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## Digital Entrepreneurs and the Origin of their Business Models

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### Abstract

The aim of this paper is to find out if the business ideas of digital entrepreneurs develop within the opportunity discovery or creation context and what digital levels their business models have in this context. Following an exploratory research design, ten digital start-ups were interviewed and analyzed.

Keywords: Opportunity discovery and creation, digital entrepreneurship, business model

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## Introduction

Business model innovation resulting from digital technologies has brought about a transformation in several industries including media or accommodation. These transformations were largely introduced by pioneering start-ups that grew into giants like Airbnb or Amazon (Sorri *et al.*, 2019; Zaheer *et al.*, 2019). Digital technologies have thus had an important impact on the new venture idea and the entrepreneurial process (Nambisan, 2016) and open up a wide range of possibilities for entrepreneurs (Kraus *et al.*, 2019) and new business models (Cuc, 2019). The new opportunities driven by digitalization build the basis for digital entrepreneurship. Digital entrepreneurship is “a subcategory of entrepreneurship in which some or all of what would be physical in a traditional organization has been digitized” (Hull *et al.*, 2007, p. 293); it “embraces all new ventures and the transformation of existing businesses that drive economic and/or social value by creating and using novel digital technologies” (European Commission, 2015 cited by Sahut *et al.*, 2019, p. 4); it’s the process of creating a digital start-up (Zaheer *et al.*, 2019). A digital start-up is in an early stage of development and growth (Klotz *et al.*, 2014) where digital technologies “enable at least one component of a business model in a way that is not just functional but vital to the firm” (Zaheer *et al.*, 2019, p. 2).

The basis for every new venture is the business opportunity pursued by the entrepreneur, such as opportunities due to digital technologies (Kraus *et al.*, 2019). Ardichvili *et al.* (2003) describe the identification of the right opportunities for entrepreneurs as one of the key activities behind success and forms the basis and starting point for entrepreneurial behavior. Before a business model or a business plan can be developed, however, entrepreneurial chances and opportunities must be *discovered or created*. Within the *opportunity discovery context*, based on the description of Kirzner (1979), opportunities exist independent from the activities of a person and wait to be discovered and used. In the *opportunity creation context*, opportunities do not yet exist, as described by its originator Schumpeter (1934). Instead, they are created if an entrepreneur

develops them within an iterative process of acting and reacting. The finding and development of new ideas, as well as the networking of existing resources with existing and new possibilities form the basic building blocks from which new and future business models are created (Ardichvili *et al.*, 2003), especially against the background of rapidly proliferating digitalization. Table 1 highlights the specific characteristics of opportunity discovery and creation.

Examples of Airbnb or Facebook showed how digital companies can become game changers in industries in conditions of high uncertainty, which is a characteristic of the opportunity creation context. Ojala (2016) investigated the issue of companies developing their business model under conditions of high uncertainty, namely the opportunity creation context. But so far, investigations have not extended to whether digital entrepreneurs develop their business model in the opportunity creation or the discovery context.

In order to understand the business model characteristics of digital entrepreneurs in a better way, Hull *et al.* (2007) identified three levels of digitalization – mild, moderate and extreme – with each level having specific characteristics. Hull *et al.* (2007) state that empirical investigations based on their characteristics should shed more light on the development of digital entrepreneurs and how digitized their business models are. More insights about the digital level of business models is also requested by Kraus *et al.* (2019). Furthermore, Zaheer *et al.* (2019) state that the research on digital entrepreneurship is still very fragmented and in-depth knowledge about the specifics of a digital entrepreneurs business model is still in very short supply.

Following the requests of Hull *et al.* (2007), Kraus *et al.* (2019) and Zaheer *et al.* (2019) to shed more light on the characteristics of digital entrepreneurs and their business models, the goal of our research is to identify 1) *in which opportunity context digital entrepreneurs develop their business model* and 2) *which level of digitalization characterizes these digital businesses*.

Table 1.

No.	Characteristic	Discovery Theory	Creation Theory
1	Opportunity existence	Opportunities are available independently from the entrepreneur and wait to be discovered. They result from unbalances in the environment, evoked by new technological standards or customer needs.	Opportunities emerge through an iterative process of acting and reacting. They result from individual and personal visions of the entrepreneur.
2	Entrepreneur	Entrepreneurs identify opportunities through an active search for opportunities and have a higher particular inclination to perceive them (Alertness).	Entrepreneurs are no different to anyone else; they can develop themselves further by creating a new possibility.
3	Information	Information about the market, customers and competition are available and lead to the recognition of a new opportunity.	As a result of an evolutionary process, the outcome of opportunity creation is open and unknown in advance. Opportunities are sometimes unrelated to currently available information. New extensive knowledge can emerge.
4	Peculiarity	New opportunities can be identified due to special abilities and knowledge of the entrepreneurs.	The path-depending process of creating an opportunity can lead to significant differences between entrepreneurs and others.
5	Decisions	The opportunities are based on risks; there is sufficient information about possible outcomes and the possibility of occurrence available. Decisions are made deductively and from evidence, based on facts and information.	The opportunities are based on uncertainty; information about possible results of a decision and the possibility of occurrence is not available. Decisions are made inductively and depend on the context.
6	Approach	Causation: Selection of the necessary resources to reach a defined goal.	Effectuation: Development of new possible goals by using the available resources.
7	Strategy	Fully formulated strategy, almost no adaptations.	Emergent strategy, many adaptations based on a trial-and-error.
8	Employees	Based on experiences from working in industrial companies.	Based on former entrepreneurial experiences.
9	Founding	Formal, based on rules.	Informal, based on the situation.
10	Competitors	Competitive advantages emerge from building up barriers due to knowledge about the market and the product.	Competitive advantages emerge by a high level of innovativeness.

Table 1: Characteristics of the opportunity creation and discovery approach (based on Alvarez and Barney, 2011; Ardichvili et al., 2003; Eckhardt and Shane, 2003; Fueglistaller et al., 2012; Gaglio and Katz, 2001; Geißler and Zanger, 2015; Ghezzi, 2019; Gontareva et al., 2018; Hills et al., 2004; Jones and Barnir, 2019; Shane, 2000)

## Approach

In order to find out how entrepreneurial opportunities are formed and how this relates to the level of digitalization, this study follows an exploratory research design encompassing ten semi-structured interviews with digital entrepreneurs who started

their businesses in the university context. The informants were CEOs or founders of the companies who were able to describe how the founding process of the company took place. We followed a purposive sampling strategy (Flick, 2014) as we deliberately selected digital entrepreneurs with an academic

background. The interview guideline used consisted of questions addressing the idea development, the founding process of the start-up, the development of the business model and the digital level of the business model. The interviews were conducted between January and March 2020 and lasted between 20 and 42 minutes each. With the exception of one telephone interview, all the interviews were conducted in person. The interviews were all recorded and fully transcribed. The process of deductive data analysis described by Mayring and Fenzel (2014) was followed for analyzing the data. The characteristics from table 1 were utilized to identify whether a company operates in the opportunity discovery or the opportunity creation context, and every interview was deductively analyzed with the aid of these characteristics. In order to assess the digital level of every company interviewed, the classification into three digital levels proposed by Hull *et al.* (2007) was followed. In order to be able to classify the companies according to the three digital levels, we used the characteristics of the typology of digital entrepreneurship advocated by Hull *et al.* (2007) and combined them with the characteristics of the digital maturity model proposed by PwC (PricewaterhouseCoopers, 2014). This provided us with a structured and sound operationalization for identifying the digital level. The categories were defined as the (1) digitalization as a company goal, (2) internal and external processes, (3) usage of digital technologies for cooperation and development, (4) usage of digital technologies for marketing and sales, (5) current level of digitalization for their business model elements, (6) collection of customer data, and, (7) support of digital education of employees.

## Key insights

According to the characteristics of the opportunity discovery and creation approach (see table 1), we revealed that 5 out of 10 companies identified and explored new opportunities in relation to the discovery context (A, B, E, G, J), whereas the remaining 5 companies did the same within the creation context (C, D, F, H, I). Although evidence of both theories has been found in every company, they could be clearly assigned to one single opportunity context. Table 2

provides an overview of the interviewed companies and their assignment to the discovery or creation context based on the characteristics from table 1 and complemented by exemplary phrases from the interview. In addition, table 2 indicates the digital level of the company's business.

The majority of founders recognized an imbalance in the market, triggered by specific customer needs or problems. But there is no clear tendency toward the discovery context of opportunities. Furthermore, entrepreneurs developing their business models in the opportunity creation context also reach a point where their product or service solves a potential problem in the market of which they were unaware at the time they started. Moreover, at the end of the development of a business opportunity toward a business model, entrepreneurs sometimes find themselves with a completely different product than the one they started with (e.g. company D).

Since five out of ten start-ups analyzed established their company in the opportunity creation context, a high degree of innovativeness is assumed in these cases. The creation of new business opportunities is based on developing products and services without or just restricted knowledge of the market and the competition. The founders create a new market demand by offering completely new products and services to customers.

In our investigation it became evident that entrepreneurs in the founding process intuitively and individually deal with the respective tasks and problems depending on the situation and do not strictly follow the characteristics of one opportunity context. Whether the entrepreneurs operate more in the discovery or creation context also depends on the combination of several factors, including access to a new opportunity, the environment, the mindset and previous developments.

By analyzing the digital level of all companies, we faced the challenge that a strict separation of each digital level is hardly possible. Nevertheless, we revealed that the business models of six companies have an extreme digital level (A, B, E, G, H, I), one has

Company	Discovery Theory	Creation Theory	Determining characterization	Example of assigned phrase	Digital level
A	x		1, 2, 3, 4, 5	"It was completely clear for me, that the potential of this technology will grow and that this will lead to huge changes. I see many parallels with internet as this topic also arose."(No. 1 & 3)	extreme
B	x	x	1, 2, 3, 5, 6, 10	"Mobile access to web systems of the university was not possible with good user experience, our co-founder realized that this was so and it bothered him, He wanted to create better accessibility for himself and the students."(No. 2 & 3) "After running several startup projects in parallel, we finally decided to focus only on company B, problem-solution-fit."(No. 5)	extreme
C		x	1, 3, 5	"The idea came out of nothing. I thought that there is a similar solution for the industry and asked myself why there is no solution for the construction topic."(No. 1) "We have had to and still have to do a lot of groundwork here."(No. 5)	moderate
D		x	1, 3, 5, 6, 7, 10	"After a research of our new idea we noticed that a solution like ours did not exist at the present time."(No. 1 & 3) "If you have a sensor device there [...] then you can save labor and the risk of accidents. This results in a great added value in terms of cost savings. And that is where there has been an expansion of the business model."(No. 10)	moderate - extreme
E	x		1, 2, 3, 4, 5, 6, 7	"What I did was to scout trends. I detected a customer need and developed a special solution for it."(No. 1 & 2) "[...]and our product is simply an addition or an innovation from the already known solution."(No. 5)	extreme
F		x	1, 2, 4, 5, 6	"We simply wanted to establish a company [...] The whole construct has developed over time."(No. 1) "My partners and I wanted to start and run a company and feverishly thought about what we could do. [...] we asked ourselves what we could do better than our competitors, and what the problem was and why other solutions didn't work as well."(No. 2 & 4)	moderate - extreme
G	x		1, 2, 3, 4	"The idea came up because we detected a certain problem shared by catering companies concerning their online review system."(No. 1) "Because of our customers, we have again been working on new features and products."(No. 3) "I actually didn't always want to be self-employed. (...) Retrospectively, I have to reflect and honestly say that, in mind-set terms, starting my own business was a good fit for me."(No. 2)	extreme
H		x	1, 3, 4, 5, 10	"That simply arose from the idea that there was nothing like that at the time. [...] and that didn't exist at the time, at least not in the quality we needed. That's why we did it ourselves."(No. 1 & 3 & 5) "I have always been self-employed, so I have never worked in a company. I am CEO."(No. 4)	extreme
I		x	1, 4, 5, 6, 8, 9, 10	"[...] the idea arose independently of the motivation to start a company. We simply made the product for ourselves."(No. 1) "We have seen the problem of not having accurate data. We have seen this in everyday life, however, we did not know or never knew about how big this problem really is and how big a need there is behind it."(No. 5)	extreme
J	x		1, 2, 3, 4, 5, 6, 8	"We saw what he was doing and thought there must be a simpler solution. We came up with our solution to a problem that was unknown to us until then."(No. 2 & 4) "And then, above all, we have both seen different companies and have also seen many things that did not suit us so well there and that we wanted to do better in our own company."(No. 8)	moderate - extreme

Table 2: Assignment of the companies to the opportunity theory approach and their digital level

a moderate level (C), and three reach a moderate to extreme level (D, F, J) of digitalization. A clear assignment to an extreme digital level was not possible in these cases. On the one hand they are providing solutions on a high digital level, and at the same time they are operating in industries in which non-digital contacts or processes are still required to a large extent (geriatric care, human resources, and stock farming). The only company with a moderate level of digitalization has developed a web-based tool for the interdisciplinary configuration of buildings in the construction industry, in which non-digital components of the business model and the industry must also be considered to a greater extent.

By combining the results on the opportunity context with the results on the digital level of each business model, our results revealed that the companies operating in the discovery context are more likely to have an extreme level of digitalization (A, B, E, G), despite company J (moderate-extreme), than companies operating in the creation context (C, D, F, H, I), showing more often a moderate level of digitalization. Nevertheless, with our results we are able to show that all the companies have a large proportion of high digitalization, although there are also indications in the direction of a moderate digital level. The reason behind this high general digital level is based on the fact that every company surveyed offers various digital aspects in its business model, predominantly digital products and services.

Overall, there is a slight tendency toward a higher degree of digitalization in conjunction with the opportunity discovery context. This suggests that entrepreneurs who found their start-up in the opportunity discovery context and have sufficient information about the market and the competition are able to place a greater focus on digitalization than entrepreneurs in the opportunity creation context. We assume that entrepreneurs in the creation context devote greater energy to developing their business idea than to dealing with the issue of the company's appearance and operations with regard to digitalization. Instead, the focus is on the product or service to be developed. In comparison, entrepreneurs in the opportunity discovery context focus more strongly on digitalization, since more information about their customers and

competition is already available. We further revealed that companies founded in connection within the opportunity creation context have to iterate more often in the development of their products and services due to the path-dependent process of trial and error. In most cases, the founders developed completely new products or services in the course of this process, so that the orientation toward competitors is not possible and customer preferences or market acceptance are difficult to predict.

## Discussion and Conclusions

The goal of our paper was to show in which opportunity context – creation or delivery – digital entrepreneurs develop their business models, depending on their level of digitalization. In sum, we revealed that digital pioneers with an extreme level of digitalization (Kraus *et al.*, 2019) in the opportunity discovery context use digital technologies to develop user-friendly solutions for customer needs. Thus, entrepreneurs have sound knowledge of the market and customers in terms of opportunities in the discovery theory context, with the result that it is more likely to offer a higher level of digitalization. Fueglistaller *et al.* (2012) argue that successful entrepreneurs need to be one step ahead of their competitors to gain a competitive advantage. This would explain the high level of digitalization in this context. By contrast, companies in the opportunity creation context show a tendency toward a moderate level of digitalization due to a lower level of digitalization of internal processes or marketing and sales activities. Companies in the opportunity creation context have to deal with questions of uncertainty (Geißler and Zanger, 2015; Ojala, 2016), because of unknown customers, an unknown market and unknown sales channels where they cannot primarily focus on a high level of digitalization. This explains in our cases the focus on the development of digital products and services and the neglect of other aspects. Nevertheless, Hull *et al.* (2007) stated that digital entrepreneurs selling digital products or services have at least a moderate digital level, which is also shown by our results.

If we view the results through the lens of the business model, we see the main differences in both

value creation and value delivery. The value proposition of the business model is geared toward creating value with the help of smart products and services. According to Hull *et al.* (2007), this is a characteristic of digital entrepreneurs. The value delivery shows that companies combine digital distribution with traditional sales activities (e.g., direct sales). We have rarely found a complete digitalization here. In value creation, digital technologies are predominantly used in the collaboration with other companies. Of course, this is relatively easy to implement in software companies, since they are thoroughly familiar with the use of digital tools in software development and document sharing. Internal processes are very often not yet digitized. In sum, our findings are in line with the findings of Zaheer *et al.* (2019) who state that digital technologies play a vital role in the elements of digital companies' business models.

With our study, we contribute to the discussion about business models of digital entrepreneurs by gaining more insights on digital levels of the business models. We also contribute to the discussion on the development of opportunities by showing, in which of the two opportunity contexts (creation or discovery) digital entrepreneurs develop their busi-

ness models. In terms of practice, we were able to demonstrate the origins and peculiarities of the opportunity context and what to consider when starting a digital business.

Our study also has its limitations. First of all, we only have 10 companies included in our sample. More empirical data is needed to strengthen our findings. Additionally, more information about the business model is needed to gain deeper insights into the elements of the business model of digital entrepreneurs. In the case of imprecisely formulated statements in the expert interviews, it was not always possible to make a clear assignment of a text passage to the appropriate category. We addressed this challenge with intercoder agreement and multiple, iterative considerations of the text material.

Future research can take our results as a basis for a quantitative study to reveal correlations between the opportunity context and digital level of the business model. Furthermore, it can be fruitful to reveal which of the characteristics or which combination of characteristics of either the opportunity creation or discovery are crucial for the entrepreneur to finally develop the opportunity in the creation or discovery context.

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