Assessing the Potential Value of Software-Support for the Venture Creation Process

Abstract. Many newly founded companies fail due to a lack of experience of the founders, a missing connection to mentors, investors or other valuable contacts, or building a product without a real market need. Formalized frameworks like Lean Startup suggest that there is a structured way of evaluating ideas and building companies that increase the chances for success. In this paper we (1) looked for empirical evidence backing this assumption and (2) identified potential for software support in managing the venture creation process. We conducted 10 semi-structured interviews with employees at business incubators and startup founders. As a result, we derived high-level guidelines that need to be taken into account for a software to provide added value for management activities of venture creation processes.

Keywords: Entrepreneurship, Venture Creation Process, Knowledge Management, Social Software

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1 Introduction

As described by Schumpeter [1], innovation is the long-term driver of economic growth. However, evaluating an idea for a business model and ultimately building a company is a complex and high risk undertaking. Literature suggests that chances for success can be increased by having experience [2], operating in a favorable environment [3] or having a strong social network and personal relationships [4-9]. These factors may mitigate the risks being associated with building a company.

Traditionally, literature recognized the non-linear and iterative nature of the venture creation process: the majority of the proposed process models suggested sequential and distinctive steps [10]. Recently, however, researchers started to criticize this conception and consider it to be an oversimplification. More recent literature acknowledges the inherent complexity and develops new approaches to understand the venture creation process [11]. Various methods have been proposed, many of which combine multiple current management trends such as Agile Development, Lean Thinking and Customer Development, to provide guidance and a conceptual framework to manage the complexity of venture creation.

For instance, the Lean Startup method [12] promotes an iterative process involving short feedback loops between founder(s) and potential customers. The underlying assumption of the Lean Startup method and similar approaches is that there is some sort of a normative blueprint process model or best-practice patterns such as certain practices or artifacts for creating a new business. The objective of this paper is twofold: (1) To look for empirical evidence that backs this assumption and (2) to investigate and identify potential for software support in managing new venture creation.

We chose an inductive, qualitative research approach to prevent potential premature generalizations due to conceptual bias towards a particular potentially narrow conceptual framework and existing preconceptions about venture creation processes. Our aim was to openly contrast theory on and actual experience in venture creation processes so as to assess the validity of our assumption.

2 Methodology

We conducted 10 semi-structured interviews with startup founders and employees at different business incubators. The interviews centered around the following four themes:

- Which general characteristics describe the venture creation process?
- How is knowledge transferred and lack of experience compensated in this context?
- How are tools and artifacts used over the course of the venture creation process?
- What characterizes the social aspects of the entrepreneurial process (e.g. networking and access to experts)?

2.1 Research Design & Method

As a basis for our research, a design science approach was followed [13]. The increasing importance of startups and innovation activities for the economy substantiates the relevance of our research. We conducted a preliminary literature research to get a better understanding of the theory on venture creation and to inform our interview design. The result of our research is a list of design guidelines for venture creation management software.

We followed an exploratory approach based on 10 semi-structured interviews. This way, we were able to cover common questions and themes as well as remain open to issues brought forward by our interview partners. The interviews were conducted in two rounds with two types of interview partners (see section 2.2 for more details).

As suggested by Mayring [14], the interviews were transcribed as detailed as necessary to capture important information and enable further processing. The transcriptions were coded using the four themes mentioned above as codes (i.e. *general characteristics*, *knowledge exchange*, *artifacts/tools* and *social exchange*). To end up with the final observations we followed an approach presented by Miles and Huberman [15], by marking certain patterns in the extracted text segments and subsume particular aspects into more general observations.

In a final step, we abstract from the descriptive observations to derive prescriptive guidelines which address one or more of the observations. This was done by collecting underlying problems for each observation. By grouping these problems, we could again subsume particular aspects of these problems into general problems that a software support needs to address. These general aspects consequently represent the design guidelines.

2.2 Sample Selection & Description

The interviews were conducted in two rounds. The first round involved employees at business incubators since we assumed that business incubators tend to follow a (semi-)structured approach to company building and supporting the entrepreneurial process of startups. Further, we assumed that employees at business incubators would be likely to observe and recognize potential patterns of startup founder experiences since they interact with multiple startups.

To pick the interview partners of business incubators, a list of business incubators in Germany containing 58 entries was created. Subsequently, the initial list was reduced to a shortlist of 22 business incubators that covers a broad spectrum of possible approaches to business incubation. Business incubators on the shortlist were contacted, from which seven ultimately agreed on participating in the research project. The business incubation programs differed in terms of age of the program, industry focus, objective of the organization, phases of admitted startups as well as duration and degree of involvement of the business incubator.

In a second round we interviewed startup founders to get reports on first-hand experience with entrepreneurship. We focused on first time founders to get insights into the problems of unexperienced founders as they would benefit most from

software support. In terms of business models, we made sure that there is a significant amount of technology involved and frameworks such as Lean Startup are potentially applicable. All interview partners are listed in table 1.

Table 1. Description of Interview Partners

No	*Code*	*Role*	*Description*
1	ES	Project Manager	Publicly funded incubator program, thematic focus, 1-5 years old
2	DA	Innovation Lead	Corporate incubator/research lab, industry focus, 1-5 years old
3	ML	Program Manager	Publicly funded incubator program, industry focus, <1 year old
4	TF	Chief Operating Officer	University affiliated accelerator program, technology focus, <1 year old
5	LM	Community Manager	University affiliated incubator program, focus on scalable business models, >5 years old
6	HV	Chief Operating Officer	Independent company builder, focus on scalable business models, >5 years old
7	AC	Chief Executive Officer	Independent accelerator program, focus on scalable business models, <1 year old
8	W	Technical Founder	Platform in e-commerce space, before scaling phase, received first financing round
9	ST	Business Founder	Media startup, validation phase with internal beta test, no funding
10	DK	Business Founder	Media startup, validation phase with public beta test, no funding

3 Observations

We found several challenges and characteristics that define the environment of a potential system support. In this section, we present our observations[1].

3.1 General Observations

An important observation influencing the entrepreneurial process is the resource restrictions startups face. There critical resource is most often available time. Thus, many activities fall short because of lower priority and due to low perceived value for the startup. Founders have to take a pragmatic approach and as mentioned in the

[1] The number in parentheses represents the number of interviews this observation is based upon, i.e. 7 of 10 means that this was mentioned by 7 interview partners out of the total 10 interviewed persons. The codes in parentheses refers to the interview codes as introduced in the methodology section in table 1 and indicate the source of information.

interviews, unnecessary tasks or too much formalization and fixed processes may produce too much overhead that is not valuable and are therefore rejected.

O1 - Resource restrictions: Founders face resource restrictions and have only limited time available. (2 of 10; HV, ML)

It was often mentioned that each startup is unique and as one interview partner put it *"there is no blueprint"* (HV) of how to build a company. Given the fact that by definition a startup is doing something new and innovative and further considering the different influencing factors, the result is often an unstructured, chaotic and fast changing environment with low predictability of outcomes. There is seldom a protocol or process to follow, but rather a pragmatic approach has to be taken to handle the high degree of uncertainty a startup faces. This manifests itself in a required high degree of flexibility, how a process evolves, which tasks to perform, which information to capture, etc.

O2 - Uniqueness: Each startup is unique and requires a high degree of flexibility with regards to the performed tasks and processed information. (6 of 10; DA, HV, LM, ML, TF, W)

As mentioned by employees at business incubators, providing support for the founders is necessary and helpful, but the initiative ultimately has to come from the founders, i.e. an advisor can not push a team to be successful if they do not have the drive to achieve success themselves. Most often the support is therefore on a request basis, as one incubator mentioned "*we see ourselves as a service provider for the startups and only give recommendations, the decision has to come from the startup itself*" (TF). This also seems to be an important trait to be successful in the long-term and the alternative can be counterproductive if a team is just executing what someone else tells them. Founders themselves mentioned they want to remain in control and drive the development and not be forced by a process or third party to do something or use some tools they do not want. This has to be balanced as they still have to be receptive to feedback and ultimately make the right assessment.

O3 - Founder initiative: Founders want and need to take the initiative and have the deciding power. (7 of 10; DA, ES, HV, LM, ML, TF, W)

3.2 Knowledge-Related Observations

Given the complexity of the entrepreneurial process and the required tasks at hand it is hardly possible to acquire all the required knowledge in advance. Especially unexperienced founders lack processual knowledge, i.e. what to do and how to do or approach things. As mentioned, they try to use their own judgment what to do or try to educate themselves, but often due to a lack of time (see O1) it is not possible to perform an elaborate research on the best practice for a specific task. They rather resort to trial and error and incorporate gained experience and knowledge over time.

Even experienced founders face situations where they may not be knowledgeable due to the uncertainty of the process.

O4 - Process knowledge: Founders often lack relevant knowledge about the entrepreneurial process and best practices. (4 of 10; AC, DA, ST, TF)

The most valuable knowledge is often tacit and, thus, hard to explain or codify. Such kind of knowledge is built from experience and for example comprised of the ability to assess a situation with limited information and still provide a promising recommendation. It is often not possible to break this decision making process down into simple and generally applicable rules, due to the complexity of influencing factors that have to be taken into account. This is a value add of advisors and mentors and why the personal interaction and support by experienced people is considered to be important in this context. One founder emphasized that they did not lack any support in the beginning besides advisors: "*we could have needed that (advisors) from the beginning … someone who raps our knuckles … we underestimated this*" (W). Experienced-based knowledge might be a differentiating factor as it is difficult to replicate.

O5 - Tacit knowledge: Valuable knowledge is often tacit and based on experience. (4 of 10; HV, ST, TF, W)

Besides tacit knowledge, certain information on specific topics is documented and accessible via the internet. The challenge is often to make an effort to find it. As mentioned, the scattered information makes it burdensome to find a specific information and assess the validity and applicability in a given situation.

O6 - Knowledge sources: Certain information and knowledge is spread across different sources and difficult to find. (3 of 10; AC, LM, W)

Many challenges are unique to each startup and depend on the specific context (e.g. product, business model or degree of innovation). However, it was mentioned that overall there are also problems that are recurring across startups. A startup may only face this problem once or a few times and therefore sees no need to document such knowledge. Although it could be helpful for other startups there is no real incentive to share this. An example could be how to set up a legal structure, which is only done once in the beginning. Such knowledge is often provided by people interacting with multiple companies like mentors or incubators that can transfer such knowledge between companies. As an example, incubators use strategy days or simple lists describing what to consider when founding a company to distribute this knowledge.

O7 - Recurring knowledge: Certain problems are recurring between startups but not necessarily within a single startup. (4 of 10; ES, HV, LM, ML)

Different types of knowledge exist and are subject to different frequencies of change. Legal topics were given as an example for quite static knowledge. As a contrast, topics like online marketing or new emerging technologies were mentioned as topics that are subject to frequent changes, which makes it difficult for documented knowledge to remain relevant. The difficulty therefore becomes to balance the efforts of collecting and formalizing such knowledge with the created value of doing so.

O8 - Knowledge creation: For certain domains, new knowledge is created often or existing knowledge is subject to frequent changes. (3 of 10; HV, LM, TF)

3.3 Tools- and Artifacts-Related Observations

Founders tend to feel overwhelmed by the amount of offered software tools and have difficulties identifying relevant and useful ones. One founder mentioned: "*I think there are too many tools, we are testing tools all the time*" (DK). Some software tools are trending or considered standard in certain areas. However, it remains up to the founder to assess the suitability for a given situation.

O9 - Multiplicity of tools: Many potential software tools are available, which require a continuous assessment of suitability. (5 of 10; DK, LM, ML, TF, W)

Various artifacts are created and used over the course of the entrepreneurial process. As an example, for business modeling purposes a pitch deck, Business Model Canvas or some form of business plan is created but mostly by using generic data processing software that does not provide much structure. Therefore, the structuring needs to be provided by the user, e.g., by using other example documents as templates.

O10 - Multiplicity of artifacts: Multiple types of artifacts are created over the course of the entrepreneurial process. However, little structural support is provided as generic software is used. (5 of 10; AC, DK, ST, TF, W)

Some artifacts such as the Business Model Canvas or a business plan are perceived as a standard amongst startups. For some business incubators they are mandatory to assess the business model: "*In the beginning we have an assessment center, where we use a Business Model Canvas*" (TF). However, sometimes there seems to be a lack of experience of how to create and work with these artifacts. One founder mentioned, he used the Business Model Canvas but "*besides filling things in boxes … did not provide much value*" (ST). The idea of most artifacts is to convey a certain thinking about a problem by providing a structure. However, if people do not know how to effectively use this structure or are not provided with any form of guidance the artifacts lose their purpose.

O11 - Artifact knowledge: Founders do not necessarily know how to effectively use certain artifacts. (3 of 10; DA, ST, W)

Pen-and-paper tools seem to play an important role for specific artifacts and project management purposes. Value is still perceived in using these forms instead of working digitally only. Especially in agile methods and when applying the Lean Startup approach, the use of posters of boards and special artifacts is prevalent as supported by the empirical data. It is more suitable for group work and in-person discussions, due to better visibility. However, there remains a gap when trying to integrate the physical pen and paper artifact into a digital workflow. As mentioned by one founder, the pen and paper versions get outdated ("*the one (Business Model Canvas) as it is hanging on the wall is not up-to-date anymore*", DK) and lose its usefulness if the form is switched from physical to digital.

O12 – Pen-and-paper tools: Founders see value in pen-and-paper tools, but it is difficult to keep physical and digital versions in sync. (3 of 10; AC, DK, W)

3.4 Social Exchange-Related Observations

Due to the knowledge often being tacit and advice being contextual, various types of interaction for knowledge transfer are required, such as personal meetings and discussions. As was mentioned in the interviews, the exchange benefits from a more informal setting and that is often why incubators organize events or try to have startups be co-located to foster exchange, as it increases the willingness to share information. As one incubator mentioned: "*The teams being co-located proved to be a major strength, as they are communicating a lot amongst each other … we were almost surprised how well it works*" (ML).

O13 - Informal exchange: Exchange of knowledge and experience is often informal, i.e. through relatively unstructured personal interaction between peers and advisors/mentors. (8 of 10; DA, ES, HV, LM, ML, ST, TF, W)

Most valuable knowledge is often tacit and held by experts, such as experienced founders or investors. Due to their expertise, these experts are usually sought out by many people seeking for help and are therefore difficult to get in touch with. Even before an initial contact, it may be difficult to identify the right expert who might be a good fit, as there is not always transparency about the area of expertise and actual knowledge that the person could provide. As mentioned by business incubators, this matchmaking process is one of the most important value adds, i.e. identifying the right fit and giving introductions to overcome this barriers founders usually face. They usually provide this through alumni networks or other forms of partner networks.

O14 - Expert access: Founders often lack access to experienced people like mentors/experts/etc. (7 of 10; DA, ES, HV, LM, ML, TF, W)

In interaction with advisors, mentors and other people that need deep insights into the company to give useful advice, sensitive information is shared. Especially in the beginning when there is often not more than an idea, founders fear revealing

proprietary information and get their intellectual property stolen. As one interview partner mentioned: "*startups need to have trust in their mentors … startups have to decide themselves who they can trust and who they want to share it (information) with*" (LM). Founders may be hesitant to document and share certain information and knowledge, as they want to have control over who has access to it. In a similar way, advisors might share confidential material too, to provide examples of documents or information that might be helpful for founders but need to be kept confidential.

O15 - Sensitive information: Sensitive information needs to be handled and bears the fear of founders of revealing proprietary information. (3 of 10; LM, TF, W)

4 Design Guidelines

To address the mentioned observations, design guidelines for the IT support of the entrepreneurial process were developed and are presented in this section. The reference code in parentheses indicates the associated observations.

1. **Workflow integration:** Due to the high resources restrictions startups face, additional work needs to be minimized in order to increase the acceptance and adoption of a tool. The effort to use a system can be minimized by integrating system usage into existing workflows and not add additional process steps. (O1)
2. **Contextual accessibility**: On a similar note, to minimize the barrier and required effort of switching between learning and doing something, relevant knowledge should be provided in a specific context, i.e. where and when it is needed or should be applied. The alternative would be to provide all available knowledge in a central location thereby having increased switching costs to access the knowledge. (O1)
3. **Goal setting**: Given the complexity of the venture creation process, focusing too much on individual steps can be counterproductive. Instead, by supporting the setting of goals and milestones collaboratively with stakeholders, accountability can be created without compromising on the flexibility of the actual implementation compared to a fixed defined process. (O2, O3)
4. **Structuring flexibility**: To further account for the complexity of the process and not be too restrictive, flexibility and adaptability of the system needs to be ensured, with regards to captured data, information and structuring capabilities of the process to address the individuality of the startup. (O2, O3, O10)
5. **Suggestion-based support**: Any form of decision support needs to remain on a suggestion basis. Control and final implementation needs to remain with founders to increase the acceptance of a support by not restricting the founder's freedom of action. As an example, possible next steps in a certain situation could be suggested based on collected data but which actions to implement ultimately has to be decided by a human. (O2, O3)
6. **Medium gap**: Given the perceived value of analog tools and artifacts, bridging the medium gap between analog and digital tools should be enabled to combine the benefits of both forms, i.e. ease of creation and interaction of analog forms with

ability to share and collaborate across locations of digital forms. As an example, results of a brainstorming on a flipchart could be captured with a camera and further processed in a digital workflow. (O12)

7. **Knowledge emergence**: Given the resource restrictions, taking time to formalize created knowledge is not necessarily the highest priority. Therefore, the emergence of knowledge and best practices through the use of the system should be enabled to minimize the effort of knowledge explication. This could be achieved through providing structuring flexibility (see DG4) and afterwards analyze the usage for patterns to use as suggestions for the future. (O1, O5, O8)
8. **Knowledge explication**: In addition to automate some form of knowledge creation, explication and sharing of knowledge needs to be incentivized to keep the knowledge base up-to-date with valid knowledge and thereby relevant for the founder. (O1, O5, O8)
9. **Knowledge base**: A shared knowledge base with relevant information for the entrepreneurial process (e.g., best practices for common processes, suggested tools for use cases, etc.) to compensate for the difference in knowledge and establish a common understanding needs to be provided. As mentioned, this could be a central repository or wiki to collect all knowledge, though providing context for the knowledge is important (see DG2). (O4, O6, O7, O9, O11)
10. **Knowledge adaptability**: As some knowledge might be changing it needs to be adapted to stay relevant and provide value to the users. Mechanisms need to be provided to easily adapt the knowledge base to account for the changing nature of information and knowledge while still ensuring the validity of the knowledge, possible through some form of version control and consensus mechanism. (O8)
11. **Shareability**: To foster collaboration amongst stakeholders easy sharing of information with other stakeholders should be enabled to lower the barrier of knowledge transfer and simplify creating a context for discussion. This could be achieved through providing access rights to certain information collected in a system or using of existing communication channels to distribute information. (O1, O13)
12. **Social exchange**: Given the mentioned barrier to formalize and capture certain knowledge, an additional way of knowledge exchange is through social interaction. Therefore, social exchange and engagement between users needs to be incentivized to support relationship building and improve the knowledge transfer of tacit knowledge. This could be achieved by encouraging the initial interaction amongst users and further through lowering the technical barriers of engagement, i.e. make it as easy as possible to connect and interact with each other. (O5, I13)
13. **Expert identification**: As mentioned, there is often a lack of access and possibly a lack of transparency about the capabilities of a certain person. Therefore, the identification and access to people with relevant knowledge and expertise should be simplified to enhance the matching process and reduce the necessity for human intervention. (O14)
14. **Trusting space**: As confidential information is often handled in this context, formalizing and submitting such information to a third party system could pose a

high barrier to system usage. To overcome this issue a space of trust and confidentiality needs to be created by giving transparent access control to the data owner to support the willingness of users to share information. (O15)

5 Conclusion

At a rather abstract level, common features between different venture creation processes could be identified such as the use of a business plan or Business Model Canvas. However, there are considerable differences in the way of usage and perceived value of applying certain methods or using certain types of artifacts. From the perspective of our interview partners, venture creation processes are perceived to be idiosyncratic. Furthermore, their application and usage does not necessarily seem central to success.

Our study suggests that the entrepreneurial process is dominated by three characteristics: (1) the unpredictability in the way it evolves over time, (2) a (perceived) lack of knowledge and experience among most founders and (3) its social nature to get access to valuable resources and enable transfer of experienced-based knowledge between different stakeholders. According to our interview partners, knowledge and social exchange may compensate for a lack of formalization and are perceived to be increase the likelihood of success.

Many available IT offerings demonstrate how software can facilitate knowledge exchange and social networking. To the best of our knowledge, little work has been done to provide software-support for the management of venture creation processes. In the present study, we derived guidelines based on our observations to inform the design of software systems for venture creation management. While the focus of this study was to gain in-depth insights on entrepreneurial practice, we acknowledge the yet hypothetical nature of the derived guidelines. Given the limited sample, a thorough validation and – if necessary – adjustment of the derived design guidelines is subject to future research.

Looking at different paradigms as a basis for such software support, Business Process Management (BPM) comes to mind as a way to support the management of the venture creation process. However, given our empirical findings, the high uncertainty and contextual dependency of the process, the focus on predefined process steps does not seem like a viable solution.

The uncertainty of the process and the context dependency on the knowledge and decision of the user calls for a more social and flexible approach such as Adaptive Case Management (ACM) seems more appropriate. It aligns with the goals driven approach presented in the guidelines and the focus on artifacts that are used in the process. It further emphasizes collaboration and social interaction rather than a step-by-step process. Still further research should provide a thorough discussion and investigation of the suitability of this paradigm.

Given the multitude of involved stakeholders, we think it is important to focus on those who would benefit and/or contribute the most to reduce the complexity. However, there seems to be an asymmetry of incentives between those benefitting

and those contributing to such a system. We see two main directions to extend the research: 1) identification of stakeholders who would benefit most from software support and 2) research on incentive mechanisms which would drive engagement towards and adoption of a venture creation management system.

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