Beyond the water cooler

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Beyond the water cooler: using socialization to understand use and impact of networking services on collaboration in a business incubator

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Scholars and policymakers claim that Business Incubators (BIs) add value by facilitating internal cooperation between tenant firms. Taking a tenant perspective, this research investigates the impact of a tenant’s length of BI tenure on the use of formal internal networking services the BI management provides, and then on the tenant’s level of intra-BI cooperation. The premise is that BI tenants use and benefit more from formal internal networking services when their socialization through participation in BI informal networking activities is low. When socialization is high they will enjoy a stronger direct effect of tenant tenure on cooperation with other tenants. Findings from data collected from a Dutch BI confirm the premise of our moderated-mediation model. Results also show that both mechanisms complement each other and that each contributes significantly to tenants’ sales growth. It lends support to the effectiveness of BI formal internal networking services, but also stresses the importance of socialization through informal networking activities.

1. Introduction

Business incubators (BIs) are a popular tool for policy makers to stimulate the innovativeness of a region or to commercialize university research results (Bruneel et al., 2012). BIs aim to accelerate start-ups’ success by co-locating them and offering support activities, including formal networking services. Close proximity to other start-ups offers a new firm more opportunities for learning from and cooperating with business counterparts to gain momentum and accomplish early growth (Bollingtoft and Ulhøi, 2005). Characterized by unproven technology and new products and/or services, a lack of market reputation, and limited knowledge of customers or limited access to customers, startups typically struggle to establish themselves (DeKinder and Kohli, 2008).

Despite several decades of research much ambiguity remains regarding the importance and role of the internal BI network and cooperation (Tötterman and Sten, 2005; Aaboen, 2009). Although the vast majority of tenants indicate that they came to an incubator...
with the expectation of collaboration (Sá and Lee, 2012), research also shows that many incubator-initiated services, for example, formal networking events, cannot compensate for barriers of communication and cooperation (Bakouros et al., 2002; Chan and Lau, 2005). The problem may be that networking services are often driven by BI management’s capability to muster support and mobilize contacts rather than by the BI tenants’ needs or the proven effectiveness of approaches (Soetanto and Jack, 2013). Most importantly, however, “...there is a lack of studies addressing evidence relating to the actual networking and cooperation activities taking place among tenants within incubators... [using a] tenant perspective...” (Bøllingtoft, 2012, pp. 304–305).

Interestingly, recent empirical results from Ebbers (2014) showed a positive correlation between the number of months a firm had spent in an incubator and its level of internal collaboration, that is, contracting. However, neither a firm’s networking orientation nor third-party referral could explain this positive effect. We want to know more about the mechanisms underlying the relationship. For instance, what is the role of BI formal internal networking services for promoting intra-BI collaboration? Do informal internal networking activities in the BI work differently? Is, for instance, the effectiveness of BI formal internal networking services contingent on BI management’s ability to involve tenants in the BI’s informal, social networking activities?

We address this gap in the BI literature regarding the role of BI internal network and cooperation by developing and empirically testing a moderated-mediation framework (see Figure 1) focusing on the three-part relationship between (1) a tenants’ length of BI tenure (i.e., time within the BI), (2) their level of intra-BI collaboration, (partly) mediated by (3) their participation in formal internal networking services offered by BI management. We define intra-BI collaboration broadly as a tenant’s perceived level, extent, and quality of cooperation with other entrepreneurs located in the BI. Formal internal networking services comprise official events and meetings organized by the BI’s management intended to expand tenants’ internal network and jump-start their intra-BI collaboration.

The moderating aspect of our framework concerns how the use of BI formal internal networking services is contingent on the level of socialization through informal networking activities (e.g., barbecues, receptions). Socialization, defined as learning and accepting a BI’s norms and values (Smale et al., 2015), stimulates identification with the BI and its desired attitudes and behaviors (Björkman et al., 2004). Participating in informal networking activities should promote participation in formal internal networking services and lead to an increase of collaboration between tenants. However, attendance of informal, social networking activities also may increase intra-BI collaboration without tenants’ participation in formal internal networking services. Informal interactions familiarize tenants with the BI’s internal network, and best practices regarding relationship building. Aiming for efficiency tenants may decide to reduce rather than increase their involvement in the formal networking events. We will study which of the two mechanisms prevails and when.

Figure 1. Conceptual framework of tenant use of BI formal internal networking services and its consequences.
Our research contributes to the BI literature in three important ways. First, we add depth to the debate about the positive co-location or proximity effect by developing and testing a framework to understand how tenants engage in intra-BI collaboration. Most research on networking and support services within BIs have generated only descriptive models (e.g., Tötmann and Sten, 2005; McAdam and Marlow, 2007), whereas empirical research testing these models has lagged behind. We develop a model and test this model adopting a tenant perspective.

Second, we extend prior work (e.g., Ebbers, 2014) by focusing on moderated-mediation mechanisms. We explore the moderation effect of the attendance of informal networking activities on the BI’s formal internal networking services—intra-BI collaboration relationship. By studying this moderation, we extend prior work that has not, with some positive exceptions (Soetanto and Jack, 2013), accounted for contingencies (e.g., Bruneel et al., 2012; Ebbers, 2014). We draw on socialization theory to develop our hypotheses. We use this perspective to explain differences in the level of collaboration between tenants of a BI. It has been used successfully to explain how new organizational members begin to identify with a new organizational context (Van Maanen and Schein, 1979; Cable and Parsons, 2001) and when employees of subsidiaries exchange knowledge with members of a firms’ headquarters (Björkmann et al., 2004; Smale et al., 2015). We will account for the fact that BIs are loosely knit organizations with low task interdependency: a context in which norms of self-interest can easily develop (Grant and Patil, 2012).

Finally, we explore the relationship between a tenant’s intra-BI collaboration and firm growth. While most current evidence concerns respondents’ speculation about the effectiveness of these services either by BI managers or entrepreneurs (e.g., Tötmann and Sten, 2005; Al-Mubarak and Busler, 2010), we test the effect using regression analysis. By tracing the effects back to the above-mentioned mechanisms we offer insight into the actual contribution of BI formal internal networking services to tenants’ development.

The results from tenant data originating from a BI in The Netherlands largely confirm our hypotheses. The positive relationship between length of tenant BI tenure and the tenant’s intra-BI collaboration was partially mediated by tenants’ use of BI formal internal networking services, as anticipated. The relationship was moderated by tenant involvement in informal networking activities, such that an average and below-average socialization through engagement in informal networking activities bolster tenants’ use of formal internal networking services. In contrast, the positive direct effect of tenure on intra-BI collaboration only existed for tenants with average and above-average informal socialization. Finally, we also found a positive total effect of tenant tenure on sales growth through the two pathways identified.

The structure of the article is as follows: First, we discuss the theoretical background, which includes prior research outcomes, the role of formal internal network services, and the contribution of informal networking activities to new tenants’ socialization to the BI environment. Then, we present our framework and develop our hypotheses drawing on socialization theory. Next, we present the methodology of the empirical study, followed by a discussion of the results. We finish this article with implications for managers and researchers, and discuss the limitations and opportunities for future research.

2. Theoretical background

A rich literature on BI exists, with many qualitative studies describing the networking practices and outcomes inside BIs. The general tenet is that BIs offer nascent firms access to important contacts. It can help these firms to overcome their liabilities of newness and smallness by initiating cooperative relationships, which are critical in the early development stages of the venture (Lender, 2003).

Lyons (2000) recognized the importance of both external and internal contacts for the tenant firms of a BI, but particularly stressed the benefits of the internal option. The close proximity of firms within a BI promotes internal collaboration through high frequency of contact and the informal nature of their interactions. The combination of the BI context and personal contact foster trust, which benefits knowledge exchange and is a prerequisite for cooperation (Schutjens and Stam, 2003; Böllingtoft, 2012). This cooperation offers important benefits for tenants, including (i) access to new ideas, (ii) resources, and (iii) learning opportunities, as well as (iv) adding to the firm’s reputation by expanding its network and resources thus enhancing its evolution and rent-earning capabilities (Carayannis et al., 2006; McAdam and McAdam, 2006).

Early studies on BIs focused on the proximity effect and cross-fertilization (Hackett and Dilts, 2004), and showed that tenants use BIs as an internal marketplace for subcontracting and access to resources (Campbell, 1989). Recently studies showed that tenants are not primarily interested in learning new skills; rather, they are buying other firms’ competencies through business contracting (Böllingtoft and Ulhøi, 2005). Böllingtoft (2012), for instance, noted that internal cooperation between entrepreneurs in an
incubator was “characterized by the existence of a financial transaction between the companies” (p. 310).

Other research found that tenant interaction generally focused on information exchange rather than on contracting (Tötterman and Sten, 2005). Tenants sometimes were suspicious and protective of their ideas, preventing internal collaboration (McAdam and McAdam, 2008). It confirmed the BI management’s important role in selection of tenants and their socialization process. “The bottom-up business incubator is based on—and depends on—the entrepreneurs having a positive attitude toward sharing of knowledge and experience with each other as well as a positive attitude toward cooperation instead of competition” (Bøllingtoft, 2012, p. 313). BI management can use socialization mechanisms to stimulate the desired attitudes and behaviors.

2.1. The role of BI socialization

When new tenants arrive in a BI they initially will lack identification with and understanding of the activities around them. To socialize they need to be able to make sense of their new environment and will seek information about why people behave as they do. Socialization is of critical importance to any organization “because it helps to ensure the continuity of core values, and in terms of identification provides employees with a frame of reference when responding to events at work, interacting with other colleagues. . ., making sense of what they do and who they are. . ., and what the organization is about . . .” (Smale et al., 2015).

BI management should aim to socialize tenants, but this may be hard to accomplish because tenants’ relationships in the BI are determined more by co-location and opportunity than task interdependency. Under such conditions, norms of self-interest may develop that inhibit helping and knowledge sharing (Grant and Patil, 2012) with others in the BI. The self-interest and economic drive may prevent tenants from active collaboration. Only if the BI management consciously uses socialization tactics will it be able to create tenant identification with the BI and a positive intra-BI dynamic, which promotes the sharing of resources and knowledge and thus intra-BI collaboration.

Social learning theories suggest that tenants learn new behaviors and values through imitation, observing others, and from formal and informal socialization tactics (Cable and Parsons, 2001). While formal introduction programs may contribute to tenants’ socialization, Cable and Parsons (2001) found no impact of collective and formal socialization tactics on perceived fit between a person and the organization. In addition, Chatman (1991) found no contribution of formal individual training to person-organization fit. However, she did find a strong positive contribution from attending firm-sponsored social events and mentoring programs on organizational identification, a tactic highly relevant to BIs. Consistent with these prior empirical findings of the socialization literature,1 we will focus on informal socialization mechanisms, in particular socialization through participation in informal networking activities.

We posit that informal, social networking activities organized by the BI’s management, such as barbecues and receptions, play an important role in socialization of tenants within BI communities. They provide laissez-faire occasions for tenants to meet each other, and, in contrast to formal events, do not distinguish between newcomers and more experienced tenants. This particular socialization mechanism facilitates the development of interpersonal ties inside the BI, which in turn can be expected to enhance the communication between parties and knowledge transfer (Tötterman and Sten, 2005). From a knowledge-sharing perspective, the underlying rational is that the more tenants share the BI’s vision, values, and goals, the more likely they are to exchange knowledge, share resources, and ultimately, cooperate (e.g., Smale et al., 2015, pp. 447–448). Well-socialized tenants are willing to expand their internal network more quickly and effectively because they will have adequate knowledge to identify, approach, and build business relations with other tenants (e.g., Bøllingtoft, 2012, p. 312) and more actively match these network opportunities with their economic motives than less well-socialized counterparts.

Formal internal networking services also promote a BI’s values, next to offering the opportunity to learn about fellow tenants’ businesses, ambitions, and progress. Introduced by BI managers to bring tenants together and develop strong, close, and mutual relationships (Hansen et al., 2000; Tötterman and Sten, 2005; McAdam and Marlow, 2007) they are less frequent and flexible than informal activities and therefore less potent as socialization tactics (Chatman 1991; Cable and Parsons, 2001).

Differences in tenants’ level of participation in informal networking activities may explain different accounts in the literature regarding social encounters inside a BI and the effect on tenant cooperation.

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1 Organizational identification refers to the process of identifying with the goals, values, and norms present within a specific organization (e.g., Wieseke et al., 2009). So, organizational identification is the underlying process of socialization.
McAdam and Marlow (2007) cite a respondent, noting that: “when you are new and do not know anybody it is very difficult to relate to the other people within the building. . . . Most of . . . firms. . . . stay in their own groups. . . . it’s very difficult to network in that kind of situation” (p. 372). In contrast, Van der Borgh et al. (2012) report the benefits of informal activities or services, “I like networking via the Business Lounge. It’s easy to get into contact with other people and companies, so that one can identify with the high tech campus” (p. 160). Also the observation of prior research that tenants generally “enjoy . . . informal happenings, where they learn to know each other better” and that these activities stimulated cooperation between them (Tötterman and Sten, 2005, p. 498) suggests that informal socialization is important. We present our model and hypotheses next.

3. Framework and development of hypotheses

Figure 1 shows the moderated-mediation framework that we developed, based on the above discussion. As the figure shows, we anticipate the relationship between length of tenant BI tenure (time in the incubator) and intra-BI collaboration to be partially mediated by the tenant’s use of the formal internal networking services the management of the BI offers aimed at promoting intra-BI collaboration. Both the direct and indirect effects are expected to be moderated by the tenant’s level of socialization through participation in the BI’s informal networking activities. Finally, intra-BI collaboration is anticipated to positively impact the tenant firm’s sales growth. Given the abundant level of support for this final positive participation by establishing a shared set of values, objectives, and beliefs across tenants, providing them with a sense of having a shared mission and unitary BI culture (Hedlund and Kogut, 1993). These shared goals and values make it more likely for tenants to exchange complementary knowledge and resources (Björkman et al., 2004). Tenants that frequently attend informal activities will be better embedded and are more likely to leverage these internal relationships than counterparts with no or low attendance.

Organized by the BI’s management and involving both new and more tenured tenants these informal networking activities also create cognitive ground between tenants. Shared cognitive ground refers to shared interpretations and systems of meaning among parties (Nahapiet and Ghoshal, 1998), or in other words, the extent to which tenants understand each other’s goals and ambitions, behavioral norms, and professional languages (Tsai and Ghoshal, 1998). Shared cognitive ground facilitates meaningful communication and knowledge transfer (Smale et al., 2015). As a result, tenants will not only identify more with the BI’s mission and values but also have better access to knowledge of the internal BI network than counterparts that participate less in BI informal form of (large) networking events, a formal lecture series, and/or speed dating events. McAdam and McAdam (2008) report that new tenants expect much of these services offered by the incubator management and thus are inclined to use them. This implies that the longer a tenant has spent inside the BI the greater the chance of having made use of these services.

Use will, at least partially, mediate between tenant tenure and a tenant’s level of involvement with other tenants, business-wise. Formal internal networking services help tenants meet other tenants, which is a necessary condition for beginning to collaborate internally (e.g., Ebbers, 2014). More specifically, formal internal networking services facilitate communication, knowledge exchange, and ultimately, collaboration. Hence,

H1: A tenant’s use of BI formal internal networking services mediates the positive relationship between a tenant’s length of BI tenure and its level of intra-BI collaboration.

3.2. BI informal socialization as moderator

Tenants’ socialization by BI informal networking activities is expected to positively moderate the direct relationship of length of tenure–intra-BI collaboration. Informal networking activities help BI socialization by establishing a shared set of values, objectives, and beliefs across tenants, providing them with a sense of having a shared mission and unitary BI culture (Hedlund and Kogut, 1993). These shared goals and values make it more likely for tenants to exchange complementary knowledge and resources (Björkman et al., 2004). Tenants that frequently attend informal activities will be better embedded and are more likely to leverage these internal relationships than counterparts with no or low attendance.

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networking activities. It explains why frequent attendance of the BI’s informal activities increases the chance of identifying internal partners and higher intra-BI cooperation.

H2: A tenant’s participation in BI informal networking activities enhances the positive relationship between length of tenant BI tenure and its level of intra-BI collaboration.

Participation in BI informal networking activities is also expected to moderate the relationship between tenant tenure and use of formal networking services. Two opposite effects can be anticipated. On the one hand, high socialization through informal networking activities may make tenants more likely to use formal networking services of the BI. Identifying with the BI, and wanting to be part of it, will result in increased participation in any of its activities. Identifying with the organization may even cause in-group pressure and thus a sense of obligation to be involved. On the other hand, the economic value of attending internally directed formal events will be lower for tenants with high socialization through informal networking activities. Consequently, they may reduce rather than increase their involvement. Characterized by a loosely knit structure and low task interdependency, within BIs socialized tenants are more prone to develop norms of self-interest and focus on own task and goal accomplishment and efficiency (Grant and Patil, 2012). Having access to the more frequent informal channel, personal contacts, and common knowledge, they feel less need for using the less frequent and less flexible formal internal networking option. Treating them as substitutes, socialized tenants will aim to balance self-interest with making a contribution to the BI and its mission and thus lower their contribution to formal internal networking services in favor of informal activities. Tenants with low socialization through informal networking activities do not have the option to switch between formal and informal alternatives. Consequently, for them the relationship between length of tenure and use of formal internal networking services will be stronger.

Because the impact of socialization on outcomes is highly dependent on the degree to which activities between tenants are connected and interdependent, we expect the second effect and reasoning to prevail in a BI setting. Tenants will have norms of self-interest and a self-serving bias. Consequently, they will tend to focus on efficiency and thus let own task and goal accomplishment prevail (Grant and Patil, 2012). Therefore,

H3: A tenant’s participation in BI informal networking activities weakens the positive relationship between length of tenant BI tenure and its use of BI formal internal networking services.

4. Method

4.1. Study context

The framework and hypotheses were tested using a survey data collected from tenants of a BI in The Hague, in The Netherlands. The BI is located in a renovated cigarette factory located in an industrial zone and offers office space and support to nascent firms from the creative industries. The aim of this co-location effort is to stimulate “cross-fertilization” (Caballero, 2014). By focusing on a single BI we account for variations that may exist in formal internal network services and setting.

Of a total of 105 tenants 84 completed the questionnaire for a response rate of 80%. Respondents were the firm owners, that is, the entrepreneurs themselves. In the case, the firm had a team of entrepreneurs, and one team member was asked to participate in the survey.

Table 1 shows several demographics of the sample. The majority, 62.0%, had 3 employees or fewer, and 55.9% had been located in the BI for under 4 years. Consistent with the BI’s focus on firms from the creative industries, the majority of firms belonged to the sectors of communication/advertising/social media (36.8%), design/architecture (27.5%), and gaming/software development (21.4%). Sixty percent of tenants had been in business for 6 years or less. Finally, the majority of firms (59.5%) had 1 or 2 fellow tenants inside the BI it cooperated with, and 76.2% rated the quality of cooperation with these internal partners as satisfactory (≥6), whereas 45.3% claimed it was more than satisfactory (>7).

4.2. Measures

An overview of the measures used for the study constructs is provided in Appendix A. The measures were based on the rich qualitative literature in the area of BIs and their internal processes (e.g., Bollingtoft and Ulhøi, 2005; McAdam and Marlow, 2007; Sá and Lee, 2012). Because BI tenants are often the subject of inquiry and surveys we used a limited set of items per construct, in order to limit the time required to complete the questionnaire.

Defining BI formal internal networking services as events organized by the BI management with formal character and structure to help tenants’ business network development, and BI informal networking activities as social get-togethers with
informal character and structure, we identified appropriate items. Tenants’ use of BI formal internal networking services was operationalized focusing on tenant attendance of two such events: “Cabfab”-event, and speed dating-event. The purpose of these events is to stimulate internal cooperation between tenants. The Cabfab event, for example, has a plenary part but also thematic workshops in which tenants present themselves to each other and to current business partners. The operationalization of our informal socialization tactic was adapted from Chatman (1991). We focused on tenants’ attendance of informal networking activities, in particular of BI drinks receptions and barbecues.

Length of tenure in the BI was measured by asking for the number of years the firm had resided in the BI using a single question and a 7-point scale with anchors 1 and ≥7 years.

For the level of intra-BI collaboration we used a three-item scale focusing on the number, frequency, and quality, that is, value of the collaboration with fellow tenants. Finally, firm sales growth was measured using two items, which tapped the increase in number of assignments and increase in sales volume, respectively.

To ensure correct model estimation we included firm size, the number of years the firm existed, and the level of dissimilarity (i.e., in terms of business activities) between the firm and other firms in the BI. Firm size and age may signal stability and thus affect the levels of cooperation and firm growth. While large dissimilarities between tenants may cause communication problems, preventing information exchange and cooperation, an absence of dissimilarity reduces opportunities for synergy (e.g., overlapping rather than complementary resources). Dissimilarity was measured by computing the Euclidian distance between each tenant and all other tenants based on industry classification. Firm size was measured in full-time equivalents, and firm age was operationalized by the years the firm had been in business.

### 4.3. Analytical approach

We analyzed the data in three principal stages. First, using SPSS 22, we examined the descriptive statistics and used exploratory factor analyses to explore internal consistency of our measures. Convergent validity was satisfactory as the average variance extracted was higher than 0.5 for all study constructs (Fornell and Larcker, 1981). Composite reliabilities were computed and met the criterion of >0.7. To research the discriminant validity of the study constructs, we used Fornell and Larcker’s (1981) test, which requires that a construct shares more variance with its measures than it shares with other constructs in a given model. As Table 2 shows, for all constructs the average variance extracted is higher than the squared correlations between the construct and all other study constructs. Together, these results suggest that the measures meet the criteria of convergent and discriminant validity (Fornell and Larcker, 1981).

Because common method bias is a concern when utilizing a survey instrument to measure both independent and dependent variables, different measures were implemented. To prevent common method variance we assured complete confidentiality, varied scale formats and separated predictor and criterion.

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**Table 1. Sample characteristics**

<table>
<thead>
<tr>
<th>Firm size</th>
<th>Industry</th>
<th>Firm age</th>
<th>Length of tenant BI tenure</th>
<th>Number of intra-BI partners</th>
<th>Evaluation of intra-BI collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees (%)</td>
<td>Classification (%)</td>
<td>Years (%)</td>
<td>Year (%)</td>
<td>#Partners (%)</td>
<td>Grade (%)</td>
</tr>
<tr>
<td>1</td>
<td>26.2</td>
<td>Communication/ advertising/ soc. media</td>
<td>36.8</td>
<td>1–3</td>
<td>20.2</td>
</tr>
<tr>
<td>2–3</td>
<td>35.8</td>
<td>Design/architecture</td>
<td>27.5</td>
<td>4–6</td>
<td>29.8</td>
</tr>
<tr>
<td>4–5</td>
<td>9.5</td>
<td>Gaming/software development</td>
<td>21.4</td>
<td>7–9</td>
<td>22.6</td>
</tr>
<tr>
<td>6–10</td>
<td>14.4</td>
<td>Other</td>
<td>14.3</td>
<td>&gt;10</td>
<td>27.4</td>
</tr>
<tr>
<td>&gt;10</td>
<td>14.1</td>
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</tbody>
</table>

†Number of fulltime fte only.
‡Based on 10 points scale.
variables in our survey instrument (Podsakoff et al., 2003; Conway and Lance, 2010). Next, several tests helped assess the potential problem including Harman’s one factor. If common method bias is present, conducting an unrotated factor analysis on a survey’s items should result in one factor that accounts for the majority of the variance in the items. In our case, the unrotated factor analysis resulted in six factors explaining 61.7% of variance, with the largest single factor accounting for only 15.8% of the variance. Together with several small observed correlations between variables included in our model of (e.g., the correlation between participation in BI informal networking activities and sales growth is only −0.02) this suggests that common method bias should not be a problem when interpreting our results. This was also confirmed in additional testing based on Lindell and Brandt (2000) and Lindell and Whitney (2001). They advocate to partial out of the smallest correlation form remaining correlations in order to remove the effect of CMV. The results of this analysis showed that all unadjusted correlation coefficients remained statistically significant at $P < 0.05$ after adjusting for CMV. Therefore, we do not consider common method bias to be an issue for our study results.

Second, we used Hayes (2013) PROCESS macros and software v2.12 tool in SPSS to estimate our conditional process model. Using the macro of Model 8 we calculated bias-corrected bootstrap confidence intervals (CIs) for the moderated-mediation model with intra-BI collaboration as dependent variable. We extend this analysis using simple hierarchical regression with curve estimation to estimate the curvilinear effect of formal networking services on intra-BI collaboration.

In a final step, we again used PROCESS to determine the direct and indirect effects to tenant tenure using sales growth as ultimate outcome. Using the macro of Model 6 we aimed to provide additional insight in paths of mediation leading toward sales growth. The estimates using PROCESS were based on 5,000 bootstrap samples and used all controls as covariates.

### 5. Results

The results of the PROCESS (model 8) estimations of the regression coefficients of our model are shown in Table 3. The results of two, nested models are reported. The first model includes the controls and main effects only, while the second model also includes the interactions. $R^2$’s are reported at the bottom of the table. First, it shows that our independent variables explain non-trivial levels of variance in our dependent variables. Second, it confirms a significant increase in $R^2$ between Model 1 and 2 for the equations pertaining to use of BI formal internal networking services ($\Delta R^2 = 0.07, F$ change = 6.53, $P < 0.01$) but not for the equations using intra-BI collaboration as the dependent variable ($\Delta R^2 = 0.00, F$ change= 0.01, $P < 0.92$).

A detailed inspection of the results shows several significant direct effects. First, a significant direct effect of the firm’s length of tenant BI tenure on the firm’s level of intra-BI cooperation is found (0.25, $P < 0.04$; see Model 2, Table 3). It replicates (Ebbers, 2014) prior finding. Hence, firms that have spent more time in the BI enjoy more cooperative activities with other entrepreneurs co-located in the incubator.

### Table 2. Means, standard deviations, scale reliabilities, AVE,$^a$ and correlations$^b$

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Sd.</th>
<th>Reliability</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Length of tenant BI tenure</td>
<td>3.89</td>
<td>1.89</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Use of BI formal internal networking services</td>
<td>0.90</td>
<td>0.30</td>
<td>0.70</td>
<td>0.45</td>
<td>0.55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Participation in BI informal networking activities</td>
<td>0.41</td>
<td>0.41</td>
<td>0.83</td>
<td>−0.19</td>
<td>−0.09</td>
<td>0.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Level of Intra-BI collaboration</td>
<td>2.50</td>
<td>0.91</td>
<td>0.85</td>
<td>0.28</td>
<td>0.30</td>
<td>0.14</td>
<td>0.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Dissimilarity</td>
<td>1.43</td>
<td>0.18</td>
<td>NA</td>
<td>−0.02</td>
<td>0.04</td>
<td>0.04</td>
<td>0.14</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Sales growth</td>
<td>1.74</td>
<td>0.44</td>
<td>0.81</td>
<td>0.22</td>
<td>0.10</td>
<td>0.09</td>
<td>0.45</td>
<td>0.02</td>
<td>0.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Firm size</td>
<td>4.68</td>
<td>3.95</td>
<td>NA</td>
<td>0.18</td>
<td>0.14</td>
<td>−0.13</td>
<td>0.08</td>
<td>0.15</td>
<td>0.17</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>8. Firm age</td>
<td>7.41</td>
<td>5.11</td>
<td>NA</td>
<td>0.32</td>
<td>0.31</td>
<td>−0.22</td>
<td>−0.02</td>
<td>0.09</td>
<td>−0.12</td>
<td>0.19</td>
<td>NA</td>
</tr>
</tbody>
</table>

$^a$AVE, average variance extracted (for each construct reported [underlined] on the diagonal of the matrix); Sd., standard deviation.

$^b$Correlations are reported in the lower half of the matrix. Correlations of 0.22 and above are significant at the 95% level (2-tailed).
Table 3. Process (model 8) regression results

<table>
<thead>
<tr>
<th>Model</th>
<th>BI formal internal networking services</th>
<th>Intra-BI collaboration</th>
<th>BI formal internal networking services</th>
<th>Intra-BI collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MODEL 1</td>
<td>MODEL 2</td>
<td>MODEL 1</td>
<td>MODEL 2</td>
</tr>
<tr>
<td></td>
<td>( \beta ) (Sd.)</td>
<td>( t )-value</td>
<td>( P )</td>
<td>( \beta ) (Sd.)</td>
</tr>
<tr>
<td><strong>Direct Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Constant</td>
<td>0.00 (0.10)</td>
<td>0.00</td>
<td>1.00</td>
<td>0.00 (0.11)</td>
</tr>
<tr>
<td>2. Length of tenant BI tenure</td>
<td>H1</td>
<td>0.40 (0.11)</td>
<td>3.70</td>
<td>0.00*</td>
</tr>
<tr>
<td>3. Participation in BI informal networking activities</td>
<td></td>
<td>0.02(0.11)</td>
<td>0.22</td>
<td>0.83</td>
</tr>
<tr>
<td>4. Use of BI formal internal networking services</td>
<td>H1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Length of tenant BI tenure ( \times ) Participation in BI informal networking activities</td>
<td>H3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Use of BI formal internal networking services ( \times ) Participation in BI informal networking activities</td>
<td>H2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Dissimilarity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Firm size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Firm age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( R^2 \) (\( F \)-value, \( P \))

\( 0.23 (4.63, \ P < 0.00) \) | \( 0.17 (2.60, \ P < 0.03) \) | \( 0.29 (5.00, \ P < 0.00) \) | \( 0.19 (2.46, \ P < 0.03) \)

*\( P < 0.01; \) **\( P < 0.05; \) (2-tailed).
Second, the length of tenant BI tenure is positively associated with use of BI formal networking services (0.39, $P < 0.00$) while the latter is positively associated with the level of collaboration of a tenant with fellow BI tenants (0.25, $P < 0.05$) (see Model 2). This provides initial support for the anticipated mediation of the central relationship by formal networking services, and thus Hypothesis #1 (later we will formally test the mediation effect). We also tested for a potential inverted U-shaped effect rather than a linear effect of the use of BI’s formal internal network services on the level of intra-BI collaboration. Because the number of tenants and thus potential candidates inside the BI is limited, the opportunity to collaborate may first increase and then decrease. Specifically, we ran an additional regression analysis including the quadratic term of formal networking services. However, while the results confirmed the significant linear effect (0.30, $P < 0.03$) the quadratic term proved non-significant ($\beta = -0.18, P > 0.15$).

Third, although the results of Table 3 (see Model 2) show the moderation of the direct relationship between length of a tenant’s BI tenure and intra-BI collaboration by informal networking activities to be not significant (Table 3, Interaction Use of BI formal internal network services × Participation in BI informal networking activities: $\beta = 0.15, P > 0.22$), the detailed results of the moderation analysis of Table 4 show a more nuanced picture. The results of Table 4 (upper part) show the results for the direct effect of length of tenure on intra-BI collaboration at three levels of the moderator: at the mean and one standard deviation below and above the mean. Those with average and relatively high levels of socialization through participation in informal networking activities (see lines two and three of Table 4 referring to mean and +1Sd.) show moderate to high associations between their length of tenant BI tenure and intra-BI collaboration ($\beta = 0.26, P < 0.04$; and $0.41, P < 0.02$, respectively), while this direct effect is not significant for those tenants with relatively low engagement in informal networking activities, that is, 1 standard deviation below the mean ($-1\text{Sd.,} \beta = 0.11, P > 0.52$). Hence, less socialized tenants do not benefit from a direct effect of their BI tenure on cooperation with other tenants located in the BI. This offers support for Hypothesis #2.

Fourth, the relationship between length of tenant BI tenure and the use of formal internal network services is negatively moderated by the tenant’s participation in BI informal networking activities (see Table 3, Interaction Length of tenant BI tenure × participation in BI informal networking activities: $\beta = -0.27, P < 0.01$). It suggests that high socialization almost completely shuts down a tenant’s use of formal internal networking services. The results of Table 4 (lower part) show the results for this indirect effect of length of tenure on intra-BI collaboration again at three levels of the moderator. These detailed results show that tenants with relatively low and average participation in BI informal networking activities ($-1\text{Sd. and mean levels}$) enjoy a strong and moderate indirect relationship between length of tenant BI tenure and intra-BI collaboration, respectively ($\beta = 0.16, \text{CI}_{95\%} = ([0.0093; 0.3991])$ and $\beta = 0.10, \text{CI}_{95\%} = ([0.0076; 0.2469])),$ while for

2 If 0 is included in the CI of the bootstrap’s outcome, the relationship is not significant. If the CI does not include 0 the relationship is significant.
tenants with relatively high levels of socialization through the participation in the BI’s informal networking activities (+1SD.) this pathway is not significantly different from zero ($\beta = 0.03, CI_{95\%} = [0.0013, 0.1008]$). It lends support to Hypothesis #3. Those with low socialization through the informal, social socialization tactic resort to the alternative mechanism of participating in formal networking services.

Finally, regarding the controls (see Table 3) we find no significant effects.

To retest the anticipated positive effect of intra-BI collaboration on tenants’ sales growth we look at the correlation table and additional PROCESS results. The correlation between intra-BI collaboration and sales growth is substantial: $0.45 \quad (P \quad < \quad 0.01)$ (see Table 2). This confirms that internal collaboration fuels the tenant’s development and growth. Table 5 presents results from an extra PROCESS analysis that helps trace back this positive effect to our mediation-moderating mechanisms and, finally, to tenant tenure.

The detailed results of Table 5 show that there is no significant positive direct effect of length of tenant BI tenure on sales growth ($\beta = 0.17, P > 0.16$). However, the total indirect effect is significant ($\beta = 0.12, CI_{95\%} = [0.0122, 0.2402]$). The detailed results show that the indirect path via: length of tenant BI tenure $\rightarrow$ use of formal internal networking services $\rightarrow$ sales, is not significant, as $0$ is included in the bootstrap interval ($\beta = -0.02, CI_{95\%} = [-0.1415, 0.0770]$). However, the pathways of length of tenant BI tenure $\rightarrow$ use of formal internal networking services $\rightarrow$ intra-BI collaboration $\rightarrow$ sales growth and length of tenant BI tenure $\rightarrow$ intra-BI collaboration $\rightarrow$ sales growth are significant ($\beta = 0.03, CI_{95\%} = [0.0013, 0.1008]$) and $\beta = 0.10, CI_{95\%} = [0.0122, 0.2481]$). It provides extra support for Hypothesis #1 regarding the mediating role of formal internal networking services. However, the results also show that the effect size of the indirect pathway via the formal internal networking services and intra-BI collaboration is modest compared with the more ‘direct’ path of BI tenure via collaboration on sales growth (i.e., $\beta = 0.03$ vs $0.10$, both $P < 0.05$).

6. Discussion

Although a positive relationship between lengths of tenants’ BI tenure on their cooperation with other entrepreneurs of the BI has been reported (Ebbers, 2014), the underlying mechanisms of this proximity effect have remained unclear. Using a tenant perspective, we offer a detailed view of how tenants’ use BI formal internal networking services to start cooperating with other tenants. Many studies recounted the general network interactions observed in incubator communities, but few detailed the role of the BI’s networking services programs for stimulating internal cooperation. We contributed to literature in several ways.

First, based on the rich BI literature we developed an explanation of how firm length of BI tenure may determine networking behavior and influence
cooperation inside a BI. We argued that formal internal networking services will help introduce tenants to potential internal partners. The anticipated partial mediation effect was supported by our results. It extends prior research by offering a better explanation for the positive effect between a tenant’s months in the incubator and internal cooperation.

Second, based on rich prior qualitative research in this domain (e.g., Bøllingtoft and Ulhøi, 2005; McAdam and Marlow, 2007, 2008; Bøllingtoft, 2012) and drawing further on socialization theory we developed an argument regarding when the direct and indirect mechanisms leading to intra-BI collaboration would be active. We assumed both effects would be conditional on tenants’ level of participation in informal networking activities organized by the BI’s management. Attendance of informal networking activities helps tenants gain knowledge about a BI’s systems, routines, and community as a whole. Learning about the norms and values of the BI helps tenants acculturate and is an important way for these new firms to expand their network and develop in BI context. Those with high levels of socialization through participation in informal networking activities will have shared cognition with other tenants and have access to relational knowledge to find their own way, whereas those with low socialization will need guidance and thus will rely more on formal internal networking services offered. For the latter, formal services act as an alternative socialization mechanism. Our moderation analyses confirmed the assumptions. It revealed that those with lower and mean levels of attendance of BI informal networking activities used BI formal internal networking services more to cooperate with other tenants than counterparts with relatively high levels of participation in informal networking activities. In contrast, tenants with mean and higher levels of participation in informal, social activities had enjoyed significant direct effects of tenant BI tenure on intra-BI collaboration. These findings support Bøllingtoft and Ulhøi (2005) comment that social aspects of BI’s should not be ignored (e.g., p. 283).

Interestingly, tenants with average participation in informal networking activities rely on both options ($\beta = 0.09$ for the indirect and 0.25 for the direct pathways) whereas counterparts with relatively high and low use rely on one pathway only. Highly socialized colleagues completely focus on the direct path and thus rely on the proximity effect ($\beta = 0.41$); for them the indirect path via formal networking services plays no role. In contrast, tenants with relatively low participation in informal networking activities are completely dependent on formal network services ($\beta = 0.16$). These findings suggest two things. First, those formal and informal services are to some extent substitutes for learning about the BI. They are two socialization tactics BI management should pay attention to and use. Second, in the loose-knit organization of a BI, norms of self-interest play a role too. Tenants that are highly socialized through informal networking activities will aim to be efficient and therefore become not more but less involved in formal internal networking services. Compared with their moderately socialized counterparts they tend to reciprocate by exclusively attending social events. Based on the current results, BI managers should now better understand this paradox. A solution could be to actively involve socialized and tenured tenants by having them share their experience in these formal meetings and by acting as buddies for new tenants through buddy programs.

Fourth, we show that intra-BI collaboration does contribute significantly to a tenant firm’s growth. This confirms that internal collaboration can help tenants overcome their liability of newness. This is further supported by the positive correlation that exists between firm growth and size (see correlation matrix, i.e., $0.17$, $P < 0.10$). Internal cooperation enhances sales growth, which adds to firm size and thus stability. Intra-BI collaboration thus is a highly strategic resource (Lyons, 2000), which should be exploited to a maximum.

Based on Bøllingtoft’s (2012) finding that internal cooperation is particularly important in the beginning of firms’ existence, one might think that our firms were still in an early stage of development. However, another conjecture may be that internal collaboration is sometimes continued. If considered important and adding to the firm’s stability internal partnerships may remain attractive to pursue. This may be easier for well-socialized firms that clearly identify with the BI and its mission.

7. Limitations and future research

The study has a number of limitations, which suggest some directions for future research. In the first place, the study was conducted in a single BI, in The Netherlands. It offers control over many variables, such as the number and type of support services offered, location, the external network of the BI, and selection of tenants. However, to enhance generalizability additional research would be needed involving more BIs.

Secondly, only a limited set of informal networking activities was examined. Other related variables and activities such as the informal office layout used in several Silicon Valley high-tech companies, and
introduction programs for new tenants might be taken into account. Moreover, the perceived level of socialization with the BI could be modeled and accounted for (Chatman, 1991; Bauer et al., 2007).

Thirdly, additional socialization tactics could be considered. Based on qualitative research a list of possible tactics could be identified and measured. Specific attention should be given to the context of low task interdependence. Grant and Patil (2012) offer a model of socialization levers that managers can use under these conditions.

Fourth, the dependent measure used here was that of the level of intra-BI cooperation and sales growth. Different types of intra-BI collaboration could be distinguished (see e.g., Bøllingtoft, 2012), and the effectiveness of each type (e.g., vertical, horizontal) could be researched in detail. It could extend our knowledge regarding intra-BI cooperation’s impact on actual survival and growth of the nascent firm.

Finally, an extension can be made toward studying the effectiveness of externally oriented network services offered by the BI management and again the mediating-moderating effects of BI socialization.

7.1. Managerial implications

Our results underscore the importance of intra-BI collaboration in nascent firms’ development residing in a BI. It helps stimulate sales growth and thus can provide initial stability. BI management should stimulate such internal networking between tenants by offering formal internal networking services and stimulating and monitoring tenant participation in informal networking activities to stimulate tenant socialization. These are two important, complementary mechanisms promoting internal networking and collaboration. However, based on our results we suggest that management should segment firms and approach them differently based on their length of BI tenure and their different levels of socialization through participation in informal networking activities.

We particularly advise that BI managers pay close attention to tenants’ socialization processes and consider the effectiveness of both informal and formal socialization tactics. Informal socialization tactics help tenants find their way inside the BI community, and drive much of the proximity effect, for instance, regarding levels of intra-BI collaboration. BI managers thus could extend the set of informal networking activities they offer (e.g., recreational events and buddy programs). It may help cater to different needs of experienced and less experienced tenants. The usefulness of formal socialization programs should be explored.

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References


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Appendix A: Scale items of measures

<table>
<thead>
<tr>
<th>Factor loading</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of tenant BI tenure</td>
<td>N.A.</td>
</tr>
<tr>
<td>Participation in BI informal networking activities</td>
<td></td>
</tr>
<tr>
<td>Drinks</td>
<td>0.604</td>
</tr>
<tr>
<td>BBQ</td>
<td>0.834</td>
</tr>
<tr>
<td>Use BI formal internal networking services</td>
<td></td>
</tr>
<tr>
<td>Annual event</td>
<td>0.879</td>
</tr>
<tr>
<td>Speed dating</td>
<td>0.564</td>
</tr>
<tr>
<td>Level of intra-BI collaboration</td>
<td></td>
</tr>
<tr>
<td>Number of firms in incubator you cooperated with the past year</td>
<td>0.752</td>
</tr>
<tr>
<td>The value of these partnerships for your company</td>
<td>0.815</td>
</tr>
<tr>
<td>Number of times your firm cooperated with other tenants in past period</td>
<td>0.854</td>
</tr>
<tr>
<td>Sales growth</td>
<td></td>
</tr>
<tr>
<td>Number of assignments increased since housed in the incubator</td>
<td>0.843</td>
</tr>
<tr>
<td>Sale increased/stable/decreased since housed in the incubator</td>
<td>0.801</td>
</tr>
</tbody>
</table>

N.A., not applicable.