Effects of Incubator Interactions on Incubated Enterprises’ Performance

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Keywords: Business incubator, Incubator interactions, Knowledge acquisition, Trust, Performance.

Abstract. Incubator interactions can improve incubated enterprises’ performance. Trust is the precondition of building interactive relationship. Knowledge acquisition plays an important role in the growth of incubated enterprises. The purpose of this paper is to establish a research model of the relationship among incubator interactions, trust, knowledge acquisition and incubated enterprises’ performance. The hypotheses are put forward through theoretical analysis which lay the foundation for further empirical study. The research has great significance on increasing the degree of incubation interactions to establish trust and promote knowledge acquisition so as to improve performance of incubated enterprises.

Introduction

With the development of science and technology, new ventures are springing up. However these new ventures suffer from either low rates of growth or failure. The current priority is to maximize growth rates while simultaneously minimizing the failure rates of new ventures. Business incubator’s (BI) primary mission is to provide financial services, psychological support, mentoring, monitoring, subsidized space, administrative tasks to new ventures. There is evidence that new ventures associated with BI succeed at a greater rate than non-incubated new ventures in terms of sales, employment growth, formation of beneficial commercial and technical-based cooperative relationship. So new ventures generally choose to be incubated and become incubated enterprises to improve their success rates. There is no clear understanding regarding mechanism of successful incubation. Hackett [1] suggests that incubated enterprises’ interactions with incubator have an important role in enabling the successful incubation of affiliated ventures through business and technical assistance. However few studies have focused on the effects of relationship between incubated enterprises and incubator manager on incubated enterprises’ performance.

To better understand the dynamics associated with the relationship between incubator interactions and incubated enterprises’ performance. The article begins with a brief introduction of incubator interactions, followed by a detailed description of effects of incubator interactions on incubated enterprises’ performance. Based on these research streams, a research model of effects of incubator interactions on incubated enterprise’ performance is proposed. Moreover some hypotheses are put forward. Finally the significance of the research is given.
**Theoretical Underpinnings**

BI is widely used to energize new ventures. The interactions between incubator managers and incubated enterprises are very important to the success of the incubation process[2]. Strengthening interactions can promote incubated enterprises to absorb tacit knowledge. Rice[3] describes incubator interactions as coproduction system which imply link between a consumer (incubated enterprises) and a producer (incubator manager). Hackett[1] explores several theories to explain the incubation process and suggests that the incubated enterprises-manager dyad can be seen as a peculiar agency relationship. An agency relationship assumes that incubated enterprises may hide information from the manager and act opportunistically.

Incubator interactions have a variety of modes. Scillitoe[2] puts forward that incubator interactions can be divided into consulting interaction and network interaction. Consulting interaction is directly interaction and reflects the willingness and degree of the interaction in the process of incubation; network interaction embodies that BI builds bridges for incubated enterprises to establish relationship with external agencies such as universities, research institutions, government agencies, service organizations, etc.[4]. Rice[3] shows that incubator interactions include face-to-face interaction and network interaction. Face-to-face interaction is directly interaction and is affected by BI's the frequencies involved and the willingness of participation; network interaction is indirectly interaction that incubated enterprises indirectly obtain assistance and resources by using the incubation network.

Incubator interactions are fundamental guarantee for incubated enterprises’ development. Hellmann[5] shows that the interactions based on cooperation have obvious positive effect on growth of incubated enterprises. The improvement of interaction frequency contributes to transmission of tacit knowledge which enhances incubated enterprises to master specialized knowledge to assist them making strategic decisions so as to affect the performance. Dyer[6] suggests that incubator and incubated enterprises develop organization relationship of sharing resource and create the cooperative relationship based on trust that have positive influence on enterprise's technical innovation performance. Scillitoe[2] concludes that different forms of interactions affect the performance of incubated enterprises in different mechanisms. Consulting interaction helps BI understand the needs of incubated enterprises and provide them specialized services to help incubated enterprises increase business knowledge and promote the performance. Network interaction enlarges the external network of incubated enterprises and promote them to gain external resources and knowledge innovation so as to improve incubated enterprises’ performance.

**Research Model and Hypotheses**

**Research Model**

BI has a positive impact on project development by providing incubator services to incubated enterprises. BI chooses the appropriate incubated enterprises according to hatching standards. Enterprises decided to be incubated in BI by evaluating the incubation policy and resources. BI and incubated enterprises choose each other and establish incubating relationship. The interactions between incubated enterprises and incubator manager are helpful to the transmission of knowledge in the process of incubation. Trust is the premise of building relationships and mutual-trust relationship can be recycled and lay the foundation for the next interaction. Smilor[7] points out that
incubator services can help incubated enterprises to acquire knowledge such as technology, organizational management, policies, marketing knowledge, etc. to improve the performance.

Performance is one of the important indicators to measure business process. Firm’s performance has a variety of determinants. Murphy[8] puts forward five dimensions of performance: profitability performance, innovative performance, growth performance, productivity performance and satisfaction performance. Covin[9] considers that the performance of incubated enterprises should be measured including growth performance and innovative performance. Growth performance pays more attention to the development of incubated enterprises and potential of growing; innovative performance is the economic benefits of incubated enterprise’s innovative output.

In order to study the interactions between incubated enterprises and incubator manager impact on performance of incubated enterprises. The research model is shown in Figure 1.

![Figure 1. Research model.](image)

**The Relationship between Incubator Interactions and Trust**

Trust is enhanced by interactions because interactions complete the informal insurance of trust. Trust is essential elements of partnership. BI and incubated enterprises contact each other to establish trust which can enhance the sharing of information[10]. It takes time to build trust because of the lack of historical interaction and it is difficult to actively communicate between partners[11]. Enhancing interactive time helps to strengthen the belief that the other party will cooperate and avoid short-term opportunism. Communication each other can foster understanding each other which reduces cognitive and coordination barriers to increase the frequency of cooperation[12]. Based on these findings, one hypothesis has been developed.

**H1:** Incubator interaction time intensity will have a positive effect on trust

The interactions are based on the principle of cooperation that needs the engagement of both parties. Lower willingness of participation will have a negative effect on establishment of trust in the process of interactions [13]. Vanderstraeten[14] indicates that the expectations and willingness-to-interact of potential incubated enterprises should be evaluated before a selection in order to determine the likelihood that they will
cooperate during the incubation process. Hardy[15] proposes that the willingness of participation determines the effect of cooperation, high willingness helps incubated enterprises to control the risk which results in establishing good relationship of cooperation. Based on these findings, one hypothesis has been developed.

H2: Incubator interaction involved intensity will have a positive effect on trust.

BI provides a series of services that are fundamental driving force to survive and develop for incubated enterprises. Incubated enterprises weaken uncertainty risk and accelerate establishment of trust relationship by using incubator services such as low rent, training, equipment, facilities [16]. The incubated enterprises make use of services of technical support, financial support, management support and legal support to accelerate their development and add dependence. It is undeniable that incubated enterprises benefit from BI and lead to the germination of trust relationship. Based on these findings, one hypothesis has been developed.

H3: Incubation service utilization degree will have a positive effect on trust.

Network has been identified as an important aspect of the incubation process and can provide the greatest benefit for innovation and the incubator managers play the key role in facilitating incubated enterprises access to these valuable network for technology development[2]. The incubated enterprises have priority right to use the network structure which facilitates them to establish cooperative relationship with external agencies and make up for the shortage of their own resources. Meanwhile network ties provide incubated enterprises with the benefit to access a wide range of valuable information such as potential markets, business locations, innovations and capital that enhance credibility in BI. Based on these findings, one hypothesis has been developed.

H4: External network utilization degree will have a positive effect on trust.

The Relationship between incubator Interactions and Knowledge Acquisition

Incubator managers and incubated enterprises frequent communicate to add the interactive time and help BI to know the incubated enterprises’ needs which strengthens BI to provide high quality professional services and is convenient to incubated enterprises to acquire more knowledge. Communication as a kind of informal interactions greatly shortens the distance of information transmission, reduces the possibility of distortion and ensures the effectiveness of understanding knowledge. Luo[17] suggests that the agreement would increase the efficiency of cooperation because the agreement decreases the misunderstanding each other’s expectations and promotes knowledg sharing between BI and incubated enterprises[12]. Based on these findings, one hypothesis has been developed.

H5: Incubator interaction time intensity will have a positive effect on knowledge acquisition.

Interaction is a process of participation. BI owns the initiative as a party with the advantage of information. The willingness and degree of involving in the incubation process of BI affect the knowledge BI providing to incubated enterprises [3].Incubator managers actively participate in the incubation process which is useful to monitor and evaluate the process.BI provides incubated enterprises with a large number of training and consulting services to meet incubated enterprises’ diversified demands for knowledge[18]. The motivation of BI participating in incubation process can facilitate incubated enterprises to acquire knowledge. Based on these findings, one hypothesis has been developed.
H6: Incubator interaction involved intensity will have a positive effect on knowledge acquisition.

Incubator services provided by BI are the basic guarantee for incubated enterprises to survive. The incubated enterprises use incubator services to closely learn knowledge and experience which not only strengthen the intensity of technical support service by BI but also help incubated enterprises get suggestions to overcome difficulties and reduce operating costs[10]. Zhong[19] finds that the firms pay more attention to the support of policy, law and financing services, but usually ignore the incubator services which do not be effective in the short term. High incubator services utilization degree can help incubated enterprises acquire knowledge to raise the success rates of hatching. Based on these findings, one hypothesis has been developed.

H7: Incubator service utilization degree will have a positive effect on knowledge acquisition.

External network has a significant impact on knowledge acquisition of incubated enterprises. Rothschild[20] points out that the external network can provide incubated enterprises with talent and promote them to obtain the technical knowledge. The space distance and cultural distance of core nodes and other nodes in the network will affect the effectiveness of transferring knowledge. Network structure offers platform of formal and informal communication, the higher frequency of communication, the more strength of interaction between nodes and it’s useful to promote collaborative innovation[21]. The incubated enterprises cooperate with external organizations which can reduce the cost of getting knowledge. Based on these findings, one hypothesis has been developed.

H8: External network utilization degree will have a positive effect on knowledge acquisition.

The Relationship between Trust and Performance

Trust is the most important force driving for networking and cooperation in BI because it reduces incubated enterprises’ concerns about opportunistic behavior by other incubator members. Higher trust greatly reduces the time of exchanging information and accelerates the conversion of resources which lay a solid foundation for the incubated enterprises’ growth. Chan[22] argues that trust is closely related to the growth performance by speeding up the incubated enterprises’ profit and market share. Iacono[23] concludes that trust has a significant impact on cooperation, the higher overall trust is, the faster enterprises develop. Trust has obvious positive correlation with growth performance.

Trust promotes incubated enterprises’ ability of technology innovation and improves the efficiency of innovation. Vedel[24] suggests that high trust between BI and incubated enterprises can active willingness to exchange information that helps incubated enterprises access to technology, market information to meet the market requirement and promote innovative efficiency. Acigil[25] points out that the higher the credibility is, the lower the likelihood of opportunism and cost of acquiring technical knowledge for incubated enterprises, trust is highly relevant to incubated enterprises’ technological innovative performance. Enhancement of trust helps BI and incubated enterprises to establish a long-term oriented information sharing, deepen mutual understanding, shorten the time of knowledge transferring, promote the cooperation and improve incubated enterprises’ innovative performance[26]. Based on these findings, two hypotheses have been developed.
H9: Trust will have a positive effect on growth performance.
H10: Trust will have a positive effect on innovative performance.

The Relationship between Knowledge Acquisition and Performance

The incubated enterprises acquire more knowledge result in having the advantage in forming the obvious differences of knowledge so as to maintain their competitive advantage. The incubator services such as training, consulting etc. lay the foundation of knowledge for the growth of incubated enterprises[27]. Incubated enterprises cooperate with outside organizations on the basis of their own knowledge storage to rise stock of knowledge and provide a strategic resource for enterprises’ growth. Cassia[28] concludes that enterprises make use of external network to obtain tacit knowledge and the knowledge has a significant effect on promoting the growth of enterprises which not only makes incubated enterprises form their own core competitive advantages but also ensure the core technology not easy to be copied. The interactions help the incubated enterprises acquire the business process knowledge which can reduce the cost of sales and enhance incubated enterprises’ profit ability[29]. Cooperating on relevant topics will also increase incubated enterprises’ knowledge base and enhance performance[30]. Tsai[31] suggests that the innovation of incubated enterprises is closely related to their knowledge acquisition and incubated enterprises get knowledge through the network structure to increase their knowledge stock. Incubated enterprises enhance their profit ability and innovative ability by making the materialization of knowledge. Knowledge acquisition has a positive influence on speeding new product development and improving technical capability[32]. As far as incubated enterprises are concerned, relying on their knowledge creation is not enough, they need to acquire new knowledge from the environment in order to ensure the enterprises’ technology update, timely market opportunities identify, new products design according to customer demand so as to expand the market scale of the enterprises. Based on these findings, two hypotheses have been developed.

H11: Knowledge acquisition will have a positive effect on growth performance.
H12: Knowledge acquisition will have a positive effect on innovative performance.

Implications

The significance of this research mainly has the following three aspects:

(1) It helps incubated enterprises acquire knowledge through strengthening interactions with BI which can reduce their failure rate in the process of incubation.
(2) It contributes to understanding mechanism of incubator interactions impacting on incubated enterprises’ performance. Incubator interactions can help incubated enterprises establish trust and acquire knowledge so as to promote growth performance and innovative performance.
(3) The research model and hypotheses lay the foundation for further empirical research. It is significant to improve the effect of the operation of BI and quicken the development of incubated enterprises.

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