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ABSTRACT

Recent academic research in entrepreneurship relates the Lean methodology principles to entrepreneurial startup activities. This study investigates the level of understanding and practice of the Lean entrepreneurship principles among the business incubators (BI) located in Turku, Finland, towards incubated companies.

The BI's have clearly defined mission and target population of entrepreneurs. BI's operating mode differs because of tenants' volume and specific needs for business idea development. They have in common a weak expertise in the field of logistics. There is a weak transfer of knowledge from latest academic research findings in the field of Lean entrepreneurship towards BI practice in Turku.

Keywords:

Lean, Entrepreneurship, Business incubator

Glossary:

BI = business incubator

BP = business plan

NABC = Need–Approach–Benefit–Competition (method)

CONTENTS

1	INTRODUCTION	5
2	INCUBATORS	6
	2.1 Definition and typology	6
	2.2 Business Incubator institutions in Turku	7
3	LEAN ENTREPRENEURSHIP	8
	3.1 Definition of Leanness	8
	3.2 Lean entrepreneurial practices	8
	3.3 Relevance of the Lean Startup approach for Turku area industries	10
4	QUALITATIVE STUDY	12
	4.1 Benchmarking the incubators' services	12
	4.2 The incubation process	13
	4.3 Practice of the Lean Startup principles	14
5	CONCLUSION	16
	REFERENCES	18

I INTRODUCTION

Lean practice and principles of *Lean Manufacturing* have been initiated, developed and spread by both academic researchers and industry experts for nearly 60 years. There is notable experience in applying the methodology in the fields of logistics, performance and risk control. Recent academic contributions from various authors relate the *Lean* principles to entrepreneurial startup activities (Ries, 2011; Blank, 2013).

Lean entrepreneurship principles are academically defined. However, there may exist a gap between those and the current practice by business incubators. How do business incubators integrate the *Lean* entrepreneurship principles to facilitate new product and service development among the startups? In this study, the author investigates the level of understanding and practice of the principles among the business incubators of the City of Turku, Finland.

2 INCUBATORS

2.1 DEFINITION AND TYPOLOGY

There is a comprehensive amount of discussions and definitions on the notion of Business incubator (BI) (Bridge et al., 2009). The variations in the type of service provided by a BI and by other types of startup support structures can be illustrated through the typology presented in Table 1 (European Commission, 2002).

TABLE 1. *Typology of Business Incubators.*

	Technology level LOW	Technology level MEDIUM	Technology level HIGH
Management support HIGH	Multi-Purpose Business Incubator	Business & Innovation Centre	Technology Centre
Management support MEDIUM	Managed Workshop	Enterprise Centre	Innovation Centre
Management support LOW	Industrial Estate	Business Park	Science Park

In this study, the term Business Incubator (BI) refers to any organization whose purpose is to help startup companies with some degree of intangible (e.g. managerial) and tangible (e.g. technical) support (Aerts et al., 2007). The study focuses on incubators which are working on a routine basis with their *tenants* (the incubated companies).

2.2 BUSINESS INCUBATOR INSTITUTIONS IN TURKU

Promoting entrepreneurship is one of the key strategic activities of the City of Turku within the Turku sub-region, which has about 320 000 inhabitants (City of Turku, 2013). There are different local institutions actively working towards providing supports to startups. Potkuri, a governmental body, offers managerial support, and acts as a networking portal at the very early stage of the startup's activity (Potkuri, 2013). As a benchmark, Potkuri's role is comparable to the European Commission award-winning Barcelona Entrepreneurship Centre (European Commission, 2013) and is essential to local economic growth. However, Potkuri is an institution that does not provide basic incubator service such as office space and furniture. For this reason we did not include it in our study sample.

The following institutions were interviewed:

- A: an incubator for technology and bio-related startups
- B: a startup "farm" for students
- C: an incubator dedicated to the creative industries.

The sample represents the major active incubator services operating in Turku. The BI named Protomo was excluded from the interview as it closed its local Turku branch office during 2013 remains operational only in some other locations in Finland.

3 LEAN ENTREPRENEURSHIP

3.1 DEFINITION OF LEANNESS

The notion of being *Lean* or *Leanness* is considered as the capability of a system to operate tightly (Perrow, 1999). It has empirical origins from quality management practices developed by Toyota throughout the 20th century (Ohno, 1998). Despite being traditionally used to characterise supply driven systems, the concept has been applied to other research areas, lately including entrepreneurship as well.

The notion of Leanness has been then considered in a number of ways in entrepreneurial research. Studies have been oriented towards the manufacturing process (Ries, 2011), the entrepreneur (Cooper and Vlaskovits, 2013) as well as towards the entire product development flow (Reinertsen, 2009). Research shows for example that role of the owner-manager is essential to the success of a company, especially with regards to his capability to fully develop and exploit his/her network, *network* being a critical success factor for lean systems (Taylor, 2000).

A research breakthrough occurred with the publications of Steven G. Blank's work related to Customer Development process (Blank, 2003) and Eric Ries' Lean Startup (Ries, 2011). The vision of Leanness as used by Eric Ries is central to our study as we used it as a reference when collecting data from the BIs we studied.

3.2 LEAN ENTREPRENEURIAL PRACTICES

In his work, Eric Ries (2011, p. 27) presents a set of *practices* aiming at helping entrepreneurs increase their odds of building a successful startup in an extremely uncertain environment. The startup is viewed as a *human enterprise* with

- a vision that is generally robust
- a strategy that may be re-oriented when needed (a process which Ries labels as a pivot)
- a product that should constantly go through a rapid and cost-effective optimisation process.

Business planning is a critical activity (Mintzberg, 1994). However for a startup, the so-called *Business Plan* (BP) is merely a projection that would in most cases not correspond to the future state of the business and its unpredictable environment. Therefore it may be better to keep it simple (Horan, 2004). A company can then control and adjust the validity of the hypotheses on which the whole *revenue model* and *value proposal* rely on, constantly and efficiently. This controlling and adjustment process is done through a three-stage loop: Measure–Learn–Build (Ries, 2011).

The Lean Startup practices contained in this basic loop are quite complex in detail since it involves various managerial activities:

- product development
- human resource management
- quality management
- innovation management
- marketing management
- strategic management
- process optimisation.

The Lean practice flow diagram in Figure 1 displays how managerial activities would be sequenced and structured based on the Lean Startup principles. This diagram is different from the original Lean Startup diagram – that can be found in Ries' work – as it is the authors' own effort. The diagram takes an implementation process perspective to illustrate how Ries' loop translates into a sequence of actual fields of competence efforts.

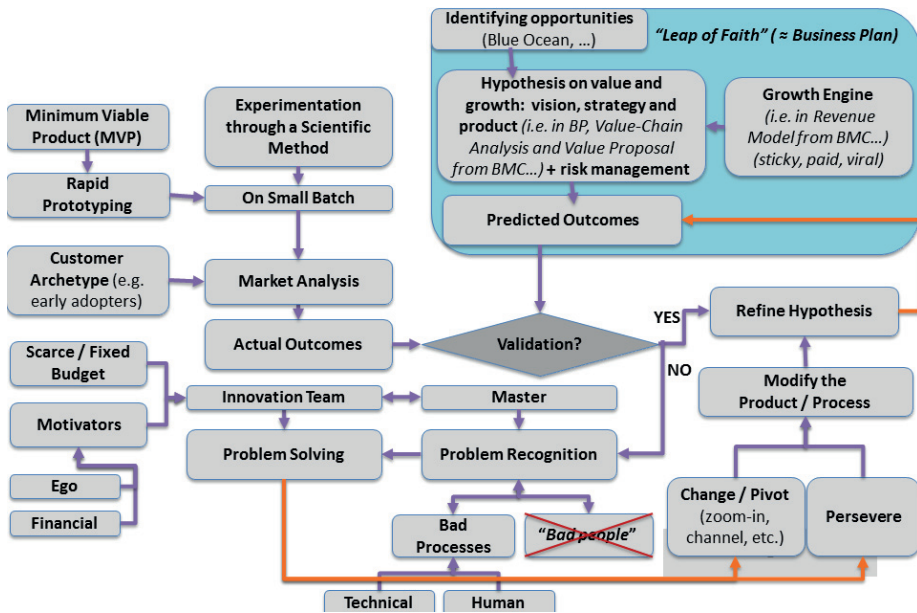


FIGURE 1. Lean practice flow diagram.

The Lean Startup approach is a rather formal and process-efficiency oriented methodology for finding strength and weaknesses in the building elements of a business idea development. This mind map can help entrepreneurs in understanding the process as well as in implementing performance metrics at every single critical step of the sequence throughout the multiple loops.

3.3 RELEVANCE OF THE LEAN STARTUP APPROACH FOR TURKU AREA INDUSTRIES

Promoters of the Lean entrepreneurship approach claim that it is applicable for all types of sectors and company sizes (Ries, 2011). However, the practice of the methodology may be steered towards different target populations in the Turku area including

- business incubators
- new-born Small and Medium Enterprises characterised by multi-tasking and simple organizational structure
- restructuring organizations with a relatively high financial leverage and innovation potential in highly competitive global markets, such as NOKIA (networking industry), STX (shipbuilding industry) or TUAS (large educational institution).

Lean entrepreneurship principles have potential for inspiring entrepreneurs and BI. It may allow an individual or a team to efficiently make improvements, for example by working towards “making the cost of being wrong cheaper” (Entrepreneur, 2013).

However, is the approach currently acknowledged by incubator experts and is it relevant and applicable for local companies? This is the core question addressed in the study. As Finland relies strongly on its innovation capability to sustain growth in the global competitive environment (Stenholm et al., 2012), the Lean Startup Principles can provide valuable insight for Finnish entrepreneurs who want all at once to:

- cut down lead times
- cut down product development costs
- develop customer feedback to better steer products and service innovations.

In the following sections, the data collected from the studied BI’s population is presented and the related findings discussed.

4 QUALITATIVE STUDY

Based on the list of BI presented in the first section, a questionnaire was administered using both open-ended and close-ended questions. The respondents are key personnel involved in steering their BI and with a strong knowledge in providing support services to their tenants. The questionnaire contains two distinctive parts. *Part A* is about the incubator services in general while *Part B* is focused on the tools and principles related to *Lean entrepreneurship*.

4.1 BENCHMARKING THE INCUBATORS' SERVICES

Based on our research data, Turku incubators perceive themselves as differentiated from the others. They have a unique value proposal towards well segmented and targeted population of candidate entrepreneurs. However, it is not clear whether this differentiation is the result of a clearly stated local public institutions' strategy, or of a tacit agreement between the incubators. Also, incubators do not consider themselves as competitors. However, there exist judgmental opinions – to a certain extent – towards other incubators, reflecting differences in incubators' vision and level of pro-activity towards local development and in-door tenants.

The incubators present themselves in general more as networking agents for facilitating managerial support than providers of physical assets. Network activation offers various benefits to the tenant entrepreneurs, such as decreasing transaction costs (for example in terms of service delay and rates from consultants).

The interviewed BIs have their own specifics, for example in relation to the volume of business ideas treated in a year, their budget, available facilities and furniture as well as their physical location. However, the BIs also share similar

characteristics, for example regarding the importance of networking as an essential service they offer and a lack of logistics expertise. The following table summarises key characteristics of the BIs based on the data collected during the study.

TABLE 2. *Characteristics of Turku business incubators.*

Incubator	Years of activity	Focus	Business ideas treated (on average / year)	Ideas incubated (on average / year)	Strongest field of expertise	Weakest field of expertise
A	24	IT and Bio-technology	150	10	Finance; Marketing; Networking	Logistics
B	4	IT	250	20	Networking	Office space & furniture; Logistics
C	5	Creative industries	90	10	Networking	Human Resources; Logistics

4.2 THE INCUBATION PROCESS

Turku BIs share similarities in the way they select the candidate business ideas and follow-up their incubation. It was therefore possible to identify three clearly delimited stages as presented below. However, there are singularities in the handling process.

- *The pre-incubation stage.* In every incubator, business ideas are pre-treated in order to discard the non-viable ones. The incubator which treats the largest amount of ideas (B) has an annual fixed timetable as it is working mainly with local students willing to start

a company. Calling itself an accelerator, B filters the candidates through its intensive and selective programme where only the most motivated candidates will have a chance to reach the incubation stage. Other BIs have less contact with the student population and are more institutional and more strongly connected to the industry. The Business Ideas selection process is flexible, i.e. there is no strictly defined process in C and A. The approach is “case-by-case” and tailor-made, with a very important role played by the internal experts for idea development and by the jury panel for idea selection. Interestingly, there is integration of external experts to the jury panel (e.g. financiers for A).

- *The pure incubation stage.* Tenants have been selected to work under the umbrella of the BI and thus benefit from various advantages and services. Networking appears as a key service from the BI to their tenants. Networking is a generic word which in practice means saving time and efforts for the tenants by getting quickly in touch with the right problem solver when they deal with an issue they cannot solve efficiently on their own. The largest BI (A) has the leverage for providing high value finance and marketing support. All BIs shared a common weakness in providing poor logistics service to the tenants.
- *The post-incubation stage.* Tenants of incubator B are encouraged to leave the BI as fast as possible in order to promote turnover in the premises. Once the tenants have left the BI, they stay in contact through the alumni and some social media platforms (e.g. Facebook). However, ex-tenants may not be very active within the BI network, like in the case of A.

4.3 PRACTICE OF THE LEAN STARTUP PRINCIPLES

In line with the *Lean* entrepreneurial practices (presented in the second section), two of the BIs consider the BP to be only relatively important. They recommend that companies should not get stuck to it and neither should they spend too many resources in elaborating it. However, it can play an essential role, depending on the growth stage, for example for those organizations seeking funding support.

The acquaintance of the BI with Lean and Quality Management methodologies is very low. However the BIs consider themselves well-acquainted with Customer Relationship Management theories or frameworks. The BIs advise their tenants to apply such theories or frameworks only to a certain extent if at all. In summary, the BIs do not apply or promote the Lean principles according to academic rules. However, we found BI practices which are similar in nature to some of the building blocks of the Lean process as shown in Figure 1. The BIs stressed the importance of “going out” (B), finding the customers (B, A) and what they associate value with (A).

The BIs’ support processes generally include dynamic and low bureaucracy / informal processes and routinized processes (B, C). These processes help spotting problems and fine-tuning the Business Idea (e.g. for *pivoting* when using the Lean terminology). The BIs promotes basic problem recognition tools to their tenants, such as brainstorming and mind mapping, for example through the recent *Business Model Canvas* framework (Osterwalder and Pigneur, 2010). However, there is unequal promotion of well-established tools in performance and quality management such as the Value-Chain analysis (Porter and Millar, 1985) or Fishbone diagrams (Ishikawa, 1990). Advanced problem solving methodologies such as the 5 Why’s (Ohno, 1988) and the 8 Disciplines (Rambaud, 2011) are unknown to the BIs. One BI (A) uses and promotes the NABC methodology for planning (Carlson and Wilmot, 2006).

Interestingly, *people* are considered as an *extremely important* source of problems for tenants (B, C), in opposition with the Lean principles. Finally, the BIs responded that their own quality management policies were limited, with *failure rate* referred to as the sole quantitative metric for performance control.

The notion of lean entrepreneurship as promoted by Blank and Ries was relatively (B) and strongly (A) unknown. It was difficult to discuss in detail how the BIs interact with stages as illustrated in Figure 1. Therefore we discussed the application of quality management related tools by the BIs, trying to establish a link between their current practices and some the lean entrepreneurship principles. Altogether the collected data from the BIs could have been improved in terms of volume and precision if the questionnaire had been customised to each of BIs’ operating mode.

5 CONCLUSION

The interviewed BIs have a clearly identified vision and mission. They have a well-segmented target population of entrepreneurs (B) or a limited field of industry (C). Their operating modes differ notably, because they are adapted to the volumes of candidates treated (B) or to the specific needs for business idea development from the tenants (C, A).

The *Lean entrepreneurship* approach is not spread nor used as a baseline for routine support towards the tenants. There has not been a high transfer of knowledge from latest academic findings towards BI practice in Turku in this field. However, the more IT driven the candidates and tenants of a BI are, the more the BI is prone to acknowledge the methodology and possibly promote the use of Lean related principles (B, A). Because BI experts' theoretical knowledge in *Lean entrepreneurship* is limited, they do not promote the approach and its principles towards tenants.

Interestingly, it was found out during the study that *logistics* was the unique common competence weakness of all BI. It is notable that *Leanness* is originally a logistics concept. The question whether the lack of acquaintance with the *Lean startup* methodology may be related to the fact that there is poor *logistics* expertise in the BIs in general is clearly raised.

BI representatives were clear on the important role of the BIs for local development as

- companies/entrepreneurs lack own assets and financial resources to maintain the business alive during the start-up phase
- the environment is too uncertain
- products in an early conceptual stage need close-at-hand, flexible, quick and affordable multi-disciplinary support and guidance.

The role of the BIs for local development is likely to remain critical in the current tight economic context. It is essential that BIs take inspiration from the “do as much with less” lean philosophy while the BI restructuring process is engaged in Turku. It is all the more important given the generalised contraction of available local public funding (Aamuset, 2013).

It would be interesting to collect data from a broader population sample by investigating BIs’ roles and practices – across regions in Finland, elsewhere in Europe and in other regions of the world – in relation to the Lean entrepreneurship principles. The acquired knowledge could be then disseminated throughout the network of incubators in order to share best practices. Because of the strong links between members of the CARPE network of universities to which the Turku University of Applied Sciences belongs to, the study could be oriented for example towards the following incubators:

- Innospace – Manchester (Innospace, 2013)
- Start UPV – Valencia (Start UPV, 2013)
- Utrecht Inc. – Utrecht (Utrecht Inc, 2013)
- Gruendungsservice – Hamburg (HAW, 2013).

Also, in view of the characteristics of the Finnish industry and business culture, it could be interesting to study whether the Lean methodology can be applied equally effectively in different business culture contexts.

Finally, it is important to acknowledge that there were no performance metrics available or it was not part of the BI strategy to develop metrics which would be available for public. It was therefore difficult to assess each BIs’ individual performance (except own tenants’ failure rate) or even to compare them.

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