

COMPARATIVE ANALYSIS AND ASSESSMENT FOR BUSINESS MODELS OF STEEL COMPANIES DYNAMICS

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Abstract

Dynamic changes in the environment, including increased competition and the need for cooperation, are the main drivers of change in business management. They are the expression of new strategies and business models. Increasing interest in business models derives from treating them as an important instrument for creating values based on a variety of sources. These can be resources, processes, competences and many kinds of innovations. Business model concepts are often a unique architecture and a combination of resources capable of creating value and consequently achieving competitive advantage and generating revenue. The research problem is the structure of business models and their ability to create value. The article presents the results of comparative analysis of business models of two steel companies. The dynamics of changes in business models in the aspect of innovation implementation was assessed. The antecedents of external and internal creation and application of business models were characterized in the surveyed enterprises. In the analysis and evaluation of business models, quality methods were used to study changes in their structure. BSC-based quantitative methods were used to examine the results of the companies. One of the subjects was the trading and servicing company of metallurgical products, the second was the hot rolled steel products rolling mill. Comparative studies were conducted between 2007 and 2016.

Keywords: Business model, steel company, innovations, value

1. INTRODUCTION

Increasing global competition and threats resulting from crisis phenomena, cause that modern management is affected by value paradigm. It is an indicator and condition of understanding companies' operations on the market and option for their development. Ability of an organization to create value is perceived as one of many important conditions to attain and maintain competitive advantage (edge). Thus, companies search for such methods and instruments that provide for creating value. One of them is designing and applying new business models, component and attribute of which is the concept of creating value, which at the moment is strongly related to and based on innovations. Business architecture represents a structure of such model and should allow creating value for a client and affect the growth of company's value allowing for its sustainability in the longer perspective. Achieved values decides about whether such business model is effective to attain assumed goals and economic, market and social effects. It underlines its ability to implement innovations, which currently are perceived as the basis for creating company's value. The research problem is the structure of business models and their ability to create value. The empirical part presents results of research performed in two steel sector companies. Steel sector is still one of the most important raw material sectors, both in the world and the national economy. In 2015, Poland produced almost 9.2 million tonnes of steel (consumption is ca. 12.5 million tonnes) and the steel sector share in GDP is ca. 2.4 % [1]. Steel sector is an important supplier for the construction industry, household equipment sector and automotive industry, what is important from the research point of view. Distribution, trading and service companies (so called steel service centres) are important for regional and local markets. The investigated companies belong to this group. The first is trading and servicing company of steel sector products. The second is rolling mill of re-roller products. The aim of the paper is a comparative analysis and assessment of business models of this companies. The analysis was conducted in terms of value creation by business models the investigated companies do not belong to any capital group and they are owned by physical persons, studies were conducted between 2007 and 2016.

2. VALUE CRERATED BY BUSSINESS MODELS - LITERATURE REVIEW

Interest in business modelling results from the search for effective methods of competing and using widely comprehended cooperation. Modern business models allow for creating value based on innovations and coopetition effects [2]. In particular, development of theory and application works related to business models results from the following reasons:

- applying business models as clear concept of creating value, both for a client and company owners,
- treating business model as a system of interrelated operations, strongly focused on creating value,
- search for instruments and methods of attaining competitive edge by implementing innovations,
- treating business model as an architecture of business operations, which is able to provide organization with effectiveness by generating profit,
- treating business model as a carrier of various innovations,
- business model represents valuable tool for strategic management, which is also useful in company's operational activities,
- using business model as a vision of an idea for a business, representing a proposal for potential investors.

Business models can be applied both as instrument for management of existing companies and represent the grounds for planning the operations of new organization. Development of research over business models bore fruits in the form of many definitions and concepts [3], [4]. In the context of research problems of the paper, the ones that apply to creating value and meaning of innovativeness in the business models are most significant. Business model can be treated as a system of resources configuration and interrelated operations focused on creating value. Set of such operations, resources, method of their organization and connections between operations, resources and network of value, allowing for implementation of these operations in cooperation with partners or clients, depends of course on the adopted business model [5]. Many papers emphasize that close relations of business model with creation of value for clients and company, point to the role of tangible and intangible factors configuration [6] as well as the option to capture part of profit from such value. In the business model concepts two main dimensions are underlined. The first one is how the value for client is created, in particular which business model elements play significant role and how the value is going to be provided [7]. The second dimension of business model is capturing value for company that provides profit for it. Its amount depends on the architecture and nature of resources and operations covered by business model. Their mutual harmonization and level of innovativeness should be emphasized. Higher level of harmonization between the elements of operation system, affects the growth of created value, thus the option for its better appropriation. Dependencies between values for a client and capturing the value is related to networks of value and strategic choices being the components of business model. In the business model theory, addressees of created value are perceived in different ways. Treating a business model as a specific combination of resources, generates a value through transactions for clients and organizations [8]. Stakeholders are mentioned as addressees of value, a concept of creating and capturing value in the value network is introduced [9], [10]. Creating unique value and competitive advantage is related to innovations [11], with a business model as their carrier [12]. Innovations provide a possibility to create a new customer value (new products and methods of customer service) as well as new value for organization (effective business processes and models, supply chains, networks of cooperation, environmental protection, new technology) [13]. Implementation of innovations is to preclude imitability threats. Business models themselves can also represent organizational innovativeness, important for competitive strategy. Levelling these threats necessitates continuous improvement of business models. To sum up, one may say that value is the focal point of business model. Synthetically presented review of theoretical research, analysis of literature point to significant meaning of investigating the value created by business models. These are important for both the theory and practice of strategic management. In this context, aim of the paper and research problem are cognitively important and current.

3. METHODOLOGY OF RESEARCH

Research methodology based on three basic components (stages), as given in the **Figure 1**, was used to assess the business model change of the steel companies and the value created by their. The first of them strategic analysis and literature studies. In particular, they include elements of modelling theory, innovation ecosystems [14], business surrounding (including competitive forces analysis), relationships with partners and macro-economy situation evaluated in the aspect of market as well steel sector development [15]

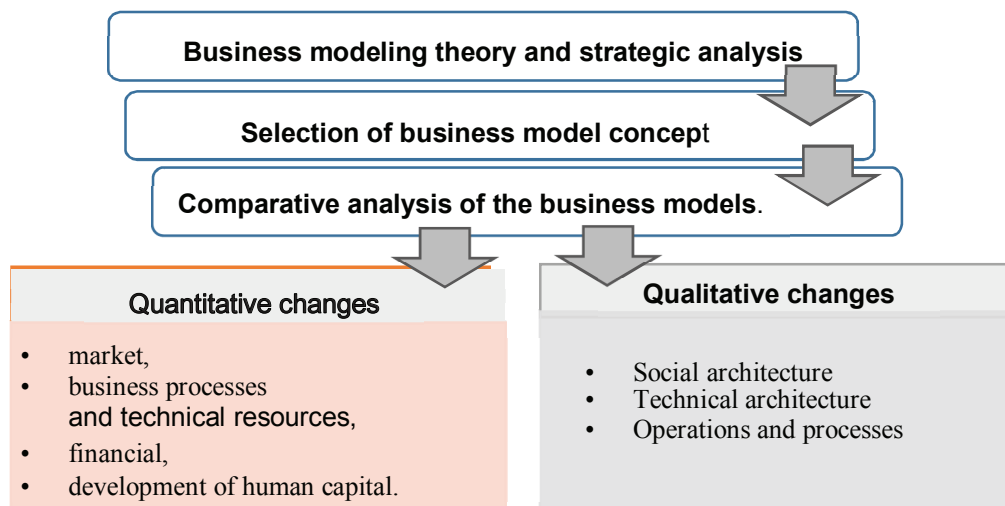


Figure 1 Research model, source: own study

Business model concepts were used (second stage of research), so called new era of innovation [16] and resource approach. The following business model elements must be emphasized: social architecture (intangible resources), technical architecture (tangible resources) and business processes. Sources of creating value and type of competitive edges are included in the structural characteristics of business model Detailed empirical research (third stage) covered two elements. The first of them is qualitative research covering structural and comparative analysis of business model components in the aspect of implemented innovations. The other one is BSC [17], [18] application used to measure and assess value attained by business models based on implemented innovations. As a result of research, it was found that business processes modification (new technologies of metallurgical products servicing, new types of steel and aluminium construction, automation of construction slings process) takes place, that allows for better satisfaction of clients' needs. This corresponds to changes of customer service processes using CRM and prosumer relations. ICT solutions applied in the examined companies, that used cloud computing allowed for knowledge codification. In case of metallurgical companies engineering and trading competences were developed within the scope of metallurgical products service, production and designing of metallurgical products.

4. EMPIRICAL RESEARCH - CASE STUDIES

Case studies included two steel sector companies:

- the trading and servicing company of metallurgical products (Company A),
- the hot rolled steel products rolling mill (Company B).

The examined Company A operates for 17 years and in 2016 attained sales at level ca. 4.4 million EUR and its economic value added (EVA) is at the level 0.4 - 0.5 million EURO. At the end of 2016, the examined company employed 112 employees. Since 2009, innovations have been implemented and the company changed its business model (organization innovations) from trading company to service and trading company by starting service centers. The examined Company B has been established in 1994 as a result of restructuring

of large metallurgical holding operating as a joint stock company, where employees were the major shareholders. At the end of 2016, attained sales at level ca. 47 million EUR and its economy value added (EVA) is at the level 1.2 - 1.3 million EUR. At the end of 2016, the examined company employed 229 employees. Within 2007-2016 slow changes of business model took place because for many years innovations were implemented to a very limited scope or not at all.

The applied business model is based on limited assortment of long steel products, hot rolling technology, production property leased on favorable conditions and relatively low costs of work. The most important elements of business models of examined companies are presented in **Table 1**.

Table 1 The most important elements of business models of Company A and Company B

Elements of business model	Company A	Company B
Social architecture		
Employment	Stable employment at the level ca. 100 employees. More employees with university education	Stable employment at the level 230 employees. Within past two years, share of employees with university education
Strategic competences	Engineering service of metallurgical products production of steel structures. CRM and construction of prosumer contacts	Production of metallurgical products (long rolled products). Cooperation with charge suppliers from outside EU.
Knowledge resources	Significantly increased range of formal information and knowledge (trainings, study).	Increased scope of formal information and knowledge
Technical architecture		
Material resources	Modern devices for plastic working, metal working and production of steel construction	Property resources at average technical level. (Leased to high extent) used to production of typical long products (squares, bars, flat bars)
ICT resources	Controlling IT system: Controlling, CRM engineering designing systems. Using cloud computing.	Basic IT solutions within the scope of production control, accountancy and sales.
Processes, competitive edge, value		
Business processes	Metallurgical products service, procurement, production, designing and advisory. Developed HR process	Production of classic and innovative long steel products, steel products service
Creating of value	High quality service. Wide assortment of services. Competitive prices of a wide product assortment.	Effective production of wide assortment of long steel product
Attained competitive edge and its sources	Differentiation of service and design services, competences and relationships Cost edge in metallurgical products- low fixed costs.	The competitive advantage is based on price / standard quality ratio concerning manufactured long products (shapes)

Table 2 presents results representing value attained in the four perspectives: financial, market, business processes and technical resources, development of human capital in both analysed companies.

Table 2 Results achieved in four perspectives for analyzed Company A and Company B

		2007	2010	2012	2016
The financial perspective					
EVA [million EUR]	Company A	- 0.19	0.22	0.30	0.65
	Company B	1.22	1.34	1.14	0.93
Return on sales [%]	Company A	1.1	4.2	8.3	9.4
	Company B	3.1	8.4	6.8	7.8
Net income dynamics [year 2007=100 %]	Company A	100	112	116	122
	Company B	100	121	103	105
The market's perspective					
Level of customer satisfaction [%]	Company A	74.4	68.9	80.0	85.1
	Company B	n.d.	80.1	85.3	83.2
Level of customer loyalty [number of loyal clients]	Company A	98	96	92	133
	Company B	n.d.	22	28	24
Sales dynamics [year 2007 = 100 %]	Company A	100	130	118	132
	Company B	100	106	98	119
The processes and technical resources perspective					
Number of new processes	Company A	1	0	5	3
	Company B	0	0	3	2
Number of new products	Company A	3	6	19	12
	Company B	4	3	11	6
Value of equipment [% increase]	Company A	10.1	13.3	113.2	273.1
	Company B	- 0.12	- 4.4	21.6	14.8
The human capital development perspective					
Innovativeness of employees [number of innovative applications]	Company A	2	0	6	4
	Company B	n.d.	2	3	2
Employees' productivity [thousands EUR]	Company A	35.2	41.1	92.4	111.3
	Company B	136.1	162.2	178.6	182.2
Employees with univ. education [number]	Company A	38	42	67	72
	Company B	7	8	13	16

Detailed empirical research covered two stages. The first of them is qualitative research covering structural and comparative analysis of business model components in the aspect of implemented innovations. The other one is BSC application used to measure and assess value attained by business models based on implemented innovations. As a result of research, it was found that business processes modification (new technologies of metallurgical products servicing, new types of steel and aluminium structures, automation) takes place, that allows for better satisfaction of clients needs. In turn, application of BSC in the examined companies allowed for quantitative assessment of the results of implemented innovations representing a value. In the research performed within 2008 - 2014, both economic, technical (process) and human resources related effects were included. Innovative changes of technological processes affected the improvement of quality and growth of offered steel products, belt slings and services, which fact allowed for competing on the market. The result of

competitiveness improvement was the growth of profitability and economic profit. Growth of sale in observed companies must be emphasized.

5. CONCLUSION

Major structural changes of the business model are observed in case of company A. Within the domain of social architecture, they apply to human resources (increase in amount and level of education of employees) and information systems. Within the scope of technical domain, company A noticed significantly higher increase of modern technical potential than company B (technical machines and devices), also ICT system was developed. The main difference between the studied business models concerns business processes and other new products related to them. Company A implements new business processes related to servicing steel products as well as customer service and management processes (developed controlling, process management, BSC). At company A, creation of value based on wide range of products and relationships with clients is much more developed than in company B. Structural changes were translated to relatively more favourable dynamics of results of company A, both economical and market ones. Comparative analysis allows for searching for reasons of the differences concerning the scale and types of implemented innovations. In particular, this is about product and process innovations, which changed business model at company A. It is necessary to mention that their implementation was possible because of the EU aid funds gained by company A. Performed studies confirmed usefulness of triangular methods application, i.e. structural (qualitative method) and BSC (quantitative analysis) while evaluating creation of value by means of business models. Comparative analysis results point to high influence of various innovations on structural changes of business models as well as the level of value generated by them.

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