UNIVERSITÀ DEGLI STUDI DI PADOVA

Dipartimento di Scienze Economiche ed Aziendali "Marco Fanno"

RELATIONSHIPS AT WORK IN A NETWORKED BUSINESS INCUBATOR: THE CASE OF H-FARM

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December 2014

"MARCO FANNO" WORKING PAPER N.190

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Abstract

This work adds to the previous literature on networked business incubators (NBIs) by exploring the complex network of relationships originated from a NBI. In particular, social ties (cooperative relations between individuals) and business ties (formal linkages between organizations) are investigated. The analytical framework developed here is empirically illustrated through a case study research on a leading Italian private NBI called H-Farm. Primary data collection was conducted during the period May–September 2012 by means of face-to-face in-depth interviews and a survey. Data are elaborated through social network analysis tools. The results highlight the co-presence and interaction of social and business ties, which build up a vital environment nurturing an entrepreneurial ecosystem. Community-based relationships and an influential incubator management are crucial for sustaining incubatees in product and business development activities.

Keywords: networked business incubator, entrepreneurship, social network analysis, interpersonal networks, inter-organizational networks, start-ups, liability of newness.

JEL codes: L26; M13.

1. Introduction

The phase that follows the birth of new ventures is characterized by a high mortality rate, as demonstrated by many past and recent empirical studies (Nagy and Lohrke, 2010). This vulnerability owes to a well-known and widely studied phenomenon: the liability of newness. Stinchcombe (1965), who first introduced and analyzed this phenomenon, investigated its underpinnings and identified four converging factors: 1) new organizations operate inefficiently as long as people do not learn their roles, and 2) organizational routines have not been developed; 3)

"new organizations must rely heavily on social ties among strangers" (p. 149), and the consequent lack of confidence translates into an additional source of organizational inefficiencies; 4) the construction of a stable portfolio of customers takes some time, during which customer-producer ties are still very fragile. These factors, directly and indirectly, affect the likelihood of failure. New ventures, which need to access and mobilize resources in order to catch up, are at a disadvantage when bargaining with resource providers, because they suffer from a lack of legitimacy (Singh et al., 1986; Elfring and Hulsing, 2003).

The actual existence of the liability factors identified by Stinchcombe—ensuring a broad and lasting consensus affirming his theory (Abatecola et al., 2012)—accounts for the high average mortality of new ventures compared to older companies. On the other hand, even when considering a cohort of firms that belong to the same sector and are located in the same territory, some of them survive and some do not. The literature offers several possible explanations for this difference, each centered on a distinctive feature of the new venture. Highly innovative enterprises have been shown to be more vulnerable: in particular, the first two liability factors—learning relative roles and the development of routines—create a relative disadvantage in direct relation to the new company's level of innovation (Stinchcombe, 1965; Elfring and Hulsing, 2003). Studies on industrial spin-offs (i.e., new ventures formed by one or more employees that stand apart from firms in the same industry) have instead emphasized the role of knowledge inheritance in moderating the effect of the liability of newness. In these cases, the emergent entrepreneur uses the parent company as a sort of incubator, from which can be learned many of the things that serve to reduce duration of exposure to the liability of newness (Klepper, 2001; Klepper and Sleeper, 2005). In contrast, start-ups, by definition, do not have a hereditary link with an incumbent firm (Helfat and Lieberman, 2002)[1], but those housed in a business incubator may have more chances to successfully address the challenges of the early stages of development—especially where the business incubator is not limited to

[1] Following Helfat and Lieberman (2002, p. 730), start-ups are a type of entrants to a market and of new ventures "whose founders have no previous employment ties to other firms in the industry".

providing affordable office spaces and shared administrative services, as in the simplest incubator formula, but plays a more complex role as moderator of the liability of newness (Bøllingtoft and Ulhøi, 2005).

Following the seminal work of Hansen et al. (2000), a degree of consensus has emerged among studies in this field, in which the most effective incubators (those more able to promote the survival and growth of start-ups) have been identified as those that provide "organized networking that enables start-ups to obtain resources and partner with others quickly" (p. 77). Bøllingtoft and Ulhøi (2005) report that the important relationships in these networked business incubators (NBI) include not only those with external parties, such as venture capital organizations, but also those internal relationships—in particular, the social relations established between people employed in start-ups—through which information and knowledge circulate smoothly within the incubator. Scillitoe and Chakrabarti (2010) focus attention on direct relations between the incubator management organization and the incubatees, and on the fact that this organization can facilitate relations between the incubatees.

These studies, and others mentioned here (sections 2 and 3), confirm the usefulness of the NBI as an efficient model because of its potential to mitigate the liability suffered by start-ups. However, the elaboration of a unified framework highlighting how different types of relationships work in a networked incubator is still missing. In order to fill this gap, we developed a single case study analysis, supported by the adoption of a social network analysis approach (sections 4 and 5) to identify interpersonal and inter-organizational networks in a NBI. The final section sums up the main results of the analysis, their implications, limitations of the research, and further development.

2. The networked business incubator

Over the last 30 years, the role of the business incubator has been consolidated as a mechanism for enhancing economic and technological development through the promotion of entrepreneurial

ideas and the provision of support to start-up companies. The BIC of Liège was founded in 1984 as the first of a new generation of business incubators promoted by the European Commission. There followed a range of incubators—public, private, and university-based—and local governments and public institutions worldwide have designed policies in support of incubating initiatives to speed up the process of business creation (Lalkaka, 2002). Incubators can be independent entities, as in the case of the business innovation centres (BICs) long promoted by the European Community (Aernoudt, 2004), or they can be embedded within science parks, universities or other research institutions (Clarysse et al., 2005; Phan et al., 2005). While the first incubator structures were public and non-profit, Idealab (founded by Bill Gross in Los Angeles in 1996) pioneered a new form of for-profit incubator, oriented mainly to sustaining technology firms with an Internet-related business idea in the first stages of life (Beaver, 1998).

Following the US National Business Incubation Association, business incubators may be defined as an infrastructure "designed to accelerate the growth and success of entrepreneurial companies through an array of business support resources and services" (www.nbia.org). They are particularly helpful in sustaining high tech start-ups, reducing difficulties related to the "liability of newness" (Stinchcombe, 1965). New ventures are generally at a disadvantage when recruiting human resources and establishing the social and business relationships necessary to enter the market (Singh et al., 1986; Cafferata et al., 2009), and this is even more apparent in the case of knowledge-intensive and innovative new ventures (Elfring and Hulsing, 2003). Elaborating on the "liability of newness" principle, Freeman et al. (1983) examined the importance of size, and introduced the "liability of smallness" principle. In order to count the high failure rate of small start-up companies, the European Commission (2002) suggested the nurturing of start-up firms in business incubators.

Even though results are not always consistent[2], academic research seems to confirm that start-up companies located in a business incubator have a higher survival rate (Ferguson and Olofsson, 2004; Sherman, 1999), sales growth (Löfsten and Lindelöf, 2001, 2002; Colombo and Delmastro,

[2] See, for instance, the case of the Turin research spin-offs described in Salvador (2011).

2002), and innovation performance (Tamásy, 2007), as compared to similar start-up companies not located in a business incubator.

Business incubators can be characterized as instruments supporting entrepreneurship in high technology sectors. They usually operate within a three-stage process, through which the incubatee meets the market and exits the incubator: 1) orientation, in which the innovative idea is outlined and specified; 2) pre-incubation, in which a business plan is created; and 3) incubation—formation of the start-up (or entrance of a spin-off). When incubators operate only at the third stage, they are also referred to as business accelerators (Grimaldi and Grandi, 2005). Incubators can be classified as public or private, depending on the nature of governance. While public incubators may take the form of business innovation centres or university business incubators, private incubators can be categorized as either independent business incubators or corporate business incubators. Corporate and university business incubators are more focused on supporting the emergence of spin-offs, while business innovation centres and independent business incubators (like BICs) have as their prime objective the nurturing of start-ups (Chiesa and Piccaluga, 2000; von Zedtwitz, 2003). Von Zedtwitz (2003) widens the typology of business incubators to include two further types: regional business incubators (where a government agency enacts a range of measures enabling the creation of new ventures throughout a region), and virtual incubators, or "incubators without walls". However, these entries tend to generalize the concept of a business incubator to the point where it becomes difficult to carry out effective research on the topic (Hackett and Dilts, 2004).

Business incubators are not limited to physically accommodating start-ups or spin-offs, rather paving the way for their independence. For this reason, they provide services that are difficult to find in the open market, such as the scouting of new talents and new ideas, innovative tutoring of entrepreneurs, and matching between funders, business people, and innovators (Rice and Mathews, 1995). Like a seed capital investment, the incubator helps start-ups to get started; they should then be able to attract additional investors for a second round of funding, so sustaining development of the business. In general, the start-up should hit the market after three years in the incubator—

although this rule is often waived, especially in the case of public incubators. The contacts and network of relationships provided by the incubator should help to attract the attention of a company or a venture capital firm to invest in the new product or service offered by the incubatee. The post-incubation phase is very delicate and can be negotiated successfully only if the incubator is able to provide opportunities for start-ups to meet with potential industrial and financial partners. And this is the significance of the divide between public and private incubators (the latter are still very rare in countries like Italy): private incubators have always adopted clear policies of post-incubation that guarantee the effectiveness of the initial investment. For this reason, although incubators should not be involved in the post-incubation phase, they can play a decisive role in properly preparing the ground.

A business incubator sustains a small firm in the early stages, paving the way to independence. But are all business incubators equally effective in shaping the performance of start-up companies? Attempting to respond to this question, Mian (1997) and Hansen et al. (2000) observed that, apart from the location and administrative support advantages, the value and performance of business incubators must be measured around a complex system of indicators. Some authors have noted that the incubator type or model affects performance (Bergek and Norrman, 2008; Barbero et al., 2012). Similarly, Hansen et al. (2000) first introduced the concept of a networked business incubator (NBI). They observed that most business incubators provide office space, funding, and basic services, but few offer an extensive network of powerful business connections. They identified the NBI as the most successful model in enabling start-ups (especially Internet-related companies) to beat their competitors to market: "A networked incubator can provide tremendous value to a start-up team through connections that help forge crucial strategic partnerships, recruit highly talented people, and obtain important advice from outside experts" (Hansen et al., 2000, p. 78). There is, in fact, increasing acknowledgement of the importance of embedding young companies in entrepreneurial networks (Malecki, 1997; Johannisson, 2000; Johannisson et al., 2002; Elfring and Hulsing, 2003; Sorenson, 2003; Myint et al., 2005; Stuart and Sorenson, 2007). Accordingly, the NBI becomes the

formal and planned mechanism sustaining formal and informal business ties (Bøllingtoft, 2012), enhancing tangible and intangible resources both internal and external to the incubator organizations (Soetanto and Jack, 2013), and playing the role of knowledge broker within the population of incubatees (Peters et al., 2004).

According to Hansen et al. (2000), the three main characteristics of a NBI are: 1) an entrepreneurial environment; 2) economies of scale and scope in providing services to the incubator companies, especially obtaining good deals from top-tier service providers; and 3) organized networking that eases resource provision and allows start-ups to quickly engage in partnering with other organizations. Thus, a well-designed NBI combines the benefits of two diverse worlds: the scale and scope of large established corporations and the entrepreneurial drive of small venture-capital firms.

Although business incubators differ from each other on many characteristics (Aerts et al., 2007; Barbero et al., 2012; Bakkali et al., 2014), it makes sense to look at their variety in a synthetic way. Following this perspective, Grimaldi and Grandi (2005) classified them under two main models. Model 1 is formed by business innovation centres (BICs) and the like—"old fashioned" incubators, where the lack of business focus (hosting start-ups operating in various industries) and the non-profit orientation fails to foster internal knowledge transfer, co-learning processes, and partnerships among start-up teams, or to boost networking activities between incubatees and potential external funders, customers, and business partners. Model 1 incubators tend to provide mainly tangible services (like spaces and offices) to new enterprises that are generally local and more anchored to the old economy. By contrast, Model 2 includes corporate private incubators and independent private incubators, both for-profit organizations in which the networking attitude is evident. Model 2 incubators tend to offer more intangible services, such as transfer of competencies and knowledge-based services, to high-tech ventures willing to operate in a global market.

As also suggested by Grimaldi and Grandi (2005), the NBIs fall within Model 2. In a NBI, synergies are strongly supported with complementary start-ups and more mature companies that

have left the incubator, the management team is deeply committed to pushing the incubatees further towards the market, and relationships between various business actors are stimulated through networking activities. The main features of a NBI are summarized in Table 1, after von Zedtwitz and Grimaldi (2006). In particular, we have added a distinction between internal and external sources of tangible and intangible resources, such as financial capital, business and management advice, and networking. Among the competitors of NBIs as sources of financial capital, we have added the emergent crowdfunding platforms, whose activities are now increasing after the pioneering work of Kickstarter, the world's first and largest funding platform for creative projects. In addition, we have introduced as rivals of the NBI some typical "natural incubators", which over time received large theoretical and empirical support in studies on economic geography and regional development, such as clusters and industrial districts. Finally, we acknowledge the emergent role of virtual social networks (i.e. Facebook and Linkedin) as tools for enhancing the networking abilities of start-ups through virtual communities and professional or interest groups—for instance, the very popular international community "TechCrunch", and some Italian communities such as "Italian Startup Scene" and "Indigeni Digitali", which have built social interactive environments on Facebook.

INSERT TAB.1 ABOUT HERE

3. The analytical framework

The present study focuses on the analysis of social and business ties among start-up companies incubated in a NBI. This section articulates our analytical framework, rooted in a variety of scientific contributions stemming from the seminal article of Hansen et al. (2000), who investigated the networking dimension of a business incubator. Building on social capital theory, Bøllingtoft and Ulhøi (2005) analysed the networks of business-related and personal-related activities through six months of ethnographic data collection in 2002, in one of the first known and documented

networked incubators, located in Århus (DK): MG50. Their main contribution consists in the exploration of the social dimension of a NBI. MG50 was defined as a "commune" (p. 279), where members cooperated on a voluntary basis within a symbiotic relationship, not only for profit-oriented activities but also for knowledge exchange and competencies sharing. The role of incubator governance was considered critical here, as it was responsible for building a cooperative social environment where interactions for business activities and problem solving could take place. However, in their research, the authors do not distinguish clearly between the two types of interaction (business and social), which are considered as blurred, and do not analyse relations external to the incubator actors, therefore overestimating the weight of internal relationships. Nevertheless, the idea of the "bottom-up business incubator", which is further developed in Bøllingtoft (2012), paved the way for more extensive research on entrepreneurial networks within Bis, also calling for ad hoc research methods that could grasp the relational structure of interactions among tenants (and others). Networking activities involving co-workers in incubated ventures, for instance, have not been addressed in the literature. One of the aims of our work is to fill this gap, distinguishing between individual and corporate relationships.

Scillitoe and Chakrabarti (2010, p. 157) suggest that "research focusing on the incubation process of individual ventures, particularly the social aspects associated with incubation, holds the greatest research potential for understanding the incubation process". We took up this call for future research and looked to deepen the analysis of the relational structure of networking activities generated in a BI. Our work augments the previous literature on the topic by offering a complete picture of the network of social and business relationships involving the incubatees. Scillitoe and Chakrabarti (2010) made an important contribution by investigating the counselling and networking interactions between incubator management and tenant firms, looking at counselling in terms of interactions between the venture and incubator management that allow the transfer of knowledge and resources for venture business and technical assistance (direct interactions). Networking interactions were described as the extent to which incubator management provides ventures with

access to the incubator network to gain additional knowledge and resources for business and technical assistance (mediated interactions). Their empirical evidence, obtained through statistical elaboration of a web-survey conducted during the years 2003–2004, was based on 42 ventures (28 US and 14 Finnish) that received support from an incubator either in the US or in Finland. The results confirm that frequent interactions with the incubator management positively influence the quality of business and technical assistance received. In this way, the authors proved the importance of the incubator management as a knowledge broker, shedding light on one possible type of relationship generated in a BI, which concerns the interaction between the incubator management and the venture. Given the nature of the data collected, the authors were not able to provide evidence of another type of relationship—the network of interactions between co-incubated ventures (tenants). Is the relational capital generated by an incubator only of a hierarchical nature, mediated by the incubator management working as a knowledge broker, or, conversely, are there also more democratic interactions within the group of peers? Driven by the same intellectual curiosity, Schwartz and Hornych (2010) studied the cooperation patterns of 150 firms located in 26 German BIs, by means of a mail survey. These "in-house" cooperative relationships are considered critical intangible resources for entrepreneurs, fuelled by the incubator management. As a result, in specialized BIs where the cognitive proximity among entrepreneurs (Nooteboom, 2000) and the absorptive capacity (Cohen and Levinthal, 1989) are high, they expected firms to have a higher probability of incubator-internal cooperation by comparison with firms located in diversified BIs. Their empirical evidence did not support this hypothesis, suggesting that it is not generally the homogeneity among tenants that fuels the interactions. In fact, the research proved that tenants engaged mainly in informal relationships with peers, but these relationships were not driven by "cognitive proximity". Some hidden variables seem missing in the analysis conducted by the authors, which may capture the interaction differentials among firms incubated in differently structured incubators. Among the others, we can identify a) the governance of the incubator, which plays a critical role, especially in relation to organizational structure; b) the characteristics of the

work environment; and c) the incentives to cooperate afforded to tenants by the incubator management. For instance, Rice (2002) emphasizes the importance of co-production of business assistance programs between incubator managers and the incubatees as clients of those programs. He suggests that several factors—for instance, the incubator management's capacity to commit sufficient time to co-production to make it effective—affect the output elasticity related to co-production inputs.

In order to investigate these issues, we felt the need to revert to a qualitative case study analysis, supported by the adoption of a social network analysis approach as also suggested by Phan et al. (2005). Social network analysis provides information about the relationships between actors, represented as a map of nodes (actors) connected by ties (relations). Only the investigation of the direct interactions between tenants and with the incubator management and external actors (clients, suppliers, and others) can shed light on the variety of networks generated by a networked incubator.

We therefore advance the following analytical framework, which illustrates the variety of relations that tenants engage in, and the role played by the incubator management. In particular, we investigate cooperative interactions within social networks (interpersonal networks) and formal linkages within business networks (inter-organizational networks) generated in a NBI (Figure 1).

INSERT FIG. 1 ABOUT HERE

In order to study the complex variety of relations occurring in a NBI, we first distinguish between two major categories: interpersonal and inter-organizational networks.

Concerning interpersonal networks, we identified different subcategories of cooperative interaction that take place between a) co-workers in a tenant firm; b) individuals working for different tenant firms; c) individuals working in a tenant firm and individuals working for an organization external to the incubator; and d) individuals working in a tenant firm and the incubator management.

Concerning inter-organizational networks, we identified formal linkages between the tenant firm and 1) service providers; 2) clients; 3) business partners; 4) technology suppliers; 5) investors; 6) intermediate goods suppliers. In so doing, we were exploring what Bøllingtoft (2012) describes as vertical and horizontal cooperation activities. Like the subcategories of interpersonal relationships, we then further distinguish formal linkages between i) tenant firms, ii) tenant firms and organizations external to the incubator, and iii) tenant firms and the incubator management.

In our view, the extent to which these ties are developed is dependent on the ability of the incubator management to create a collaborative environment where interactions among tenants and between internal and external actors are favored[3].

4. Methodology

We applied a single case study research design, in order to provide an in-depth analysis of a real-world case where the boundaries between the phenomenon under scrutiny and the context are not clearly evident (Yin, 1981a, 1981b; Eisenhardt, 1989; Siggelkow, 2007). The analysis focuses on the relational features of a well-known and peculiar Italian business incubator: H-Farm. This represent a critical case in Italy, and might be considered as a point of reference in the Italian scene of new ventures supporting infrastructure. More details will follow in Section 5. Field research is based upon prior research work, which has been extensively illustrated in Section 2, and it aims at presenting promising new measures for the relational features of a NBI, following the analytical framework presented in section 3. Our work qualifies as intermediary theory research, which is well supported by a single study that blends quantitative and qualitative features (Edmonson and McManus, 2007).

[3] We acknowledge that the analysis of the direct external ties of the staff of the incubator might also be of interest, but this is not the present concern; here, the unit of analysis is the tenant firm.

We recurred to the mix use of quantitative and qualitative evidences from multiple sources allows going beyond the qualitative research already conducted on the field of the NBI research, providing more robust results (Yin, 2014). Following Mathison (1988), we aimed at improving the reliability and validity of our research findings by means of data triangulation. We gathered primary data from multiple respondent groups (incubator managers, tenant managers and employees, experts) and secondary data from various sources, including websites (of incubator, tenants, business partners, clients and suppliers), social networks (Linkedin, Facebook, Twitter), internal incubator documents, and incubator and tenants' brochures.

Primary data collection was conducted in the period May–September 2012 through face-to-face in-depth interviews (one hour long on average) with key actors operating in H-Farm. In addition, a survey was distributed to a sample of 11 companies incubated in H-Farm[4]. The sample was selected in order to maximize the variety in terms of life cycle of the ventures and the amount of the investment by H-Farm. The 11 companies, then, included ex-incubatees still located physically within the incubator (such as H-Art)—even if they had been acquired by global buyers—long-term incubatees, and newly incubated firms.

The two questionnaires included one addressed to the founder/s of the start-up (firm questionnaire), collecting information on the inter-organizational network, and another addressed to all members of the firm (individual questionnaire), collecting information on the interpersonal network. The two were administered differently. Most literature on mixed-mode applications refers to the reduction of non-response error (De Leeuw, 2005), and one of the most consistent findings in mode comparisons is that self-administered forms of data collection perform better than interview modes when sensitive questions are asked (for an overview, see De Leeuw, 1992). Therefore, following Turner et al. (1992), we adopted a mixed-mode approach using a paper self-administered

[4] These 11 companies were selected after several visits to H-Farm. We decided not to include in the survey tenant firms that were physically located outside the incubator, or whose founder/s and/or employees never show up. Our objective is, in fact, to grasp the relational dimension of a NBI, which is mainly built on frequent face-to-face contact and workplace sharing.

form to elicit sensitive information about interpersonal relationships, while company level information was gathered through face-to-face interviews.

In total, 11 firm questionnaires[5] and 45 individual questionnaires were collected[6]. Data were elaborated through descriptive statistics and social network analysis, a tool that allows the study of the underlying structure of social ties. Wellman (1988, p. 20) describes structural analysis as "a comprehensive paradigmatic way of taking social structure seriously by studying directly how patterns of ties allocate resources in a social system." By using the social network analysis framework (Scott, 1991; Burt, 1992; Wasserman and Faust, 1994, Hanneman and Riddle, 2005), we were able to highlight the double-knit structure of relationships among individuals and incubatees in H-Farm.

5. Evidence from the Ca' Tron Valley

5.1. H-Farm: the origin and functioning

H-Farm was founded in early 2005 in Ca' Tron Valley, an estate of 110 acres in the municipality of Roncade (Treviso province, northeastern Italy), by the vision of a serial entrepreneur: Riccardo Donadon. The company is a center for research and technological innovation, a private incubator (it would fall in the category "independent incubator", following the taxonomy proposed by von Zedtwitz and Grimaldi, 2006), whose mission is to nurture innovative companies in the field of technology and new media. H-Farm was born out of a community of ICT enthusiasts, a heterogeneous group of creative people headed by Riccardo Donadon, who decided to get involved in a new business venture. "H" stands for "Human" and "Farm" recalls clearly the values of a peasant society that seems to diminish from year to year under the combined pressures of

[5] The sample comprises 11 companies: H-Art, Responsa, GoWar (now FungoStudios), Desall, Zooppa, Logopro, Log607, Shado, Corso12, H-umus, and 1Ring.

[6] To protect respondent privacy and maintain confidentiality, the identity of respondents is not disclosed.

technology and globalization. The name embodies the mission of the company: to empower human capital for the creation of new technological products in an environment that boosts organizational creativity (Woodman et al., 1993).

Donadon brought in Maurizio Rossi as co-founder and shareholder of H-Farm. From 1985 to 2003, Rossi worked in the family firm, Rossimoda, the market leader in luxury footwear for women (sold to LVMH in 2003). In 2004, he left the group to venture into online business, launching two commercial portals dedicated to boating and yachting: YachtWorld.com and boats.com.

At the beginning of the new millennium, the local economy, based on traditional manufacturing in industrial districts, was showing the first signs of a looming crisis in the face of new global challenges. Donadon tried to revive the entrepreneurial spirit that has characterized the Veneto region, favoring the creation of new business models and the propagation of new sectors within a private business incubator. The idea was to create a dynamic working environment, where professionals with different skills would come together, discussing and arguing to bring new ideas to life and develop new projects. The model was Silicon Valley, a precedent (Lebret, 2007), that Donadon aimed to emulate, creating a similar ethos in his "Ca' Tron Valley"[7].

H-Farm offers technology, administrative and managerial support to all its ventures (hereafter H-ventures or H-Farmers), encouraging the development and early realization of creative ideas. The services offered include real estate, business administration, management, accounting, legal and financial support, human resources, media relations, mentoring, and support for internationalization and access to global networks. At least 70% of each H-venture is controlled in its initial phase by H-Farm, and the remaining 30% is divided among other industry partners, private and institutional investors, and managers who will form the operating backbone of the company. Stock options, if successful, are redistributed to employees, encouraging them to achieve very high job performance. H-Farm deals mainly with the first two stages of incubation: the so-called seed and early stage,

[7] Donadon emphasizes this aspect in many interviews, some of which are also available on line; see for instance: http://www.datamanager.it/news/h-farm-un-sogno-diventato-realt-43137.html

often leaving the later stage (growth) to companies that acquire the start-up. A seed program identifies the areas considered most attractive to the market (for example, iPhone applications), and the most promising business concepts and emergent entrepreneurs are selected for funding of up to 30,000 euros for three months. The early stage (the second phase of incubation in H-Farm) lasts 12 to 18 months, with a typical investment of between 90,000 and 180,000 euro per project.

Within three to four years, the H-ventures must find an outside investor (venture capitalist or industry partner) who is able to support them and enable them to exit the incubator, which sells its stake in the venture in whole or in part. H-Farm, however, has imposed the constraint that firms must remain physically within the incubator, paying a fee for services received, for at least 5 years. This constraint is aimed at encouraging the development of a Silicon Valley-like culture, and to maintain contacts and potential processes of cross-fertilization between old and new ventures, as commonly happens in the industrial district model (Camuffo and Grandinetti, 2011).

5.2. H-Farm: the evolution

Since 2005, H-Farm has grown, and its headquarters has moved to a restored farmhouse. Today, H-Farm is a holding company (H-Farm Ventures Ltd), controlled for Riccardo Donadon through the company E-Farm Srl, directly by Maurizio Rossi, and by Patrizio Bof through the company Infiniti Ltd. In 2012, the share capital of H-Farm Ventures was 30,000 euros. H-Farm Ventures has four subsidiaries: H-Farm SpA Italy, U.S. H-Farm Inc. (formed in May 2008, in Seattle), H-Farm India (May 2009, Mumbai) and H-Farm UK Ltd. (June 2009, London), with Riccardo Donadon as Group CEO. The decision to open new offices in Seattle, Mumbai, and London is a clear sign of the determination to grow internationally and so to introduce to H-ventures an enlarged and international network of relationships, skills, and potential investors. Moreover, in 2009, faced with the need to raise additional finance to accelerate the development of further rounds of investment

and expand the incubator, the founders of H-Farm Ventures Ltd. created Angels Farm. The capital of the holding is open to new private investors (angels).

Over the years, the incubator staff has gradually improved its practices in all principal areas of activity: selection of the incubatees, business support, networking, and institutional mediation (Bergek and Norrman, 2008). With specific reference to project selection, H-Farm has developed an original method for the evaluation of ideas regularly presented by potential entrepreneurs or entrepreneurial teams[8].

From its inception to 2013, H-Farm has incubated 32 ventures, of which five have been sold and four more are waiting to be sold (see Figure 2). Successful H-ventures include H-care, H-Art, Log607, Thounds, and Shicon.com.

INSERT FIG. 2 ABOUT HERE

H-care was born in March 2005 from an idea originated by Umberto Basso. The goal was to produce avatars—virtual assistants used by corporate portals to "speak" to customers. Today, H-care is a leading developer of innovative technology solutions for customer care services and multichannel self-service, with over 80 million users assisted by Human Digital Assistant™ platforms for web and kiosks, and Intelligent IVR for fixed and mobile networks. In 2008, H-care was recognised by Red Herring as one of the top 100 emerging technology companies in Europe, and again in 2009 as among the top 200 worldwide. H-care technology has been integrated by many large companies in Italy, including Telecom Italy, Vodafone, Tele2, ENI, FIAT, Poste Italiane, TIM Brasil, European Central Bank, Banco Bradesco, Akbank, Lottomatica. Currently. the company structure includes as shareholders Comdata and Pat, while H-Farm retains a stake of 5%. Comdata

[8] Following the typology proposed by Bergek and Norrman (2008), based on selection criterion (idea versus entrepreneur) and selection breadth (survival-of-the-fittest versus picking-the-winners), H-Farm has chosen a combined strategy of survival-of-the-fittest and idea selection.

has supported H-care from the beginning, owning 20% of shares since 2005. Pat became a majority shareholder in 2009, finalizing the acquisition in 2010. Pat is a company specializing in producing and delivering "customer-centric" solutions that enable companies to achieve the objectives of customer acquisition and retention, with increased productivity and a tangible reduction in costs. Founded in 1992 by Patrick Bof, current president and CEO of H-care, Pat is now a leader in implementing CRM solutions, headquartered in Treviso with offices in Milan, Rome, and Barcelona, and an extensive network of distributors throughout the world. Comdata offers an innovative service that, through the integration of specialist advice, advanced technologies, and operating structures of excellence, anticipates customer needs and proposes models of re-engineering and processes of transformation that bring value to the business. Founded in Turin in 1987, this vision is now a reality through twenty-two locations across the country.

H-Art, founded in April 2005 by Massimiliano Ventimiglia to provide e-business strategies and interface design in the field of interactive media, numbers among its clients Diesel, Barilla, Giorgio Armani, Dainese, Illycaffè, Nike and Telecom Italy. In 2009, GroupM, the media investment group of the WPP Group of media agencies (Maxus, MC2, Media Club, Mediacom, Mindshare, and Mediaedgecia), headed by Sir Martin Sorrell and a world leader in marketing and communications, acquired 90% of H-Art. The acquisition by GroupM and WPP will enable H-Art to establish itself as one of the largest digital agencies in Italy. To date, H-Art employs 90 employees in offices in Treviso, Milan and Florence. H-Farm holds a share of 9%.

Log607, born in May 2007 as H-play, was created by Tomas Barazza, formerly a consultant with Arthur Andersen and Benetton. Log607 creates unconventional tour guides. In 2009, the company received the National Award for Innovation in Services for the Tourism Category, established by the Presidency of the Council, from the President of the Republic Giorgio Napolitano. The award was for Whaiwhai ("search" in ancient Maori), a series of unconventional tourist guides that is used to search the secrets of the city. The tourist becomes the protagonist of an adventure, solving original puzzles through text messages guidelines. To date, the series Whaiwhai has been extended

to Venice, Rome, Florence, and Verona. In 2009, H-Farm and Marsilio Publishers (RCS Group) signed an agreement for the sale of the majority of Log607 to Marsilio, with a view to developing and implementing new and innovative editorial models. The remaining 49% of the shares remain in the hands of H-Farm.

Thounds, a portmanteau that owes its name to the combination of "thought" and "sounds", was founded in 2009. It is the masters thesis of Francesco Fraioli, a 25-year-old with a passion for programming, music, and the web. Thounds is a social music network (the Facebook of music) that lets users create music in the community by exchanging backing tracks. Through the portal, everyone can express and share their musical thoughts with other users. The result is a musical brainstorming session that allows everyone to experiment and create music, with contributions from across the world. Microsoft acquired Thounds Italy in 2011 and created an application for MSN Messenger (the instant messaging client from Microsoft, which allows instant communication with text messages between two or more individuals at any distance). The first artist to open his music to a mass collaboration was Raphael Gualazzi, winner of Sanremo Giovani 2011 and runner-up at Eurovision 2011.

Shicon.com was founded in 2009 as a creative online platform where users can create design elements that can be used to make shirts and other accessories. Based on a crowdsourcing model, Shicon promotes creativity by offering brands seeking new solutions and graphic design a community of more than 2,000 designers from around the world, ready to respond competitively to market challenges. Creative contests are launched and ideas are presented to clients, who can select one or more winners from a range of international proposals. In 2010, Shicon was acquired by Taac (owned by Michele Simonato and Matteo Lai, who specialize in innovation and new business models) and by Employees Only (owned by Henry Aprico, a consultant on new media and digital content).

Zooppa is a social advertising platform. Founded in 2007, the company promotes contests on behalf of large companies to select innovative user-generated advertising. Brands launch their

contests through Zooppa, activating a community of creative people that creates proposals after reviewing the brief online. The prizes are awarded by brand, by the staff of Zooppa, and by the creative community itself (more than 100,000 users). Among their clients are Fiat, Enel, Telecom, Citroen, BMW, and Nike. Zooppa has won several awards (most recently, Pact 2009 in Silicon Valley), but received no funding in Italy. For that reason, Donadon decided to move the social advertising platform to Seattle in the United States, selling it off in full to Zooppa.com in 2009. Overseas, Zooppa.com has acquired a world-class CEO in Will Merritt, former Time Warner executive and senior vice president of Corbis. Zooppa is the "YouTube of advertising", and is now conquering India, where H-Farm has created Brandpotion, a modified version of Zooppa. Times Group, the Indian publishing giant that owns five newspapers selling a total of 4.3 million copies a day (as well as 31 periodicals) has expressed an interest in buying Brandpotion.

Among the first ventures born in H-Farm is H-umus, founded in 2006 and managed by Fabio Carraro. The company produces sensory spaces to present complex emotional content in a simple way to visitors to a store or trade fair. H-umus realized Shoex (Shoes Digital Experience) for the footwear district of Riviera del Brenta. H-umus has recently been acquired by Gruppo Team System.

The presence of this group of successful start-up companies at H-Farm has a twofold value. First, they serve as excellent exemplars for younger companies, for whom they represent an important point of reference; second, they have been able to build a network over time of business relationships and experiences that enrich the relational dimension of the NBI.

5.3. Social ties in H-Farm

In order to investigate the cooperative interactions generated in the incubator, we focused on a sample of 45 people (71% male, 30 years on average). The majority of respondents commenced work in the incubatees in 2012, so reporting on a very short working life in the incubator, with only 11% of the sample working there since 2007. We asked them first to list the 10 most important

relationships, internal or external to the incubator, in terms of information and knowledge they bring to the business. This free recall method is one of the most common means of conducting social network analysis, allowing each respondent to list their relationships on the basis of his/her memory. Since we aimed to collect only the most important ones, we adopted a fixed-choice approach, placing 10 as an upper limit to the number of nominations a respondent could make. The name generator question was "To whom do you turn for advice when you experience difficulties at work?" In addition, we added some interpreter questions in order to collect information on interaction frequency, means of communication, and rate of importance of each social tie. As a result, the study does not focus on a complete network, but on ego networks (Prell, 2011). The sample reported a total of 294 ties, involving 138 nodes.

Two of the most obvious results are that 1) respondents working in the incubatees for less than two years have less than ten relationships, and 2) the manager of the venture is the primary source of information, revealing a high degree of social embeddedness.

The majority of these ties (see Table 2) involve relationships with other H-Farmers (89%), of whom most are co-workers (64%). Due to the spatial proximity of the people who are recognized as a relevant source of information for the business, it is unsurprising that the most common means of communication is face-to-face interaction, followed by conversations over Skype, which is the modern substitute for the more traditional phone call. Being ICT-based start-ups, most of their business is online, making it quicker and easier to communicate over internet than over the phone. The frequency of interaction is very high, with 79% of the ties based on almost daily contacts.

INSERT TAB. 2 ABOUT HERE

Figure 3 represents the network of interpersonal ties. Two nodes are connected if one of them has declared a relationship with the other. Nodes are grouped by attributes—that is, they are proximate if they belong to the same organization. The graph in Figure 3 is clearly indicative of 1)

the gatekeeping role of the H-Farm staff (the incubator management); 2) the density of the intra-firm relationship (among co-workers); 3) the crucial role of external consultants; and 4) the relevance of the relationships among H-Farmers.

This evidence provides interesting insights into the importance of informal within-incubator relationships, confirming that the social dimension of a NBI can be captured through the analysis of cooperative interactions within what resembles a community of practice (Wenger, 2000; Bettiol and Sedita, 2011). From our in-depth interviews with management and the direct observations during our visits to H-Farm, it seems clear that these ties are strongly encouraged by workplace sharing, by informal meetings in the canteen (which takes the form of a greenhouse providing healthy food, a good environment in which to nurture the body as well as the mind), by the organization of social events such as masquerades and other leisure activities, and, finally, by encouraging participation in learning meetings where founders present their results or digital "gurus" or other inspiring people are invited to share their experiences with the H-Farmers.

INSERT FIG. 3 ABOUT HERE

5.4. Business ties in H-Farm

The sample comprised 11 companies: 1 in incubation phase, with no product yet on the market; 7 in incubation phase, with a product on the market; and 3 in post-incubation phase. Following the same methodology used for mapping social ties—free recall and a fixed choice approach—we asked the manager/founder of the firm to list the 10 most important relationships, internal or external to the incubator, deployed to run the business. The name generator question was, "To whom does the firm turn for acquiring intermediary goods or services, for selling products/services, for jointly developing new products/services, for getting financial resources?" From this we were able to distinguish between 6 types of ties between tenant firms and 1) service providers; 2) clients;

3) business partners; 4) technology suppliers; 5) investors; 6) intermediate goods suppliers. Overall, the sample reported a total of 75 ties, involving 54 nodes.

Table 3 illustrates the variety of relationships, internal or external to the incubator, engaged in by the tenants. About 65% of the ties are external to the incubator, revealing a good degree of openness, and 35% are internal, pinpointing the crucial role played by the incubator as a fertile environment for business development. Our in-depth interviews reveal the significant levels of partnering activity occurring among H-Farmers. H-Art, one of the first tenant firms, has played a crucial role and is perceived by other tenants as a point of reference. Other companies that have been asked for services are Shado (multimedia formats and video) and Logopro (logo design). There have also been some joint projects involving incubatees, as in the case of GetBazza and Misiedo, who together launched an online shopping platform in collaboration with American Express (www.theoffer.it), with features that are very similar to the popular Groupon. The incubator has therefore confirmed its role as knowledge, information, and service provider for tenant firms, but also reveals itself as a place to build promising partnerships and business opportunities.

Moreover, the presence of external relationships directly engaged in by the incubatees, unmediated by the incubator management, indicates that an efficient NBI also provides the right tools for moving towards independence.

INSERT TAB. 3 ABOUT HERE

Figure 4 shows the network of inter-organizational relationships. The size of the nodes represents their indegree centrality (the number of incoming ties). The network is strongly centered on the incubator, which offers comprehensive support to new ventures and has been involved, in fact, in different types of relationships (as service provider, investor, and business partner). Amazon and RCS are the two other most cited partners, as a key supplier and client/investor respectively. The chart in Figure 4 presents the hierarchical structure of this particular NBI, in which the

incubator management plays a crucial role, although the initiatives of some external actors are allowed and, indeed, encouraged.

INSERT FIG. 4 ABOUT HERE

The questionnaire produced other two important items of information, concerning the rating of information sources for product development and marketing. We asked the manager/founder of each company to evaluate the importance of the following information sources: 1) H-Farm staff; 2) other firms incubated or located in H-Farm; 3) participation in workshops/seminars organized in H-Farm or outside it; 4) investors; 5) online communities; 6) other firms outside H-Farm; 7) external consultants; and 8) universities and research centres. The 11 respondents were asked to judge each source on a 5-point Likert scale, where 1 is "not important" and 5 is "very important". We then summed all the scores received by each source (with scores ranging from a minimum of 11 to a maximum of 55), in order to provide a rating. The results are reported in Table 4 where, again, the H-Farm staff plays a pivotal role as a gatekeeper of information and knowledge that is useful both in the product development phase and in the product marketing phase. Other firms incubated in H-Farm are also rated very high, confirming that the incubator was able to establish an entrepreneurial ecosystem that resembles an ecology of creativity as defined by Staber (2012, p. 31), in which the creative process is conceptualized as "a site of interdependent but different elements (e.g., cognitions, groups of actors, organizational projects, interpersonal networks) that interact and interpenetrate each other". Not surprisingly, the role of internal resources decreases with the growth of the firm, which in both the final stage of incubation and the post-incubation phase is far less dependent on the incubator management or internal resources as it becomes more open to external partnerships and financing.

INSERT TAB. 4 ABOUT HERE

6. Conclusions

This paper has added to the previous literature on NBIs by providing evidence of the social and business relationships occurring among incubatees, and between incubatees and the incubator management, as well as with external advisors, clients, and suppliers. The case study confirms and extends the literature on NBIs along three main dimensions. First, NBIs are distinguished from others by the fact that they offer an extensive network of business relationships that start-ups can use to make their fledging process faster and more efficient (Hansen et al., 2000). Second, in H-Farm, as well as in other NBIs, there are important relationships not only with external stakeholders but also within the incubator, whether as inter- organizational relationships or social ties (Bøllingtoft and Ulhøi, 2005). Third, the role of the team that manages the incubator is twofold. On the one hand, it works as an enabler and facilitator of relationships for start-ups, offering them the possibility of leveraging on the reputation of the incubator, which helps to legitimate their activities and so mitigates the liability of newness (Baum et al., 2000). On the other hand, it also develops intense interactions with start-ups, conveying relevant information and knowledge (Scillitoe and Chakrabarti, 2010).

Our research helps to illuminate the detail of these interpersonal and business networks originated within the incubator. The results demonstrate that it is their co-presence and interactions that makes the incubator a vital environment and qualifies it as a specific type of entrepreneurial ecosystem (Staber, 2012).

In particular, the analysis of social ties shows their dense lattice-like form. They are practiced with high frequency and are used by people within the incubator as cognitive sources and learning opportunities of primary importance. In addition, our work highlights a feature that has not yet emerged in the literature: the importance of relations between employees who work in the same organization, which are enriched by knowledge exchanges that are external to the firm, within and

outside the incubator. This is a relevant result, given that, in a seminal contribution on the liability of newness, Stinchcombe (1965) points out that the lack of precisely that mutual understanding among the human resources of the new venture is a principal determinant of the phenomenon. The staff of the incubator works as a knowledge broker in the networks. We were able, in fact, to account for an aspect not adequately developed in studies of networked incubators (at least on the empirical side)—the importance, in addition to the formal inter-organizational relationships, of social ties between staff members and personnel from the start-ups. Overall, the number of social ties, their intensity and their cognitive value lent the incubator the character of a community of practice, as defined by Etienne Wenger (2000), in which people develop a shared repertoire of collective resources such as language, sensibilities, styles, and stories. In respect of the business relationships, their identification traces a double network, formed by the relationships that start-ups forge with external parties and within the incubator, with the incubator management and also between incubatees. The relationships between the incubatees are encouraged by the relative specialization that constitutes the incubator's core interest. Moreover, this specialization is also the basis for the formation of a community of practice within the incubator.

In our view, these results pave the way to further research, oriented to the conceptualization of a networked business incubator as a (small) cluster, as defined by Porter (1998)—geographical concentrations of interconnected companies and institutions in a particular field, more specific for start-ups (Aerts et al., 2007). NBIs that resemble the H-Farm business model are characterized by a strong intertwining of the economic and the social dimensions, evidencing the presence of a community of practice. Interestingly, the communitarian character of these NBIs brings them close to the Marshallian industrial districts (a variant of Porterian clusters), while their very open nature avoids the phenomenon of knowledge lock-in that has been an evolutionary block in many traditional districts (Lazerson and Lorenzoni, 1999).

The application of social network analysis tools adopted here invites further research on networked incubators, applying the same methodology in two directions. On the one hand, it will be

interesting to repeat the analysis of relations in H -Farm at a distance of a few years. It is, in fact, a young incubator, and only a longitudinal analysis will confirm whether or not the aspects of the community of practice and/or the cluster will be sustained into the future. It will be equally important to extend the research to other networked incubators, to check whether the results obtained within this case study of H-Farm are generalizable to other situations, or whether, conversely, they are strongly determined by specific elements, in particular by the presence of a charismatic incubator entrepreneur (whose role emerged clearly from the qualitative survey and was confirmed by the quantitative analysis).

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Table 1: Main features of a NBI

Service category		Services	Sources of competitive advantage	Competitors
Physical infrastructure		Office space, desk, PC, telephone amenities	Favorable rent/lease terms, volume discount, shared use	Municipalities, science parks, real-estate/landlords
Office support		PC & equipment support, secretary & mail, security	IT support & lease, reception services, safety & protection	Science parks, real estate operators
Access to capital	Internal	Direct investment	Own incubation fund, milestone instalments, road-shows	Venture capitalists, business angels, crowdfunding platforms
	External	Access to VCs, business angels and investors		
Process support	Internal	Coaching, mentoring, consulting & legal advice	Access to technical experts, start-up training, business planning, strong involvement/commitment of the management team in the entrepreneurial initiatives	Law & accountancy firms, consultants, business angels
	External			
Networking	Internal	Formal and informal relationships with key employees	"Rolodex", internal matchmaking, travel support	HR firms, networking organizations, virtual social network (i.e. Facebook and Linkedin), VCs and business angels, clusters and industrial districts
	External	Formal and informal relationships with customers, suppliers, partners		

Source: Adapted from von Zedtwitz and Grimaldi (2006).

Table 2: Main features of the social ties in the interpersonal network

Type of cooperative interaction			Communication means			Frequency		
	a.v.	%		a.v.	%		a.v.	%
Between co-workers	187	63.6	Face-to-face	214	72.8	More times a week	233	79.3
With H-Farm staff	48	16.3	Skype	42	14.3	More times a month	49	16.6
With external consultants	32	10.9	E-mail	18	6.1	More times a year	9	3.1
Among H-Farmers	27	9.2	Phone	13	4.4	Seldom	3	1.0
			Social networks	7	2.4			
Total	*294*	*100.0*	*Total*	*294*	*100.0*	*Total*	*294*	*100.0*

Source: Our elaboration.

Tab. 3: Main features of the business ties in the inter-organizational network

Type of contact	Ties		External		Internal	
	a.v.	%	a.v.	%	a.v.	%
Service provider	21	28.0	13	61.9	8	38.1
Client	15	20.0	15	100.0	0	0.0
Business partner	12	16.0	6	50.0	6	50.0
Technology supplier	11	14.7	9	81.8	2	18.2
Investor	11	14.7	4	36.4	7	63.6
Intermediate goods supplier	5	6.6	2	40.0	3	60.00
Total	*75*	*100.0*	49	65.3	26	34.7

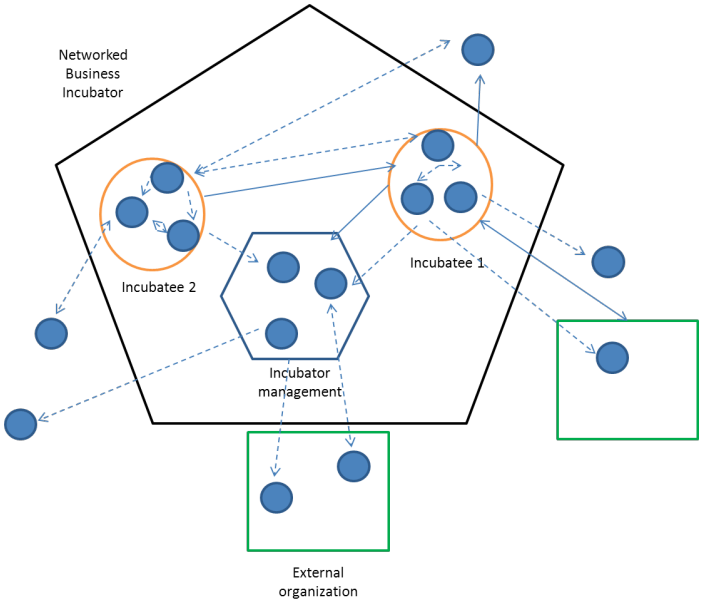
Source: Our elaboration.

Tab. 4: Rating of the information sources for product development and marketing

Information sources	Sum of scores		Variation
	Product development	Marketing	
H-Farm staff	46	46	=
H-Farmers	36	27	-
Workshops/seminars in H-Farm	32	33	+
Investors	31	37	+
Online communities	28	35	+
External firms	27	27	=
External consulting	25	28	+
Workshop/seminars out of H-Farm	22	29	+
Universities/research centres	22	20	-

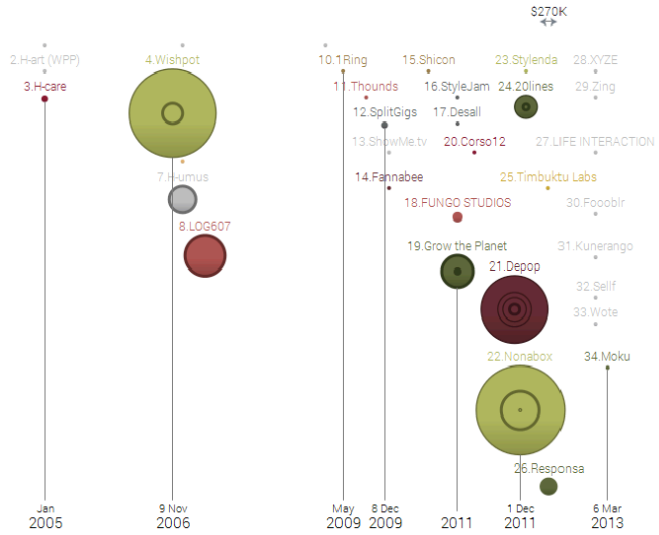
Source: Our elaboration.

Fig. 1: Interpersonal and inter-organizational relationships in a NBI



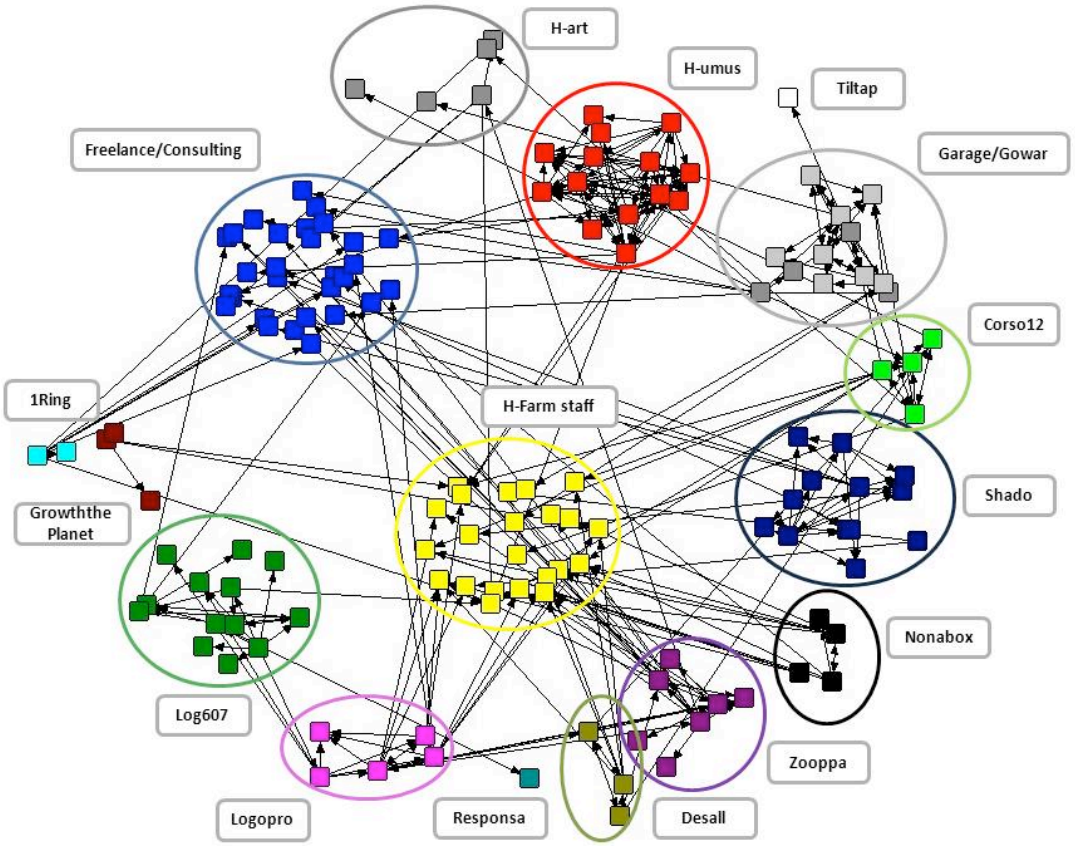
Source: our elaboration.
Note: Small dots are individuals; broken lines are inter-organizational formal linkages; solid lines are interpersonal cooperative interactions.

Fig. 2: H-Farm ventures portfolio from 2005 to 2013



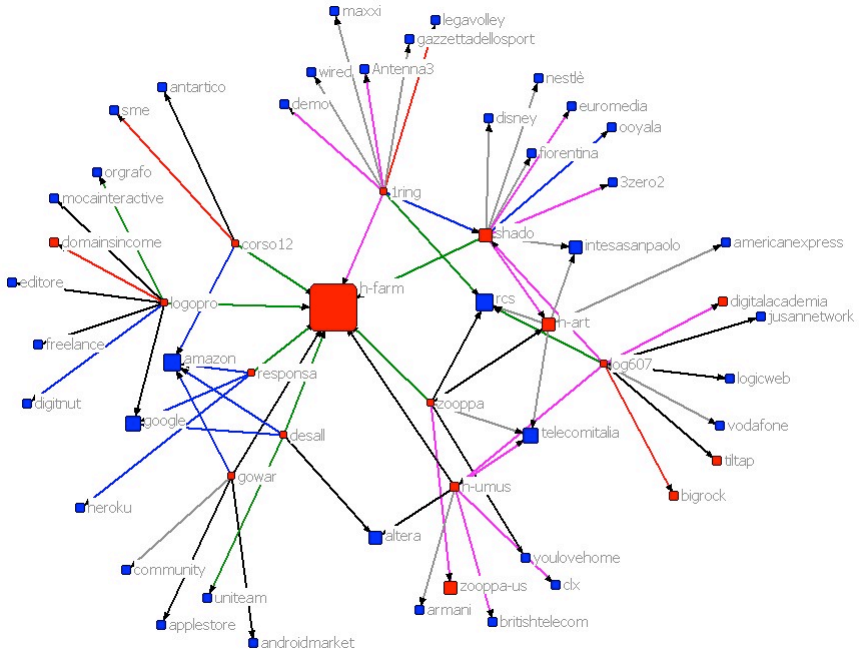
Source: our elaboration
Note: the size of the circles represents the amount of the investment of H-Farm in the venture in 2013.

Fig. 3: Network of interpersonal relationships



Source: Our elaboration.

Fig. 4: Network of inter-organizational relationships



Legenda:

Nodes
Red nodes = H-Farmers
Blue nodes = external organizations

Ties
Pink lines = business partners
Green lines = investors
Grey lines = clients
Blue lines = technology supplier
Red lines = intermediate goods suppliers
Black lines = service providers

Source: Our elaboration.