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The use of dynamic capabilities in the processes of shaping start-ups'  
business models

Summary of doctoral thesis

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The ecosystem of start-ups has become one of the most rapidly growing sectors of the Polish economy. Although Polish start-ups still do not have a very large share of GDP creation, their development in the long term can positively influence the development of the economies of both Poland and European Union countries (Palmen and Baron, 2016). Such a conclusion can be drawn by referring to the observation of the impact of start-ups on the development of innovation in the United States (Sobczak and Dudycz, 2016), where ecosystems that provided effective conditions for the emergence of start-ups developed naturally. The dynamic development of start-ups has led to a situation where the US economy is considered the most innovative in the world (Sobczak and Dudycz, 2016). Poland, as well as other European Union countries, aiming to develop the start-up sector, have adopted a different strategy (Kierul and Tuzimek, 2018). Indeed, while start-up environments arose naturally in the United States, European Union countries allocate public funds for these initiatives.

Although start-ups are often seen as companies using artificial intelligence, augmented reality or other technological innovations from the field of Industry 4.0 (Slusarczyk, 2021), it should be noted that the existence of a start-up does not require the use of modern technologies (Filg et al., 2019). Based on this observation, this dissertation adopts after S. Blank that a start-up is: "a temporary organisation that seeks a viable, scalable and replicable business model" (Blank, 2013). Referring to the above definition, it can be noted that it is very capacious, as it allows to call a start-up both a company that uses innovative technologies and one that wants to test its idea for business development.

The start-up market in Poland is developing in a dynamic way (Golawska-Witkowska et al., 2017). New investment funds are appearing, both those that cooperate with the state and those that rely solely on private capital, which results in lowering the entry barriers, as it is becoming easier to obtain funding from investors (Bukowski, Szpor and Śniegocki, 2012). Entrepreneurs managing their own start-ups include young people as well as those who have acquired corporate experience and now want to develop their own enterprise (Tamowicz, 2007, p. 54).

An important concept from the start-up point of view is the business model. The analysis of the literature on this subject allows to draw the conclusion that individual authors, when presenting assumptions describing the essence of business models, try to include and describe in their concepts as many variables as possible, which are not always relevant to understanding the nature of business models. For example, A. Osterwalder and Y. Pigneur (2010), who are the authors of the most frequently cited definition of a business model, attempt to include in it too many variables, thereby imposing a certain logic on the company for constructing the business. Therefore, for the purpose of this dissertation, the definition by M. Rapp (2010) was adopted. According to this definition a business model is a way for a company to implement business ventures that allow it to generate income.

The literature indicates that the process of designing an enterprise is preceded by the process of designing a business model (Jablonski, 2014). The business model, as a complex entity, should be shaped using a variety of approaches that allow building a unique idea for the development of the enterprise. Therefore, it is important to identify the basic determinants shaping the business model in such a way that the enterprise is able to achieve its goals, create value and achieve competitive advantage (Adamik, 2015). In a situation where the business model does not provide the ability to create value for the organisation, it should be changed or modified (Rudny, 2013). At the same time, it should be borne in mind that the shaping of the business model is a continuous process, as changes in the business environment require continuous refinement of the model (Barańska-Fischer et al., 2016).

The dynamics of change in the environment creates the need for companies to continuously adapt to new market challenges. The development of technology and the increased importance of innovation necessitates the transformation of business models (Skrzypek and Skrzypek, 2019) in order to achieve the assumed level of efficiency and the ability to create and deliver value to customers (Barańska-Fischer et al., 2016). Shaping new, more innovative business models is becoming a priority, with the process being structured, rational and coherent in order to provide the conditions for a good strategic solution. Therefore the process of shaping business model should (Obłój, 2002):

1. create value,
2. be consistent and repeatable,
3. be difficult to imitate.

Another construct used in the dissertation, i.e. dynamic capabilities, has its roots in the resource approach (Stańczyk-Hugiet, Piórkowska & Stańczyk, 2016). However, while the resource approach valorizes the importance of resource accumulation and allocation (sets of resource combinations), indicating that competitive advantage is based on the use of bundles of strategic resources (Baird, 2014), dynamic capabilities are treated in terms of processes of renewal and reconfiguration of strategic resources that provide opportunities to build new combinations of operational capabilities (Stańczyk-Hugiet, Piórkowska and Stańczyk, 2016). In doing so, it is pointed out that competitive advantage in a turbulent environment should be based on the capabilities of the enterprise, which are dynamic, and not on the competitive position, or conflict in the sector. Another construct discussed in the dissertation, i.e. dynamic capabilities, has its roots in the resource approach (Stańczyk-Hugiet, Piórkowska and Stańczyk, 2016). However, while the resource approach valorises the importance of resource accumulation and allocation (sets of resource combinations), indicating that competitive advantage is based on the use of bundles of strategic resources (Baird, 2014), dynamic capabilities are treated in terms of processes of renewal and reconfiguration of strategic resources that provide opportunities to build new combinations of operational capabilities (Stańczyk-Hugiet, Piórkowska and Stańczyk, 2016). In doing so, it is pointed out that competitive advantage in a turbulent environment should be based on the firm's dynamic capabilities, rather than on competitive positioning, or conflict in the sector.

In the dissertation, the author attempted to answer the following research questions:

1. What business models are used by start-ups in Poland?

2. How are the processes of forming business models of start-ups in Poland implemented?
3. What bundles of dynamic capabilities are used by start-ups in Poland?
4. How does the selection of a specific bundle of dynamic capabilities affect the process of shaping the business model of start-ups in Poland?

The aim of the dissertation is to identify and evaluate the use of dynamic capabilities in the processes of shaping start-up business models. The dissertation therefore poses the following research hypothesis: different bundles of dynamic capabilities are relevant at different stages of the process of shaping start-up business models.

The paper consists of four chapters. In the first two chapters of a theoretical nature, the literature relating to dynamic capabilities and business models was critically assessed, which allowed to build a framework for the conducted research procedure. These chapters indicate the definitions of business models and dynamic capabilities, which are used throughout the thesis as a reference point for these theories. The theoretical chapters examine various approaches suggesting that both dynamic capabilities and business models derive from strategic management theory and have their basis in the resource approach. Both concepts have become particularly relevant to the start-up sector, which is adapting them for its use, providing a broader view of the functioning of this type of enterprise. The third chapter, which is empirical in nature, provides a characterisation of the start-up sector in Poland and describes the business models used. At the beginning of the chapter, a definition of a start-up was proposed. Next, an analysis of the start-up sector in Poland was carried out, and business models that are most frequently used in economic practice by start-ups in Poland were indicated. The conducted research procedure, embedded in the defined theoretical foundations, allowed to notice trends in the formation of business models by start-ups. The fourth chapter discusses the results of the conducted research, indicating the most frequently used business models in the Polish start-up sector.

In order to maintain terminological consistency, for the purposes of the research process it was assumed that:

- A business model is a way for an enterprise to implement business ventures, allowing it to generate income. (Rappa 2010)

- A start-up is a temporary organization that seeks a repeatable and scalable business model (Blank 2013)
- Dynamic capabilities are a learned and enduring pattern of collective action in which an organization systematically develops and adjusts routine operating behavior to achieve a high level of efficiency (Zollo and Winter 2002).

The research investigation was carried out between January and March 2021. The initial assumption was that a start-up is a young organisation, therefore it is difficult to call a start-up an organisation that has existed for more than 7 years. It is doubtful that such an organisation does not already have a scalable business model defined, hence the first question related to the age of the surveyed company. The second question referred to the level of modernity, where respondents were given three options to choose from: 1) modern, 2) intermediate, 3) traditional. The information on the level of modernity indicates the characteristics of the start-up under study and links perfectly with the next question on the prevailing business model. In the third question, the Author asked respondents to determine which business model (the list of models was redefined) best describes the characteristics of their enterprise. The above three questions constituted the first part of the survey. The next questions related to the impact of the selected dynamic capability bundles on the various stages of the business model formation processes. In the survey procedure, respondents were asked about the use of four bundles:

- strategic alliances, acquisitions and takeovers,
- internal training, research and development and innovation design,
- strategic decision-making, alliances, foreign expansion capability,
- diversification and relocation of resources.

In the course of the research proceedings, an attempt was made to verify the hypothesis according to which: different bundles of dynamic capabilities are relevant at different stages of the process of shaping start-up business models. The results of the research showed different levels of relevance of the selected bundles of dynamic capabilities at different stages, which allows the hypothesis to be considered true. As the research showed, all variables (apart from the business model bundle) have a significant impact on the verification of the hypothesis. Moreover, the research

suggests that, for the surveyed group of respondents, the prevailing business model of their start-up was not significant.

In order to achieve the aim of the dissertation, which was to determine how the selected dynamic capability bundles interact with the different stages of the processes of shaping start-up business models, the dissertation was divided into a theoretical part and an empirical part. In the theoretical part, a discussion relating to research in the field of dynamic capabilities and business models was conducted. It is noted that the definitions and typologies of dynamic capabilities and business models differ, but also have common elements. The dissertation notes the popularity of dynamic capabilities as a strategic management concept due to its critical importance for business development. The increased interest in the concept of the business model, which, according to the assumptions made in this dissertation, makes it possible to answer the question of how a company generates revenue, has also been recognised. Attention was also drawn to the lack of explicit definitions of business model and dynamic capabilities in the literature. Although a number of different definitions can be identified in the literature that address common assumptions, they attempt to capture too many variables, making them difficult for entrepreneurs to understand.

In the empirical part, the reference point was start-ups. Characterising start-ups, the Author attempted to present the Polish start-up market in the context of business model typologies described in the literature. Finally, for the purpose of conducting the research proceedings, the Author proposed his own hybrid typology of business models, which includes both traditional and modern enterprises.

The research proceedings distinguished three stages of start-up development: the initial stage, the development stage and the stabilization stage, which made it possible to show the diversity of responses, depending on the stage of development of start-ups. The second important characteristic distinguishing the surveyed entities was the age of the start-up. It was assumed from the outset that companies that have been in existence for more than seven years should not be considered start-ups, as they already have a scalable business model. In the research procedure, the level of modernity of the surveyed enterprises was also considered important (a division into: traditional, intermediate and modern was adopted). Most often, start-ups perceived

themselves as very modern enterprises, that are basing operations on new technologies and artificial intelligence. However, the survey found that many respondents viewed their start-ups as traditional enterprises that did not use cutting-edge technologies to achieve market success.

The research showed that the most commonly used business model was the subscription model (used by more than 40% of the surveyed entities), which confirms the conclusions of other research on the start-up sector regarding the increasing popularity of this model among entrepreneurs. However, as the results of the study show, the business model used does not play an important role from the perspective of the impact of dynamic capability bundles on business model formation processes.

The results of the study showed that the dynamic capability bundles surveyed have a significant impact at the development and stabilization stages of start-ups, while they were found to be less important at the initial stage of business operation. According to the respondents, it was important that these bundles were well planned for the more mature stages of start-up development, which allows the conclusion that the division into stages of business model formation processes was justified from the point of view of the hypothesis, and that these stages are relevant in terms of the relevance of dynamic capability bundles.

This paper also attempts to deepen knowledge in the area of the functioning of the start-up sector in Poland. Although this sector does not yet have a large impact on the generation of GDP, looking at the example of the United States and Israel, one can expect an increase in its importance for the Polish economy as well. The assumption relating to the development of the start-up sector may allow pointing to the directions of future research:

1. Deepening research on the functioning of start-ups using subscription models. Future research could address the impact of dynamic capabilities on the subscription model and the impact of bundles of dynamic capabilities other than those studied in this dissertation on this business model.
2. Deepen research on the impact of bundles of dynamic capabilities on the initial stage. Although the bundles proposed in the dissertation confirmed the



hypothesis, it would be worthwhile to deepen the research relating to the start-up stage, where most start-ups end up.

3. Deepening the research on the functioning of Venture Capital and the role of business angels in the development of dynamic capabilities of start-ups. These entities were intentionally omitted from the research proceedings in order to obtain research material directly from companies, rather than from funds or individual investors. It is worth noting, however, that these entities can have a significant impact on shaping the start-up sector and can ultimately be a valuable source of information.
4. Deepen research relating to the impact of dynamic capabilities on the performance of high-tech start-ups, which make up a large percentage of the start-up population and are the "driving wheel" of the entire sector.
5. Conducting research in other countries. Diversity relating to the forms and conditions of business can allow conclusions to be drawn and point to the directions of start-ups.
6. To deepen research on bundles of dynamic capabilities other than those studied in the dissertation. Selected bundles of dynamic capabilities have been shown to be particularly important in the stages of development and stabilization. It would be worthwhile to attempt to identify the bundles that might prove particularly relevant during the initial stages.

Undoubtedly, this paper provides a starting point for further research relating to the functioning of start-ups. It can be noted that start-up ecosystems in developed and developing countries are recognised as an important element for the economies of these countries. Although it remains to be seen in which direction individual ecosystems will develop, it can be assumed that start-ups are no longer constrained in any way in terms of scale of operations. A well-designed start-up has the potential for dynamic entry into further markets, which is made possible, among other things, by international payment systems. The biggest cost of a start-up is the promotional activity on the new market, but in this process the start-up can be supported by partners and investors. There are no limits forcing start-ups to operate only locally, and restrictions can only come from legislation, which usually addresses practical issues.