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Incubator Support and Resource Accumulation of Incubated Firms

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Abstract
Constructing an initial resource base is one of the most important, yet challenging elements of developing a new entrepreneurial firm. However, there are ways for startup firms to get help. The purpose of business incubators is to provide startup firms with a structured and nurturing environment during the early development stages, and thus help firms accumulate necessary resources for development and growth. Drawing from organizational sponsorship theory, this study examines the role of incubator support, referred to as buffering and bridging mechanisms, on the internal and external resource accumulation of startup firms. Data collected from 252 firms located in business incubators in Norway, suggest that bridging mechanisms (i.e. external network support) provided by the incubator management is important for firms to acquire external resources (i.e. financing, new customers), as well as develop internal resources (i.e. procedures, capabilities). Buffering mechanisms (i.e. counseling, infrastructure) provided by the incubator management is important for developing the internal resources of the firm. This study highlights the importance of different incubator support mechanisms in the resource accumulation of startup firms.
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ABSTRACT

Constructing an initial resource base is one of the most important, yet challenging elements of developing a new entrepreneurial firm. However, there are ways for startup firms to get help. The purpose of business incubators is to provide startup firms with a structured and nurturing environment during the early development stages, and thus help firms accumulate necessary resources for development and growth. Drawing from organizational sponsorship theory, this study examines the role of incubator support, referred to as buffering and bridging mechanisms, on the internal and external resource accumulation of startup firms. Data collected from 252 firms located in business incubators in Norway, suggest that bridging mechanisms (i.e. external network support) provided by the incubator management is important for firms to acquire external resources (i.e. financing, new customers), as well as develop internal resources (i.e. procedures, capabilities). Buffering mechanisms (i.e. counseling, infrastructure) provided by the incubator management is important for developing the internal resources of the firm. This study highlights the importance of different incubator support mechanisms in the resource accumulation of startup firms.

Keywords:
Incubator; organizational sponsorship; resource accumulation
INTRODUCTION

Research on the startup process of entrepreneurial firms have shown that new firms are quite fragile (Amezcua, Grimes, Bradley, & Wiklund, 2013) and often fail during the early development stages (Watson, Hogarth-Scott, & Wilson, 1998; Zacharakis, Meyer, & De Castro, 1999), forcing many new firms to exit before reaching an operational stage. Two factors have been identified in the literature as the main obstacles for rapid and effective firm development, the “liability of newness” (Stinchcombe, 1965) and the “liability of smallness” (Aldrich & Auster, 1986). The liability of newness refers to startups lack of visibility in the market and lack of business relationships (Pfeffer & Salancik, 1978; Roseira, Ramos, Maia, & Henneberg, 2014), which makes it difficult for them to access needed resources to exploit entrepreneurial opportunities (Fisher, Kotha, & Lahiri, 2015). Thus, the risk of failure for new firms is much higher than it is for established organizations (Stinchcombe, 1965). The liability of smallness refers to the impact of size on available resources or skills, as startups often show lack of management knowledge and management skills (Roseira et al., 2014) and general resources that are critical to their survival (Grimaldi & Grandi, 2005; Schwartz & Hornych, 2010). This is particularly the case for technology-based firms (Smilor, 1987).

New firms must develop a resource base to survive (Brush, Greene, & Hart, 2001). However, this is a complex task and can be challenging for new organizations. Business incubators are established to circumvent the “liability of newness” and “liability of smallness” through providing the new firm with resources (Bøllingtoft, 2012). A business incubator can be defined as an organization that provide office-space, business support and networking to young firms (Bruneel, Ratinho, Clarysse, & Groen, 2012; Hackett & Dilts, 2004). They provide a supportive environment for young firms with access to knowledge based services to develop internal resources, such as routines and capabilities, and access to external resources, including
potential customers, suppliers and investors, through the incubators external network. The focus of this study is how the business incubator can help new firms accumulate internal and external resources. We argue that the development of internal resources and access to external resources, are dependent both on the support provided by business incubators, but also on the capacity and willingness of the firm to take advantage of the support they are offered. The following research question is addressed:

To which extent do support provided by business incubators influence new firms’ resource accumulation?

We use the emerging theory of organizational sponsorship to analyze the particular support mechanisms business incubators provide for new firms and the potential value they may have for helping the firm accumulate resources. Organizational sponsorship is defined as “attempts to mediate the relationship between new organizations and their environments by creating a resource-munificent context intended to increase survival rates among those organizations” (Amezcua et al., 2013: 1628). In other words, organizational sponsorship intent to provide new firms with necessary resources and increase their chances of survival.

Organizational sponsorship can play different roles to buffer and/or bridge the new organization (Amezcua et al., 2013). Business incubators provide different services to new firms, which fit into either one or both mechanisms of organizational sponsorship (Amezcua et al., 2013). As such, our study stresses the 1) bridging dimension - the extent to which the incubator seeks to connect new organizations with external resource providers, and 2) the buffering dimension, which is activities that involve the direct transfer of knowledge, capital and labor to new organizations (Amezcua et al., 2013).
This paper contributes to the literature in at least three ways: First, this study add to the literature on business incubators and their role in the entrepreneurial process, by examining the support that is offered by the incubator and used by tenant firms, and their relative impact on firm’s accumulation of internal and external resources.

Second, this study contribute to the literature on organizational sponsorship by 1) identifying particular bridging and buffering mechanisms and 2) the short-term effects of those mechanisms. Previous studies have looked at the effect of sponsorship on firm survival (Amezcuca et al., 2013). This study takes a step back and look at new firms’ resource accumulation that may lead to firm survival. While firm survival depends on several factors, measuring the potential proximal outcomes (i.e. resource accumulation) of bridging and buffering mechanisms can allow for a better understanding of the mechanism leading to a particular outcome in the development process. As Wiklund and Shepherd (2011: 938) argue, “proximal outcome variables...allow for a better understanding of the mechanisms bringing about a phenomenon and for potentially stronger empirical results because there is less unobserved heterogeneity in the investigated relationships”.

Third, there is a need for more studies on incubators from the perspective of the firm, as the majority of studies on the impact of incubators have a supply side focus (Aaboen, 2009; Bruneel et al., 2012; McAdam & McAdam, 2008). We contribute to the literature by taking a demand side perspective, looking at the impact of incubators as perceived by the entrepreneur. Results will have implications for incubators, firms and policy makers.

This study begins with a short review of the incubator literature. This is followed by a discussion on organizational sponsorship, the sponsorship mechanisms involved in the incubation process, and then hypotheses are derived. An outline of the research methodology and data collection are presented, followed by results, discussion, conclusions and implications.
THEORY AND HYPOTHESES

Business Incubators

Entrepreneurs in new firms are often under-resourced (Stevenson & Jarillo, 1990), and face challenges in gathering the necessary resources to pursue their business opportunities (Aldrich & Fiol, 1994; Baker & Nelson, 2005; Shane & Venkataraman, 2000; Singh, Tucker, & House, 1986). They need support in gathering capital investment, develop their new role and business model and pursue suppliers and customers (Katila, Rosenberger, & Eisenhardt, 2008; Lounsbury & Glynn, 2001; Zott & Huy, 2007). Business incubators are created to help young firms to gather the necessary resources to survive and grow (Aernoudt, 2004), by promoting industry linkages and providing assistance in the formation and development of these firms (Westhead, Batstone, & Martin, 2000). A business incubator can be defined as: “a shared office-space facility that seeks to provide its incubatees (i.e. “portfolio-“, or “client” or “tenant-companies”) with a strategic, value-adding intervention system (i.e. business incubation) of monitoring and business assistance” (Hackett & Dilts, 2004: 57).

Business incubators consist of a network of individuals and organizations, and the incubator uses these networks and their knowledge to provide the new firm with necessary resources and assistance in developing the firm. The business incubator offer a combination of services; office-space, business support assistance and networking, to facilitate firm development and increase the chances of tenant firms survival (Bruneel et al., 2012; Hackett & Dilts, 2004). Incubator counsellors need both business and technical skills to assist new technology-based firms (Hackett & Dilts, 2004; Mian, 1996). Business assistance includes support such as business planning, tax assistance, personnel recruiting, marketing, management, accounting, general legal expertise, accessing financial capital and accessing business connections (Mian, 1996; Scillitoe &
Business incubators also serve as brokers between investors and entrepreneurs. They help the entrepreneur to articulate business ideas appropriately for potential investors (McAdam & Marlow, 2011). These various roles require a high level of capabilities from the incubators counsellors. The incubator should offer assistance in management, legal advice, operational know-how and access to new markets and external financing (Aernoudt, 2004).

Policy makers view incubators as a mechanism to accelerate new firm performance (Bergek & Norrman, 2008; Bruneel et al., 2012), and has therefore harvested significant attention from researchers and considerable support from governments and policy makers. However, there is disagreement on whether or not incubators add value to new firms. These conflicting views, can be explained with the lack of a consistent definition of performance, and how to measure, evaluate and compare incubator performance (Phan, Siegel, & Wright, 2005). The majority of incubator performance studies focus on outcome, without considering how these incubators assist incubated firms. Earlier studies are therefore unclear in regards to which incubation mechanism(s) they see the effect of. In the following sections, we argue that an organizational sponsorship perspective is useful to understand how incubator support influence the resource accumulation of incubated firms.

Organizational Sponsorship

Flynn (1993b) refers to organizational sponsorship as government, business and/or university efforts to support and contribute to the survival of new ventures, and includes business incubators, venture capital funds, tax subsidization and other governmental initiatives. Flynn (1993b: 51) states that the attempt to create a “richer, more nurturing environment can be defined as the process of sponsorship”. Because new organizations often face challenges in
adopting to the environment, organizational sponsorship efforts attempts to diminish the threats that new organizations face (Amezcua et al., 2013; Flynn, 1993a; Jourdan & Kivleniece, 2016). Organizational sponsorship tries to help with the structural imbalance for new organizations to access resources (Amezcua et al., 2013), and give them a more stable level of resources (Flynn, 1993a).

Organizational sponsorship is believed to increase the rate of survival by giving new ventures access to necessary resources and information (Flynn, 1993a; Seidel, Packalen, & O'Mahony, 2016), and by creating a cohort of entrepreneurs who can learn from each other about business (Motoyama & Knowlton, 2016). Two mechanisms can describe why organizational sponsorship increase survival: Organizational sponsorship can play a buffering role or a bridging role in the formation of the new venture (Amezcua et al., 2013). Business incubators can buffer the new organization by helping the organization accumulate resources and build operating procedures, and thereby make the organization less dependent on the external environment (Amezcua et al., 2013). Organizational sponsorship can also play a bridging role, were the sponsor connects the new firm to external resource providers.

Brush et al. (2001) discusses the importance of initial resource development and composition, for the success and survival of new organizations. Therefore, human, social, financial, physical, technological and organizational resources must be developed (Brush et al., 2001; Greene & Brown, 1997). However, this can be challenging for a new organization, as it has to develop an initial resource base from scratch, which is a complex task. New firms need to accumulate both external and internal resources. Based on ideas of the resource-based theory to entrepreneurship, Alvarez and Busenitz (2001) extends the concepts of resources to include various cognitive abilities possessed by entrepreneurs to create and combine new resources. They describe how activities and skills is seen as resources, and includes opportunity-seeking behavior,
combining and organizing resources, assembling the resources into a firm, and creating heterogeneous outputs that are superior to the market. The buffering mechanism focuses on the internal development of resources, while the bridging mechanism on gathering resources externally. The two mechanisms also differ in respect to how they perceive the environment and sponsorship activities. Figure 1 provides our research model with the hypothesized relationships between bridging and buffering mechanisms and resource accumulation. The model also illustrate the relationship between resource accumulation and new organizational survival. The following sections discuss the bridging and buffering dimensions of organizational sponsorship and their connection to resources.

Bridging mechanisms. The bridging mechanism focuses on enhancing inter-organizational relationships between the new organization and external resource providers. The new organization can have difficulties attracting resources, because it lacks legitimacy (Packalen, 2007), reputation and a track record (Brush et al., 2001). The sponsor serves as a connective intermediary between the social network of the sponsor and the new organization, and encourages the new organization to attract resources from the external environment, by engaging actively in it (Amezúa et al., 2013).

Organizational sponsorship increases social capital, by connecting the new venture with other organizations and sources of knowledge (Flynn, 1993b). The new organization can thereby build and increase its “social capital”, by improving the quantity and quality of its relationships to the external environment (Amezúa et al., 2013). Firms should according to Inkpen and Tsang
(2005) proactively build social capital to attain efficient knowledge transfer. Through building social capital the likelihood of attracting resources and knowledge increases, and new organizations can improve competitiveness and chances of survival (Amezcua et al., 2013).

The enhancement of good relations can signal a leading “edge” in the market and thereby increase legitimacy (Zimmerman & Zeitz, 2002), which Stinchcombe (1965) describes as the cure for the “liability of newness” that new organizations face. Legitimacy is often crucial for the survival of new organizations (Starr & MacMillan, 1990), and an important intangible resource that enables organizations to acquire other resources (Zimmerman & Zeitz, 2002). With increased legitimacy, external actors are more motivated to provide the new organization the required resources, because they believe the organization is competent and essential (Zimmerman & Zeitz, 2002). Thus, bridging encourages new firms to actively engage in the environment to attract resources and knowledge rather than to buffer and separate themselves (Yli-Renko, Autio, & Sapienza, 2001). By enhancing the quantity and quality of relationships between the firm and other firms, sponsorship through bridging increases the nascent organizations social capital (Flynn, 1993a).

Business incubators have been recognized in the literature as a mechanism for embedding firms in entrepreneurial networks (Bøllingtoft, 2012; Bøllingtoft & Ulhøi, 2005; Hackett & Dilts, 2004; Hansen, Chesbrough, Nohria, & Sull, 2000; McAdam & McAdam, 2006; Schwartz & Hornych, 2008). In addition to offer startups office space and shared business services, the opportunity to network with other firms may be one of the most important services offered by a business incubator (Hansen et al., 2000). A solid network is one of the key factors for the emergence and development of new ventures and important for the survival and growth of new firms because they can provide access to knowledge and resources (Bøllingtoft, 2012). Networking support by the incubator involve connecting the firm with external actors (Bruneel et
Incubators can provide a bridge between the firms and the environment (Peters, Rice, & Sundararajan, 2004) with a purpose of leveraging entrepreneurial talent and resources (Bøllingtoft, 2012; Bøllingtoft & Ulhøi, 2005; Grimaldi & Grandi, 2005). Bøllingtoft and Ulhøi (2005) state that incubators should focus on developing business networks that can help startups chance of survival, which includes acting as an intermediary between the startups and networks of external potential partners, such as customers, suppliers, financial and funding institutions (Schwartz & Hornych, 2010). By emphasizing the facilitation of inter-organizational relationships, thereby establishing a conduit through which essential resources can flow more efficiently between external resource providers and new organizations (Amezcua et al., 2013) – can increase competitiveness and probability of survival (Dyer & Singh, 1998).

McAdam and McAdam (2006) states that incubators have the potential to yield substantial intangible benefits such as credibility and the promotion of partnerships between the firm and other external partners. Access to such networks can thereby help the firm to overcome the liabilities associated with newness and smallness, and support the development of cooperative relationships, which are important in the early startup and development stages of new firms. Network support by the incubator is important to the entrepreneurs because it has the potential to link firms with potential partners, other entrepreneurs, investors and funding institutions, and thereby help firms acquire external resources. Based on the above discussion, we suggest the following hypothesis:

Hypothesis 1. There is a positive relationship between incubated firms’ use of bridging support mechanisms, and their accumulation of external resources.
While bridging mechanisms provided by incubators is suggested to be influencing the accumulation of new firm’s external resources, it may also facilitate the development of internal resources. According to (Bruneel et al., 2012), lack of experienced management teams and capabilities hinders new firms development and subsequent growth. Firms can however overcome such resource constraints through networking. By providing access to networks and external partners, incubators may contribute to helping the firms extend their internal resource base, as building partnerships and collaborating with other firms provides an opportunity to acquire new knowledge (Yli-Renko et al., 2001) and develop new capabilities (Lane & Lubatkin, 1998). Additionally, building knowledge and capabilities through inter-organizational relationships is also faster than if the firms have to develop such resources internally (Bruneel et al., 2012). Introducing new firms to venture capitalists and business angels, who may transfer their knowledge and expertise to the companies in which they have invested (St-Pierre, Nomo, & Pilaeva, 2011), can also play an important role in professionalizing the firms (Hellmann & Puri, 2000). Therefore, incubator support that focus on connecting firms to other individuals, organizations and networks may facilitate new knowledge, learning opportunities and contribute to helping new firms overcome their inherent resource scarcity (Bruneel et al., 2012). The following hypothesis is suggested:

Hypothesis 2. There is a positive relationship between incubated firms’ use of bridging support mechanisms, and their accumulation of internal resources.

**Buffering mechanisms.** Sponsorship can provide particular interventions that buffer new firms and their dependency upon the external environment for resources (Amezcua et al., 2013). The external environment have been characterized as a locus of potential liabilities and threats for
new firms (Shepherd, Douglas, & Shanley, 2000), where buffering can act as a mechanism that allow firms to isolate themselves from the environment in order to form and develop without having to meet these threats (Amezcua et al., 2013). The role of the incubator here is to maintain a protective environment that allows new firms to develop their internal resources and minimize their dependency on external resources. Shane and Venkataraman (2000) emphasize the need and importance for new organizations to acquire basic resources, such as money, people and information in the establishment of new ventures.

The buffering mechanism of sponsorship will help the new firm to develop an initial resource base, by focusing on developing internal resources. The sponsor acts like a “shelter” for the new organization by providing the new organization with access to initial resources in a protective environment, and allowing the new organization to develop internal resources (Amezcua et al., 2013). So the sponsor protect the new organization from “running out of fuel” before they are able to attract resources from the environment (Amezcua et al., 2013). Thereby, the buffering mechanism is supposed to diminish the need for initial external resources, by buffering the firms relationship to the external environment (Dalton, Daily, Johnson, & Ellstrand, 1999). In other words, buffering emphasize new ventures ability to be independent from external resources (Pfeffer & Salancik, 1978). Flynn (1993a) realizes that new organizations can be overprotected in a stable environment, and therefore have challenges adapting to a uncertain environment.

A sample of buffering activities are tax shelters, subsidized office space, small business loans and consulting services (Amezcua et al., 2013). Consulting services are the direct transfer of knowledge between the incubator management and the new firm (Scillitoe & Chakrabarti, 2010). The incubator management offer consulting/mentoring services in different areas, such as assistance in developing business and marketing plans (Seidel et al., 2016). Incubators also
provide assistance in building management teams (Grimaldi & Grandi, 2005), recruiting personnel, tax assistance, marketing, management, accounting, general legal expertise (Mian, 1996; Scillitoe & Chakrabarti, 2010). Incubator counsellors need both business and technical skills to assist new technology-based firms (Hackett & Dilts, 2004; Mian, 1996). Business incubators also serve as brokers between investors and entrepreneurs and help the entrepreneur to articulate business ideas appropriately for potential investors (McAdam & Marlow, 2011). These various roles requires a high level of capabilities from the incubators counsellors. Some incubators provide assistance from early stage business planning to the firm is independent, while others specialize on a given phase (Grimaldi & Grandi, 2005). Consulting from the incubator give the new firm needed advice and knowledge, to develop internal resources.

In addition to consulting assistance, incubators provide shared office space and administrative services (Grimaldi & Grandi, 2005). Seidel et al. (2016) argue that infrastructure is the least important service offered by the incubator. Some incubators also offer capital directly to the new firm (Amezcua et al., 2013; Seidel et al., 2016). Subsidized office space and back office support provided from the incubator can minimize the cash burn for new firms, thereby protecting the firm from their environment (Amezcua et al., 2013). Office space, administrative services and capital provided by the incubator, buffer the new organization by giving it time to focus on developing their internal resources.

Through buffering mechanisms, new firms will be able to assemble initial resources and develop basic operating routines, which allows them to preserve their start-up capital and lower their need for initial external resources to start and maintain operations. As such, we hypothesize that:

Hypothesis 3. There is a positive relationship between incubated firms’ use of buffering support mechanisms, and their accumulation of internal resources.
DATA COLLECTION AND RESEARCH METHODOLOGY

Sample

This research is based on a web-based survey of firms that had a contractual relationship with an incubator supported by Siva (The Industrial Development Corporation of Norway), in 2015. Siva supports R&D and Industry incubators, in total 40 incubators. The incubators vary in a number of factors, providing a rich and diversified incubation context appropriate for our research goals. Most of the firms located in incubators in Norway are technology-based, including university spin-offs and private innovative startups. Incubated firms in Norway vary in life-cycle stage, but most of them is in their gestation period.

We excluded firms that had been registered as part of an incubator later than December 2015, as the purpose was to only include firms that had been in the incubator long enough to report any possible impact. In 2015, there were, according to Siva, 819 incubated firms in Norway. The questionnaire survey was conducted using the web-based data collection tool QuestBack.

The incubator literature, and observations, discussions and interviews with both incubator managers and incubated firms formed the basis for the survey. We visited five incubators in spring 2015. In total, we conducted seven non-participatory observations of meetings between the incubator managers and incubated firms, seven interviews with incubator managers and 13 interviews with incubated firms. We also observed the daily activity in two of the incubators for, respectively, four and five days. Four incubated firms, one incubator manager and two employees who work in public agencies who support newly founded firms pre-tested the survey. Several colleagues also reviewed the questions.
Siva provided a list of all the firms in Siva supported incubators with email addresses of the CEOs of 798 of these firms. There was 27 invalid e-mail addresses that did not reach the intended recipient. Thus, we administered the survey to a total sample of 771 incubated firms in Norway between June and August 2016. After two email-reminders and a telephone-reminder, we ended up with answers from 252 firms, a response rate of approx. 33 %.

Variables and Measures

**Dependent variables.** The overall dependent variable in this study is resource accumulation. As mentioned earlier, we have differentiated between external and internal resources. Both measures are subjective measures, where the founders’ evaluate in what extent they have gained access to different kinds of resources on a scale of 1-7. We assumed that the founders are the best way to get information about the firms’ resource accumulation.

External resources refers to different external resources needed for firm development, such as new key employees, new directors, new customers, new suppliers, financing and access to new technology. Based on the insights from the literature review on resources necessary for successful firm development we developed a formative model with nine items for external resources. See Appendix A for specific measures. We designed the items to portray to which extent the firm during the past year had acquired these nine different resources. A one-year timeframe for the external resources construct was chosen, since we want to measure the proximal outcomes of incubation and to create a consistent scale across the sample.

Internal resources reflects different internal resources needed for firm development. Based on the suggestion that entrepreneurial cognition facilitates competitive advantage through opportunity discovery and development of the firm through its early stages (Alvarez & Busenitz,
we developed a reflective model with four items for new firms internal resources. Respondents were asked to state on a scale from 1 (strongly disagree) to 7 (strongly agree), if different statements describes the company as of today. See Appendix B for specific statements. Exploratory factor analysis identified all the four items as one latent factor with factor loadings of 0.80, 0.80, 0.83 and 0.77 (Eigen value=2.55; 63.79% of variance explained). Cronbach’s alpha is 0.81.

**Main explanatory variables.** Our two main explanatory variables measure use of incubator services. The variable bridging involves if incubated firms receive bridging support mechanisms from the incubator. More precisely, the incubator connect the new firm with external resource providers. Examples of external resource providers are industrial partners, established companies, other entrepreneurs, researchers, banks, investors, customers and suppliers. Based on the insights from organizational sponsorship and network theory, we constructed a measure for bridging, where the respondents could state whether the incubator offer activities to set companies in contact with eight different resource providers. See Appendix C for the specific question and categories. Respondents could state the answers “yes, and use/have used activity”, “yes, but have not used activity”, “no” and “don’t know”. This variable counts the number of times a respondent answer, “yes, and use/have used”. It ranges from 0 (none of the above-mentioned activities are used) to 8 (all activities are used).

The variable buffering involves the direct transfer of knowledge and resources between the incubator management and the new firm, such as consulting and shared office space and administrative services. We constructed a measure for buffering based on the organizational sponsorship literature. Respondents could state whether the incubator offer advice and/or assistance on seven different categories. See Appendix C for specific measures. Respondents could state the answers “yes, and use/have used service”, “yes, but have not used service”, “no”
and “don’t know”. The variable counts the number of times a respondent answer, “yes, and use/have used”. It ranges from 0 (none of the above-mentioned services are used) to 7 (all services are used).

**Control variables.** We included several control variables that concerned the entrepreneurs and the firms, such as social capital and entrepreneurial experience prior to sponsorship, as well as team members and time spent in incubator.

Social capital prior to sponsorship refers to the extent of the firm’s networks and relations with individuals that could provide resources prior to entering the incubator. A large network before incubation can imply that the firm/founder has a high level of social capital prior to sponsorship, which means that they are better at attracting resources than firms with low levels of social capital. Respondents could state there agreement on a scale from 1 (very limited) to 7 (very extensive) on the following six categories: “(Potential) customers”, “(Potential) suppliers”, “Public financing institutions (e.g. Innovation Norway, the Research Council etc.)”, “(Potential) investors”, “(Potential) collaborators” and “Competitors”.

Prior entrepreneurial experience may be important in relation to the ability of new firms to accumulate both internal and external resources. For instance, experienced entrepreneurs have been associated with the “entrepreneurial mindset” which induces them to passionately seek and exploit the best opportunities (Ucbasaran, Westhead, Wright, & Binks, 2003), while industry and management experience have especially been said to be important in relation to receiving equity funding (MacMillan, Siegel, & Narasimha, 1986). Thus, prior experience could either minimize the firms need for incubator assistance and thereby reduce its effect, or it could enhance it as the firms are better predisposed to accumulate the resources that are offered. Experience prior to sponsorship is therefore a summated scale of how many years of experience the founder had to different types of firm experience, such as leadership, product/service development, market and
sales, business development, production/distribution of product/services and entrepreneurship, before the firm became an incubator firm.

Empirical studies have found that firms founded by teams are more successful than firms that are founded by individuals (Cooper & Bruno, 1977). Particularly in knowledge-intensive dynamic industries, teams are claimed to be stronger at establishing more powerful networks (Lechler, 2001). Thus, we control for team by creating a binary variable, which involves if the firm is a team start-up or is founded by one person.

Time in incubator reflects how long the firm has been affiliated/received assistance from the incubator, which could potentially influence the effect of assistance on the firm’s resource accumulation (Rothaermel & Thursby, 2005). The respondents could choose between five different answers: 0-6 months, 7-12 months, 13-24 months, 25-36 months and More than 36 months. The time in incubator variable was included as a control variable, because we expect that the longer the firm has received assistance from the incubator, the higher access to resources.

Prior to regression analysis, correlation and multicollinearity analyses were performed (Table 1). In the correlation analysis, we see that bridging and buffering are significantly, highly correlated (0.53**). This means that new firms that receive bridging support also receive buffering support. Table 1 also offer venture descriptives for the sample. In summary, 64% of the ventures were team start-ups. The ventures had been affiliated with the incubator for an average of 1-2 years, and the founder had over three years of experience in different types of firm experience and an average network before incubation. For the dependent variables, there are no issues with multicollinearity (VIF’s ranged from 1.02 to 1.20).

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RESULTS

Regression analysis was used to examine our research question and test our hypotheses. Tables 2 and 3 present the hierarchical regression results for this study for two dependent variables, external and internal resources. Table 2 presents Models 1-2 for the dependent variable external resources, regressed on the control variables and the independent variable, bridging. Table 3 presents Models 3-5 for the dependent variable internal resources, regressed on the control and independent variables, bridging and buffering.

For Table 2, the two models were statistically significant. Model 1 presents the results of the dependent variable, external resources, regressed on the four control variables, social capital prior to sponsorship, experience prior to sponsorship, team and time in incubator. Model 1 explains 9.4% of the variance and it was significant (F = 7.491; p < 0.01). This model suggests that the firms’ social capital prior to sponsorship (B = 0.22; p < 0.01) and the time the firm has spent in the incubator (B = 0.24; p < 0.01) were related to acquiring external resources for incubated firms. The founders experience prior to sponsorship and if the firm is a team start-up or not, were not significant.

Model 2 presents the external resources, regressed on the control variables and bridging as the main effect variable. Model 2 was also found to be significant (F = 8.409; p < 0.01) and explains 12.9% of the variance. Results of this model suggest that the bridging mechanism provided from the incubator management are important for acquiring external resources (B = 0.20; p < 0.01), supporting hypothesis 1.
Table 3 presents the regression results for Model 3-5, with the two mechanisms bridging and buffering on internal resources. For Table 3, all three models were statistically significant. Model 3 presents the results of the dependent variable, internal resources, regressed on the four control variables. Model 3 was significant (F = 6.933; p < 0.01) and explains 8.6 % of the variance. This model suggest that the firms’ social capital prior to sponsorship (B = 0.23; p < 0.01), the founders experience prior to sponsorship (B = 0.16; p < 0.05) and the time the firm has spent in the incubator (B = 0.17; p < 0.01) were related to building internal resources. The binary variable team, if the firm was a team start-up or not, were not significant.

Model 4 presents the dependent variable, internal resources, regressed on the control variables and bridging as the main effect variable. This model was also significant (F = 7.028; p < 0.01) and it explains 10.7 % of the variance. Results of this model suggest that the bridging mechanism provided from the incubator management are important for building internal resources (B = 0.16; p < 0.01), supporting hypothesis 2.

The last model, Model 5, presents internal resources regressed on buffering as the independent variable. Model 5 was also significant (F = 6.656; p < 0.01) and explains 10.1 % of the variance. The results of this model suggest that the buffering mechanism provided from the incubator management enable the building of internal resources (B = 0.14; p < 0.05), supporting hypothesis 3.

**DISCUSSION AND CONCLUSION**

In this paper, we applied a sponsorship framework to examine entrepreneurs use of various incubator support mechanisms, and its potential influence on their firm`s accumulation of internal and external resources. Resource accumulation is important for new firm survival, but it can be challenging for a new firm to develop a resource base from scratch (Brush et al., 2001).
The purpose of business incubators are to provide new firms with necessary resources (Bøllingtoft, 2012). Therefore, this study have focused on incubator support and new firms resource accumulation.

Earlier work on the effect of business incubators has been widely debated (Autio & Klofsten, 1998; Phan et al., 2005; Schwartz, 2013), claiming that incubator accelerate the emergence of successful firms (Bergek & Norrman, 2008; Bruneel et al., 2012), to doubts about the impact of incubation on firm survival (Schwartz, 2013). In this paper, we add to this literature by using a sponsorship framework to show the mechanism/s that potentially have an effect on new firms resource accumulation, thus explaining which particular support mechanism influencing their accumulation of internal and external resources.

While the sponsorship framework has mainly focused upon measuring the impact of incubator support on firm survival (Amezcua et al., 2013), we take a step back and look at the potential short-term effect of incubator support mechanisms. Examining the incubator support that is used by the firm during the gestation period, and the relative resources accumulated by the firms in this period, allowed us to see whether there is a relationship between particular support mechanisms and the accumulation of resources that could potentially build a more stable foundation, from which the firms could continue to develop. Firms that has succeeded in accumulating necessary resources and has gone through a number of crucial phases to attain these, may easier overcome the vulnerability that firms often possess in their early life (Davidsson & Klofsten, 2003).

In the incubation process, incubator managers use different mechanisms to buffer and/or bridge the new organization. These mechanisms provide new firms with necessary resources to help them overcome the liabilities of newness and smallness. However, the link between sponsorship within incubators and type of resources gained are unclear. Thus, similar to Amezcua
et al. (2013) we divided incubator support into two separate mechanisms, buffering and bridging.
We identified particular bridging and buffering mechanisms used by new firms.

The bridging mechanism for this study involves the extent the sponsor connects the new organization with external resource providers, which we suggest could influence the firm`s accumulation of both internal and external resources. Literature on business incubators have acknowledged the importance of embedding the new organization in networks (Bøllingtoft, 2012; Bøllingtoft & Ulhøi, 2005; McAdam & Marlow, 2008; McAdam & McAdam, 2006), as networks could facilitate the achievement of credibility through alliances and therefore provide access to resources. Networks may also provide access to new ideas, facilitate collective learning (Jack, 2005; McAdam & Marlow, 2008) and provide access to information, knowledge and expertise (Bøllingtoft, 2012). Thus, our results acknowledge and support these arguments by finding a positive relationship between bridging mechanisms and firm`s accumulation of both internal and external resources.

The buffering mechanism in this study involves counseling provided directly from the incubator manager, as well as infrastructure to incubated firms, which we suggest influence firm`s accumulation of internal resources. Amezcua et al. (2013) claim that sponsors acting like a “shelter” for the new organization by providing access to initial resources in a protective environment, allows the new firm to develop internal resources. Similarly, Bruneel et al. (2012) states that firm`s profit from incubator infrastructure as they do not have to put effort and time in managing complementary services, allowing them to concentrate on their core activities. They further argue that business support services such as coaching and training within incubators accelerate the firm`s learning and skill development processes. The results from this study support this argument, by finding a relationship between buffering mechanisms and the firm`s accumulation of internal resources.
This study show that incubators are actually able to help firms build resources through the support services they offer. Firms that use these services, benefit from it, while companies that do not actively use the services of the incubator does not get this effect. Variation between incubators (what they offer) and firms (what they demand) leads to variation in the results, which may help to explain variation in studies that only looks at the effect of being in an incubator.

Our findings have a number of implications for incubator managers, entrepreneurs and policy makers and organizations that support incubators. First, this study offer insights into which mechanisms enable firms to accumulate internal and external resources. We therefore suggest incubator managers acknowledge their potential influence and plan their strategy according to the firms resource need. For entrepreneurs, the actual use of services offered by the incubator could determine the extent of resources accumulated in the gestation process. This suggest that one way to overcome their liabilities is to take advantage of the resources that are provided, and knowing how each mechanism could benefit their development. For policy makers and those interested in stimulating entrepreneurial development, using insights from this study, one can move beyond the question regarding incubators effect on long-term survival, which can be the cause of several aspects, to acknowledge that they could have a positive impact in the early development process of new entrepreneurial firms.

Although this study provides important insights into the relationship between incubator support and firm’s resource accumulation, it has limitations. First, this is a cross-sectional study. We can only analyze at one point in time. It would therefore be interesting for future research to examine whether the resource accumulation of the firms actually contributes to survival. Second, we have only analyzed the effect of external network (bridging mechanism) and business support and infrastructure (buffering mechanisms) on new firms’ resource accumulation. Future research
could benefit from including the incubators internal network, as one dimension that could influence the tenant firm’s accumulation of resources.
REFERENCES


## Tables

### Table 1. Descriptive Statistics and Correlation Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>1. External resources</td>
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<td>1.41</td>
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<td></td>
<td></td>
<td></td>
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<td>1.33</td>
<td>.45**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. Bridging</td>
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<td>2.20</td>
<td>.20**</td>
<td>.14*</td>
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<td></td>
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</tr>
<tr>
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<td>1.99</td>
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<td>.13*</td>
<td>.53**</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5. Social capital</td>
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<td>.20**</td>
<td>.23**</td>
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<td>- .12*</td>
<td></td>
<td></td>
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</tr>
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<td>6. Experience</td>
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<td>1.64</td>
<td>.13*</td>
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<td>.01</td>
<td>.31**</td>
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<td>7. Team</td>
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<td>1</td>
<td>.64</td>
<td>.48</td>
<td>.13*</td>
<td>.01</td>
<td>.00</td>
<td>- .07</td>
<td>.10*</td>
<td>.08</td>
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</tr>
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<td>8. Time in incubator</td>
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<td>5</td>
<td>2.89</td>
<td>1.16</td>
<td>.16**</td>
<td>.06</td>
<td>.25**</td>
<td>.19**</td>
<td>- .25**</td>
<td>- .14*</td>
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*p < .10

* *p < .05

** **p < .01
Table 2. Hierarchical Regression Results - External Resources

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1 std.coeff. (std.error)</th>
<th>Model 2 std.coeff. (std.error)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social capital prior to sponsorship</td>
<td>.22** (.08)</td>
<td>.25** (.08)</td>
</tr>
<tr>
<td>Experience prior to sponsorship</td>
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<td>.09 (.05)</td>
</tr>
<tr>
<td>Team</td>
<td>.08 (.18)</td>
<td>.08 (.18)</td>
</tr>
<tr>
<td>Time in incubator</td>
<td>.24** (.08)</td>
<td>.19** (.08)</td>
</tr>
<tr>
<td>Bridging</td>
<td></td>
<td>.20** (.04)</td>
</tr>
<tr>
<td>F-value</td>
<td>7.491**</td>
<td>8.409**</td>
</tr>
<tr>
<td>R²</td>
<td>.108</td>
<td>.146</td>
</tr>
<tr>
<td>Adjusted R²</td>
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<td>.129</td>
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<tr>
<td>R² change</td>
<td></td>
<td>.038**</td>
</tr>
</tbody>
</table>

* p < .10
* p < .05
** p < .01

Table 3. Hierarchical Regression Results - Internal Resources

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 3 std.coeff. (std.error)</th>
<th>Model 4 std.coeff. (std.error)</th>
<th>Model 5 std.coeff. (std.error)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social capital prior to sponsorship</td>
<td>.23** (.08)</td>
<td>.26** (.08)</td>
<td>.24** (.08)</td>
</tr>
<tr>
<td>Experience prior to sponsorship</td>
<td>.16* (.05)</td>
<td>.15* (.05)</td>
<td>.15* (.05)</td>
</tr>
<tr>
<td>Team</td>
<td>-.05 (.17)</td>
<td>-.05 (.17)</td>
<td>-.04 (.17)</td>
</tr>
<tr>
<td>Time in incubator</td>
<td>.17** (.07)</td>
<td>.13* (.07)</td>
<td>.14* (.07)</td>
</tr>
<tr>
<td>Bridging</td>
<td></td>
<td>.16** (.04)</td>
<td></td>
</tr>
<tr>
<td>Buffering</td>
<td></td>
<td></td>
<td>.14* (.04)</td>
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<tr>
<td>F-value</td>
<td>6.933**</td>
<td>7.028**</td>
<td>6.656**</td>
</tr>
<tr>
<td>R²</td>
<td>.101</td>
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<tr>
<td>Adjusted R²</td>
<td>.086</td>
<td>.107</td>
<td>.101</td>
</tr>
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<td>R² change</td>
<td></td>
<td>.024**</td>
<td>.018*</td>
</tr>
</tbody>
</table>

* p < .10
* p < .05
** p < .01
FIGURES

Sponsorship mechanisms  Resource accumulation

Figure 1. Sponsorship effects on resource accumulation
APPENDIXES

Appendix A. External Resources

<table>
<thead>
<tr>
<th>External resources:</th>
<th>To what extent has the company during the past year:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acquired new key employees</td>
</tr>
<tr>
<td></td>
<td>Acquired new directors</td>
</tr>
<tr>
<td></td>
<td>Acquired new customers in the same market</td>
</tr>
<tr>
<td></td>
<td>Acquired foothold in new markets</td>
</tr>
<tr>
<td></td>
<td>Acquired new suppliers</td>
</tr>
<tr>
<td></td>
<td>Acquired new partners</td>
</tr>
<tr>
<td></td>
<td>Received public financing (Innovation Norway, the Research Council and the like)</td>
</tr>
<tr>
<td></td>
<td>Acquired new owners (investors, investment funds or similar)</td>
</tr>
<tr>
<td></td>
<td>Acquired access to new technology</td>
</tr>
</tbody>
</table>

All items are measured on a Likert scale from 1 = a very small extent to 7 = a very large extent.

---

Appendix B. Internal Resources

<table>
<thead>
<tr>
<th>Internal resources:</th>
<th>We develop procedures to explore new product/service-ideas.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>We process our ideas for products/services.</td>
</tr>
<tr>
<td></td>
<td>We develop effective procedures to produce/deliver our products/services.</td>
</tr>
<tr>
<td></td>
<td>We develop our products with the aim of lowering production costs or improve quality.</td>
</tr>
</tbody>
</table>

All items are measured on a Likert scale from 1 = strongly disagree to 7 = strongly agree.

---

Appendix C. Incubator Support: Bridging and Buffering

<table>
<thead>
<tr>
<th>Bridging:</th>
<th>Does the incubator offer activities to set companies in contact with:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Industrial partners</td>
</tr>
<tr>
<td></td>
<td>Established companies</td>
</tr>
<tr>
<td></td>
<td>Other entrepreneurs</td>
</tr>
<tr>
<td></td>
<td>Research and innovation communities (researchers, university, institute)</td>
</tr>
<tr>
<td></td>
<td>Financial sources (eg. bank, Innovation Norway, the Research Council, investors, funds)</td>
</tr>
<tr>
<td></td>
<td>Commercialization Stakeholders (eg. TTO - Technology Transfer Office)</td>
</tr>
<tr>
<td></td>
<td>New customers</td>
</tr>
<tr>
<td></td>
<td>New suppliers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Buffering:</th>
<th>Does the incubator offer the following (advice and/or assistance):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Organizational development (eg. recruitment of staff, procurement of resources)</td>
</tr>
<tr>
<td></td>
<td>Financing (eg. help with funding requests)</td>
</tr>
<tr>
<td></td>
<td>Business development (eg. writing business plan, developing a business model, strategy development etc.)</td>
</tr>
<tr>
<td></td>
<td>Development of financing/administrative procedures (accounting, budgeting, billing)</td>
</tr>
<tr>
<td></td>
<td>Effective joint administrative services</td>
</tr>
<tr>
<td></td>
<td>Competitive premises</td>
</tr>
<tr>
<td></td>
<td>Funding (money, capital)</td>
</tr>
</tbody>
</table>

Respondents could answer; “yes, and use/have used activity/service”, “yes, but have not used activity/service”, “no” and “don’t know”.

32