Enabling Start-ups' Capabilities to Collaborative Partnerships for Innovation: The Case of Green/Eco-Innovation.

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The current economic system claims a significant shift in dichotomous objectives, such as offering innovative solutions to societal problems, reducing environmental impacts and, at the same time promoting economic growth. The eco/green sector start-ups' real challenge is not just bridging the gap to the market regarding R&D activities; it lies in their ability to build capabilities to collaborate with other organizations for innovation. The role of interdependence in the identification of commonalities in R&D and market development for start-ups niches stimulate collaborative partnerships. However, to what extent the development of capabilities for collaboration in innovation foster integrative strategies? This research will study from a multidimensional approach which organizational elements and strategic capabilities are required to stimulate collaborative partnerships for innovation. The study will utilize mixed methods in two phases from primary empirical data collection. The first phase is an initial contact survey to get a general organizational picture and business vision regarding collaborations in eco/green innovation start-ups to identify relevant case studies. The second phase is related semi-structured interviews with 30 start-ups' team members regarding prospecting which components, activities and business conditions foster collaborations. Their business model role is relevant to assess collaborative partnership capabilities required for innovation. The study relevance is due to knowing about the start-ups' capabilities basis identification for collaborative partnership in organizational enduring and continuous innovation, in eco/green sector.

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1. Introduction to the problem and justification of the topic

The current economic system claims a significant shift in dichotomous objectives, such as offering original solutions to societal problems reducing and disappearing environmental impacts and, at the same time promoting economic growth. The green-eco-innovation start-ups are relevant source of emerging new concepts and fresh ideas. Nevertheless, their survival process demands a constant interaction between team members with their context. Many start-ups organizations are a source of technological breakthroughs. Mostly, because of the market's uncertainty and operational contingencies, they face general problems associated with creating and launching new products and services (Chorev and Anderson 2006).

Green/eco-innovation start-ups are technology-based ventures focus on create solutions regarding reducing environmental impacts or solving societal problems. Its organizational structure, operations and purposes are diverse, most of them because their level specialization are knowledge-base integration basis. Their efforts focus on developing various solutions from emerging technologies, adapted systems and novel product concepts to open new markets opportunities. For instance, development of electronic devices to control energy efficiency, photovoltaic systems for housing, and clean water gadget for remote communities.

The start-ups' activities found their skills and efforts among the team members and define an organization to create and capture value regarding their value proposition. The combination of a purpose, creative vision, know-how, and assets determines an organizational capability (Loasby 1998). Collaboration in entrepreneurial teams refers a strong tights, high level of trust and wiliness of sharing knowledge (Nissen Aarøe, Rostgaard Evald, and Clarke Højbjerg 2014). Moreover, their business model plays a relevant role in strategies development and innovation processes to establish complementary assets through collaborative partnerships (Helfat 1997; Rothaermel 2001; Colombo, Grilli, and Piva 2006; Paradkar, Knight, and Hansen 2015).

The start-ups' organizational maturity process is full of massive failures in an ongoing learning-by-doing process. Throughout the time, start-ups face difficulties in their course of building a coherent organization and financial certainty for its continuity. There are four problems that start-ups face creating innovation and transform it into cost-effective product or service which requires a continual know-how production that is unsustainable. Even though the team members' commitment and heterogeneity might increase their chances of survival, it does not compensate its capital and assets requirement. The second is building complementary assets for continual innovation demand extra work, time and resources investment, the third is the rival firms might own those assets creating collateral damages in their market (Paradkar, Knight, and Hansen 2015). Finally, patenting is not meaningful because the lack of understanding regarding the intellectual property system, particularly in small organizations (Helmers and Rogers 2011).

Due to the contraposition of interests, it is necessary a coordinated set of actions joining capabilities to introduce new technologies, products, and services. Inter-firm relationship allows firms to create value and build collaborative competitive advantage depending on the nature of their market issues (Hansen and Nohria 2004; Malhotra and Lumineau 2011). Nevertheless, how do green/eco-innovation start-ups reach authentic collaborations? Collaborative model in business is relatively novel because it requires developing unique capabilities and operations in a coordinated manner. This innovation model demands that start-ups (relatively matures) not just develop a good level of networking, also inside they produce different skills particularly build abilities to coordinate their activities towards cooperate with partners and achieve together a higher innovation performance (MacCormack et al. 2007; Milovanovic 2015).

The confusion of concepts between cooperation and collaboration in inter-organization relationships is common. Meantime collaboration is pursuing equal conditions among the partners, cooperation is considered a threat of exploitation by opporturtunistic exchange partner (Malhotra and Lumineau 2011). *MacCormack et al.* defined three major mistakes regarding strategic collaborations and pinning them as traditional tactics focus on production: 1) costs reduction tactics, 2) business partners were perceived mainly as suppliers, and 3) Projects did not result in long-term collaboration partnerships for investments. *MacCormack et al.* study involves a broad vision of global integration of diverse and unique capabilities from organizations associated and coordinated in different business activities. But it set a clear opportunity to integrate the local collaboration.

The role of interdependence through collaborations dissolve the traditional concept of competition but reinforce the competitive advantage among partners to assure continuity in innovation (K. Blomqvist and Levy 2006). The unstable market conditions and aggressive competitiveness because of the acceptance of emergent new technologies and products, in green/eco-innovation sector defy and threat start-ups' niches continuity. In innovation is a process that recombines existing knowledge from diferent actors, conditions and pathways (Du Plessis 2007). Therefore, the need of creating innovation has a heavily dependance of know-how integration.

In start-up niches are source of specialized and complementary knowledge to breed novel ideas for launch cost-effective products and services (Plessis 2007). Thus, a collaborative behaviour among green innovation start-ups might assure their survival in the long run. Collaborative efforts link their organizational evolution into a more sophisticated behaviour for cooperation in continual innovation cycles (Miles, Miles, and Snow 2006).

The principal research question leading this study relates to:

To what extent the development of capabilities for collaboration in innovation foster integrative strategies?

To give an answer to the central research question there are three secondary questions regarding start-ups operations:

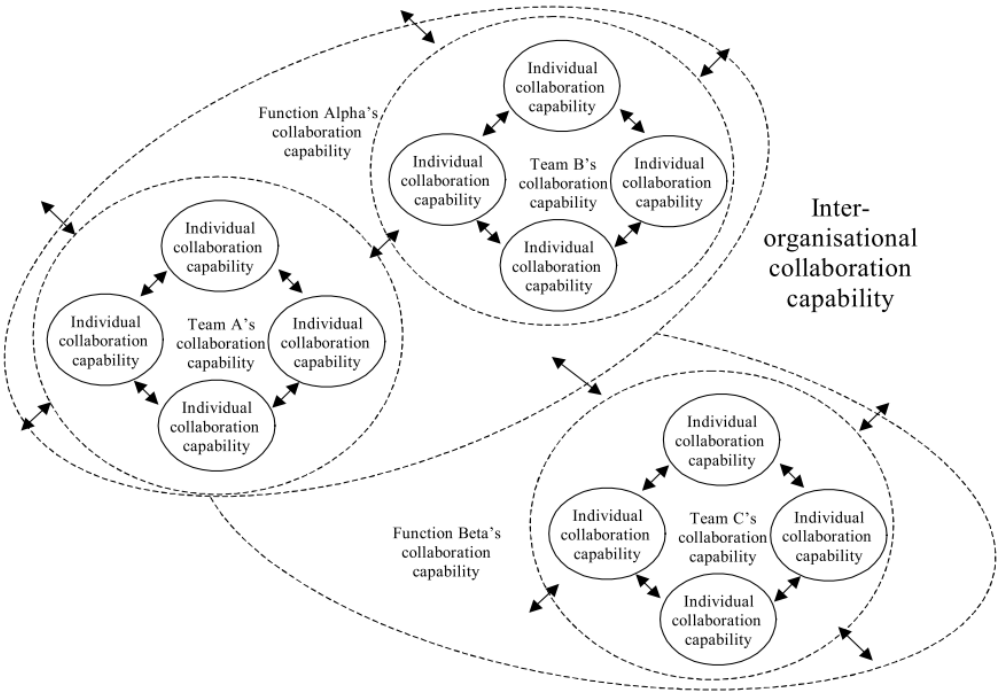
1) *Which resources/capabilities stimulate collaboration?*
2) *What activities and conditions define/identify collaborative partners?*
3) *How do collaborative partnerships continue in the long term?*

The relevance to identify the start-up's organizational elements and conditions as drivers of collaborative partnerships will unveil the difficulties around enabling complementarities among start-ups. The theoretical debate to the inter-organizational collaborations has been studied at different levels of an individual, team, organizational and inter-organizational levels. It also adopts an integrative and cross-level concept based on creation know-how processes, shared values, and networks (K Blomqvist and Levy 2006). Especially entrepreneurial efforts regarding green innovation are branched into diverse elements such as kind of technology, general organizational objectives, market scenarios and financial conditions.

Collaborative behavior in small organizations is intimately rooted in their members' routines, normative, networking, and strategies (Blomqvist and Levy 2006). Therefore, an active collaborative behavior is also considered a meta-capability, because it involves knowledge creation and integration at different levels. As a capability, it encourages networks quality and coordinated inter-organizational actions to influence the market (Blomqvist and Levy 2006).

The start-up organizational structure involves knowledge management, human capital and core business strategies conceived as an essential component of know-how integration in products, processes, and services (Gloet and Terziovski 2004; Breuer and Lüdeke-Freund 2014). The start-ups concentrate their activities on creating, apply and use knowledge, those who can use these resources to innovate fastly and efficiently (Plessis 2007). Therefore, the addition of knowledge and skills through collaboration have been considered an effective way of developing innovation (Tamer Cavusgil, Calantone, and Zhao 2003).

Diagram 1. Collaboration capability as a multi- and cross-level concept according to *Blomqvist et al*. is understood within the context of multiple dimensional analysis (K. Blomqvist and Levy 2006, 36).



On the one hand, the start-ups creation process refers to the classic approach of the human organization integrating skills, capacities that developing specific activities combining different resources around a particular concept. The essence of entrepreneurial effort comprised organizational processes frequently related to biological organisms such as the firm life cycle (Penrose 1952) and linked to its environment adaptation for its survival. The elemental basis of start-ups' purposes focus on the solution-problem proposal and "attempt to maximize profits".

Especially in nascent technologies, their battle is mainly in technological innovation and market leadership (Penrose 1952; Zahra, Sapienza, and Davidsson 2006). On the other hand, the green innovation start-ups goal pursue financial benefits but also endeavoring to reduce environmental risks and impacts, regarding new technologies in renewable energy and sustainable living, such as ensuring food safety production and low emissions transport (Schiederig, Tietze, and Herstatt 2012). These particular objectives between economic profit and potential environmental risks reduction in the current economic locus play contradictories market conditions.

2. The green/eco-innovation start-up ecosystem

The content of green innovation has different definitions focused on product, process, service method. Their market orientation, environmental aspect, production standards linked to the corporate behavior affect their operations directly (Schiederig, Tietze, and Herstatt 2012; Ketata, Sofka, and Grimpe 2014). The green innovation start-ups have different visions, according to their value proposition and activities, according to *Schick et al.* the various categories of ecological orientation, and it support their organizational culture.

Table 1. Different categories of ecological and social orientation among green start-ups. (Schick, Marxen, and Freimann 2002, 65)

Eco-dedicated	**Eco-open**	**Eco-reluctant**
Description: These companies consistently adopt environmentally friendly business practices.	These companies partially adopt environmentally friendly business practices.	These companies adopt environmentally business practices to comply with regulations.
Environmentally friendly measure encountered in the start-up business		
▪ Use of 'closed loops' to Re-Use material waste for the generation of energy. ▪ The production of semi-finished and finished materials with use of renewable raw materials ▪ Consistent use of environmentally friendly materials ▪ The sale of environmentally friendly products and services ▪ Safe disposal of hazardous waste materials ▪ The use of a washing machine for paintbrushes and another working ▪ appliances ▪ Waste sorting ▪ The recycling of packaging	▪ Use of solar power. ▪ The introduction of additional, environmentally friendly, products to the product range. ▪ The sale of environmentally friendly products and services. ▪ Use of biodegradable detergents ▪ Installation of energy efficient light bulbs ▪ The use of recycled paper ▪ Waste sorting ▪ The safe storage and disposal of hazardous materials ▪ The offering of discounts for environmental and social groups ▪ Oil separation ▪ Recycling of oil cloths	▪ Compliance with environmental regulations. ▪ Waste sorting. ▪ Use of energy-efficiency measures within the premises. ▪ Oil separation.

Furthermore, the start-ups' diversity and context role define their business model, where engaging actors and quality networks are the strategy components (Breuer and Lüdeke-Freund 2014) for creating and capture value. It is their core motivation and primary goals where the organizational challenge is integrated into their business. The design of start-ups' business model requires a systemic understanding of the problem and the adequate solution introduction through their value proposition (Rohrbeck, Konnertz, and Knab 2013). Hence, the complexity in the study of start-ups is sourced by their long-term organizational inconsistency and, in most of the cases, because their incapacity to coevolve interactively.

Competitiveness works against them because they constitute small organizations with relatively close objectives (see Table 2). Consequently, their sustainability depends greatly on their operational capacity of problem-solving, business orientation, adding resources and performing adequate actions for innovation continuity (Schaltegger 2002; Schaltegger and Wagner 2011). Additionally, their ability to collaborate is relevant to integrate alternative resources through the identification of complementarities in their value chain.

Table 2. Characterization of different kinds of sustainability-oriented entrepreneurship (Schaltegger and Wagner 2011, 224)

	ECOPRENEURSHIP	SOCIAL ENTREPRENEURSHIP	INSTITUTIONAL ENTREPRENEURSHIP	SUSTAINABLE ENTREPRENEURSHIP
CORE MOTIVATION	Contribute to solving environmental problem and create economic value	Contribute to solving societal problem and create value for society	Contribute to changing regulatory, societal and market institutions	Contribute to solving societal and environmental problems through the realization of a successful business.
MAIN GOAL	Earn money by solving environmental problems	Achieve societal goal and source funding to achieve this	Changing institutions as a direct goal.	Creating sustainable development through corporate entrepreneurial activities.
ROLE OF ECONOMIC GOALS	Ends	Means	Means or Ends	Means and ends
ROLE OF NON-MARKET GOALS	Environmental issues as integrated core element	Societal goals as ends	Changing institutions as core element	The core element of integrates end to contribute to sustainable development.
ORGANIZATIONAL DEVELOPMENT CHALLENGE	From focus on environmental issues to integrating economic issues	From a focus on societal issues to integrating economic issues.	From changing institutions to integrating sustainability	From small contribution to large contribution to sustainable development.

In Table 2, according to *Schaltegger et al.* these types of entrepreneurship have different historical trajectories; however, their motivations for the activities are similar. Therefore, it is the evident presence of complementary assets among them made through collaboration for innovation (Schaltegger and Wagner 2011). In the core of start-ups' organization, the internal conditions are always testing their structural integration and efficacy.

The organizational development process in entrepreneurial organizations like start-ups is full of massive failures in an ongoing learning-by-doing process (A. H. Van de Ven et al. 1999). The study of inter-organizational collaborations involves a multi-level approach due to the organizational complexity and operations around the value proposition, such as knowledge-based view (Dyer and Singh 1998; Nonaka 1991; Nonaka, Toyama, and Konno 2000; Von Krogh, Nonaka, and Aben 2001); resources-based view (Wernerfelt 1984; Helfat and Peteraf 2003; Newbert 2007); and capabilities-based view (Levinthal and Myatt 1994; Fawcett et al. 2011; Wu 2007). Thus, the understanding of collaboration in few start-ups resides in their capacity of assimilating their organizational experiences and transform them into useful and profit-making knowledge (A. H. . Van de Ven 1986; A. H. Van de Ven et al. 1999)

3. Capabilities for collaboration in innovation

The start-up's capabilities for innovation are unique, diverse, flexible and adaptable. They are called dynamic capabilities; this framework focuses on explaining the organizational sharpening processes for change and adaptation through developing capabilities for shifting market conditions rapidly. They are directly related to tactic operations, specifically, because their need for continuous conduction of creating and capturing value (K. M. Eisenhardt and Martin 2000; D.J., Teece, and Pisano 1994).

Dynamic capabilities found its development on various resources inside an organization: resource-based view (RBV)(Wernerfelt 1984; Helfat and Peteraf 2003). Start-up, like many other organizations establishing their value in the configuration of intangible resources, such as knowledge-based, operations and processes. All rooted in their human capital, intellectual property, financial resources consolidating their capacities (R. M.; Grant and Baden-Fuller 1995; Conner and Prahalad 1996; Nonaka 1991; Nonaka, Toyama, and Konno 2000). Also, their interaction intangible resources combined with their facilities, technology basis, and infrastructure stimulate interaction between the knowledge-base and the resource-based of the start-ups.

First of all, the sensing capability is linked to strategic vision and operations which enable the identification of opportunities in the market from generating market intelligence. Also, it involves the reconfiguration of current operational capabilities in the company (Pavlou and El Sawy 2011). Therefore, an *absorptive capacity* is essential to be assumed by the organization towards technologic complementarities in innovation (Cohen and Levinthal 1990; Bosch, Wijk, and Volberda 2003; Newey and Zahra 2009). The absorptive capacity it is also considered as learning capability where the role of scientific knowledge is crucial in the new product development capability and new market envision (Deeds, Decarolis, and Coombs 1999; Pavlou and El Sawy 2011).

The absorptive capacity of the start-up is at an organizational level, but it defined as the ability to recognize the value of different external knowledge, integrate it, and apply it to profitable proposes (Cohen and Levinthal 1990; Camisón and Forés 2010). This organizational

capacity begins from individual members to the team reason it is a collective capacity linked to the incremental process of learning by doing (Wenger 1998; A. H. Van de Ven et al. 1999) and observing the market conditions by business intelligence (Breschi and Lissoni 2001; Taylor 2010). The knowledge production is a continual organizational process; sometimes it is produced by mistakes and problem-solving experiences (A. H. . Van de Ven 1986; Harper 2008). Most of these experiences merge individual *explicit knowledge*, it is transferred, and access to coding and it can be storage; and *tacit knowledge*, developed by personal experience.

GH1 The start-ups team collaborative behaviour in their organizational integration, interaction, and performance base on a continual knowledge creation is prone to cooperate with other organizations.

Therefore, knowledge creation is a *self-transcending knowledge* process of change to a different individual perception (Nonaka, Toyama, and Konno 2000, p. 8). According to *Nonaka et al*. the knowledge is dynamic, and dynamic capabilities considered as a knowledge-based approach which also involves knowledge management in a significant capacity. Defining that from the micro (individual) and macro (environment) co-exist and in their interaction influence each other (Nonaka 1991; Nonaka, Toyama, and Konno 2000). At the organizational level, the constant interaction produce, share and transferred knowledge by coding in their daily basis among the team members in entrepreneurial activities.

During their organizational process conformation, the start-ups combine diverse intangible and tangible resources. For instance, the team founder members' focus their efforts and visions pursuing the same goal for a functional organization. It is through the entrepreneurial team efforts where the venture's responsibility and activities divided among each members' knowledge, expertise, interest, and skills all funded by commitment and trust.

Inside an organization, the teams' interaction and operation involve particular qualities that defined them (K. Blomqvist and Levy 2006). Entrepreneurial teams collaboration at different levels of knowledge and background, but also there are relevancy in commonalities. Personal ties can also define organizational flexibility in start-up teams (Zolin, Kuckertz, and Kautonen 2011; Nissen Aarøe, Rostgaard Evald, and Clarke Højbjerg 2014), it is frequent the development of cross-functional activities (Pinto and Pinto 1990), for specific routines and attitudes toward learning, sharing and openness. The team's learning and exchange knowledge processes have particular structures that are the basis of new capabilities build in the start-ups as an essential toolkit for specialization process in horizontal structures, for instance, R&D processes (Laudel 2001).

Sub-hypothesis, start-ups that are willing to accomplish these elements inside their team:

H1a. Teams with a high level of background diversity in its members actively foster cross-functional activities in decision making for collaboration.

H1b. Teams with integrative norms regarding learning and sharing among their members are open to collaborating.

H1c. Teams with high levels of trust, commitment and responsibility, develop strong internal tights that influence positively for collaborating with other organizations.

Technology-oriented start-ups' team – as a case study regarding green innovation and high-tech start-ups - defined their foundations on knowledge-based as an intangible resource of the organization (Paradkar, Knight, and Hansen 2015). The entrepreneurship and research nourishes by teamwork efforts share same beliefs and commitment (Davis, Aldrich, and Longest 2009). Moreover, the role of the entrepreneurial team collaboration involves trust principally, but also union, interdependence, and relatively same interest assumed working together. Despite the team definition, the entrepreneurial personality still plays a relevant role in the start-up. The entrepreneurial and high skilled individuals with complementary background create and share knowledge (Nissen Aarøe, Rostgaard Evald, and Clarke Højbjerg 2014).

The teamwork in collaborative projects involving advanced knowledge and skills stem of practical guidelines for new product development, in design, testing, and improvement. Its effectiveness in performance depends greatly on their organizational norms and interaction with their environmental circumstances studied on a multidimensional level of analysis (Stokols et al. 2008). According to Stokols et al. identified intrapersonal and situational variables regarding the collaborative team effectiveness such as empowering leadership styles, regularity and efficiency of team communication, opportunities for informal face-to-face contact (personal networking), members' training and information to collaborate with other organizations.

4. The start-up operations and strategic activities

The start-up operations begin from the development of routines, "a routine is a behavior that is learned, highly patterned, repetitious, or quasi-repetitious, founded in part on tacit knowledge – and the specificity of objectives"(Winter 2007; Pavlou and El Sawy 2011, p.242). The technology-based start-ups' activities found their efforts in the entrepreneurial capability, also defined sensing capability, which is the ability to spot, interpret, and pursue opportunities in the environment (Pavlou and El Sawy 2011). These activities in the organization produce and capture value by offering unique solutions rooted in a combination of creative vision, know-how, and assets: capability (Loasby 1998). For instance, the entrepreneurial labor contents specific individual skills, expertise, new knowledge creation, and integration, developing their organizational culture and norms, which are gradually consolidated through the time in routines, processes and procedures (Loasby 2007).

Due to turbulent market environments that technology-driven start-ups face, it is necessary to customize particular abilities to overcome uncertain market conditions and to develop innovation process. The start-ups organizational structure capacities in their integration process meet specific tasks and routines to quickly adapting to new market conditions. The new organizational capacities building up is defined the dynamic capabilities as the organizational capacity to identify opportunities and adjust their operations to the new market conditions (D.J., Teece, and Pisano 1994; Zollo and Winter 2002; K. M. Eisenhardt and Martin 2000; Pavlou and El Sawy 2011).

The development of value chaining actions demands product-market processes, knowledge, abilities, and coordination with other actors through their business models. As a result of a constant alertness of their market and business ecosystem (Korunka et al. 2003; D. J. Teece 2010a). Coordination among start-ups involves know-how in market share and their level of technological and operational complementarities integrating profits in common. This means this requires exceptional leadership with collective vision and influence focus on mixing and

matching capabilities, processes, networks to eventually configure a *business ecosystem* (Moore 2006; Peltoniemi and Vuori 2004; D. J. Teece 2012; Clarysse et al. 2014).

GH2 Start-ups focus on spotting opportunities has implemented a knowledge management oriented in new product and market development activities tending to collaborate with others.

The capabilities for collaboration among different companies' synergies requires, self-governance (organizational independence), specialized knowledge, managerial and coordination resources mastered with fast actions to overcome the uncertainty of the market (Moore 2006; Stieglitz 2007; Helfat 1997). This co-evolution of markets occurs when competitors are open to working together to survive defined as *creating mutualisms*. This is the integration of the big picture of the firm's environment with a symbiotic relationship (Moore 2006). Collaboration among small and flexible organizations such as common technology-based start-ups is a continuing process of expertise and performance synergies linked to their business model towards cospecialization and innovation.

The development of fast track of organizational abilities to innovation, dynamic capabilities, also conceived as strategic capabilities, allows collective activities for creating and capturing value. The creation and capturing value progressions are the primary goals of every start-up. The development of fast-track capabilities to market condition adaptation are *idiosyncratic* and considered as high-level of organizational abilities to reconfigure different competencies in business organizations (D. J. Teece 2012; D. J. Teece, Pisano, and Shuen 1997).

Sub-hypothesis:

H2a Start-up with a high-level capacity of knowledge management regarding intellectual property/authorship rights/licensing procedure spotting complementary opportunities is prone to collaborate.

R&D activities and marketplace processes in technologic-based start-ups demand exploration and exploitation activities that stimulate the organizational adaptation (Dixon, Meyer, and Day 2014). Exploration is related previously mentioned sensing capability that identified commonalities inside their business ecosystem. These two activities are also known as dynamic capabilities, they are strategic components that incentive and support technologic complementarities in their way to operational specialization, and hence, the start-ups' capacities to collaborate with other organizations (Foss 1998; D. Teece 1996; D. J. Teece 2006).

Sub-hypothesis:

H2b Start-ups with dynamic communication activities build and excellent reputation to attract opportunities for collaboration with other organization.

H2c Start-up with and formal and informal networking identify opportunities for collaboration with other organization.

The innovation management in green innovation demands deep knowledge of their business and innovation ecosystems. The start-up priority is survival to the market conditions through a constant observation of their context and market position regarding horizontal, and vertical complementarities (Helfat 1997; D. Teece 1996). Either in the case, between

competitors and suppliers, both complementation among them support the long-term sustainability of each organization. The collaboration between start-ups requires from inside each organization, the output of advanced know-how, visionary strategy, and self-motivated management performance; added to that, the integration of highly skilled professionals and adequate organizational environment amalgamation.

5. Start-ups ’collaborative business model

In the innovation environments, the concept of collaboration is conditional to face the market uncertainties. Thus, the relevance to reveal a pathway for innovation demand to find a common ground and compromise to develop wealthy partnerships. In technologic collaborations, there is an ongoing process to seek partners involving an implication of business model. Nevertheless, in technology-driven start-ups ecosystems what conditions stimulate collective efforts in entrepreneurial environments adding the concept: it is better in a group than alone. The alignment of resources both inside and outside include assessing when and how an enterprise ought to form alliances with other organizations (D. J. Teece 2012; D.J., Teece, and Pisano 1994). The development of collaborative business models enlightens the way of explaining the different levels of practice from management, operation, and strategic approaches.

GH3 Start-ups focus on collaborative business models, include downstream, midstream and upstream, promote coordinated activities among their business ecosystem diversity.

Strategic collaborations can be formed horizontally through supplier chain to price production by fixing control through their processes, for instance, to face technological competition (R. M.; Grant and Baden-Fuller 1995; Robert M.; Grant and Baden-Fuller 2004). Also, collaborations can be vertical for developing unique sourcing and distribution arrangements, because market strategies reduce the market uncertainties and pursue product complementarities through their network. Regarding the development of innovation capabilities, under the dynamic capabilities framework, define their relationship in common specific objectives between exploitative commercial or explorative technological actions (Colombo, Grilli, and Piva 2006). Strategic collaborations involve value-creating opportunities in their close network and searching common objectives and equal benefits between the possible partners.

Sub-hypothesis:

H3a Start-ups actively focus on R&D /market development identify mutualisms among its business ecosystem and likely to develop collaboration activities [openness capability]

H3b start-ups with authentic vision on the influence the market develops collaborative instruments agreements of sharing market due to their commonalities.

The technological complementarity leads the organizational change through the time in their way of specialization. Nevertheless, why and under which conditions start-ups would collaborate? The classic school defined that collaboration between other organizations, also established alliances; they are based on élite thinking and because strategic reasons principally they are pursuing power and influence with their products and services in the market.

Alternatively, the co-evolutionary view of the start-up's market context as the business landscape is constantly changing; however, it is possible to influence it by economic coordination (D. J. Teece 2010b; Moore 2006; Peltoniemi and Vuori 2004). Those actions are through coordinated actions, for instance, small firms can do it through the creation of the start-ups ecosystems with other complementary businesses. The co-evolution of markets stimulates competence between start-ups by continuous innovation (Moore 2006) towards complementarity among similar technologies and partners in their enterprise ecosystem.

Methodology

This research encompasses a multidimensional analysis (K. Eisenhardt and Schoonhoven 1990; K. Blomqvist and Levy 2006). This level of analysis will consider the principal funders individuals, identification of specific organizational routines involving member's interactions, norms, networking, business model and strategies among the start-ups team. The study will utilize mixed methods in two phases, the first phase basis is on a contact survey for data collection in green innovation niches. The second phase is related semi-structured interviews of the top team members of 30 start-ups in the green innovation sector.

The data sources are coming from EIT-ClimateKIC program which develops green/eco-innovation start-ups incubator/accelletator programs.

The fist phasewith the team members divided, into two phases from primary empirical data.

1. The first stage is a first contact survey asking (briefly) to the general start-up organization. The first contact survey to get generals from the start-up organizational picture regarding the relevant individuals and organization basis, including value proposition.
   Asking them perception about their team, which elements do they have identified as allies on their business models canvas model of green innovation start-ups. Asking them in a prospecting way, what factors do they consider to establish a strategic partnership, to identify relevant case studies. It will describe their current conditions: it is a picture of the start-up, it will allow me to know:

   1.1 Kind of green organization they are according to their value proposition: technology, product or service.

   1.2 The team members' background, quality of interaction and the organizational environment represent the conditions that influence in decisions making. : regarding how do they influence and support the organization in R&D and Marketing.

   1.3 The founder team dynamic interaction and to identify among the team members which specific routines establish co-workers commitment, trust, and respect among them.

   1.4 To know their organizational environment and specific normative that support and improve their team interaction and communication. In the way, they encourage individual or team networking quality.

1.5 To know about how their define a strategic vision regarding allies and mutualisms based on complementary synergies identification. In this specifically related to openness ans cooperation on the contribution, to influence the market.

2. The second phase is based on interviews with the top-team members:
    - The meeting in appointment (30-40 minutes), pursues to reveal which elements and resources are relevant and what others are missing to collaborate with others.
    - Identity collaborative organizations who are not interested in collaborating and who have already do it and those who would like to do it.
    - To what extent do they develop ideas that attract other start-ups synergies and open their operations to catalyze collaboration strategies for the long term.
    - Inside the team organization, cross-functions and routines define adaptable assets, to what extent are those elements are considered competitive advantages and how do they might influence other organizations specializing development.
    - To identify elements that contribute to building new capabilities to collaborative strategies for the creation of new products (innovation) with their competitors or other different and that such partnerships developed between them.

The technology-based start-ups characteristics:

Technology-based (Renewable energy systems, green innovation technologies in housing, high-tech: software, programming developing, applications in business development, etc. Mature organizations (2-3 years), with annual sales.

- ✓ University Polytechnic of Valencia (UPV) Start-UPV - University cluster.
- ✓ Climate KIC -Valencia: Accelerator 40-50 start-ups (level of maturity not confirmed yet.

Data collection and analysis

The research was applied, qualitative and quantitative mix methods:

- ✓ The surveys will be e-mailing distributed via LimeSurvey. Data basis collection from the platform.
- ✓ Data analysis will be using Nvivo.

The study includes the principal team members, 1) their organizational interaction, relatively mature start-ups (from 2 to 3 years). 2) their market stage, technology-based (value proposition). 3) business model: green innovation and high-tech start-ups. 4) Their environment, as a small organization, what is their level of context knowledge and how do they integrate that information into their operations: identification of complementarities, networking, public participation, e.g. attendance in public acts and technology expos or contexts.

Sensing, seizing, and transform are processes linked with strategic thinking, and it involves a multidimensional analysis connected to the top-management team. Routines description according to dynamic capabilities framework for collaboration description.

Table 2. Research questions and hypothesis relation with questionnaire

Secundary research questions	**General hypothesis**	**Sub-Hypothesis**	**Relevant questions/ questionnaire**	**Relevant questions/ interview**
1. *Which resources/capabilities stimulate collaboration?*	*GH1 The start-ups team collaborative behaviour in their organizational integration, interaction, and performance base on a continual knowledge creation is prone to cooperate with other organizations.* [Absorptive capability]	*H1a. Teams with a high level of background diversity in its members actively foster cross-functional activities in decision making for collaboration.* *H1b. Teams with integrative norms regarding learning and sharing among their members are open to collaborating.* *H1c. Teams with high levels of trust, commitment and responsibility, develop strong internal tights that influence positively for collaborating with other organizations.*	**Question 17.** Who are your current team members? • Names: Ask for their LinkedIn • Principal role • Studies • Previous job experience: start-up/frim/government/industry/none • Decision making: Strong/Medium/Light/Equal/none ***Question 18***. Please rate the effectiveness team performance regarding launching and improving your value proposition to address rapidly-changing market conditions about your value proposition **Empowerment*** 01 Most members of this group are very committed to their work 02. Decisions are often taken at the level of the best information available. 03. Information is widely shared and can get the information needed 04 Each member believes it can have a positive impact on the group 05. The planning of our work is continuous and involves everyone in some degree **Teamwork (team Orientation)** 06. Cooperation between the different groups of this organization is actively encouraged. 07. Work in this group is like being part of a team 08. We tend to perform tasks as a team, instead of downloading the weight in the direction 09. The groups and individuals are the main pillars of this organization 10. The work is organized so that each person understands the relationship between their work and objectives of the organization.	2. Value proposition: Mission and vision linked with their beliefs 3. Routines knowledge management 4. Interaction with their norms, communication, and network 5. Business model (canvas) 6. Strategy How would they acquire notions of collaboration? a) From specialized workshops (from Incubator /Accelerator) b) From university (during the studies) c) From employees d) From other organizations with more experience e) In the process learning -by doing (from our mistakes)

Research questions	General hypothesis	Sub-Hypothesis	Relevant questions/ questionnaire	
2. What activities and conditions define/identify collaborative partners?	*GH2 Start-ups focus on spotting opportunities has implemented a knowledge management oriented in new product and market development activities tending to collaborate with others.* [openness capability -based on mutualisms through communication and networking]	*H2a Start-up with a high-level capacity of knowledge management regarding intellectual property/authorship rights/licensing procedure spotting complementary opportunities is prone to collaborate.* *H2b Start-ups with dynamic communication activities build and excellent reputation to attract opportunities for collaboration with other organization.* *H2c Start-up with and formal and informal networking identify opportunities for collaboration with other organization.*	**Question 13**. Do you count with an integrated R&D + market process? ☐ Yes, who is on charge? _____ ☐ No, why? _____ **Question 14.** Does your start-up hold the intellectual property, original authorship or rights /loyalty holder of your value proposition? ☐ Yes ☐ No **Question 18.** **Coordination and integration** 21. Our way of working is consistent and predictable 22. People of different groups of this organization have a common perspective 23. It is easy to coordinate projects between different groups of this organization 24. Working with someone from another group of this organization is like working with someone from another organization * 35. There is good alignment of objectives links between different hierarchical level. **Strategic Direction, Intention, and Networking** 41. This organization has a long-term project and an orientation 42. Our strategy serves as an example to other organizations (reputation) 43. This organization has a clear mission that gives meaning and direction to our work 44. We keep an excellent quality networking and communication with different start-ups in our community. 45. We are regularly attending informal meetings organized by other start-ups in the same sector. 46. We are active in communicating our projects and identify opportunities for other start-ups 47. This organization has a clear strategy for the future 48. The strategic focus of this organization is clear to me *	

Research questions	General hypothesis	Sub-Hypothesis	Relevant questions/ questionnaire	
3. *How do collaborative partnerships continue in the long term?*	*GH3 Start-ups focus on collaborative business models, include downstream, midstream and upstream, promote coordinated activities among their business ecosystem diversity.* [Coordinated capacities]	*H3a Start-ups actively focus on R&D /market development identify mutualisms among its business ecosystem and likely to develop collaboration activities [openness capability]* *H3b start-ups with authentic vision on the influence the market develops collaborative instruments agreements of sharing market due to their commonalities.*	**Question 18. About collaborative business model** 07. My start-up pro-active on shares resources to help our partners (other start-ups)/suppliers improves their capabilities 08. Partners/ supply chain are actively shaping and covering our business model strategic objectives. 09. We are open to sharing information, rewards and risks with our partners/supply chain relationship. 10. Value-added resources are shared among partners/supply chain members. 11. We believe that working coordinated with other similar organizations we can influence the market.	

Note: As the general outcome: identify which organizational elements and conditions produce active partnerships among start-ups

Ethical considerations

The study will be carried out under ethical standards and confidentiality, and the information will consider for statistical purposes of empiric information. Start-up valuable information such as commercial tactics or elements that are not related to the topic will be avoided.

Risks, the number of start-ups is relatively small and the timing to interview might be a problem because the agenda of the entrepreneurial team members. It will be covered by appointments (40 minutes) for semi-structured interviews and survey to measure interaction among the team members to confirm the information.

Contribution

- The start-up's core drivers of capabilities for collaboration for innovation and influence the market through integrative partnerships (mutualisms) between entrepreneurial organizations and other organizations.

- My interest is to highlight the relevance of inter-organizational collaboration best practices for innovation. I am pursuing to show an understanding approach of which the organizational mechanisms and conditions are required in the process of collaboration for innovation. The relevance of the topic is focus to identify opportunities to build a suitable collaboration framework that reinforce the local collaboration and innovation continuity

- This builds on work of Teece et al. regarding dynamic capabilities framework (D. J. Teece, Pisano, and Shuen 1997; D. J. Teece 1996; K. M. Eisenhardt and Martin 2000; Kirsimarja Blomqvist and Seppänen 2003; Prieto, Revilla, and Rodríguez-Prado 2009; Açıkdilli, Doğan, and Ayhan 2013).

References

Açıkdilli, Gaye, Prof Doğan, and Yaşar Ayhan. 2013. "Dynamic Capabilities and Entrepreneurial Orientation in the New Product Development." *Inteernational Journal of Business and Social Science* 4 (11): 144–50.

Blomqvist, K., and J. Levy. 2006. "Collaboration Capability–a Focal Concept in Knowledge Creation and Collaborative Innovation in Networks." *International Journal of Management Concepts …* 2 (1): 31–48. doi:10.1504/IJMCP.2006.009645.

Blomqvist, Kirsimarja, and Risto Seppänen. 2003. "Bringing Together the Emerging Theories on Trust and Dynamic Capabilities – Collaboration and Trust as Focal Concepts." *Business* 33: 1–25. http://www.impgroup.org/uploads/papers/4296.pdf.

Bosch, FAJ Van Den, R Van Wijk, and HW Volberda. 2003. "Absorptive Capacity: Antecedents, Models and Outcomes." http://papers.ssrn.com/sol3/papers.cfm?abstract_id=411675.

Breschi, S, and F Lissoni. 2001. "Knowledge Spillovers and Local Innovation Systems: A Critical Survey." *Industrial and Corporate Change*, 975–1005. http://icc.oxfordjournals.org/content/10/4/975.short.

Breuer, H, and F Lüdeke-Freund. 2014. "Normative Innovation for Sustainable Business Models in Value Networks." *Available at SSRN*, no. June. http://ispim.org/files/2014_dublin_proceedings/552521905_Paper.pdf.

Camisón, César, and Beatriz Forés. 2010. "Knowledge Absorptive Capacity: New Insights for Its Conceptualization and Measurement." *Journal of Business Research* 63 (7). Elsevier Inc.: 707–15. doi:10.1016/j.jbusres.2009.04.022.

Chorev, Schaul, and Alistair R. Anderson. 2006. "Success in Israeli High-Tech Start-Ups; Critical Factors and Process." *Technovation* 26 (2): 162–74. doi:10.1016/j.technovation.2005.06.014.

Clarysse, Bart, Mike Wright, Johan Bruneel, and Aarti Mahajan. 2014. "Creating Value in Ecosystems: Crossing the Chasm between Knowledge and Business Ecosystems." *Research Policy* 43 (7). Elsevier B.V.: 1164–76. doi:10.1016/j.respol.2014.04.014.

Cohen, Wesley, and Daniel Levinthal. 1990. "Absorptive Capacity: A New Perspective on Learning and Innovation." *Administrative Science Quarterly* 35 (1): 128–52. doi:10.2307/2393553.

Colombo, Massimo G., Luca Grilli, and Evila Piva. 2006. "In Search of Complementary Assets: The Determinants of Alliance Formation of High-Tech Start-Ups." *Research Policy* 35 (8 SPEC. ISS.): 1166–99. doi:10.1016/j.respol.2006.09.002.

Conner, Kathleen R., and C. K. Prahalad. 1996. "A Resource-Based Theory of the Firm: Knowledge Versus Opportunism." *Organization Science* 7 (5): 477–501. doi:10.1287/orsc.7.5.477.

D.J., Teece, and Gary Pisano. 1994. "The Dynamic Capabilities of Firms: An Introduction." *Industrial and Corporate Change* 3 (3): 537–56. doi:10.1093/icc/3.3.537-a.

Davis, a. E, H. E Aldrich, and K. C Longest. 2009. "Resource Drain or Process Gains? Team Status Characteristics and Group Functioning Among Startup Teams." *Frontiers of*

Entrepreneurship Research 29 (11): 2.

Deeds, David L, Dona Decarolis, and Joseph Coombs. 1999. "Dynamic Capabilities and New Product Development in High Technology Ventures : An Empirical Analysis of New Biotechnology Firms." *Journal of Business Venturing* 15 (216): 211–29. doi:10.1016/S0883-9026(98)00013-5.

Dixon, Sarah;, Klaus; Meyer, and Marc Day. 2014. "Building Dynamic Capabilities of Adaptation and Innovation: A Study of Micro-Foundations in a Transition Economy." *Long Range Planning* 47 (4): 186–205. doi:10.1016/j.lrp.2013.08.011.

Du Plessis, Marina. 2007. "The Role of Knowledge Management in Innovation." *Journal of Knowledge Management* 11 (4): 20–29. doi:10.1108/13673270710762684.

Dyer, Jeffrey H.;, and Harbir Singh. 1998. "The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage." *Academy of Management Review* 23 (4): 660–79.

Eisenhardt, Kathleen M, and Jeffrey A Martin. 2000. "Dynamic Capabilities: What Are They?" *Strategic Management Journal* 21 (10/11): 1105–21.

Eisenhardt, Km, and Cb Schoonhoven. 1990. "Organizational Growth: Linking Founding Team, Strategy, Environment, and Growth among US Semiconductor Ventures, 1978-1988." *Administrative Science Quarterly* 35 (3): 504–29. doi:10.2307/2393315.

Fawcett, Stanley E., Cynthia Wallin, Chad Allred, Amydee M. Fawcett, and Gregory M. Magnan. 2011. "Information Technology as an Enabler of Supply Chain Collaboration:A Dynamic-Capabilities Perspectives." *Journal of Supply Chain Management* 47 (1): 22. doi:10.1111/j.1745-493X.2010.03213.x.

Foss, Nicolai J. 1998. "The Resource-Based Perspective: An Assessment and Diagnose of Problems." *Scandinavian Journal of Management* 14 (3): 133–49. doi:doi: 10.1016/s0956-5221(97)00030-4.

Gloet, Marianne, and Milé Terziovski. 2004. "Exploring the Relationship between Knowledge Management Practices and Innovation Performance." *Journal of Manufacturing Technology Management* 15 (5): 402–9. doi:10.1108/17410380410540390.

Grant, R. M.;, and C. Baden-Fuller. 1995. "A Knowledge-Based Theory of Inter-Firm Collaboration." *Academy of Management Proceedings* 1995 (1): 17–21. doi:10.5465/AMBPP.1995.17536229.

Grant, Robert M.;, and Charles Baden-Fuller. 2004. "A Knowledge Accessing Theory of Strategic Alliances." *Journal of Management Studies* 41 (January): 61–84.

Hansen, M T, and N Nohria. 2004. "How to Build Collaborative Advantage." *Mit Sloan Management Review* 46 (1): 22 – +. doi:Article.

Harper, David a. 2008. "Towards a Theory of Entrepreneurial Teams." *Journal of Business Venturing* 23 (6): 613–26. doi:10.1016/j.jbusvent.2008.01.002.

Helfat, Constance E, and Margaret A Peteraf. 2003. "THE DYNAMIC RESOURCE-BASED VIEW : CAPABILITY LIFECYCLES" 1010: 997–1010. doi:10.1002/smj.332.

Helfat, Constance E. 1997. “Know-How and Asset Complementarity and Dynamic Capability Accumulation: The Case of R&D.” *Strategic Management Journal* 18 (5): 339–60. doi:Article.

Helmers, Christian, and Mark Rogers. 2011. “Does Patenting Help High-Tech Start-Ups?” *Research Policy* 40 (7). Elsevier B.V.: 1016–27. doi:10.1016/j.respol.2011.05.003.

Ketata, Ihsen, Wolfgang Sofka, and Christoph Grimpe. 2014. “The Role of Internal Capabilities and Firms’ Environment for Sustainable Innovation: Evidence for Germany.” *R&D Management* 45 (1): 60–75. doi:10.1111/radm.12052.

Korunka, Christian, Hermann Frank, Manfred Lueger, and Josef Mugler. 2003. “The Entrepreneurial Personality in the Context of Resources, Environment, and the Startup Process— A Configurational Approach.” *Entrepreneurship Theory and Practice*, 23–42. doi:10.1111/1540-8520.00030.

Laudel, Grit. 2001. “Collaboration, Creativity and Rewards: Why and How Scientists Collaborate.” *International Journal of Technology Management* 22 (7-8): 762–81. doi:10.1504/ijtm.2001.002990.

Levinthal, Daniel A, and Jennifer Myatt. 1994. “Co-Evolution of Capabilities and Industry: The Evolution of Mutual Fund Processing.” *Strategic Management Journal* 15 (I 994): 45–62. doi:10.1002/smj.4250150905.

Loasby, Brian J. 1998. “The Organisation of Capabilities.” *Journal of Economic Behavior & Organization* 35 (May 1995): 139–60. doi:10.1016/S0167-2681(98)00056-0.

Loasby, Brian J. 2007. “A Cognitive Perspective on Entrepreneurship and the Firm.” *Journal of Management Studies* 44 (7): 1078–1106. doi:10.1111/j.1467-6486.2007.00729.x.

MacCormack, Alan, Theodore Forbath, Peter Brooks, and Patrick Kalaher. 2007. *Innovation through Global Collaboration: A New Source of Competitive Advantage A New Source of Competitive Advantage*. 07-079. *“From Outsourcing to Global Collaboration: New Ways to Build Competitiveness.”* http://i-n-w.org/talking_collaboration/innovation.pdf.

Malhotra, Deepak;, and Fabrice Lumineau. 2011. “Trust and Collaboration in the Aftermath of Conflict : The Effects of Contract Structure.” *Academy of Management Journal* 54 (5): 981–98. doi:http://dx.doi.org/10.5465/amj.2009.0683.

Miles, Raymond E., Grant Miles, and Charles C. Snow. 2006. “Collaborative Entrepreneurship: A Business Model for Continuous Innovation.” *Organizational Dynamics* 35 (1): 1–11. doi:10.1016/j.orgdyn.2005.12.004.

Milovanovic, Snezana. 2015. “Balancing Differences and Similarities within The Global Economy: Towards A Collaborative Business Strategy.” *Procedia Economics and Finance* 23 (October 2014). Elsevier B.V.: 185–90. doi:10.1016/S2212-5671(15)00369-X.

Moore, James F. 2006. “Business Ecosystems and the View from the Firm.” *Antitrust Bulletin* 51 (I): 31–75. doi:Article.

Newbert, Scott L. 2007. “Empirical Research on the Resource-Based View of the Firm: An Assessment and Suggestions for Future Research.” *Strategic Management Journal* 28 (2): 121–46. doi:10.1002/smj.573.

Newey, Lance R., and Shaker a. Zahra. 2009. “The Evolving Firm: How Dynamic and Operating Capabilities Interact to Enable Entrepreneurship.” *British Journal of Management* 20 (SUPP. 1). doi:10.1111/j.1467-8551.2008.00614.x.

Nissen Aarøe, Helle;, Majbritt; Rostgaard Evald, and Ann Clarke Højbjerg. 2014. “Knowledge Sharing in Heterogeneous Teams through Collaboration and Cooperation: Exemplified through Public-Private-Innovation Partnerships.” *Industrial Marketing Management* 43 (3). Elsevier Inc.: 473–82. doi:10.1016/j.indmarman.2013.12.015.

Nonaka, Ikujiro. 1991. “The Knowledge Creating Company.” *Harvard Business Review* 69: p96–104. doi:10.1016/0024-6301(96)81509-3.

Nonaka, Ikujiro, Ryoko Toyama, and Noboru Konno. 2000. “SECI, Ba and Leadership: A Unified Model of Dynamic Knowledge Creation.” *Long Range Planning* 33 (1): 5–34. doi:10.1016/S0024-6301(99)00115-6.

Paradkar, Amit, John Knight, and Paul Hansen. 2015. “Innovation in Start-Ups: Ideas Filling the Void or Ideas Devoid of Resources and Capabilities?” *Technovation* 42: 1–10. doi:10.1016/j.technovation.2015.03.004.

Pavlou, Paul, and Omar El Sawy. 2011. “Understanding the Elusive Black Box of Dynamic Capabilities.” *Decision Sciences* 42 (1): 239–73. doi:10.1111/j.1540-5915.2010.00287.x.

Peltoniemi, Mirva, and Elisa Vuori. 2004. “Business Ecosystem as the New Approach to Complex Adaptive Business Environments.” *Proceedings of eBusiness Research Forum*.

Penrose, Edith Tilton. 1952. “Bilogical Analogies in the Theory of the Firm.” *The American Economic Review* 42 (5): 804–19. http://ww.jstor.org/stable/1812528.

Pinto, M.B., and J.K. Pinto. 1990. “Project Team Communication and Cross-Functional Cooperation in New Program Development.” *Journal of Product Innovation Management* 7 (SEPTEMBER): 200–212. doi:10.1016/0737-6782(90)90004-X.

Prieto, Isabel M., Elena Revilla, and Beatriz Rodríguez-Prado. 2009. “Building Dynamic Capabilities in Product Development: How Do Contextual Antecedents Matter?” *Scandinavian Journal of Management* 25 (3): 313–26. doi:10.1016/j.scaman.2009.05.005.

Rohrbeck, René, Lars Konnertz, and Sebastian Knab. 2013. “Collaborative Business Modelling for Systemic and Sustainability Innovations.” *International Journal of Technology Management* 63 (1-2): 4. doi:10.1504/IJTM.2013.055577.

Rothaermel, Frank T. 2001. “Incumbent’s Advantage through Exploiting Complementary Assets via Interfirm Cooperation.” *Strategic Management Journal* 22 (6-7): 687–99. doi:10.1002/smj.180.

Schaltegger, Stefan. 2002. “A Framework for Ecopreneurship.” *Green Management International* 38: 45–59. doi:10.9774/GLEAF.3062.2002.su.00006.

Schaltegger, Stefan, and Marcus Wagner. 2011. “Sustainable Entrepreneurship and Sustainability Innovation: Categories and Interactions.” *Business Strategy and the Environment* 20 (4): 222–37. doi:10.1002/bse.682.

Schick, Hildegard;, Sandra; Marxen, and Jurgen Freimann. 2002. “Sustainability Issues for Start-

up Entrepreneurs." *Greener Management International*, no. 38: 59.

Schiederig, T., F. Tietze, and C. Herstatt. 2012. "Green Innovation in Technology and Innovation Management – an Exploratory Literature Review 1." *R&D Management* 42 (2): 180–92. doi:10.1111/j.1467-9310.2011.00672.x.

Stokols, Daniel, Shalini Misra, Richard P. Moser, Kara L. Hall, and Brandie K. Taylor. 2008. "The Ecology of Team Science." *American Journal of Preventive Medicine* 35 (2): S96–115. doi:10.1016/j.amepre.2008.05.003.

Taylor, David W. 2010. *Making Ecopreneurs. Developing Sustainable Entreprenuership*. Edited by Michael Schaper. Second Edi. Surrey, England: Gower Publishing Limited. http://hdl.handle.net/2173/91878.

Teece, David J. 1996. "Firm Organization, Industrial Structure, and Technological Innovation." *Journal of Economic Behavior and Organization* 31 (2): 193–224. doi:10.1016/S0167-2681(96)00895-5.

———. 2006. "Reflections on 'Profiting from Innovation.'" *Research Policy* 35 (8 SPEC. ISS.): 1131–46. doi:10.1016/j.respol.2006.09.009.

———. 2010a. "Business Models, Business Strategy and Innovation." *Long Range Planning* 43 (2-3). Elsevier Ltd: 172–94. doi:10.1016/j.lrp.2009.07.003.

———. 2010b. "Technological Innovation and the Theory of the Firm: The Role of Enterprise-Level Knowledge, Complementarities, and (Dynamic) Capabilities." In *Handbook Economics of Innovation, Vol. 01*, edited by Bronwyn H. Hall, USA Universiry of California, Berkeley, California, The Netherlands University of Maastricht, Nathan Rosenberg, and USA Standford University, Stanford, California, Second, 679–730. Amsterdam, Boston, Heidelberg, London,New York, Oxford, Paris, San Diego, San Francisco, singapore, Sydney, Tokio: Elsevier. doi:10.1016/S0169-7218(10)01016-6.

———. 2012. "Dynamic Capabilities: Routines versus Entrepreneurial Action." *Journal of Management Studies* 49 (8): 1395–1401. doi:10.1111/j.1467-6486.2012.01080.x.

Teece, David J., Gary Pisano, and Amy Shuen. 1997. "Dynamic Capabilities and Strategic Management." *Strategic Management Journal* 18 (March): 509–33. doi:10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z.

Teece, DavidJ. 1996. "Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy." *Research Policy* 15 (February): 285–305. doi:10.1016/0048-7333(93)90063-N.

Van de Ven, A.H., D.E.; Polley, R.; Garud, and S.; Venkataraman. 1999. *The Innovation Journey*. Frst Editi. New York: Oxford University Press, Inc.

Van de Ven, A.H.; 1986. "Central Problems in the Management of Innovation." *Management Science* 32 (5): 590–607. doi:10.2307/2631848.

Von Krogh, Georg, Ikujiro Nonaka, and Manfred Aben. 2001. "Making the Most of Your Company's Knowledge: A Strategic Framework." *Long Range Planning* 34 (4): 421–39. doi:10.1016/S0024-6301(01)00059-0.

Wenger, Etienne. 1998. “Community of Practice: A Brief Introduction.” *Learning in Doing* 15: 1–7. doi:10.2277/0521663636.

Wernerfelt, Birger. 1984. “A Resource-Based View of the Firm.” *Strategic Management Journal* 5 (Apr-Jun): 171–80.

Winter, Sidney G. 2007. “Understanding Dynamic Capabilities - Presentation.”

Wu, Lei Y. 2007. “Entrepreneurial Resources, Dynamic Capabilities and Start-up Performance of Taiwan’s High-Tech Firms.” *Journal of Business Research* 60 (5): 549–55. doi:10.1016/j.jbusres.2007.01.007.

Zahra, Shaker a., Harry J. Sapienza, and Per Davidsson. 2006. “Entrepreneurship and Dynamic Capbilities: A Review, Model and Research Agenda.” *Journal of Management Studies* 43 (4): 917–55. doi:10.1111/j.1467-6486.2006.00616.x.

Zolin, Roxanne, Andreas Kuckertz, and Teemu Kautonen. 2011. “Human Resource Flexibility and Strong Ties in Entrepreneurial Teams.” *Journal of Business Research* 64 (10). Elsevier Inc.: 1097–1103. doi:10.1016/j.jbusres.2010.11.026.

Zollo, M., and S.G. Winter. 2002. “Deliberate Learning and the Evolution of Dynamic Capabilities.” *Organization Science* 13 (3): 339–51. doi:10.1287/orsc.13.3.339.2780.