AGILE INNOVATION AND BUSINESS MODEL WITHIN ENTERPRISE SYSTEMS

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Rezumat. *În prezenta lucrare, ne concentrăm pe conceptele de agilitate strategică şi modele de afaceri, propunând o nouă abordare pentru recunoaşterea strategiilor, activităților şi căilor comune pentru reconfigurarea modelelor de afaceri. S-au identificat trei clase principale de capacități din perspectiva agilității strategice, în speță inovarea strategică, care ar putea fi axate pe "branding", ofertă personalizată, CDI şi responsabilitate socială, valorificarea resurselor în domeniul educației, perfecționării profesionale a angajaților şi creşterii abilităților manageriale, respectiv „networking" în activitățile de „branding" şi „retail". Mai mult, soluțiile software de business şi tehnologiile digitale facilitează un nou mod de a realiza inovarea, prin utilizarea integrării sistemelor, ca inovare agilă. Studiul identifică caracteristicile specifice ale inovării agile şi explică procesul de realizare al acesteia, oferind informații valoroase pentru cercetători şi practicieni.*

Abstract. *The present paper is focused on strategic agility and business modelling approach, by proposing a method for developing common strategies, activities and paths to improve business models. We identified three main groups of capabilities for strategic agility, i.e. strategy innovation being focused on brand and value proposition, R&D activities and social responsibility, resource capitalization targeting education and knowledge acquiring, management and human resource business components, and networking, focused on branding and retail in a network context. Furthermore, Enterprise Systems and Digital Technologies facilitate a new way of attaining innovation, by using the integration of systems, in the frame of agile innovation. Thus, the study identifies the specific characteristics of agile innovation and explains the process of its implementing, the conclusions offering valuable insights for researchers and practitioners.*

Keywords: strategic agility, business model, enterprise systems, agile innovation, digital technologies.

1. Introduction

The concept of "innovation" refers to "organizational innovation" for products, processes, managerial and technological innovations, emerging when using

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technologies such as Enterprise Systems – (https://en.wikipedia.org/wiki/Enterprise_system) and Digital Technologies (https://www.quora.com/What-are-digital-technologies).

One definition of organizational innovation is: "production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems" [1]. It goes beyond the concept of "new-to-the-world" approach, capturing internally-developed innovations, together with other adopted / imitated innovations. The term of "innovation" does not correspond every time to the new-to-the-world concept, as it is the case for technology / manufacturing innovators like Google, Apple Inc. or BMW. Thus, classical innovation methods, typically measuring innovation through patents [2], or new products and new markets [3], have minimal relevance for day-to-day innovation actions, because the most common business practices rarely involve the capitalization of patents or the allocation of internal R&D funds [4]. In this respect, innovation could be considered as an imitation of something already used elsewhere, but new to the organization that adopts it.

Consequently, Enterprise Systems is aiming to streamline the business processes and enhance the efficiency and effectiveness of the organizational behaviour [5]. But, even though these systems imply initially radical changes in the organization, afterwards they support the continuous innovation necessity to survive in the contemporary competitive business environment. In the current volatile markets, organizations are obliged to seek for opportunities, in order to be agile [6], especially the ones focused on increasing efficiency, reducing costs and attaining higher productivity.

Competing in the fast-changing economic context, it requires being agile in perceiving and exploiting opportunities to develop innovations [7], increasing the response to disruptions [8] and enhancing resilience against external threats [9]. This is reflected in the necessity that business models need to change continuously if firms want to achieve sustainable value creation [8]. Thus, the ability to improve business models is essential for a company's survival and success, as an approach to reduce the risk of inertia towards change, which often occurs when a company has been successful with the same strategy over time [10].

In particular, as regards capabilities, experts agree that companies need to be proactive in order to "feel", shape and capitalize on opportunities [11]. In order to achieve this agility, firms must identify and exploit their bundle of capabilities, avoiding the phenomenon of "capability myopia" [12], when not sensing the need for developing new capabilities and allocating necessary resources to create new value propositions. Therefore, in order to capitalize on resources and time,

strategic managers should focus specific actions on some / not all building blocks of their business model.

It is already accepted that Enterprise Systems is a significant and valuable source of increased productivity and efficiency in organizations [13]. Moreover, Enterprise Systems initiatives are considered as the most lengthy and expensive IT projects of contemporary organizations [14]. Thus, organizations focus on their existing Enterprise Systems, in order to innovate in the competitive business landscape. Another key reason for adopting Enterprise Systems, when attaining innovation, is the technology platform itself. Enterprise Systems is increasingly viewed as the core technology platform in organizations, since they allow tools to be incorporated so that technology and data resources can be perfectly shared [15]. Enterprise Systems could be seen as a business model building block, providing essential functions as a technological system. The widespread adoption of Enterprise Systems across industry sectors, geographical locations and the emergence of open platform architectures (e.g. the NetWeaver platform interface by SAP), represent a further recognition of Enterprise Systems as a dominant corporate technology platform [16].

The advent of Digital Technologies in the mid-2000s signifies an era of technology, that is a perfect example of flexible, easy-to-deploy and cost-effective IT solutions. For organizations, the growth of Digital Technologies has provided an ecosystem of providers and suppliers of tools, techniques and practices beyond the conventional boundaries of traditional corporate IT.

The last decade was characterized by a substantial change in IT through the advent and mass proliferation of mobile technologies and analytic technologies, cloud computing and business intelligence (including big amounts of data). According to a recent PwC study (https://www.pwc.com/us/en/) there are four key technologies that have contributed massively to drive innovation: social networking, mobile computing, analytics, and cloud computing. These technologies facilitate new ways to develop products and interact with stakeholders such as customers, vendors and employees.

For the traditional Enterprise Systems “keepers”, these Digital Technologies provide an alternative approach, also providing them the opportunity to embed such applications into their Enterprise Systems. As operant resources, such tools introduce new organizational arrangements, structures and processes, but at the same time increasing the risk of failure.

2. Theoretical Background

Each type of IT (Enterprise Systems and Digital Technologies), with its characteristics, has certain advantages and disadvantages. For example, Enterprise Systems and Digital Technologies have the potential to innovate in different ways.

The nature of innovation and the role played by IT in innovation have changed substantially over the last period of time [17]. Certainly, the advancements in the technology development have made this an attainable goal for any organization. As opposed to single, monolithic one system view, modern organizations are offered a heterogeneous collection of technologies that drives innovation. Nowadays, the IT portfolio is classified referring to two primary roles: (i) IT as an operand resource, and (ii) IT as an operant resource [17].

The operant IT triggers innovation, while the operand IT enables innovation. In other words, a technology can be used as operant or operand, based on the nature of innovation and the context that it is embedded in the innovation process. In this spirit, it is assumed that all information technologies are operant resources. A technology as an operand IT is defined as "those resources that an actor acts on to obtain support for executing a task", where the enabling role of IT highly depends on the fit of the IT within the organization [17]. An operand resource is defined as a resource on which an operation or act is performed to produce an effect. Therefore, the main objective of an operand IT resource is to increase efficiency and effectiveness. Thus, the value of an operand resource to an organization is greater when the tool fits well to the objectives, organizational structures and strategies that facilitate innovation, being generally static and stable.

Compared to operand resources, operant resources are dynamic. The impact of operant IT resources on innovation is often unpredictable and may not always be positive. As a result, operant IT resources are considered as risky initiatives and caution must be applied in introducing and managing them. Furthermore, an operant IT resource could deliver different outcomes to the organization, depending on how it has been applied in the organization. As such, operant resources enable differentiation that ultimately leads to a competitive advantage.

Relating the notions of operand and operant roles of IT to Enterprise Systems, it can be argued that Enterprise Systems portrays the characteristics of operand resources, and Enterprise Systems itself triggers innovation in business processes, practices, products and services. So, Enterprise Systems triggers "a new era" of computing in an organization through integration, process orientation and standardization. Consistent with pioneering innovation literature [17], the introduction of an Enterprise System itself is an innovation to the organization. From a functional view point, Enterprise Systems enables integration acting as a collaborative platform for diverse actors and technologies to act upon [17]. Similarly, features of Enterprise Systems will enable business practices that will lead to the enhancement of efficiency and effectiveness of business practices, acting as a foundation for other applications [17]. Such characteristics, together with their integration ability, demonstrate the role of Enterprise Systems as an operand technology.

From a technology view point, firstly, Digital Technologies have provided organizations with unprecedented potential for innovation through affordability, ease of adoption, and ease of connection with customers and suppliers. Digital Technologies have extended the innovation capabilities of the organization and have introduced new routines, organizational arrangements, structures and business processes which summarize the inherent characteristics of operant resources. Secondly, from a business point of view, the introduction of Digital Technologies may lead to unpredictable outcomes. Similar to operand IT resources, they will also increase the risk of failure when triggering innovation. Yet the risk could be minimized with careful planning of the selection and deployment strategy. Thirdly, Digital Technologies can be integrated with Enterprise Systems and augment the value delivered. Operant IT resources engage with other resources in the innovation ecosystem and thereby lead to innovation or value co-creation. Considering these facts, it is obvious that Digital Technologies can be considered as operant resources.

Firms benefit from discovering new or applying different business models in order to remain innovative [18], i.e. in doing a business model innovation or a business model reconfiguration. Companies are required to continually develop and strengthen their ability and to adapt their business model effectively and in a timely manner when an opportunity or threat arises [18]. The literature on business model innovation / reconfiguration has focused on two main areas: the positive and negative factors involved in changing the business model and the enablers or facilitators of this kind of innovation which must be taken into consideration.

The strategic reconfiguration of business models is associated with many difficulties which need to be overcome, such as: (1) identifying change needs, (2) overcoming inertia, (3) accepting new structures and choosing adequate approaches to renovation [18]. When facing unexpected and significant environmental breakthroughs and not adapting the firm's business model successfully and timely, a decrease in the market share or even business failure is possible [18]. Thus, today, possessing an important set of capabilities for responding to business environment changes and for delivering strategic agility is a necessary requisite for a firm's survival [18].

Business model reconfiguration can benefit from strategic agility, since it is defined as "the ability to continuously adjust and adapt strategic direction in core business, as a function of strategic ambitions and changing circumstances and create not just new products and services, but also new business models and innovative ways to create value for a company". Being strategically agile means gaining the ability to dynamically revise or reinvent the company and its strategy,

to think and act differently, leading to new business model innovations, as the business environment changes [18].

In this paper, we have started from a recent study that made investigations into the "black box" of the business model and certain further research directions that ask for research on patterns of strategizing actions, critical capabilities and activities that request the continuously adapting of business models [18]. In the following analysis, we therefore propose a capability-based and building block-based view, in order to reconfigure the business model. We explore how firms actually create unique combinations of the business model elements, detailing them in a specific and recognizable manner, in order to create an exclusive value offer and to understand how firms use specific capabilities in dealing with business model innovation.

3. Research Method

Starting from the literature review and the understanding of the importance of linking the strategic agility with business modelling approaches, the present work aims to investigate the capabilities that are useful in specific areas of the business model. In particular, we have formulated the following research question: *What capabilities should companies make use of and where should they capitalize them in order to effectively and successfully refurbish their business model?*

For the multiple-case study, we selected from our clients four enterprises that proved a strategic agility approach by:

• an effective business model improvement;

• an innovative approach for creating value by their actual business model.

Moreover, we preferred companies that were relatively successful, in order to reveal the efficacy of their strategic agility and therefore gain better insights from them. We selected different companies in terms of size and type of industry, aiming to do a detailed analysis and to make a significant comparison.

The research setting isn't connected to a specific industry or to a specific size of company, because we considered it irrelevant for our study. We have analyzed business model effectiveness in established organizations, because such companies are experienced in their day-to-day activity, enabling us to focus on specific building blocks of their business model.

We used several data sources: qualitative and quantitative data from primary sources (innovation audit, done with IMPROVE ACADEMY instrument - https://www.improve-innovation.eu/) and secondary sources (press releases, websites and business materials provided by informants). Multiple data collection methods were adopted in order to ensure a deeper understanding of their time dynamics,

increase the information base and to reduce biases [18]. Information sources included the managers (i.e. R&D / marketing directors, people in charge for the relationship with customers and financial officers for revenues/costs).

In the analysis, we explored how firms actually create unique combinations of the business model elements (building blocks), detailing them in a specific and recognizable manner in order to create an exclusive value offer. All the four companies based their successful business model improvement on different sets of capabilities, for the following purposes:

• perceiving opportunities and quickly responding to them (strategy innovation);

• acquire, develop and integrate key resources (resource capitalization);

• connecting the internal and external organizational environment (networking).

Below, we present some conclusions and recommendations resulted from the innovation audits, addressed to four Romanian successful SMEs: CALORIS, DFR Systems, ROLIX and WEASEL ART.

3.1. CALORIS case study

After analyzing the options for benchmarking and according to the purpose of the innovation audit, corresponding to the strategy of CALORIS (http://www.caloris.ro/), based on the benchmarking class from the Evaluation Report - IMP³rove Assessment (January 2017), some recommendations were formulated:

- Complementary to the idea of management, the value proposition of CALORIS should focus more on licensing or selling internally developed ideas, concepts, patents, etc., as results from its R&D&I activities, with the help of an external KAM;

- Life cycle length for most profitable products / services could be extended, by developing some radical innovations;

- Reduced time-to-market period for product/services should be attained by using specific available means (cooperation, customer implication through feedback, marketing/branding techniques, accessing public funding from projects financed by competition, in partnership programs at national and international level, etc.);

- The budget set aside for long-term innovation projects should be minimum 10% from the yearly profit, to support the increasing of the number of successful incremental innovation projects and taking the step forward to radical innovations, which implies more money spent and longer term of expectation;

- Increase allocation of operational profits, according to specific business activities, to service, process, organizational and business model innovation with reasonable percentages (between 1 to 5%, differentiated between categories, the majority going to services innovation), by diminishing contribution of product innovations; in this respect it is necessary to make an analysis of the perspectives for different types of innovations implemented by CALORIS and their balance, maybe an option being to orient more activities to consulting, design, testing, etc., not mainly to product innovations, as today notice;

- Innovation activities should contribute also to higher operational cost reduction, mainly in processes and at organizational level, with the support of design management instruments and better / more efficient allocation of all type of necessary resources (human, material, knowledge, etc.).

3.2. DFR Systems case study

After analyzing the options for benchmarking and according to the purpose of the innovation audit, corresponding to the strategy of DFR Systems (http://www.dfr.ro/), based on the benchmarking class from the Evaluation Report - IMP³rove Assessment (December 2016), some recommendations were formulated:

- Complementary to the idea of management, the value proposition of DFR Systems should include some licensing or selling internally developed ideas, concepts, patents, etc., as results from its R&D&I activities, with the help of an external KAM;

- DFR Systems should increase the number of incremental innovation projects started and completed, by developing its own solutions, improved constantly as performances, through partnerships with R&D entities from Romania and from abroad;

- The budget set aside for long-term innovation projects should be of minimum 10% from the yearly profit, to support the increasing of the number of successful incremental innovations projects and taking the step forward to radical innovations, which implies more money spent and longer term of expectation;

- It’s necessary to analyze these types of innovations implemented by DFR systems and their balance, maybe an option being to make some operational profit also from services and process innovations (by consulting, design, testing or other activities), not only from product innovations, as today.

3.3. ROLIX case study

After analyzing the options for benchmarking and according to the purpose of the innovation audit, corresponding to the strategy of ROLIX (http://www.rolix.ro/), based on the benchmarking class from the Evaluation Report - IMP³rove Assessment (November 2016), some recommendations were formulated:

- Life cycle length for most profitable products / services could be extended, by developing some radical innovations;

- Keeping reduced time-to-market and time-to-profit parameters for product/services, by using specific available means (cooperation, customer implication through feedback, marketing/branding techniques, accessing public funding from projects financed by competition, in partnership programs at national and international level, etc.);

- ROLIX should increase the number of incremental innovation projects started and completed, for new products and services, by developing its own solutions, improved constantly as performances, through partnerships with R&D entities from Romania and from abroad;

- When dealing with radical innovations, ROLIX, by its own estimation, has obtained no results yet, but has the potential to invest and "transform" the current incremental realizations into radical ones;

- The expenditures on innovation should be increased with minimum 10% from one year to another, as a strategic decision, because it is the only way to maintain competitiveness in the actual economic context;

- It is necessary to make an analysis of the perspectives for different types of innovations implemented by ROLIX and their balance, maybe an option being to re-orient part of the activities, from consulting and design, to product innovations, but still keeping the balance between ROLIX competences and its day-to-day activities.

3.4. WEASEL ART case study

After analyzing the options for benchmarking and according to the purpose of the innovation audit, corresponding to the strategy of WEASEL ART (http://www.fabricadeprofile.ro/), based on the benchmarking class from the Evaluation Report - IMP³rove Assessment (January 2017), some recommendations were formulated:

- Complementary to the idea of management, the value proposition of WEASEL ART should include – if it's possible - some licensing or selling internally developed ideas, concepts, patents, etc., as results from its R&D&I activities, with the help of an external KAM;

- Life cycle length for most profitable products / services could be extended, by developing some radical innovations;

- Continue to keep reduced time-to-market and time-to-profit parameters for product/services by specific available means (cooperation, customer implication through feedback, marketing/branding techniques, accessing public funding from projects financed by competition, in partnership programs at national and international level, etc.);

- The budget set aside for long-term innovation projects should be of minimum 10% from the yearly profit, to support the increasing of the number of successful incremental innovations projects and taking the step forward to radical innovations, which implies more money spent and longer term of expectation.

4. Discussion

We conclude that the application of a strategically agile approach should not address the entire business model, so companies should concentrate on acting in the specific areas of their activity, by having certain capabilities available for improvement. The studied cases suggest that reconfiguring a company's business model rapidly and successfully requires the right combination of capabilities in different and specific building blocks. Consequently, we revealed the most important correspondences between macro- and micro-capabilities and the addressed building blocks of the business model. This analysis enabled us to state some conclusive propositions, presented in the following paragraphs.

4.1. Strategy innovation

Capabilities that address the strategy innovation class refer to the capacity in perceiving and the attention concentrated on implementing reasonable strategic developments. In fact, in order to be strategically agile, it requires a proactive and continuous search for the innovation of products (through R&D), processes and businesses and subsequently being able to effectively deploy this in order to grasp opportunities, satisfy new customer needs and generate new value.

In this respect, we have classified the capabilities of companies for strategy innovation into: (1) capabilities to anticipate and look for strategy innovation, by sensing and anticipating possible target markets and (2) capabilities to realize strategy innovation, by shaping the environment and developing new innovative products and services.

When changes in customer needs occur or new needs appear, new market opportunities are possible to emerge. So, strategy innovation endeavours to rapidly detect and seize opportunities, ideas and innovative behaviours both inside and outside a company's boundaries and also to rapidly change the assets,

business environment, markets, etc., in order to rethink or renew the value offer for their customers.

As a result of the above-mentioned analysis, we make the following statement: ***firms attain business model agility if their strategy innovation capabilities are focused on their brand and value offer, R&D and social responsibility***.

4.2. Resource capitalization

Resource capitalization presumes capacities which rapidly adapt, by reallocating resources, depending on new opportunities or new activities, corresponding to an improved activity system. This approach has a strong "applicative" focus, requiring effective actions for exploiting efficiently its assets, both internal and external, in order to obtain a fast adaptation to environmental changes.

Companies investing continuously in education and knowledge management are able to align employees with their vision and goals, fostering values beyond incentives [18]. The four analyzed companies have partially succeeded in making their business more flexible, by sharing organizational values and creating a fertile working climate based on teamwork. In most of the four cases the entrepreneurs themselves represent a key resource, due to their leadership skills and organizational competencies, for ensuring the cohesiveness of the organization [18].

So, we are able to conclude the following proposition: ***firms achieve business model agility if their resource capitalization capabilities are focused on education, knowledge management and human resources capitalization***.

4.3. Networking

Capacities for networking involve the determination to contribute to the growth of networks around the organization, targeting win-win solutions activation, knowledge creation and the definition of new strategic activity directions. A double perspective is naturally defined: first, an internal perspective that consists of creating autonomy inside organizational boundaries and, secondly, an external perspective that consists of connecting the organization's internal system to the external one. Networking capabilities should specifically cover the "network" building block of their business model, being very interesting to explore which micro-capabilities are involved and how these have been applied in the four analyzed companies, in order to improve their strategic agility.

Thus, we conclude the following definition: ***firms achieve business model agility if networking capabilities are focused on the branding and retail activities, benefiting from a network organization approach***.

Conclusions

In this paper, we have analyzed three macro-capabilities for business model improvement and have explained in detail their usefulness in defining the building blocks of a specific business model. Firms that succeed to adapt and reconfigure their business models over time are able to identify the best micro-capabilities (already possessed) to be used effectively, as presented in the three above mentioned classes, corresponding to the three conclusive definitions/propositions.

Achieving sustained value creation, through business model innovation, mainly focus on restating the company mission and value offer, in order to improve customer satisfaction and increasing his / her loyalty, which is possible also thanks to a continuous innovation process and exploiting innovative ideas, sometimes with the extension of business with multilateral (art, culture, sport) initiatives.

Resource capitalization capacities focus both on aligning an organization's employee culture with the sharing of organizational values and teamwork and on fostering leadership positive attitudes, oriented for obtaining higher performance in activity. This approach could be also extended outside external organizations' limits, by the activation of networking capabilities that allow knowledge creation and sharing, collaboration and integration with the key stakeholders, in particular customers, in order to consolidate strategic partnerships. These two classes of capabilities allow gaining flexibility and leveraging on key resources and business partners for strategic agility, also supporting and integrating capabilities for strategy innovation.

These conclusions are useful for practitioners as well as for future theoretical research on business models, which create value over time. They are embedded in a multi-dimensional organizational and strategic setting of capacities, targeted in some, limited as number, action directions. It is important to avoid wasting resources and time and to direct critical capabilities and actions to specific areas of the business model, in order to enable the shaping, adapting and renewing its content. In our opinion, we have contributed to the business model literature by identifying necessary capabilities and exemplifying specific actions to be addressed, when achieving business model change over time. In the recent literature, as mentioned above, it was still unclear if the capabilities and the actions should address the entire business model or they could address only a part of it, in order not to waste resources and time.

We brought strong arguments for the three types of capabilities, that are directed to specific building blocks of the business model, i.e.: (1) strategy innovation capabilities, oriented to brand building and value offer, R&D and social responsibility; (2) resource capitalization, oriented to education and knowledge

management / human resources; and finally (3) networking, targeting branding / retail activities, benefitting from network advantages.

The study also highlighted some important conclusions, as follows:

i. Consistent with other studies, Enterprise Systems enable radical innovation, when introduced in organizations activities;

ii. Post-implementation, Enterprise Systems provide a strong technology platform;

iii. The market oriented approach of using IT allows customers and suppliers to directly engage in business functions;

iv. Organizations encourage the stronger implementation of low-cost Digital Technologies, useful for innovation;

v. Digital Technologies trigger directly innovation itself;

vi. The innovation attained through Enterprise Systems and Digital Technologies is not similar, in terms of characteristics of radical innovation or incremental innovation;

vii. The lead time of innovation attained through Enterprise Systems and Digital Technologies acting together is lower compared to the lead time of innovation attained through Enterprise Systems acting alone;

viii. The innovation attained through Enterprise Systems and Digital Technologies has better outcomes compared to the outcomes provided by Enterprise Systems alone;

ix. Innovation in modern organizations is driven not only by IT departments, but mostly all functional departments contribute to attain innovation;

x. Modern organizations focus on innovating only some selective business functions, rather than entire business processes.

In this respect, the results presented in this paper are linked directly and effectively to managerial practices. We tried to reveal a specific set of capabilities needed for each building block of a business model, wishing that a company will be capable to become strategically agile in reconfiguring its business model.

Targeting our analysis only on four different SMEs case studies, we have provided practical examples that can support managers to rethink their key micro- and macro-capabilities and, whether or not they pay enough attention to organizational and strategic aspects, to select only the relevant ways to attain a continuous business model development and adaption to the new economic environment requirements.

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