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Full Papers*

*University of Bocconi, Milan*

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# **Boosting knowledge & trust for a sustainable business**

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## ***Referred Electronic Conference Proceedings***

**Full Papers**

edited by

*Sandro Castaldo - Marta Ugolini - Gianmario Verona*

# Universities and the generation of impact: the role of university foundations in knowledge transfer

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## Abstract

**Framing of the research.** *The paper explores the role of the University Foundations (UFs) in the knowledge transfer activities of the Italian universities, as one of the possible organizational solutions for academic-industrial collaborations.*

**Purpose of the paper.** *The work examines the UFs under an organisational and strategic perspective through the analysis of those organizations that have been designed to generate impact within a third mission framework.*

**Methodology.** *We conducted a multiple-case study as exploratory research approach, interviewing the employees of three different Italian UFs. Furthermore, we ran a thematic analysis on the transcripts to inductively code our data and to identify significant relationships between emerging themes and existing literature.*

**Results.** *The paper sheds light on the role that the Italian UFs play in bridging the gap between university and industry with a specific focus on their activities, employees, strategies, and relationships. Acting as an intermediation structure for knowledge transfer activities, they represent a simplified entry point to the universities' assets by scouting opportunities and catalysing the innovation processes.*

**Research limitations.** *The research explores the UFs under a small sample of cases. However, this work represents just a preliminary effort toward the exploration of the phenomenon. These limits can provide avenues for future research.*

**Practical implications.** *The paper contributes to the literature on knowledge transfer and intermediary organization by analysing the specific case of the UFs.*

**Originality of the paper.** *The work address for the first time the UFs not only under the legislative lens of investigation but also under the strategic and the managerial ones. There are no prior studies focused on understanding this organizational phenomenon under these perspectives.*

**Keywords:** *University Foundations; knowledge transfer; knowledge transfer organizations, University-industry collaborations*

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## 1. Introduction

In the last decade, scholars have been paying increasing attention to the role of universities and their impact on society, not only through education and research but also in terms of their so-called third mission (Guimon, 2016; Vesperi and Gagnidze, 2019; Compagnucci and Spigarelli, 2020; Petruzzelli and Murgia, 2020). Universities all over the world have intensified their relationships with the external environment. In particular, they have become more innovative and entrepreneurially-oriented in the exploitation of academic assets and technologies through knowledge transfer (KT) activities (Perkmann *et al.*, 2013; Pfothenhauer *et al.*, 2016; Davey, 2017; De Moortel and Crispeels, 2018), which do represent an important component of the third mission. This increasing commitment has been characterised by a set of changes in the internal organization of the universities and in their interactions with their external environment (Audretsch *et al.*, 2014; Granieri and Basso, 2019, Perkmann *et al.*, 2021).

It is well known that to facilitate these interactions, universities have equipped themselves with internal and external intermediary organizational structures. The most widespread solutions are internal knowledge and technology transfer offices (KTOs/TTOs) designed to support researchers in all the knowledge transfer activities (e.g., IP protection, research commercialization, university-firm collaboration, and promotion of entrepreneurship) (Gubitta *et al.*, 2016; Clayton *et al.*, 2018; Giuri *et al.*, 2019). Furthermore, several universities have also set up external intermediaries as limited companies, incubators, science parks, or foundations to support in whole or in part the academic third mission's activities (Muscio, 2010; Conti *et al.*, 2012, Perkmann *et al.*, 2013; Bonomi, 2014; Battaglia *et al.*, 2017).

With regard to Italy, researchers have emphasized that Italian universities have experienced a catching-up phase in the knowledge transfer frame (Algieri *et al.*, 2011; Conti *et al.*, 2012; Cesaroni and Piccaluga, 2016; Grimaldi *et al.*, 2021). They have been growing fast in terms of third mission activity, and yet they still require investments related to times and resources if compared with more consolidated organizations in Europe or in the rest of the world (Di Bernardino and Corsi, 2018; Micozzi *et al.*, 2021).

In this scenario, an interesting Italian peculiarity is the one of the University Foundations (UFs). Established in 2001 by the Italian legislator, these organizations can perform a vast set of supporting activities on behalf of their related institutions that establish and formally drive them (Bellezza and Florian, 2005; Serravalle, 2012; Fabbri, 2016; Sicchiero, 2020). According to the limit of action defined by the universities, UFs can work closely with their KTOs becoming their "operative arm" (Radano, 2005; Serravalle, 2012).

Given the general lack of investigation of this phenomenon, our study addresses the following research question: *after 20 years from their establishment, which is the role of the University Foundations in the academic knowledge transfer activities?* We conducted a multiple-case study as exploratory research approach, considering three different Italian UFs.

This study contributes to the literature on knowledge transfer and intermediary organizations in three main aspects. First, we contribute to the analysis of the UFs, considering not only the legislative framework but also the strategic and the managerial ones (Ferrara and Rea, 2011; Fabbri, 2016). To our knowledge, no prior studies have examined this organizational phenomenon under these perspectives. Second, we provide a specific contribution to the literature related to knowledge and technology transfer in Italy (Villani *et al.*, 2017, Vesperi and Gagnidze, 2019; Grimaldi *et al.*, 2021). Third, our research sheds light on the role that Italian UFs play in bridging the gap between university and industry with a specific focus on their employees, activities, strategies, and relationships, which represents a finding that can be useful for other national contexts.

The remainder of this work is organized as follows. First, we illustrate the conceptual background in Section 2. Section 3 describes the methodology. Section 4 presents the main findings. Finally, we discuss the implications of our results and we draw our conclusions in section 5.

## 2. Background literature and theoretical framework

### 2.1 Bridging the gap

Within this research context, scholars have paid growing attention to the role of intermediary organizations in the knowledge transfer process (Bonomi, 2014; Villani *et al.*, 2017; Clayton *et al.*, 2018; Alexandre *et al.*, 2021). These organizational structures act as intermediaries in the knowledge transfer process to shorten the distance between universities and industries, dealing with markets that are often highly knowledge-intensive and increasingly competitive (Audretsch *et al.*, 2012; Petruzzelli and Murgia, 2020).

These types of organizations can be formed internally to universities but also externally, according to the different third missions' roles and objectives of each institution and countries' characteristics related to legislation, policies, etc. (Battaglia *et al.*, 2017; Maresova *et al.*, 2019). Even if it highly depends on the different local contexts, in the majority of the cases only internal university's offices are responsible for knowledge and technology transfer activities (Conti *et al.*, 2012; Lafuente and Berbegal-Mirabent, 2019), mainly through KTOs or TTOs, which have been widely explored in prior studies (Gubitta *et al.*, 2016; Clayton *et al.*, 2018; Giuri *et al.*, 2019).

However, in some countries, such as Canada, UK, and Israel, these internal and external organizational levels coexist, cooperating in the third mission's activities, with distinctive and integrated roles and capabilities. Universities decentralize some activities to these bridging structures or develop them to support the activities carried out by the internal offices (Brescia *et al.*, 2016).

Examples of these organizations can be the university incubators, designed to develop university innovations by facilitating knowledge flows with the market (McAdam *et al.*, 2006; Kolympiris and Klein, 2017), the collaborative research centres, set to enhance translational research through partnerships (Schröder *et al.*, 2014; Gibson *et al.*, 2019), the scientific and technological parks, organized to foster links with enterprises on a local basis (Giarretta, 2014; Minguillo and Thelwall, 2015), and the Proof-of-Concept Centres, organized to increase the technology readiness to market of the universities' patents (Gulbranson and Audretsch, 2008; Bradley *et al.*, 2013).

Another example may be the knowledge transfer companies which are for-profit private ventures, as limited companies wholly owned by the universities, that represent an instrument to easily engage with the private sector in a profit-oriented way (Villani *et al.*, 2017; Hoackaday, 2020). The first case of these organizations is the technology transfer companies, established in Israel in the 60s and designed to support the TTOs in their operational activities (Meseri and Maital, 2001).

Usually, the boards of these organizations are composed of representatives both of the university and the industry, to facilitate the intermediation process and to strategically align the third mission objectives of the universities with the external environment. These organizations, mainly composed of employees with training in engineering and management, are usually more involved in the provision of knowledge transfer-related services for the exploitation of knowledge-based opportunities (Landry *et al.*, 2013; Brescia *et al.*, 2016; Kolesnikov *et al.*, 2019).

Scholars identify those sorts of organizations as suitable actors to span the gaps between universities and their external context. They can improve the efficiency of the knowledge transfer activities, reducing the cost related to time, negotiation, and coordination among parties (Battistella *et al.*, 2016; D'Este *et al.*, 2016; Grimaldi *et al.*, 2017). However, given the high research focus on internal organizational structures for knowledge transfer, these external organizations still represent a relatively recent and understudied phenomenon (Brescia *et al.*, 2016; Battaglia *et al.*, 2017; Villani *et al.*, 2017; Alexandre *et al.*, 2021). Within this framework, we contribute to this research field by analysing a specific case of external organization for the university-to-industry technology transfer: university foundations in Italy.

## 2.2 *The Italian University Foundations*

UFs in Italy represent a relatively recent organizational supporting form in the field of KT and impact (Conti *et al.*, 2012; Macrì, 2016). Still, low scientific attention has been paid to discuss their nature and the main opportunities and threats related to them, both from a managerial and a legal point of view (Ferrara and Rea, 2011; Fabbri, 2016).

The UFs' establishment was driven by the universities' need for new effective instruments through which addressing competition and funding issues in the academic world (Macrì, 2016; Manfredi, 2017). The legislator set up these new organizational forms to enhance the simplification of the public structures by decreasing the bureaucracy levels (Marchetta, 2001; Hinna, 2005; Serravalle, 2012)

The regulatory action that introduces in the Italian legislative system the legal entity of the UFs is the Decree of the President of the Republic (d.P.R.) 24th of May 2001, n.254. This legislation allows the University to constitute foundations, singularly or in associated form, to acquire goods and services at the best market conditions, and to perform instrumental and support activities to the teaching and the research. At the last annual conference of the Italian UFs, it emerged that about 29 organizations of this sort have been set up in Italy and 23 still operate (Magnani, 2019).

This particular organization, controlled by the universities but at the same time with good levels of autonomy, can work in collateral and support activities. With the transfer of several tasks to these external organizations, the offices of the universities can be more focused on their main institutional "core" activities while the Foundations can address more boundary issues (Mainardi, 2008; Boffo and Moscati, 2015). At the same time, the coexistence, at an organizational level, of the private structure of the foundation and the public nature of the interest pursued can help these structures to act as intermediators between the public and the private dimension (Serravalle, 2012; Sicchiero, 2020).

This organizational structure can assist the reference institution which directly participates in the organization, in this case, the universities. It means that the UFs are typically controlled by the university in terms of strategic objectives and on the way through which they operate in the market (Hinna, 2005). The universities, with respect to the foundations, play an address and feedback function on the effective coherence of the activities performed. In addition, they also define the guidelines for the foundation, approving the annual and triennial activity plans (Bellezza and Florian, 2005).

## 2.3 *The UFs' Distinctive Characteristics*

Starting from the aspects underlined in the previous sections, it can be considered how the regulation has conceived the UFs as instrumental entities (Bellezza and Florian, 2005). According to Serravalle (2012), the four main distinctive characteristics of these organizations can be framed as follows: (i) the participation, according to which the founding members can directly and actively participate in the foundations' operation; (ii) the founders' plurality, which indicates that in the constitutive process of a foundation there are shared objective among several participants that contribute to the provision of the basic means for the foundations' activities; (iii) the dynamic and progressive formation of the foundation's capital, related to the fact that other participants could enter the organizations, providing to the institution new resources for the achievement of common objectives; (iv) the operativity, which is mainly related to an active presence in the economic, political, and social context in which these organizations operate.

## 2.4 *The UFs' Governance Systems*

Universities play a key role in the governance and strategic path of UFs, acting as related institutions. The UFs have to operate in the exclusive interest of the universities, working as their "operative arm" (Radano, 2005). Even if also external subjects can play a role in the foundation's

management, the DPR 254/2001 prescribes that the university has to directly nominate the governance bodies to effectively control the foundation and its moves.

Four main roles are called upon to perform a governance function within the Universities Foundation, these are: (i) the President; (ii) the Board of Directors, which is the body that manages and controls the foundation's activities and it can consist of a maximum of eleven components, including the president, and its absolute majority has to be appointed by the related institution; (iii) the Board of Auditors; (iv) the Scientific Committee.

In the definition of the relationship between the UFs and the related institutions, Ferrara and Rea (2011) emphasize the role played by the university in the legislative framework defined by the DPR 254/2001. The interactions among the two entities are regulated through the foundation's charters which specify the main tasks, the operative structures of the organization, and the duration of the foundation's bodies. It means that Universities define the guidelines for the foundations' activities which are readjusted years after years to better address issues and to more effectively perform activities. The relationships among these two entities are regulated by the charter that determines how they will take place, in terms of collaborations, consultancies, assistance, support services, and the activities related to the promotion of the university's assets (Serravalle, 2012).

### *2.5 The UFs' Activities*

The Italian Legislator designed these organizations to directly address the needs of university potential or actual stakeholders. DPR 254/2001 states the various activities that the foundations can perform in favour and on behalf of their related institutions. Universities have the power to design their foundations to best fit their institutional, educational, and research needs, exercising address and monitoring functions. For this reason, an optimal UFs model does not exist and each situation requires a different set of goals and a specific institutional design to perform efficiently. However, a proper division of labour, tasks, and responsibility should be clearly stated to contain or, if possible, avoid any kind of conflict and inefficiency (Demarie, 2005).

In Art. 2, Paragraph 1 (DPR 254/2001), the Legislator makes a list of all the possible activities that can be carried out by the UFs, in favour and on behalf of the universities. In fact, according to the foundations' charters, these organizations can mainly address two issues. First, the acquisition of goods and services at the best market conditions. This "in-house providing" framework permits a public entity to outsource its services to external juridic subjects that are under the same administration (Ferrara and Rea, 2011). Second, the performance of instrumental and supporting activities for their related institution. Within this frame, universities can differently configure their foundations, according to their specific needs (Demarie, 2005).

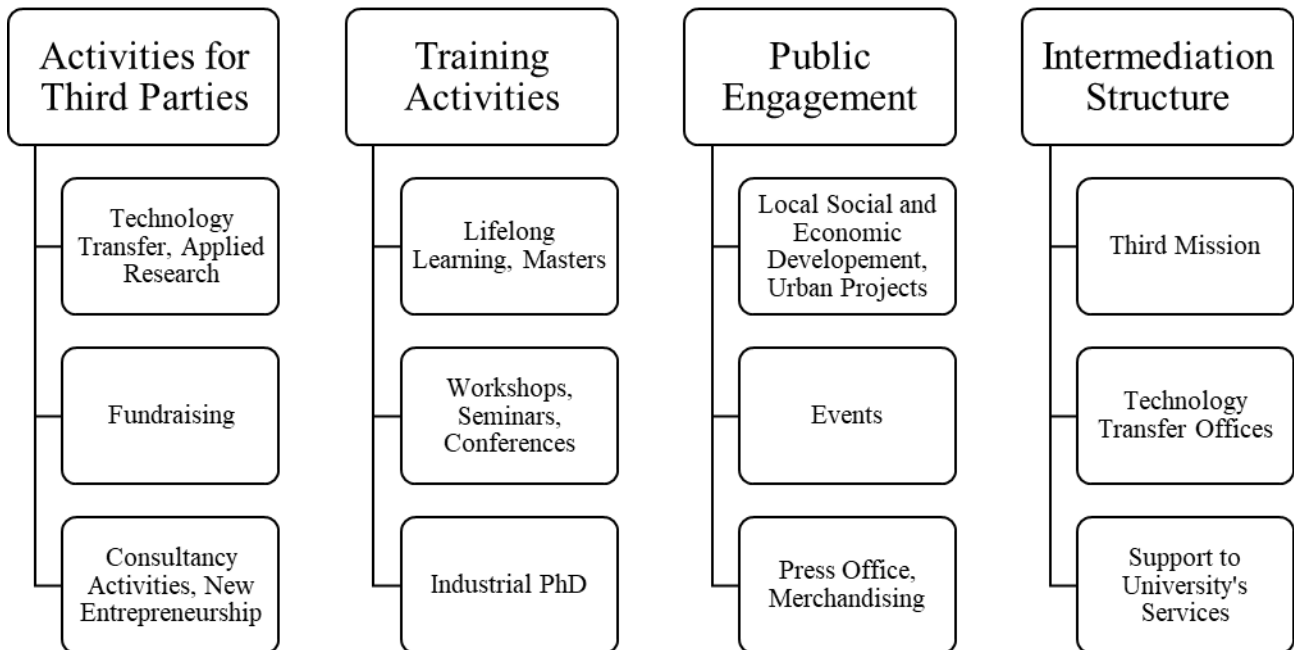
The legislator considers several UFs' activities that may be divided into four macro-areas, according to the structure proposed by Magnani (2019) schematized in

*Fig. 1.* First, the activities for third parties, which cover a vast set of actions, such as technology transfer, applied research, fundraising, and every form of consultancy. Second, the training activities, as the organization of workshops, seminars, and conferences, the university supports the industrial PhD management and the lifelong learning dimension. Third, the public engagement, with the social and local development, in several cases also in terms of urban-related projects, organization of public events, press offices, and merchandising services. Fourth, the intermediation



structure both with external stakeholders in a third mission scenario, and internal stakeholders as the TTOs, the International Research Offices, or the Public Engagement Offices.

Fig. 1: University Foundations, main activities



Source: Own elaboration on Mangnani (2019).

Considering the theoretical analysis proposed in the previous paragraphs, it emerged that the role of UFs in the universities' knowledge transfer activity received scarce attention from academia in Italy and abroad (Ferrara and Rea, 2011; Fabbri, 2016). In particular, we observed a general lack of analysis of this organizational phenomenon under the lens of investigation of the business sciences, especially from an organisational and a strategic perspective. According to the review we carried on in the previous paragraphs, UFs have been mainly examined only within the Italian academic debate and mainly from a legislative point of view.

In order to deeply understand and analyse the phenomenon of the Italian UFs and their role in the knowledge and technology transfer activities of their related institutions, we set an investigative framework to answer the research question: *after 20 years from their establishment, which is the role of the University Foundations in the academic knowledge transfer activities?*

### 3. Methodology

#### 3.1 Research setting

According to the research framework proposed by Saunders *et al.* (2016), to gain further understanding of a scarcely investigated phenomenon, this work will consider an exploratory research approach. The choice of this proposal is mainly related to the flexible and adaptable nature of this research framework. Since, as emerged in the previous paragraphs, UFs still represent a

relatively recent phenomenon that has not been fully explored and on which a scarce amount of scientific material has been produced, we considered the multiple-case study as research approach. In fact, it enables an investigation of the phenomenon through interviews from the different cases and a comparison among them (Yin, 2009).

By asking the same questions to different organizations, this approach will be useful to code and compare information under multiple perspectives (Adams *et al.*, 2014). Starting from the context-related information previously converged, we designed the process in order to highlight common aspects and differences among the various cases. The multiple-case study should allow a wider exploration of the research questions through suggestions more grounded in several empirical pieces of evidence (Gustafsson, 2017).

According to the research approach proposed by Yazan (2015), the process of data collection and analysis will take place under a multiple embedded design rather than a multiple holistic one. In fact, it will not be considered the phenomenon of the UFs as a whole but only under those aspects related to the knowledge transfer activities. From this point of view, even if the cases will be described and the different activities will be presented, the spectrum of analysis related to the investigation of other activities will be excluded *a priori*.

### 3.2. Cases selection

The analysis will be mainly based on a qualitative approach and it will consider three cases. We selected those cases for the purpose of setting a generalized framework of research, finding recurrent and comparable aspects. The selected cases should lead to point out possible logics and relations capable of enabling connections and keys of interpretation through which read the phenomenon (Eisenhardt and Graebner, 2007; Yin, 2013). From the list of the 24 Italian UFs available from the Italian Ministry of Education, University, and Research (MIUR, 2020), we considered three foundations for our analysis because of four aspects that allowed a comparison: the knowledge transfer commitment, their geographical proximity, the participation of similar institutions, and their different levels of experience.

In terms of their commitment to knowledge transfer, universities designed these foundations to specifically support the activities carried on by the TTOs and to valorise the research assets of their related institutions (Battaglia *et al.*, 2017). In terms of their geographical proximity, the three foundations connect the academic dimension with a similar stakeholders' system, at least from a local point of view (Steinmo and Rasmussen, 2016). They collaborate with very similar companies and participate in comparable consortia. In addition, they are participated by quite similar related institutions in terms of institutional control, number of departments, patents filed, academics employed, and students enrolled (Villani *et al.*, 2017). To better explore the phenomenon, we considered three universities that belong to three different classes of the public CENSIS ranking (2020): which are the mega, the big, and the technical universities. In conclusion, they have different levels of experience. The foundations considered have been established in different historical moments, this difference in time can help to better answer the research questions from an evolving perspective. The key features of the universities that host the foundations are summarized in *Tab. 1*.

*Tab. 1: Characteristics of the Universities*

| <b>Institutional characteristics (year 2020)</b> | <b>Polytechnic University of Milan</b> | <b>University of Padova</b> | <b>Ca' Foscari University of Venice</b> |
|--------------------------------------------------|----------------------------------------|-----------------------------|-----------------------------------------|
| <b>Institutional Control</b>                     | Public                                 | Public                      | Public                                  |
| <b>CENSIS Class</b>                              | Technical                              | Mega                        | Big                                     |
| <b># of Students</b>                             | >46.000                                | >57.000                     | >21.000                                 |
| <b># of Academics</b>                            | 1.430                                  | 2.268                       | 1.039                                   |
| <b># of Departments</b>                          | 12                                     | 32                          | 8                                       |
| <b># of Patent filed</b>                         | 76                                     | 57                          | 17                                      |

|                                         |                                                                                                                   |                                                                 |                                                                               |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------|
| <b>University Foundations</b>           | The Foundation Polytechnic of Milan                                                                               | UniSMART - Padova University Foundations                        | University Foundation Ca' Foscari                                             |
| <b>University Foundations' Websites</b> | <a href="https://www.fondazionepolitecnico.it/en/about-us/">https://www.fondazionepolitecnico.it/en/about-us/</a> | <a href="https://www.unismart.it/">https://www.unismart.it/</a> | <a href="https://www.unive.it/pag/15272/">https://www.unive.it/pag/15272/</a> |

Source: Own elaboration from Universities' Social Report and Knowledge-Share.eu database (2021).

Under this research setting, we considered three UFs. Firstly, The Foundation Polytechnic of Milan (FPM) which is the UF of the Polytechnic University of Milan since 2003. It is actively involved in the enhancement of the university innovation path since the university designed its foundation for the transfer of knowledge developed within the polytechnic in the fields of engineering, architecture, and industrial design to external stakeholders from the public and the private sector. It is the first Italian UF (Foundation Polytechnic of Milano, 2020a; Foundation Polytechnic of Milano, 2021). Secondly, UniSMART - Padova University Foundation (FUS) which is the UF of the University of Padova deputed to the technology transfer activities and post-graduate education. The organization has been established in 2016 as UniSMART Padova Enterprise, a commercial for-profit limited company. At the time, this organizational framework represented a unicum in the Italian scenario (Carosio *et al.*, 2018; Carosio *et al.*, 2019; UniSMART, 2021a; UniSMART, 2021b). Thirdly, the University Foundation Ca' Foscari (FCF) which is the instrumental entity of the Ca' Foscari University of Venice established in 2010 and mainly deputed to support the university in the pursuit of its third mission's activities (University Foundation Ca' Foscari, 2020;). An overview of the three UFs based on the framework of analysis for knowledge transfer organizations developed by Cesaroni and Piccaluga (2016) and Campbell *et al.* (2020) is schematized in *Tab. 2*.

*Tab. 2: Foundations' Overview*

| <b>Variable</b>                                    | <b>Description</b>                                                                                                                  | <b>UniSMART - Padova University Foundation (FUS)</b> | <b>University Foundation Ca' Foscari (FPM)</b> | <b>The Foundation Polytechnic of Milan (FCF)</b> |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------|--------------------------------------------------|
| <b>Experience</b>                                  | N. of years since the foundation started its activities.                                                                            | 1                                                    | 10                                             | 18                                               |
| <b>HR</b>                                          | N. of employees and collaborators in the knowledge transfer area.                                                                   | 9                                                    | 25                                             | 30                                               |
| <b>Earnings from knowledge transfer activities</b> | Total earning from licenses, research contracts, consultancy, and other services TT-related. (TT-related earnings/production Value. | 2.432.499<br><b>(61%)</b>                            | 2.077.554<br><b>(29%)</b>                      | 4.512.609<br><b>(43%)</b>                        |
| <b>Contracts</b>                                   | N. of knowledge transfer projects for third parties, involving the university departments.                                          | 67                                                   | 47                                             | 150                                              |
| <b>Funded Projects</b>                             | N. of active EU or International funded projects.                                                                                   | 15                                                   | 1                                              | 63                                               |

Source: Own elaboration from Foundations' Social Reports and Balance sheets. All data are referred to 2020. Please, notice that usually the earnings from research contracts and consultancy activities are not considered within the earnings from the technology transfer of the Italian TTOs.

### 3.3 Data collection

In the multiple-case study, the data collection for the research purpose of this work will consist of two sources: primary sources collected via interviews and secondary sources assembled through desk research. The approach to data collection will be mainly qualitative and the information could

not be addressed without reference to the context. Considering the particular nature of the case studies, the data collection process will not take into account only the most traditional knowledge and technology transfer indicators, but also other elements linked to the transfer channels and to the environment in which those kinds of activities are put in place (Campbell *et al.*, 2020).

As previously mentioned, the primary data collection took place through specific interviews on a sample of three foundation employees that carry on knowledge transfer activities within the three different organizations. According to the methodology developed by Gioia *et al.* (2013), the primary data collection is based on semi-structured interviews which are set on a one-to-one basis. This flexible framework provides primary sources not only on the specific case analysed but also on the background and on the context in which the foundations operate (Saunders *et al.*, 2016). We contacted respondents via e-mail and, due to the pandemic situation, interviews took place online on the Microsoft Teams platform. Employees may be schematized as follows: Manuela, Chief Operating Officer at Foundation Polytechnic of Milan (FPM); Stefano, Technology Transfer Manager at UniSMART - Padova University Foundation (FUS); Tommaso, Director at University Foundation Ca' Foscari (FCF).

### 3.4 Data analysis

On the basis of the grounded theory approach of Strauss and Corbin (1998) and more recent approaches developed in qualitative management research (Gioia *et al.*, 2013), we inductively coded our information to identify significant relationships between data, emerging themes, and existing literature. We considered an open coding approach to construct generic categories based on in-vivo codes from respondents' phrases (Strauss and Corbin, 1998). We coded data according to the research question to identify the actual role of the UFs in the knowledge transfer activities performed in the bridging process between the universities and the external environment.

Following standard practice, we conducted data analysis in several stages by reading several times the data collected. Using MS Excel spreadsheets, we proceeded manually starting with first-order codes and then to more abstract themes that represent an overarching dimension used to develop a general framework through thematic analysis (Saldaña, 2015). Finally, when no additional first-order codes emerged from the data, we grouped them in more general themes that represent the second-order codes. At this stage, our objective was to reduce the number of code units and identify general categories which may assume relevance for the analysis. *Tab. 3* presents the structure of our data, including first- and second-order codes, as much as the dimensions in which we aggregated the themes for presenting the results.

*Tab. 3: The thematic analysis grid*

| Codes (first-order codes)                                                           | Themes (second-order codes) | Dimensions                       |
|-------------------------------------------------------------------------------------|-----------------------------|----------------------------------|
| Preliminary support; Knowledge transfer support; Ingoing support; Outgoing support. | Supporting activities       | Knowledge Transfer Activities    |
| Path definition; Own way research; Trade-off.                                       | Role definition             |                                  |
| Reaction to external stimulus; Reaction to the market needs.                        | Reactive Strategy           | Strategy                         |
| Consulting approach; Top-down approach; Solutions offering; Proactive activities.   | Proactive Approach          |                                  |
| Value distinction; Value uniqueness.                                                | Unique value proposition    |                                  |
| University centrality; University autonomy; University self-sufficiency.            | University Independence     | Relationship with the university |
| Synergy with Universities Offices; Collaborative Behaviour.                         | Synergy with Universities   |                                  |
| Compliance with university's objectives; Instrumental bodies.                       | Instrumentality             |                                  |
| Market aggressiveness; Flexible approach; Market needs accomplishment.              | Industry Engagement         | Competitive advantage            |
| Inter-sectoral interactions; Public-private interactions.                           | Public-private Interaction  |                                  |

Source: Own elaboration from interviews.

## 4. Findings

Based on our inductive coding, we distinguish between 10 themes. Aggregated into four dimensions, the findings are presented in the next subsections.

### 4.1 Knowledge Transfer Activities

This sub-section considers the codes that resulted from the thematic analysis which we associated with the themes “Supporting Activities” and “Role Definition”. It is not always easy to specifically define a unique set of activities performed by the UFs. In fact, as instrumental organizations, they have been designed in order to respond to the precise needs of their related institutions. This aspect clearly reflects the adaptability and agility in terms of activities and operations that, according to the respondents, it is not that easy to reach within the universities related to our case studies, since they are large and aged multinational organizations. Given the great dimensions of the universities, there is a vast range of supporting activities that can be located under the knowledge transfer frame. They have been schematized in *Tab. 4*.

*Tab. 4: Foundations’ Knowledge Transfer Activities*

| <b>Knowledge Transfer Activities</b>        | <b>The Foundation Polytechnic of Milan (FCF)</b> | <b>UniSMART - Padova University Foundation (FUS)</b> | <b>University Foundation Ca’ Foscari (FPM)</b> |
|---------------------------------------------|--------------------------------------------------|------------------------------------------------------|------------------------------------------------|
| Project Management – Industrial Projects    | X                                                | X                                                    | X                                              |
| Project Management – Collaborative Projects | X                                                | X                                                    | X                                              |
| Research Contracts                          | X                                                | X                                                    | X                                              |
| Innovation Consulting                       | X                                                | X                                                    | X                                              |
| IP Management and Valorisation              |                                                  | X                                                    |                                                |
| New Entrepreneurship – Start-ups’ support   | X                                                |                                                      |                                                |
| New Entrepreneurship - Spin-offs’ support   |                                                  | X                                                    |                                                |

Source: Own elaboration from *Foundations’ Social Reports*.

By considering a general overview of this specific aspect of the UFs’ phenomenon, it emerges a common ground underlined by all the respondents. In terms of technology and knowledge transfer, these intermediary organizations act as a simplified entry point for the industry to the innovation developed within the university’s departments.

*We are a facilitated interface towards the assets, the technology, and the knowledge of the university, with respect to the industrial sector. A company with technology-related issues is not always able to identify the correct person for a support internal to the university and that’s where we come in. (Manuela - FPM)*

The first kind of activity widely diffused among the UFs is project management (Van Horne and Dutot, 2017; Garengo, 2019). Units within the organizations have been designed to cope with a vast range of programs, as the industrial projects, mainly financed under the schemes similar to the Recovery Fund or other national and regional funding, the European Projects, largely financed through the former Horizon2020 schemes now Horizon Europe, the Interreg Italy-Switzerland program, or other international tenders and collaborative projects.

The second typology of activity is the research contracts. It is about the management of highly innovative contracts commissioned by private and public organizations to the laboratories or the research groups of one or more university departments. For the external stakeholders, it represents a facilitated way to commercially benefit from the unique value proposition and capabilities of the

universities' research centres. The transferring process happens through practical answers to needs that would not be addressed by the external organizations in such an easy and cost-efficient way (Berbegal-Mirabent *et al.*, 2015).

The third activity is innovation consulting which consists of targeted support to private and public organizations to find innovative solutions to complex problems through the valorisation of the knowledge and technology of the universities' departments. The consultancy activities may support through the innovation of customized innovation strategy, the development of products and services, or the analysis and scouting of emerging markets and technologies in a constantly developing perspective.

Fourth, the Intellectual Property management. This activity can comprehend various sets of actions related to the patents' valorisation. Foundations may collaborate in the process of IP registration, licensing, and brokerage, supporting the university in the negotiation of their licensed technologies and in the protection of IP-related rights through legal assistance. While the previous activities were carried on by all the foundations considered within the multiple cases analysis, in this specific example, foundations can cooperate with the TTOs or the ILOs both through general support or through a delegated responsibility by the universities to directly manage a specific part of the process or the whole of the patents' life cycle (Landry *et al.*, 2013; Brescia *et al.*, 2016).

The fifth and final typology of activity is related to the new entrepreneurship support and it mainly takes place on a double track. The former way is the processes of academic start-ups' creation, management, and valorisation. The latter track is the spin-offs generation, promotion, and support (Bonomi, 2014). These activities have been designed to assist students and researchers in turning business ideas into action within the framework of a university-led innovation (Minola *et al.*, 2016).

#### 4.2 Strategy

This sub-section investigates the codes that emerged from the thematic analysis which have been associated with the themes "Reactive Strategy", "Proactive Approach", and "Unique Value Proposition". A first aspect that has been underlined in all the interviews is that, from a strategic point of view, the initial approach for a foundation is to understand what is its "place in the world", defining what to do and how to grow. It is not such an easy issue if we consider that these organizations have been designed to operate in between the problems of both the public and the private sectors, as private foundations under the public law legislation. It means that the value generated cannot be taken for granted but it depends on the project managers' ability to generate margins over knowledge transfer operations.

Respondents generally agree to point out that foundations' strategy is often a quick response to the system in which the foundation provides knowledge transfer services. An interesting definition has been the one of FPM's COO which refers to strategy as the "function of the study of what the plate gives" (Manuela - FPM). In fact, one of the ways through which foundations bring value to their related institutions is the university's involvement through industrial and collaborative financing schemes. From the perspective of the intermediary organizations, the process of engaging universities' departments, professors, and researchers mostly occurs in a top-down way. It is a response of what are the needs of the market in terms of innovation transfer and collaboration opportunities.

*Our distinctive characteristic is that we open the university to the market. We started to intercept firms and institutions with needs and unexpressed questions, offering solutions and answers. So, after an internal screening, we brought to the market the knowledge and the technology of the university. (Tommaso - FCF)*

If we consider the knowledge transfer operations carried on by the UFs, another issue that emerges from the respondents' overview is the identification of a fundamental strategic aspect in

the valorisation of the uniqueness of their value offering. These intermediary organizations represent a meeting point between a complex organization, like the university, and a vast range of local, European, and international stakeholders. From an ingoing perspective, external players may find a facilitated way to enter into contact with the innovative assets of the university.

For the reasons mentioned above, in terms of trade-offs, it is essential that the foundation's role is clear and stated. As related institutions, universities have to design their foundations defining what they can and what they cannot do. The legislator provides a vast set of activities that UFs can pursue but this aspect does not mean that they have to cover all of them. From a strategic point of view, only a clear and stated role distinction can enable efficient support to the universities' activities.

As emerged in the interview with FUS PM, the foundations must not become a duplicate of the universities. Even if the objectives are shared, these intermediary organizations have to pursue different strategies and operative approaches. If their top-down strategical proposal and their "market-aggressive" entrepreneurial mindset are not valorised, UFs would not represent anymore a value-added to all the activities already performed by the universities and their departments.

*[Foundations] do not have to replicate university's models, modus operandi, approaches, and mindsets, but they have to find their own way. Until the foundations maintain their independence, they can represent a competitive advantage for the universities. (Stefano - FUS)*

#### 4.3 Relationship with the university

This sub-section investigates the themes "University Independence", "Synergy with Universities", and "Instrumentality". The interviews carried on within the foundation's employees have generally confirmed what emerged from the literature review. UFs, as intermediary organizations, play only a supporting role in the knowledge and technology transfer activities for their related institutions and, in particular, with the TTOs or the other offices that address similar aspects. All the interviews underlined the fact that the university would be capable of carrying on these activities also without the assistance of an organization of this sort. This diffuse awareness among the cases selected can help to better understand the role of the UFs.

In the investigation of this relationship, the words "synergy" clearly comes out in all the interviews collected. This aspect assumes critical relevance to reach a successful outcome in the third mission's activities. A synergic approach permits avoiding competition and aligning the interests between the parties involved. In the development of a knowledge transfer process, the synergy among the different actors represents a fundamental aspect for the emergence of a successful collaboration. It does not lock the innovation system into a vicious circle, pursuing a more vast and comprehensive diffusion of innovative solutions (Leydesdorff and Ivanova, 2016; Cesaroni and Piccaluga, 2016).

Another important element that emerged is that, for the foundations' employees, the constant dialogue and the collaborations set with the TTOs and the other universities' offices represent a litmus test. In fact, it permits to understand whether the supporting activities are actually aligned or not with the universities' strategic objectives in the third mission frame.

From this point of view, according to the FPM's COO also a spatial proximity dimension may be helpful, in particular in the early stage of a UF of this sort. For example, the TTO of the Milan Polytechnic was beside the foundation's offices. That closeness, also in terms of physical relations, enhanced a constant confrontation and strengthened more collaborative dynamics. This perspective can lead intermediary organizations to work more efficiently as mediators in the knowledge and technology transfer process.

*[TTOs] know that we collaborate in facilitating and supporting their job. There is no competition with them because we have been designed to do different things. They are our principal*

*instrument through which we can understand if we are aligned with the university or not. (Manuela - FPM)*

A relevant aspect observed in the interview with FUS but that refers to a widespread behaviour among the cases considered is the different approach to the project development (Stefano - FUS). In fact, in the relationships with the university's offices aimed at a project development, both under a research contract on a European project scenario, the universities follow a more bottom-up path while the foundations a more top-down one. Because of its nature as a private organization designed with a structure able to deal both with university and industry, the foundation can be more facilitated in the engagement of companies and researchers in projects already in progress.

#### *4.4 Competitive advantage*

At this final stage of the findings, it will be considered the codes associated with the themes "Industry Engagement" and "Public-private Interaction". Respondents mostly agree in recognizing that UFs do not radically change the big picture of their related intuitions' activities. However, they can become key organizational players when the university needs extra gear in times of difficulty or in moments in which the offices are saturated with work. They can represent a competitive advantage to better position universities in all the situations that require quick flexibility and adaptability. These characteristics cannot always be easily matched by large public organizations of this sort (Petruzzelli and Murgia, 2020).

*The foundation is a competitive advantage for the university. However, it does not directly affect the overall picture. The University would carry on the same activities but probably this process would require more time and it would come late or it would have more complications because a public organization of this sort cannot always move with agility. (Stefano – FUS)*

Another relevant aspect, in terms of competitive advantage, is the different organizational behaviour more related to a consulting approach. It can represent an efficient and effective attitude in particular in situations that require adaptable responses to specific market needs to involve industrial collaborations or to scout opportunities (Villani *et al.*, 2017). From this point of view, as previously mentioned, respondents generally agree upon the identification of a different kind of tension that can be perceived within this typology of intermediary organizations concerning their internal university offices. This constant research of a profitable outcome for their related institutions, led these organizations to behave in a more proactive and accelerated way.

Even in this case, it is fundamental to underline that the foundation's strategic objectives do not differ from the ones of the university. So, the value represented by the foundation is not always something that can be simply added to the overall university's value. Mentioning a comment of the FUS' respondent, "it is another way, not another business".

## **5. Conclusions and implications**

### *5.1 Conclusions*

The multiple cases' analysis on the UFs and the embedded approach on their knowledge transfer activities have set an exploratory framework on UFs after 20 years from their establishment. Considering the insights which emerged from the data analysis and findings, we can derive few conclusions.

It is still not easy to define a single and simple answer to the research question. One of the main reasons is that there is not a unique way to organize the UFs. As emerged in (Bellezza and Florian, 2005; Serravalle, 2012; Sicchiero, 2020), the related institutions define their role



accordingly to the precise needs and strategic objectives of the athenaeums. Therefore, considering the specific focus of the knowledge transfer activities and looking at the multiple cases considered, the next paragraphs will try to piece together all the observations and the suggestions made so far to address the phenomenon and made some remarks.

The worldwide academic system is always more crowded and competitive not only in terms of education and research activities but also from the third mission side (Vesperi et Gagnidze, 2019; Petruzzelli et Murgia, 2020; Compagnucci et Spigarelli, 2020). Universities have tried to readapt their organizational behaviours to better cope with the academic market needs, acting under a more entrepreneurial perspective (Cesaroni et Piccaluga, 2016; Davey, 2017). However, especially for the Italian case, it is not always easy for such huge and dated organizations to collaborate with the external environment by pursuing socio-economic profitability through the transfer of their knowledge and technology (Algieri *et al.*, 2011; Micozzi *et al.*, 2021).

As intermediary organizations, UFs can represent an external operative instrument in the hands of the athenaeums to pursue all the strategic objectives that require a higher level of flexibility and market-adaptability, as the ones related to the knowledge transfer activities (Ferrara et Rea, 2011; Serravalle, 2012; Macrì, 2016). For this reason, according to the pieces of evidence collected in the previous paragraphs, the role of the UFs can be determined as follows.

As emerged in sub-section 4.1., UFs, as intermediary organizations, have the role to comprehend which are the opportunities that may arise from each of them and, if any, which is the value-added that these variegated actors can bring to the academic system, or vice-versa, generating innovative solutions for the entire society. Foundations' employees agreed in considering their foundation as a platform and a simplified entry point for the industry to the innovation developed inside the university. They act as a translator of the needs of the external environment into operative targeted activities, scouting opportunities within the innovation process.

Acting as a bridge between the university and the external environment, UFs represent catalysts to innovation. As emerged in Brescia *et al.* (2016) and in Battaglia *et al.* (2017), those organizations do not pursue objectives different from the ones of their related institutions, with respect to the more traditional internal offices' approach, they just act in a different way. From this point of view, a relevant aspect to underline in the conclusive side is the different *modus operandi* of the foundations' employees when compared with the people in the universities' TTOs (Landry *et al.*, 2013; Villani *et al.*, 2017; Kolesniknov *et al.*, 2019).

It is important to keep in mind that foundations' project managers are employees of private organizations and that their salaries may change accordingly to their results and accomplishments in the knowledge transfer activities. This helps to better contextualise that "tension" that leads foundations' employees to constantly seek for new and innovative routes to generate value, as described by FPM COO's (Manuela - FPM). The project managers' proactive role may be a useful approach capable to generate innovative paths not only within their foundations, but also in the academic mindset of researchers, departments, and universities' offices.

Again, we need to keep in mind that UFs do not represent the only possible structure through which the athenaeums may address activities related to knowledge and technology. On the basis of the analysis carried on so far, these organizations may represent a possible solution among many others, according to the specific needs of each university and its strategic direction.

## 5.2 Research limits and future researches

This study has several limitations. Indeed, the research method proposed is considered as a limited one with respect to other research frames, especially from the generalization point of view (Yin, 2013). This is mainly because the investigation is carried on under a small sample of respondents and that the research approach is still set on an explanatory basis. As discussed before, this is the level of analysis required by the early-stage of the research framework related to UFs and knowledge transfer activities. However, even if the content of this dissertation can have low generalizability in absolute terms because of its case-specific context, this aspect does not

compromise or undermine the explanatory purpose of this multiple-case study (Saunders *et al.*, 2016). Since we just analysed a sample of 3 UFs, this represents just a preliminary approach to the research of this phenomenon that may be enriched with more cases.

In addition, our work is related to a qualitative research approach. For this reason, another possible path to take could be the analysis of this phenomenon from a more quantitative perspective. Through specific data collections, it could be measured the impact of the UFs on the knowledge transfer activities of their related institutions. For example, it could be made a comparison among the outcomes of similar activities carried on by the internal university offices and the foundations' units. This approach could help to shed light on which organizational structure operates more effectively and could lead researchers to provide useful insights to all those offices that carry on knowledge and technology transfer activities, choosing the proper organizational structure and the right role distinction to better enhance these processes (Battaglia *et al.*, 2017; Micozzi *et al.*, 2021).

Those kinds of organizations may be investigated under a more general focus within the framework of intermediary organization for knowledge transfer activities. Researchers can analyse when it can be more efficient and effective to for the universities to go for the support an intermediary organization rather than a completely external one (Villani *et al.*, 2017; Alexandre *et al.*, 2021). Since it is a still recent phenomenon for scientific research, there are still many observations that can be made. From this point of view, it can be specifically addressed which are the advantages and the disadvantages of the different organisational structures and in which context they would better fit.

In general, this analysis could be carried on also under a more international perspective, considering similar cases in different national contexts. In particular, interesting examples can be found in the US, the UK, Israel, and Canada that, together with Italy, can count cases of this organization's typology (Brescia *et al.*, 2016; Hoackaday, 2020). Another interesting investigation could be carried on to assess which are the factors that better enhance an efficient and effective transfer of knowledge and technology when facilitated by intermediary organizations. By considering successful cases of knowledge transfer, the phenomenon could be in-depth analysed, providing practical and operative paths. This frame could lead to develop new strategies and to reshape processes by maximising the results of the transfer.

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