

Eco-innovation as an Element of Business Value and Performance Management

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Abstract. The intangible assets create the value of the enterprise and affect its performance and business model. The basis for creating these values is the exchange of information (communication) and proper management of them. There is a dichotomy between assessing the value of a company and its effectiveness through the prism of exclusively material aspects, but efficiency can be understood in various and multi-aspect terms. One of them is green economy perspective, which is answer to financial perspective of value and effectiveness assessment. Moreover, the green economy is focused on realisation of sustainable development principles and values. To address to environmental and socio-economic problems a transformation of business model is needed, to spread the green values used by green sectors. Then implementation of eco-innovation and green management helps to create green jobs, especially by participation in the transformation of agriculture. The agriculture sector is still important part of each country's economy, which also cause majority of damages to the natural environment. In this article chosen statistical data analysis and descriptive method were implemented to prove mentioned above induction and deduction processes.

Keywords: Business Value, Effectiveness Management, Resources Balance.

1 Introduction

Modern enterprises need to change to survive in vivid business environment and to possess a competitive advantage. They have to also, observe the market in real time, participate in mechanisms, impulses and react to them, and finally anticipate and overtake to have certain degree of control [1, 8]. This is a mechanism of the market orientation understood as the ability to systematically generate relevant information [6, 14] about current and latent customer needs, spread this information across all company departments and use this information in decision making and subsequent behaviour [1, 7]. To obtain conscious and full reception of reality, "where there are masks, artificialities and fragments of the image" [12], is in our opinion possible only if not only the management of the company will listen to it and make final decisions, but also if other employees will be involved in these processes [14]. Therefore, the

communication is the most important to set a proper strategy or formulate a business model [13, 15]. Although the eco-innovations are considered both as an effect of new values approach and engine of future development [9, 16, 20]. On the one hand, this postulate will cause that the value of the enterprise will not be limited to the material factors determining the enterprise, and the intangible factors will have an advantage, which have much greater potential and possibilities [6]. On the other hand, the efficiency of the enterprise will definitely increase in the longer time period [5, 8]. The aim of the article is to verify the above presented thesis based on analysis of secondary statistical data related to the economy transformation towards the green economy. Therefore, an agriculture sector secondary data research and its results were described in this paper.

2 Research Problem

Balancing the material and intangible factors that determine the market value of the organization is a phenomenon that we observe in many enterprises recording the growth of their profits [13]. The modern enterprise is the sum of both the values related to the equipment as well as human capital or intellectual value in the form of, inter alia, inventions created. It can be assumed that the company value is the sum of the net value of its assets and the value of non-proprietary components [6, 8, 15]. The company's value is the sum of all special benefits that cannot be identified in any way relating to an existing enterprise: good name, capable management and staff, good credit terms, product or service reputation and location benefits [8, 17]. The value of the company is the sum of all the opportunities effectively used by the company [11]. Many authors question the determination of the company's value by investors on the stock exchange [3, 5, 9, 15]. Therefore, it is difficult to disagree, that the adoption of the maximum value as the primary requires action in the environment of a well-developed capital market enterprise, which will allow the most objective valuation of the benefit [3, 9, 17].

The second basic concept in the article - the effectiveness of enterprises, has many definitions and interpretations. The perception of effectiveness is important not only from the economic perspective but also in the area of efficiency and effectiveness of the operation. In this context, "Effective organization is characterized by productivity, the ability to adapt to changes, loyalty, satisfaction of people with work and creativity" [12]. When considering the effectiveness in terms of the enterprise, it should be remembered that it has many levels which should be analysed as well [11]. These layers are: organizational efficiency, financial efficiency, market efficiency. In general, the following efficiencies can be distinguished as:

- economic efficiency - it forms the basis of the company assessment system; it results, among others, from the comparison of the results of operations with the expenditures incurred on it,
- social efficiency - it is an assessment of comparison of the supply of business results with demand and social needs,

- technical efficiency - is an assessment resulting from a comparison of the obtained material result of a given activity with a technical model of the product produced by the enterprise,
- ecological efficiency - this is an assessment resulting from a comparison of the state of the environment before and after a certain phase of the company's operation.

Economic efficiency is considered from the perspective of two main shots [9, 13]. These are: production, in order to be effective, which must be carried out in such a way that the resources possessed by the enterprise are used to increase the level of production of a given good, while not lowering this level for another commodity [8, 14]. The second is an exchange, and to be effective is possible only if, after introducing changes to the distribution of goods, this treatment will bring benefits to some without causing losses to others [3, 6].

There is a level of efficiency between the exchange and production [11, 13]. It occurs when consumers are able to replace one good with another, with the simultaneous possibility of converting the production of one good to the good that suits it. Therefore, the scope of the term efficiency covers:

- efficiency (in terms of technical-economic management school),
- competence (in terms of organizational and bureaucratic Weber),
- efficiency (in terms of praxeology of Kotarbiński),
- functionality (in the humanistic aspect of Beckhard),
- communication skills (in Lawless's personality approach),
- morality (in the behavioural perspective of Obuchowski and Scalan).

Efficiency is also considered as an effect of the innovation implemented into organisation. There is a special kind of innovation which is related to the values related to the environment protection and sustainable development. It, due to the greater complexity and different hierarchy of objectives, is very different from innovation in general. The aim of the eco-innovation is to eliminate or at least reduce the negative impact of business on the environment [14, 16 19].

It is understood that the concept of "eco-innovation" is new. The prefix "eco-" comes from the word ecology, while by "innovation" we mean in everything is new. It is generally recognized that eco-innovations generate new products and processes that provide value for the consumer and business, but also reduce the impact on the environment. Already in the 1990s, research on eco-innovation began. Their development was influenced, among others, by increased awareness of environmental threats, as well as the search for a more balanced model of economic development [3, 16, 18].

Eco-innovation (according to classical definition) is a new product that provides value for the customer and for business, while significantly reducing the negative impact on the environment [4]. Schumpeter worked very intensively with the concept of innovation, meaning the introduction of something new into the economic system [15]. The first case of innovation, as Schumpeter defined it, is the production of a new

good that consumers do not yet know, or the productions of goods of a new quality. The second is the introduction of new methods of production which are virtually unknown to the industry. Schumpeter saw the main role of the entrepreneur as that of an innovator entering a functioning market while also becoming the main driver of the economic process [15]

The European Commission, on the other hand, defines eco-innovation as "a form of innovation that aims to make significant and provable progress towards the goals of sustainable development by reducing environmental impact or achieving more effective and responsible use of natural resources including energy" [2].

The eco-innovation influenced also Chinese companies. In 2014, the energy consumption of manufacturing industry accounted for 57.55% of the total energy consumption of China, of which the consumption of coal in manufacturing occupied 42.75%. Therefore, China want to achieve the dual goals carbon emission reduction and manufacturing power in 2025 [9].

Eco-innovations lead to integrated solutions aimed at reducing the resources and energy inputs, while at the same time improving the quality of the product and service. Therefore, their impact on agriculture is visible among other sectors of economy under transformation [2]. The aim of eco-innovations is to develop new products and processes that significantly reduce their negative impact on the environment [13, 15]. One of such innovations is the creation of green jobs, the aim of which is to reduce the pressure on the natural environment on the part of the economy and consumption

3 Methodology and Goal

The main goal of the article is to prove the thesis that eco-innovation and intangible values combined together allow companies to increase their performance in the longer time period. To verify so declared thesis, a research question was formulated as follow: do companies with more share of green jobs have higher performance? The performance measurement was based on secondary data analysis obtained from Main Statistical Office. These basic indicators and trends describing Polish Economy were applied. The analysis in based on comparative research and simple statistical methods and Florence's indicator were incorporated. In the further part of article main sectors were indicated with the highest share (%) and number of employed in green jobs. Therefore, the research question was addressed describing the economy transformation towards the green economy.

4 Business Models and its Effectiveness in Aspect of Value Creation

Contemporary concepts of the business model vary in a way of emphasis on the sources of value creation, by:

- articulation of the value proposal, i.e. the value created for recipients through a specific product/ service offer);

- definition of the target market segment and how is specified the generation mechanism revenue (i.e. it defines the recipients of the offer and the reason for which they will be interested offer);
- definition of the structure of the value chain required for creation and distribution offers and complementary resources necessary to support the position in the value network;
- detail the mechanisms by which the company will receive payment for delivered offer and thus earn revenue;
- determination of the cost of the offer and profit level possible to be obtained;
- determination of the company's position in the value network;
- formulation of the assumptions of a competitive strategy that allows obtaining and maintaining competitive advantage over rivals.

There is also the resource approach in the enterprise business model, where models are formed of three elements:

- resources and competences;
- organizational structure;
- value proposition offered to customers in the form of products and or services.

Another concept is green jobs. This is any type of professional activity that helps protect the environment and fight climate change by saving energy and resources, promoting renewable energy, reducing waste and pollution, and protecting biodiversity and ecosystems.

According to the definition of green jobs, the most important for the authorities' government and local government have indicators regarding the social sphere to which include categories: work practices, human rights, society (building community) as well as product liability. Importantly, an important group of factors there are social factors, especially indicators of direct energy consumption from primary sources and creating new jobs.

It is also important for the development of agriculture that people trained by sharing with their ecological skills with colleagues and neighbours, they become "ambassadors of ecology" in their neighbourhood and workplace, which is a factor conducive to change. In addition, an important element of green jobs there is an increase in entrepreneurship and competitiveness in their area and an increase in the number new jobs surrounded by agriculture. Creating green jobs is a new proposal to combat unemployment and social exclusion.

5 Statistical Data Analysis

The adopted method in this paper was secondary statistical data research conducted among the 17,062 organisations (business entities) which basic data is presented in Table 1. The research was conducted by the Main Statistical Office in Poland (GUS) in

2017 among Polish economic entities [10]. The aim of the original research were financial results of business entities in first half of the year 2017.

Table 1. Economic entities with 10 and more persons employed in months I-VI in 2013-2017. [10]

Years	2013	2014	2015	2016	2017
Total number of employed	46.890	46.912	47.127	47.547	47.181
Number of persons employed (10-49)	29.936	30.198	30.265	30.426	29.729
Number of persons employed (50-249)	13.880	13.610	13.636	13.801	13.984
No. of persons employed 250 and more	3.074	3.104	3.226	3.320	3.468

The object of the original research was to measure the effectiveness, including not only an economic but also a social one. A comprehensive view of the indicators focused on the value of the enterprise with its potential, opportunities and threats, as well as the challenges of the global economy. The subject of research was micro, small, medium-sized enterprises in Poland (as presented in Table 1).

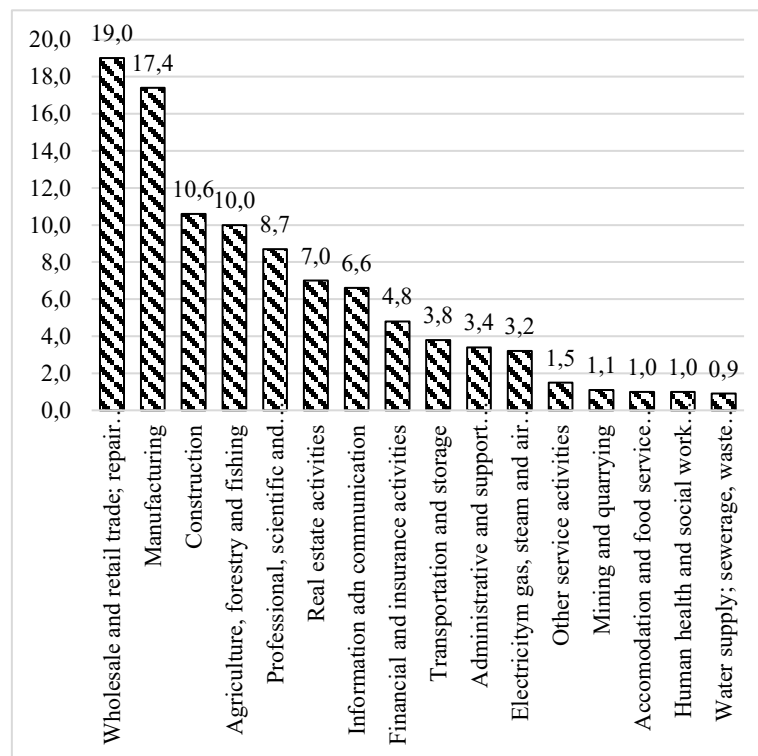


Fig. 1. Structure [%] of the economic entities groups according to the NACE in the research [10].

Pursuant to the Statistical classification of economic activities in the European Community, abbreviated as NACE Rev. 2 (French: Nomenclature statistique des activités économiques dans la Communauté européenne), the Companies which took part in the research were classified in many different fields of activity (Fig.1).

Presented data can be compared among first four groups of economic entities (formulated by the PKD classification) which share in the research group was over 10%. On this background the number of the green jobs in each group was estimated [20].

Table 2. Number of employed and green jobs in chosen groups of NACE in 2016 (I-VI) [10].

group	% of employed	% of green jobs
Wholesale and retail trade	24	2
Manufacturing	13.2	6.2
Construction	12.7	1.3
Agriculture, forestry and fishing	11.4	9.1

Although in this research the greatest number of people were employed in wholesale and retail trade (24%) among these jobs only 2% were green in 2016. On the other hand, green jobs were majority among jobs offered in agriculture, forestry and fishing group of entities which participated in the research conducted by Main Statistical Office in Poland. However, the number of green jobs was estimated based on the research with method and definition described by the green sectors of PKD [4, 20].

6 Conclusion

Based on the above the issue of creating new jobs in agriculture it should be emphasized that the aim of these activities is to reduce the pressure on natural environment on the part of economy and consumption, and consequently – investing in sectors that at the same time serve the environment and bring economic returns and social, for example manufacturing and whole sale and retail trade. It should also be noted that promotion ecological transformation of the local economy, creating stable, local jobs and maintaining the long-term profitability of business operations in the agricultural sector is important from the point of view of economic development. New green jobs are related both to the implementation of sustainable policies development, with socio-economic changes as well as green development technology.

The largest number of green jobs is created in the agriculture sector, which become more ecological and greener over recent years. However, the largest number of employed is in the wholesale and retail trade, which is not considered as a green sector of the economy. Companies from this sector are characterised by the better performance than agricultural economic entities.

The aim of the further research should be to construct specific performance indicator supported by the theoretical model, which can expand described in this paper economic phenomena.

References

1. Čekmeová P.: Unfavourable productivity growth in the European Union -the role of labour market institutions, In: Hradec Economic Days 6(1) Double-blind peer-reviewed proceedings of the International Scientific Conference Hradec Economic Days 2016 February 2nd and 3rd, 2016, pp. 138, University of Hradec Králové, Hradec Králové (2016).
2. Council of the European Union: Competitiveness and Innovation Framework Programme (CIP) (2007–2013). Decyzja nr 1639/2006/WE Parlamentu Europejskiego i Rady z 24 października 2006 r. Official Journal of the European Union. L 15/310 (2006).
3. Czaja, S., Tutaj, J.: Liberalizm, Wydawnictwo AE we Wrocławiu, Wrocław (1999).
4. Grudziński, A., Sulich, A.: Green European Integration. In: Staničková, M., et al. (eds.) Proceedings of the 4th International Conference on European Integration 2018, ICEI 2018 : May 17-18, 2018, Ostrava, Czech Republic. Pt. 1, pp 364-371. VŠB - Technical University of Ostrava, Ostrava (2018).
5. Hamrol, M.: System oceny przedsiębiorstwa przemysłowego. Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznań (1992).
6. James, P.: Toward sustainable bussines? In: Charter, M., Tischner, U. (eds.), Sustainable Solution. Greenleaf Publishing, Sheffield, pp. 77–97 (2001).
7. Kuchta, D., Ryńca, R., Ziaecian, Y., Grudziński, A.: Multicriteria assessment of the academic research activity. Multiple Criteria Decision Making, 12, 103-118 (2017).
8. Kulhanek, L., Sulich, A.: Financial risk in the contemporary environment of enterprises. Zeszyty Naukowe Wyższej Szkoły Humanitas. Zarządzanie. 2(19), 49-63 (2018).
9. Main Statistical Office in Poland, Wyniki finansowe podmiotów gospodarczych, p.30, <http://stat.gov.pl/obszary-tematyczne/podmioty-gospodarcze-wyniki-finansowe/przedsiębiorstwa-niefinansowe/wyniki-finansowe-podmiotow-gospodarczych-i-vi-2017,11,17.html>, last accessed 2018/10/25.
10. Michalski, G., Rutkowska, M., Sulich, A.: Remodeling of FLIEM: the cash management in Polish small and medium firms with full operating cycle in various business environments. In: Dudycz, T., Osbert-Pociecha, G., Brycz, B. (eds.), Efficiency in business and economics: proceedings from the 7th International Conference on Efficiency as a Source of the Wealth of Nations (ESWN), Wrocław 2017, Springer Proceedings in Business and Economics, pp. 119-132. Cham: Springer, cop., Wrocław (2018).
11. Osbert-Pociecha, G.: Twórcza destrukcja jako uwarunkowanie efektywności przedsiębiorstwa, Prace naukowe AE im. Oskara Langego we Wrocławiu, 1060, 543(2006).
12. Parkitna, A., Tutaj, J., Kamińska, A.M.: The role of measuring the efficiency of marketing e-tool brand management. In: Marketing i cifrovi tehnologii: Zbirk materialiv III Mižnarodnoī naukovo-praktičnoī konferenciī, 25-26 travnā 2018 = Marketing and digital technologies: collection of materials of the III International scientific and practical conference the 25-26th of May 2018, pp. 33-34. TES, Odessa (2018).
13. Pawłowski, J.: Wybrane metody oceny efektywności finansowej przedsięwzięć gospodarczych, 2nd edn. Wydawnictwo Uniwersytetu Łódzkiego, Łódź (2007).
14. Petříček, M., Máče, J.: Application of Schumpeter's theory of the innovation to economic development. In: Hradec Economic Days 6(1) Double-blind peer-reviewed proceedings of the International Scientific Conference Hradec Economic Days 2016 February 2nd and 3rd, 2016, pp. 817, University of Hradec Králové, Hradec Králové (2016).
15. Rutkowska-Podołowska, M., Pakulska, J.: The level of eco-innovations in EU member states. In: Staničková M. et al. (eds.), Proceedings of the 4th International Conference on European Integration 2018, ICEI 2018: May 17-18, 2018, Ostrava, Czech Republic. Part 3, pp. 1247-1255. VŠB - Technical University of Ostrava, Ostrava (2018).

16. Shi, B.: An analysis on green total factor productivities of Chinese manufacturing industries. In: Hradec Economic Days Vol. 7(1) Double-blind peer-reviewed proceedings of the international scientific conference, Hradec Economic Days 2017 January 31st and February 1st, 2017. p 745. University of Hradec Králové, Hradec Králové (2017).
17. Skrzypek, E.: Efektywność ekonomiczna jako ważny czynnik sukcesu organizacji. In: Dudycz, T., Osbert-Pociecha, G., Brycz, B. (eds.) Efektywność- konceptualizacja i uwarunkowania, Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, vol 262, p.319. Wydawnictwo UE we Wrocławiu, Wrocław (2012).
18. Skrzypek, E.: Jakość i efektywność. Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej, Lublin (2000).
19. Stańczyk-Hugiet, E.: Strategizing routine revisited: theoretical roots, determinants, and consequences; *Journal of Economics & Management*, 32, 102-117(2018).
20. Sulich, A., Zema, T.: Green jobs, a new measure of public management and sustainable development. *European Journal of Environmental Sciences*. 8(1), 69-75 (2018).