CONNECTING THE DOTS: EFFECTUATION AND LEAN STARTUP

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Abstract. Accelerated digitalization calls for more entrepreneurial thinking and venturing in an uncertain and dynamic environment. This applies not only to startups but also to established companies. In both cases, entrepreneurial thinking and behavior help to develop future business opportunities with benefits for new products and business model innovation. Research streams like Effectuation and Lean Startup have significantly improved the tool kit for entrepreneurial and corporate venturing in recent years. This work combines these two research streams in an analytical framework featuring pairs of key concepts of Effectuation and Lean Startup. Applying the analytical framework empirically in the context of the Swiss e-healthcare system suggests that it can contribute to entrepreneurial venturing.

Keywords: Entrepreneurial venturing; effectuation; lean startup; innovation; stakeholders; e-healthcare system

INTRODUCTION

Definitions of startups are diverse. These suggest, for instance, that "startups are new organizations created by entrepreneurs to launch new products" (Eisenmann, Ries & Dillard, 2011: 1) or "a startup is a human institution designed to create a new product or service under conditions of extreme uncertainty" (Ries, 2011: 37). Theoretical concepts for entrepreneurial ventures include the blue ocean strategy (Kim & Chan, 2015), business modelling innovation (Osterwalder, 2010; Osterwalder, 2014; Linz & Müller-Stevens, 2017) as well as systemized entrepreneurial paths by serial entrepreneurs (Aulet, 2013; Maurya, 2012; Maurya, 2016). This work combines two popular research streams in the entrepreneurship literature – Effectuation and Lean Startup – in an analytical framework, which is tested empirically in the form of interviews with experts in the Swiss e-healthcare system. This combination adds a different theoretical angle to the entrepreneurship literature and in practice assists entrepreneurial venturing. The developed framework is applicable to startups, to new product development in established companies and to the adoption of new technologies.

LITERATURE REVIEW

Effectuation is concerned with behavioral processes that entrepreneurs engage in by using available means, such as resources and skills, in order to create desired outcomes (Sarasvathy, 2001). Instead of following clearly defined plans and making predictions about the future, entrepreneurs examine opportunistically which means are available to them at a given point in time in order to use them flexibly (Sarasvathy, 2001; Fisher, 2012). Lean Startup is a pragmatic approach to entrepreneurial activities that favors experimentation over detailed planning and focuses on customer feedback and iterative loops (Blank, 2013; Ries, 2011; Ries, 2017). Along these lines, Blank (2005) suggests that startups are temporary organizations in search of a repeatable and scalable business model. While Effectuation emphasizes the entrepreneurial process and personality (Sarasvathy, 2001), Lean Startup focuses more on iterative steps in new product development including an interactive exchange with potential customers (Ries, 2011). Given these different perspectives, the integration of these two research streams may assist entrepreneurial venturing more holistically. The relevant literature is reviewed as the basis for the analytical framework.

Effectuation

Effectuation explains entrepreneurial processes, creating desired outcomes by using available means, resources, and skills (Sarasvathy, 2001). It can be defined as "processes that take a set of means as given and focus on selecting between possible effects that can be created with that set of means" (Sarasvathy, 2001: 245). In other words, these processes help to choose between possible effects that can be created with a given set of means. Using these means also allows to further design these effects (Dew, Read, Sarasvathy & Wiltbank, 2008; Sarasvathy, 2001). The following three aspects are described to be particularly relevant in the literature (Chandler, DeTienne, McKelvie & Mumford, 2011; Chandler, DeTienne & Mumford, 2007; Read, Song & Smit, 2009; Sarasvathy, 2001).

1. Form partnerships: Establishing close relationships with stakeholders builds complementary assets and helps to deal with uncertainty in running the venture (Chandler, DeTienne & Mumford, 2007). Means related to "whom I know" include the network the venture has, especially with entities that might prove useful in terms of opportunities and resources (Read, Song &

Smit, 2009). Partnership go beyond competitive thinking and focus on committed internal and external stakeholders which allow the effectual entrepreneur to access, shape and exploit new means and opportunities (Perry, Chandler & Markova, 2012; Read, Song & Smit, 2009). Getting pre-commitments and agreements from customers and suppliers reduces the uncertainty of the venture (Chandler, DeTienne, McKelvie & Mumford, 2011; Chandler, DeTienne & Mumford, 2007). This allows the venture to gain some control over future outcomes which renders the need to predict them obsolete (Chandler, DeTienne, McKelvie & Mumford, 2011; Sarasvathy, 2001).

2. **Run experiments**: This is about trying different approaches prior to defining the business concept (Chandler, DeTienne & Mumford, 2007). Given that entrepreneurs often face situations without prior experience, they have to learn by trial and error and by pivoting between different approaches. Experimentation is seen as learning from the entrepreneurial process and to use iterative steps in order to work out a feasible business concept (Chandler, DeTienne & Mumford, 2007; Sarasvathy, 2001). Experiments with poor results quickly lead the entrepreneur to focus on the next experiment without losing precious time and resources (Chandler, DeTienne, McKelvie & Mumford, 2011). In addition, experiments exceeding the costs the entrepreneur is willing to incur are rejected (Chandler, DeTienne & Mumford, 2007) which suggests that effectual ventures can contain potential losses (Chandler, DeTienne, McKelvie & Mumford, 2011).

3. **Exploit opportunities**: Opportunities can arise in the form of contingencies. Formal business plans with rigid goals and predictions can be undermined by unexpectedly materializing contingencies (Chandler, DeTienne & Mumford, 2007; Read, Song & Smit, 2009; Sarasvathy, 2001). Instead of pursuing a clearly defined goal, leveraging contingencies emphasizes innovative applications of contingent alternatives, which entrepreneurs encounter while exploiting the means at their disposal and engaging in the entrepreneurial process of creation (Read, Song & Smit, 2009; Perry, Chandler & Markova, 2012). Because no specific goal is set, the result of this process might be different from the initial idea that led to the formation of the venture in the first place (Read, Song & Smit, 2009).

Lean Startup

Lean Startup is an entrepreneurial approach that favors experimentation over planning and focuses on an iterative process taking into account customer feedback (Blank, 2013; Ries, 2011; Ries, 2017). Startups are defined as temporary organizations looking for a repeatable and scalable business model (Blank, 2005). Lean Startup is driven by new technologies and focuses on innovation and agile product development (Rasmussen & Tanev, 2015). The application of new technologies takes place in a customer development process, in which user cases and product functionalities are developed in close collaboration with customers (Blank, 2007). Behind Lean Startup is the understanding that entrepreneurs can be found everywhere, not exclusively in startups. Entrepreneurship can be seen as active management and a structured scientific (experimental) process that can be learned (Ries, 2011; Aulet, 2013). Similar to lean production methodologies that aim to eliminate waste, lean entrepreneurial initiatives avoid the development of products that nobody wants in the end (Frederiksen & Brem, 2017). Lean Startup proposes a Build-Measure-Learn Cycle which enables entrepreneurial ventures to reduce uncertainty early (Ries, 2011) with the help of experiments (Tomitsch, 2018). In order to successfully deal with the challenges of a "VUCA" environment characterized by volatility, uncertainty, complexity and ambiguity (Bennett & Lemoine, 2014: 1), it is proposed to focus on the following three aspects of Lean Startup.

1. **Involve stakeholders early**: Companies are encouraged to look beyond company walls and find out what customers expect. The process of carefully listening to customers and collecting their feedback makes it possible to improve the existing solution and helps to make it effective in order to meet customer requirements (Ries, 2011). This is referred to as customer acquisition and validation in the search phase that occurs before customer acquisition and business development takes place in the implementation phase (Blank, 2013: 6).

2. **Apply Build-Measure-Learn Cycle**: Lean Startup focuses on the translation of an entrepreneurial vision into a rigorous validation of specific product features with the help of the Build-Measure-Learn Cycle (Rasmussen & Tanev, 2015). This validated learning based on hypotheses (Eisenmann, Ries & Dillard, 2011) makes it less likely to develop a product or process innovation that customers are not interested in. By deliberately iterating and experimenting with individual product properties, they are validated which increases the likelihood of startup success.

3. **Create Minimum Viable Product**: Creating a promising Minimum Viable Product (MVP) makes it possible to understand what customers want. This represents a working product with a minimum level of functionality (Ries, 2011). Different prototypes with new features are developed, each of which solves a specific customer problem. In contrast to a perfectly written business plan with rigidly defined product features, a business model in agile development is improved continuously through experiments (Blank, 2013).

METHODOLOGY

This work follows a qualitative approach based on semi-structured interviews with ten relevant stakeholders to gain insights into the Swiss e-healthcare system. E-healthcare comprehends new digital services through the convergence of biomedicine, IT, health data, wireless and mobile communication and requires digital data processing via an electronic patient dossier (in the following referred to as EPD), which will capture individual health data. Its application will become compulsory for stationary health institutions while patients as well ambulant health facilities can still choose to opt out.

To generate empirical data, semi-structured interviews were conducted with ten stakeholders in Switzerland in 2018 who are key players in the digital e-healthcare system. This approach meets the need of multiple interactions between interviewer and interviewees for more robust results and corresponds to a recommended sample size of four to ten (Eisenhardt, 1989; Eisenhardt & Graebner, 2007). The goal was to identify individuals for each key stakeholder group in the e-health system in order to get a wide array of organizational perspectives on the EPD. This included representatives of a health logistics provider, medical practice, pharmacy chain, health consultancy, hospital as well as elderly homecare providers. Notes were taken during interviews by the interviewer and summaries were written subsequently to highlight emergent issues (Miles & Huberman, 1994; Sharma & Vredenburg, 1998). In case of ambiguous answers, interviewees were asked follow-up questions for clarification. Data were tabulated based upon which the analysis was performed (Eisenhardt, 1989; Yin, 2003).

The interviews were conducted to identify benefits, challenges and potential for improvement in relation to the EPD. Since experts and their organizations naturally have different perspectives on the EPD and the e-healthcare system (e.g. hospital versus logistics service provider or pharmaceutical chain versus nursing home operator), the questions were asked in general terms that are relevant to different organizations (e.g. "Which challenges of the EPD do you see and why?"). The components of the analytical framework were not explicitly mentioned to interviewees, but rather it was examined to what extent their answers related to these components. This approach was chosen so that experts could respond freely without being pushed into rigidly thinking along the dimensions of the framework.

DISCUSSION

Effectuation and Lean Startup can assist individuals involved in different business environments and contexts (e.g. startups, new product development in established companies, adoption of new technologies), which has been discussed in the literature (Ries, 2011, Sarasvathy, 2001). However, there are differences between the two, as Effectuation focuses primarily on entrepreneurial personalities, while Lean Startup focuses on iterative processes in developing solutions for customers. Therefore, looking beyond the separate benefits of the two approaches and taking a more holistic view by combining them can provide additional insights to entrepreneurship. Based on the discussed key concepts of Effectuation and corresponding aspects of Lean Startup as well as the empirical findings in this work, the three concept pairs depicted in Figure 1 appear to be particularly important for the development of an e-healthcare system featuring the EPD. In their responses, experts clearly referred to the concepts of the framework.
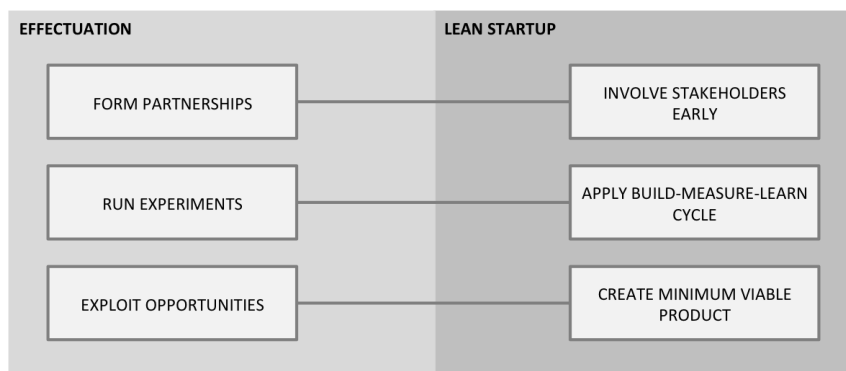

Figure 1. Analytical framework linking Effectuation and Lean Startup

Using this framework in the context of a VUCA environment like the Swiss e-healthcare system, the empirical findings are discussed now. The answers of interviewed experts were consistent, which suggests that the three concept pairs presented in the framework hold and are important for the development of the EPD.

1. **Form partnerships – Involve stakeholders early**: Developing partnerships and expanding the network with different stakeholders (e.g. customers, suppliers or distributors) helps to spot opportunities and understand the particularities of a given market (e.g. Chandler, DeTienne & Mumford, 2007; Read, Song & Smit, 2009). Developing a relationship of open dialogue and an honest feedback culture to determine pain points makes it more likely that stakeholders really commit and become partners (e.g. Chandler, DeTienne, McKelvie & Mumford, 2011; Chandler, DeTienne & Mumford, 2007). By involving stakeholders early as suggested by Lean Startup, feedback can be collected rapidly and a better solution can be developed due to regular validation by customers (Blank, 2013). The findings not only suggest that partnerships with stakeholders facilitate primary market research in the sense of access to shareholder-specific information (i.e. a "door opener" as one interviewee has put it). Based on the response of all interviewed parties, the findings also highlight clearly that these partnerships build the foundations for long-term collaboration in the context of the EPD.

One interviewed individual noted that "the voluntary application of the EPD creates gaps in the system that hinder the onward development". While this as a significant challenge, another interviewee argued that "for the initial application of the EPD, it does not need each and every individual of the population and healthcare provider to participate and that the system can be tested and run with smaller numbers". He added: "Going forward, an increasing number of (younger and tech-savvy) individuals and institutions will adopt the EPD and this will improve the system". To close these gaps in the system, trusted partnerships are of the essence amongst those entities that have to and choose to adopt the EPD in order to make the initial system work. Several interviewees noted that all their individual pain points need to be assessed holistically and this can only happen through cooperation and partnerships. Most interviewed stakeholders suggested that these partnerships should start as early as possible so that challenges can be addressed. Without exception, all interviewees emphasized that key challenges will be the interface, connectivity and integration of different primary IT systems and types of software that stakeholders currently operate. Many systems are not compatible yet and patient data are often entered and copied from one system to another. Not surprisingly, this "semi-digital approach", as one interviewee put it, is liable to errors and is also highly inefficient. Some interviewees highlighted the importance of collaborative political processes with a country-wide adoption of the EPD in mind. Another important issue mentioned by most interviewees is data security and protection determining the trust in the EPD system for handling private data. They also noted that a secure EPD system can only be developed if all parties work together seamlessly and agree on a common set of security requirements.

2. **Run experiments – Apply Build-Measure-Learn Cycle**: Upon establishing trusted relationships with stakeholders and gathering valuable knowledge, effectual attempts of running experiments can be made to assess if a product, service or specific solution resonates with them. This suggests that involved teams have to interact closely with customers, for instance, to learn by trial and error and to pivot between different possible approaches resulting from the insights. Learning in iterative steps from experiments informs the development process of feasible and relevant solutions (Chandler, DeTienne & Mumford, 2007; Sarasvathy, 2001). In addition, this approach helps involved individuals to avoid spending too much time and effort on dissatisfactory solutions (Chandler, DeTienne, McKelvie & Mumford, 2011). Along these lines, Lean Startup involves the Build-Measure-Learn Cycle in the sense of experiments and validated learning (Ries, 2011; Eisenmann, Ries & Dillard, 2011). This ensures that products or systems to be developed, such as the EPD, are actually useful. Interviewees also mentioned the issue of connectivity of different primary IT systems in this context. Literally all interviewed stakeholders proposed the development of one shared IT infrastructure to handle the EPD. One interviewee noted: "Just contemplating on the issues and challenges will not be of any use for the development of a holistic infrastructure. What is needed is that all involved parties work on the compatibility of their primary IT systems handling EPD data in order to develop functioning interfaces with systems of other parties".

On the matter of IT security of a connected EPD system, experimentation will also be instrumental to check for loopholes and other weak points. Some interviewees have already set up task forces to address this issue with a special emphasis to get feedback on interfaces with systems of other players. One interviewed person tellingly said: "Data security is the backbone of trust in the EPD system. If there is only a shadow of a doubt about it, most users will be very reluctant to adopt the system." Testing these IT systems by experimenting with different interfaces that create a link to the next party's system will be instrumental for the development of a trustworthy and secure EPD infrastructure.

3. **Exploit opportunities – Create Minimum Viable Product**: Experimentation in the effectual sense and the application of the Build-Measure-Learn Cycle help involved individuals to recognize and exploit opportunities better. This can be done by creating a basic pilot solution that meets identified requirements instead of writing formal and rigid business plans. Unforeseen events, materializing new opportunities or changing customer preferences can quickly undermine an elaborate business plan or fully developed solution (e.g. Chandler, DeTienne & Mumford, 2007; Read, Song & Smit, 2009; Sarasvathy, 2001). By exploiting current opportunities rather than preparing for future ones, project teams can avoid larger potential losses and keep an eye on the maximum affordable loss (Chandler, DeTienne, McKelvie & Mumford, 2011; Chandler, DeTienne & Mumford, 2007; Sarasvathy, 2001). They can also leverage contingencies and use opportunities as they arise and thereby take part in the process

of creation (Read, Song & Smit, 2009). This significantly increases flexibility because opportunities can be exploited as they arise which can create results that may differ from what had been planned originally (Read, Song & Smit, 2009). In this context, Lean Startup calls for the creation of a promising MVP with basic functions to be presented to the market (Ries, 2011). This allows the team to test whether a basic prototype can solve problems, for instance, in the digital networking of medical service providers (Ries, 2011). With a focus on the e-health space, the findings indicate that several opportunities could be exploited. Based on the mentioned experiments, lessons learned can be used to make the expected improvements and offer suitable pilot solutions and user journeys, especially with the user-friendliness of the EPD in mind. Many interviewed individuals said they expected low adoption rates, however, some of them talked at length about how the combination of a user-friendly solution and demographic factors can actually have a positive impact. Specifically, one person noted: "As younger tech-savvy generations join the health system, whether as patients or as healthcare providers, this represents a massive opportunity because it will increase the adoption rate of the EPD. Younger generations are less concerned about new technologies and will push forward change".

Increasing life expectancy and an aging population drive health costs to unprecedented levels. All interviewed individuals mentioned that the EPD can play an important role to mitigate these effects. Several interviewees noted that the same patient data are often collected multiple times at different places. One interviewed stakeholder explained: "If a patient encounters a medical emergency without his or her general practitioner involved (i.e. without referral) and is picked up by the ambulance, the emergency service providers need to compile patient data from scratch. If they had access to the EPD, they could do it at one click. Rather, they have to ask the patient for information and if that is not possible, they need to search for the information elsewhere". Such an emergency represents a major risk to the patient. If time is of the essence, critical health information needs to be available to healthcare professionals immediately so they can decide on a suitable treatment. Several interviewees highlighted how important key data on blood type, allergies, applied medication and the general heart condition are, especially when urgent treatment is necessary. As some interviewees added, yet another advantage of an EPD in an emergency is the availability of data around the clock and everywhere. However, an EPD also offers opportunities in non-emergency situations. Patients are often treated by multiple healthcare providers over time. Other than their general practitioner, these include specialists, hospitals and other clinics. Every time they have an appointment with a new entity, a patient file will be created containing personal data. Even if patients are referred by their general practitioner (often by letter, fax or email), the next entity will have to open a new file and enter the data again manually which interviewees generally regarded as a tremendous inefficiency. They highlighted that this should be done electronically and accessible for all involved parties. Given that handwritten notes are often used by healthcare professionals, one interviewee argued that "these can easily get lost, may contain mistakes and may be hardly legible". She said further: "This makes it difficult for those who have to enter the information into the respective systems and can cause mistakes, either by missing something or by not being able to read it properly". Another interviewed person noted that because electronic entry masks include clearly defined fields and picklists, they force users to work more accurately and prevent gaps in patient files. The discussed findings indicate tremendous opportunities to be exploited by developing pilot solutions that meet all stakeholders' requirements. An integrated EPD can generate substantial time and cost savings and therefore help to slow down the rapidly accelerating health sector costs.

In times of ageing societies where limited resources are confronted with rising healthcare costs, digitalized processes can reap significant benefits. Developing digitalized diagnostic solutions – with the help of entrepreneurial Effectuation and Lean Startup – will enable cost-efficient homecare solutions for a growing number of elderly people.

CONLUSION

By developing an analytical framework combining two research streams of entrepreneurship, namely Effectuation and Lean Startup, this work supports entrepreneurial venturing for both startups and established companies. On the one hand, this contributes to theory by identifying connecting points between the popular research streams, which allows to examine them from a different theoretical angle and to assess how they can complement each other (i.e. Effectuation emphasizing entrepreneurial personalities and Lean Startup zooming in on iterative processes). On the other hand, applying the theoretical framework in the practical context can support entrepreneurial venturing methodologically. With a VUCA environment in mind, the presented analytical framework was then examined in the context of the Swiss e-healthcare system. The evaluation of the interviews clearly indicated that Effectuation can be linked to Lean Startup. The proposed three concept pairs discussed can methodically support entrepreneurial venturing in startups as well as established organizations.

Limitations are outlined briefly. For example, the sample of interviewees is relatively small. The goal was to get representatives for each key stakeholder group in the Swiss e-healthcare system to learn more about their specific perspectives. While it satisfies the requirements of insightful qualitative research (e.g. Eisenhardt, 1989; Eisenhardt & Graebner, 2007), more interviews could be conducted. Nevertheless, the findings show high consistency on how the EPD is perceived. Furthermore, the framework

contains useful concept pairs. While these assist entrepreneurial venturing, other concept pairs may exist that could provide additional methodological approaches.

Some promising directions for further research exist. For instance, the presented analytical framework can be the basis to derive research hypotheses on the concept pairs, the linkages between them and the impact they may have on entrepreneurial venturing. While this goes beyond the scope of this work, such hypotheses would pave the way for quantitative analysis with larger samples. In addition, the framework can be used in the context of business model development. Given the outlined methodological approaches, questions on their impact and usefulness to inform business model development can be addressed.

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