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DIGITAL ENTREPRENEURSHIP AND GREEN BUSINESS MODEL INNOVATION: LEAN STARTUP APPROACHES

Dragos TOHANEAN (author 1)

Ph.D. student, The Bucharest University of Economic Studies, Bucharest, Romania, tohanean_dragos@yahoo.com

Pablo WEISS (author 2)

Ph.D. student, The Bucharest University of Economic Studies, Bucharest, Romania, pablo.weiss@gmx.de

ABSTRACT

The emerging green business strategy provides a networked infrastructure that enables incremental business transformation as well as radical business changes. So far, the full potential of possible business opportunities has not been leveraged.

The digital entrepreneurship is a driver for digitization. By analyzing machine data, the use of sensors and the intelligent real-time processing of huge amounts of data in the cloud, new business models are created. With the information gained, companies are able to improve their value chain and entrepreneurs are able to develop new business ideas. However, one of the most difficult issues in this context for many companies or entrepreneurs is how they can further develop their existing business model or establish successful new business models that will be based on new technologies. The lean startup provides a scientific approach to get a desired product to customers' hands faster.

To investigate resulting impacts, we draw on the existing business models and deduct specifics for the green business strategy. Building on this, in order to reach the aims of the paper the authors will use a descriptive research method and a case study, to present how lean startup approaches can innovate green business models.

KEYWORDS

Digital entrepreneurship, green business model innovation, lean startup, disruptive innovation

INTRODUCTION

The fast-moving accretion of digital technologies with groundbreaking new functionalities has changed the competitive landscape of businesses, the structure and processes of business models and leads to a disruption of traditional business strategies (Bharadwaj et al. 2013, Zhao and Collier 2016). At the same time, governmental regulations and limitations lead enterprises to re-think on their strategies in order to develop innovative green business models.

Digital transformation is influencing established business models in an unmistakable way. Companies need to learn not to consider the process of business model innovation as a rare event. Rather, the innovation of business models will become an entrepreneurial task - for which a company needs appropriate methods and procedures.

As the term suggests, "innovation" is something new. From an entrepreneurial point of view, innovation is a creative process to introduce promising innovations in the marketplace or in-house, thereby improving economic success. Such innovations can affect services, processes, markets or social issues. The digital transformation enables companies to digitize their business processes in creating innovative business models into digital entrepreneurship by disrupting old business approaches. In digital entrepreneurship the product itself dislocates from a physical product to a digital product, the pace of its development is more multiplex than the production of physical products. Not only the development itself but also the availability of qualitative data used for business application is available with a much higher velocity using digital data to create new business models e.g. digital platforms. Adhering to a green business approach it is in actual times more necessary than before to implement green business model innovation. A principle to start up such a business model in the most efficient way, the lean start up approach including the basic rudiment of the minimal viable product. By application of the lean start up approach in the green business it seems to be promising that business ideas will be established faster and easier due to the reflection of customer opinions during development.

LITERATURE REVIEW

The main concepts of the paper are digital entrepreneurship, green business model innovation, lean startup, disruptive innovation. The term entrepreneurship (from the french *entreprendre*), also founder scene or start-up culture, deals with the start-up activities or the creation of new organizations in response to identify. In modern entrepreneurship literature there are numerous, partly broader definitions. Entrepreneurship is more than starting a business and using resources efficiently. It includes creative elements such as the systematic identification of (market) opportunities, having a digital strategy and green approach, the finding of new (business) ideas and their implementation in the form of new business models and is not necessarily associated with the ownership function. Using an ABC priority plan, sorting the tasks according to a value and importance, working with a system - because this is how a large construction site becomes a multi-pronged project, with which the entrepreneur celebrates small successes. Using intelligent task planning to successfully run the business from the start (Mark Zuckerberg, 2017). Digitalization is based on the digital strategy of the company. It defines the goal to be achieved and thus the projects to be implemented for a successful digitization. Digital entrepreneurship combines the thinking of the entrepreneur with the digitization strategy of the company he is responsible for.

The concept of innovation has been defined in different ways. Some researchers consider that the fresh thinking induced by innovation leads to value creation (The Economist, 2007) while others see innovation as the implementation of a new product/process, a new organizational method (Gault, 2018) or as a mindset, a new way to think about business strategies (Kuczarski, 1996). A business model shows the way an organization creates, delivers, and captures value (Osterwalder, 2014). On its turn, a green strategy heralds a whole new era of competition. With its dynamics, this green approach is changing entire industries, redefining old industries and creating new ones. This will affect the core business of each company. As the concept green creates an integrated relationship between business, technology and environment - representing a key element of today's

business models (Mandapaty, 2016). It is not the strongest species that survive nor the most intelligent, but the ones most responsive to change (Charles Darwin). Change and startup are going hand in hand, with the link to digital entrepreneurship and business models, the green strategy or lean startup . All combined bring the key to modern innovation.

RESEARCH METHODOLOGY

In order to achieve the research objective, the authors used a descriptive research method combined with a case study. The information was gathered from numerous sources of secondary data, such as books and articles from the domains of management, IT and innovation, or corporate reports of green strategy - through a desk research and a case study on different green bussines strategies, challenges and approaches. The literature review was carried on mostly in the international libraries where the electronic databases (e.g. Cambridge University Press, Elsevier, Emerald Insight) were found and consulted.

INNOVATION AND DIGITAL ENTREPRENEURSHIP

The foundation of digital start-up companies always have an impact on the development of new products or services in a very innovative behaviour. The vision behind such innovative and digital entrepreneurs most likely is that they are looking for new ways to improve the quality of living or disrupt technology, not only contributing to the green, social or economic development of a country but also creating new places of employment and new types of work descriptions.

In such a case you can refer to an innovative formation of an enterprise where a new combination of the classical input factors of Schumpeter are applied (Schumpeter, 1964).

Especially in digital entrepreneurship the added value are digital goods or services with a high potential for disruptive innovation in the field of information and communication technologies without using physical rессources. This form of entrepreneurship is very attractive for young founders as there are no costs and investments related to physical goods or machines in order to create a product or service. The advantage of these digital products are the short-term leverage on positive marginal return as well as short cycles of innovation (Kollmann, 2016).

In this particular case it can also be referred to disruptive innovation, a specific form of innovation which is characterized by creating new markets and value-generating networks. In some cases it goes beyond replacing old products or the manufacturer in competition will be suppressed (Harvard Business Review 2015). Referring to digital entrepreneurship it can be described as a process of identifying entrepreneurial opportunities followed by an evaluation and their intelligent usage by developing digital products or selling products via digital channels such as most commonly digital platforms (Fueglistaller et. al 2016, Pioch 2018, Richter et.al, 2017).

Digital transformational processes support the digitization of actors such as enterprises and customers along the value chain by usage of new technologies. The digital transformation of business models can affect single business model elements, the complete business model or value chains as well as different actors within a value chain network (Schallmo, 2019).

Within the digital transformation of digital business models enabler or new technologies are used to create new applications or performances such as the usage of Big Data, Blockchain and others. According to Boueé and Schaible these enablers can be divided into four categories which will be explained in the following: (Boueé and Schaible, 2015)

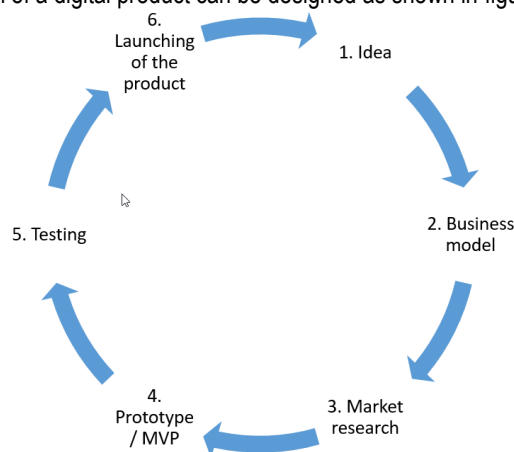
Digital Data: gathering, reworking and evaluation of digitized data in order to improve predictions or decisions

Automatisation: the usage of artificial intelligence in combination with existing technology enables companies to build autonomous working, self-organizing systems that help reducing failure rates, increasing velocity and reducing operational costs

Digital customer access: the internet of things enables companies direct access to customer through more transparency in customer data

Digitalisation: the mobile and performance-driven digitalisation of the complete value chain using broadband telecommunication allows the synchronization of supply chains which lead to a reduction of production times and shortens the innovation cycle to a great extend

Understanding these four principles which enable the digitalization of business models as a digital entrepreneur, the process starting with an idea until the launch of a digital product can be designed as shown in figure 1.



(Source: modified by the author based on Pioch, 2019)

Figure 1. process from idea to launching a digital product

Starting from above logic nearly explosive inventions emerge in computer science, medicine, biology, manufacturing and many other areas of technology. Changing state framework conditions and ecological challenges characterize economic activity. In addition, there are drastic changes in society in value systems, demographic development, population migration, etc. This challenges lead to new movements towards green directions, divided into technical (renewable resources, material / energy efficiency, recycling), services (functionality instead of property, open source, innovation) and social (taking responsibility, sustainable lifestyles, education) green business models.

In this environment, there are many new opportunities for entrepreneurial initiatives. It can even be said that there is a need for broad entrepreneurial activity to meet the challenges of change. There will be more and more disruptive developments, that is, radical and volatile changes in coping with professional and private tasks. By way of example one should be mentioned here: In a few years, internal and external paper-based correspondence was replaced by electronic communication. Furthermore, the step by step green approaches lead to massive changes in manufacturing processes, individualisation of products, logistics and warehousing.

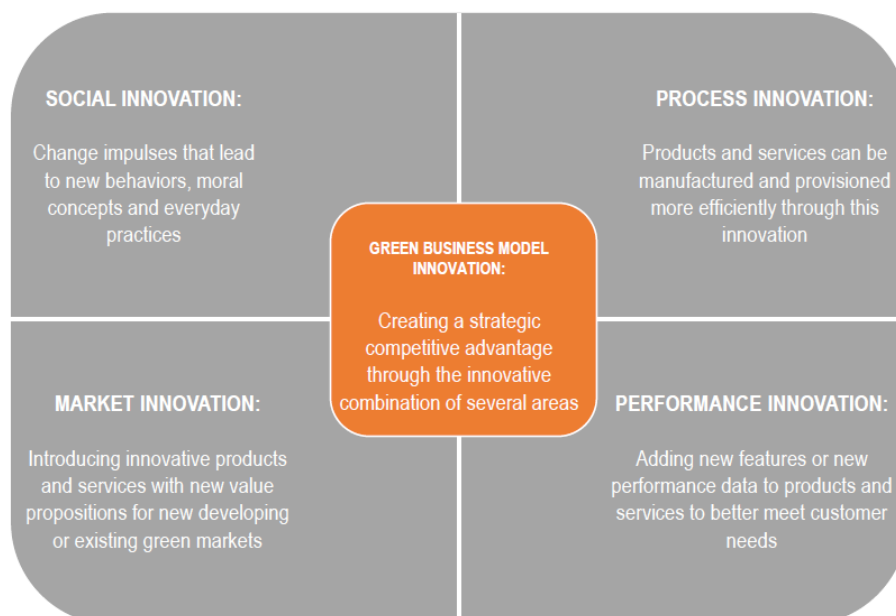
Taking this three pillars as a base (entrepreneurship, digital, green strategy) and minimal viable product in the launching process of a digital and green product is the first and significant deviation from normal product launches and typical for the lean start-up process. By using minimal viable products the launching company of the product puts a product in the market which is not completely developed and improves it due to the customers feedback and to check the fundamental business hypothesis. This will be explained later in the lean startup approach.

GREEN BUSINESS MODEL INNOVATION: LEAN STARTUP APPROACHES

The business plan originally came from strategic planning. The aim was to achieve a defined goal with the most effective use of resources. From this concept, Peter Drucker developed the first ideas on how to use strategic planning as a method for systematic entrepreneurial decision-making. This resulted in the business plan, with focus on the goals of a company (Peter F. Drucker, 2016). Additional content is usually a detailed financial plan that includes the business calculations on revenue prospects, liquidity planning, capital requirements, and financing structures. These detailed plans make the business plan sluggish and often the theoretical assumptions in reality are not true. Therefore, this method is only partially suitable for early stages of a start-up. But this makes the business plan no less valuable - it is the right method for strategy and planning concepts, or if you want to address potential investors and strategic partners.

The business plan is a fairly static and formal method. However, the context in which innovative entrepreneurs work is very dynamic. The green business model is a more flexible approach than the business plan (Martin Reeves, Rodolphe Charme di Carlo, 2017). This method describes how an organization creates value, implements it into the customers processes, generates revenue and takes care of the environment and its resources. These are just a collection of assumptions or hypotheses about customers, the product, revenue streams, work strategy and green approaches. A green business model is an organized way to structure these assumptions and hypotheses. Often people work with different green business models and select a suitable model for implementation. Working with a green business model is a creative and iterative process that also represents the link between the invention, the environment and the value generated. The repetitive thought process and learning from mistakes contribute to the improvement of the product and environment.

Green business model innovations represent a special form of innovation, since there are overlaps with the four subareas mentioned in figure 2.



(Source: Daniel R.A. Schallmo and Leo Brecht, 2015)

Figure 2. The areas of green business model innovation based on Schallmo and Brecht

As the approach how to build a business model with a green strategy or to change an existing one to be nature friendly, is not so easy – innovation is the key to achieve it. The innovation process itself has the task of ensuring the necessary activities and decisions in the correct order in the shortest possible time window (Tohanian and Toma, 2018). Innovation research has created a set of proven procedural models for this type of process (e.g. design thinking, stage gate model, lean startup).

The creation of new businesses in recent years is experiencing a process of streamlining and simplification significantly, compared with the previous years. Nowadays put into practice the business idea of entrepreneurs can be conducted much more easily using the formula of the lean startup (Eric Ries, 2011). Who founded a start-up, knows only one motto: Do or die (Gregg Fairbrothers, Catalina Gorla, 2013). Both, time and financial resources are scarce to bring a competitive and demand-driven product or service to market. It is self-explanatory that this can not be achieved by all. This assumption is still quite euphemistic in the face of reality, because in reality only very few start-ups develop into successful models. What would be closer than trying to minimize the risk of failure? That's what Ash Maurya, Dave McClure, Steve Blank, Alexander Osterwalder and above all Eric Ries thought. These are today regarded as pioneers of the Lean Startup concept. This is a pragmatic approach to minimizing risk, which is now used throughout Silicon Valley. Lean Startup is not only suitable as an approach to starting a start-up, but also as an effective method for changes in existing companies - and especially in the course of digital entrepreneurship.

Referring to traditional product development, it requires a lot of groundwork to set product specifications, as well as plenty of time and financial resources to make the product a reality. Quite different with the Lean Startup approach: Here only so much is developed and realized, as is necessary, to complete a building-measuring-learning cycle. This is called Minimal Viable Product, the product that requires the least amount of effort and the shortest development time. This is completely sufficient to gain important insights about the product, its customer benefit and your previously established hypothesis.

The Lean Startup method's iterative steps (step-by-step approach) is better known as the Build Measure Learn (BML) cycle and consists of three recurring stages:

Building: In the first step, a prototype, the Minimum Viable Product (MVP), is created. This product has the main features of the final product. With this product you then go to the market and get the feedback of your potential customers. The basic idea is to maximize the key learnings about the customer with the least effort possible.

Measuring: Talk to your customers and other experts, and gauge the impact of your MVP on these people.

Learning: The keyword of this BML step is validated learning. In doing so, instead of guessing as you did earlier, you use data by evaluating customer feedback and testing it over and over again.

This cycle is repeated several times in Lean Startups, until the product is accepted by the customer in the market and there is a product market fit. The advantage of this method: due to repeated intensive feedback from the customer, the product can not be developed past the market. Millions of euros of development budget for a product that nobody wants in the end, are unlikely with the lean startup method. Due to the close contact with the target group, customers can be gained from the very beginning and a customer relationship maintained. Instead focusing on technical (renewable resources, material / energy efficiency, recycling) and social (taking responsibility, sustainable lifestyles, education) green approaches with services (functionality instead of property, open source), creating environmental impacts by reducing energy and material usage in the production, creating a product with less CO2 emissions, and less need for maintenance. Reduction of waste, reducing the use of packaging material per product unit and reducing the electricity (Richard A. Clarke, Robert N. Stavins, et al., 1994). The main goal for every business following a green strategy is to become more sustainable at producing what they have always produced by taking care of its employees and the environment.

Taking into consideration the three pillars of the lean start up approach and the focus of the green business model, those combined offer innovative start-ups and entrepreneurs the opportunity to cost-effectively implement the suitability of a green business idea on the market and to accelerate product development.

CONCLUSION

Digital entrepreneurship and green business model innovation are both giving companies the possibility to maintain competitive and innovative at the same time. By using green business model innovation in combination with the lean start-up approach the digital entrepreneurs can adopt to a fast-changing environment as well as the differing requirements of the customers on a product or service. Therefore, placing a minimal viable product (MVP) in the market offers deep insights in the customers opinions on a product and is a direct feedback for the digital entrepreneur to undertake the next steps concerning the development and improvement on the product before launching again. Furthermore, this kind of market approach is even more important in green business as there are much more requirements from the government to fulfill besides the customers demands. By doing so, the iterative BML cycle helps getting better insights into the requirements of the target group and helps saving costs in launching a product.

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