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BUSINESS MODELS OF POLISH FUEL AND ENERGY COMPANIES IN INTEGRATED REPORTS

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ABSTRACT: The business model is undoubtedly a new issue in scientific research and currently enjoys great popularity, in recent years, it has attracted increasing attention in relation to both financial and non-financial corporate reporting. The purpose of the article is to identify business model disclosures of fuel and energy companies in Poland presented in integrated reports. The study, which examined 70 integrated reports for 2013 and 2021, involved analysing disclosures of information about the business model, analysing the content of integrated reports of companies and checking the scope and content of disclosed information in the part of the report concerning the business model. The content analysis method was used in the study, and the Likert scale was used to measure the level/quality of disclosures. The quality assessment of business model disclosures in integrated reporting is comprised of two steps: analysis of average scores of disclosures in each of the analysed years and case study analysis to compare the practical approach to disclosing information about the business model. The findings proved that the business model disclosures are at a high level. In most cases, the companies use the capital approach, complementing the business model presentations with value creation schemes. The results of the study allow for a better understanding of the logic of running a business of fuel and energy companies for all stakeholders. The article is the result of original empirical research concerning the analysis of non-financial information disclosed by Polish companies and fills a gap in scientific research on disclosing information about the business model in integrated reports. The research presented in the article contributes to the current literature on integrated reporting by using the novel dataset.

KEYWORDS: business model, sustainability reporting, energy sector

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Introduction

The subject of business models has recently been widely discussed in the literature and business practice (Brandenburger & Stuart, 1996; Timmers, 1998; Mahadevan, 2000; Slywotzky et al., 2000; Amit & Zott, 2001; Chesbrough & Rosenbloom, 2002; Sandberg, 2002; Magretta, 2002; Afuah & Tucci, 2003; Hedman & Kalling, 2003; Pateli & Giaglis, 2004; Morris et al., 2005; Shafer et al., 2005; Zott & Amit, 2007; Gołębiowski et al., 2008; Johnson et al., 2008; Brzóska, 2009; Osterwalder & Pigneur, 2009; Nogalski, 2009; Chesbrough, 2010; Demil & Lecocq, 2010; Teece, 2010; Johnson, 2010; Zott et al., 2011; Arend, 2013; Falencikowski, 2013; Osterwalder & Pigneur, 2013; Baden-Fuller & Mangematin, 2013; Zott & Amit, 2013; Gajda, 2014; Cyfert & Krzakiewicz, 2015; Michalak et al., 2018; Szromek & Naramski, 2019). Both the definition of the business model and its key elements are perceived differently. In general, the approach to defining the concept of "business model" largely depends on the scientific discipline represented by the authors. The most popular approaches are described in the management literature, and in recent years, along with the dynamic development of the non-financial information trend, the concept of a business model is also defined in the accounting and finance literature.

The literature on the subject also proves that connections and cause-and-effect relationships between individual components of business models should enable the achievement of the assumed goals of the organisation, and the architecture of the business model should be flexible and conducive to its modifications and innovation. This means that the ability to define and redefine business models, taking into account the appropriate configuration of their components, is a key competence for creating company value.

The business model has also appeared in corporate reporting and has become a challenge for accounting. Considerations regarding the disclosure of the business model in accounting have been undertaken both by theoreticians (Leisenring et al., 2012) as well as practitioners associated with organisations such as the Institute of Chartered Accountants in England and Wales (ICAEW), European Financial Reporting Advisory Group (EFRAG), Autorité des Normes Comptables (ANC) in France, and the Financial Reporting Council (FRC) in the United Kingdom (EFRAG, 2013).

It was also noted that investors advocate the position that high-quality reporting describing the business model of an organisation is crucial for better understanding the organisation's performance, the impact of the external environment on the organisation, and the way organisations create and sustain value over the long term.

CIMA (Chartered Institute of Management Accountants), in their research, has found that there is a growing interest in business model disclosure – investors, in particular, demand access to information about the business model which is not provided by the financial statements in the traditional form (CGMA, 2016).

There is no doubt, therefore, that the topic of the business model and its place and significance in organisational reporting constitutes a significant area of research.

The article is the result of original empirical research concerning the analysis of non-financial information disclosed by Polish companies since 2013, and it fills a gap in scientific research on the disclosure of business model information in corporate reports.

The research problem in the article concerns the scope and form of information currently disclosed within the concept of the business model. Determining the scope and form of this information is crucial for the proper fulfilment of entities' obligation to report on the description of the business model. Thus, it will have practical value.

The research area in the article is the disclosure of non-financial information in the integrated reports of Polish companies, while the subject of the study is the content of disclosures regarding the business model.

The purpose of the paper is to identify business model disclosures of fuel and energy companies in Poland presented in integrated reports. Based on the case study, the scope of disclosures about the business model of fuel and energy companies was analysed. The study allowed for a better understanding of the position of practitioners preparing integrated reports in the form of presenting the business model. The analysis was based on the integrated reports of three capital groups: PGE, Bogdanka, and Orlen.

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The article attempts to determine how practitioners understand and explain the concept of a business model and whether the implementation of integrated reporting has influenced the scope and form of presenting information on the business model by fuel and energy companies. The article is part of authors research (Bek-Gaik & Surowiec, 2019; Bek-Gaik & Surowiec, 2020; Bek-Gaik & Surowiec, 2021) on the organization-environment relationship and is aimed at recognising the non-financial and sustainability reporting, in particular the quality of the disclosures presented in reports.

The essence of a business model

Determining the essence of a business model is not an easy task, which results from the different approaches of researchers to identifying this concept. The concept of a business model first appeared in the literature thanks to Bellman et al. (1957) (Osterwalder et al., 2005), and three years later, Jones used this term in his article (Osterwalder et al., 2005), but it gained popularity only at the turn of twentieth and twenty-first centuries, which coincided with the rapid development of the digital economy. So far, many definitions of business models have been proposed, and their content and scope have evolved along with the development of the concept. It should be noted, however, that on the theoretical level, a uniform, generally recognised definition of a business model, e.g. in a norm or standard, has not been adopted. A new era for the concept of a business model began in 2010 when the business model was implemented in such corporations as Apple, Google, Facebook/Instagram, and Skype. These implementations were related to the improvement of business processes using new technologies. A broad review of the definition of a business model in the Polish literature on the subject was made by Michalak (2015), Falencikowski (2013), Jabłoński and Jabłoński (2013), Wierzbiński (2015).

The dominant feature of business models is value creation. This position is presented by many authors, including Smith et al. (2010), Sterman (2000), Zott and Amit (2010), Climent and Haftor (2021), perceiving the business model as a “configuration”, thanks to which the company selects a strategy variant that enables value creation, and consequently uses organisational architecture to create and sustain value (Smith et al., 2010). Chesbrough and Rosenbloom claim that an essential component of a business model is to “formulate the competitive strategy by which the innovating firm will gain and hold an advantage over rivals”, and “heuristic logic is employed to discover an appropriate business model” that combines technical potential with creating the economic value” (Chesbrough & Rosenbloom, 2002). The authors noticed that the business model primarily articulates the value proposition, enables estimation of the cost structure and profits potential from the value proposition and value chain structure, identifies market segments, describes the position of the firm within the value network, defines the structure of the value chain; formulates a competitive strategy based on the introduction of innovation, which allows the enterprise to retain profits greater than competitors (Chesbrough & Rosenbloom, 2002).

The business model of an organisation has been identified as one of the significant disclosures in organisational reporting because it constitutes a fundamental concept enabling the understanding of how organisations operate and how they create value (IIRC, 2013a; IIRC, 2013b; IFRS Fundation, 2021).

On the other hand, the business model understood as a method of creating value and a unique combination of processes and resources (assets), impacts the entity’s situation, as presented in the financial statements and other reports. It affects the length of the entity’s operating cycle, the way assets are used, including the process of transformation of inputs into results, types of risk related to operations, the ability to generate cash flows and the level of capital intensity, thus shaping the financial position of the organisation. The business model may determine whether certain activities are recurring or unique and, therefore, should be included in the process of determining the operating profit or non-operating income. International financial reporting standards serve as a set of financial reporting principles and, as a “global dictionary” of financial accounting, approach the concept of a business model in a selective and non-comprehensive way (Michalak, 2016).

The business model is disclosed in the annual report, and the disclosure is mostly descriptive. Another report presenting the business model is the management commentary. In Poland, the concept of a business model was introduced to reporting standards as a consequence of the implemen-

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tation of Directive 2014/95/EU into the Polish Accounting Act, which is detailed in National Accounting Standard No 9. The business model has also been defined by the International Integrated Reporting Council (IIRC, now part of the International Financial Reporting Standards Foundation, IFRS Foundation) as one of the main content elements of an integrated report (IIRC, 2013b). It was recognised that the presentation of the business model is crucial in presenting a holistic image of the organisation, showing the way in which the organisation creates and captures value, thus, it is the basis for the analysis of the organisation's activity that presents the logic of running a business.

Business model in integrated reporting

The Integrated Reporting Framework (IR Framework) (IFRS Fundation, 2021) identifies the business model as a key disclosure, defined as an organisation's "system of transforming inputs, through its business activities, into outputs and outcomes that aims to fulfil the organisation's strategic purposes and create value over the short, medium and long term" (IFRS Fundation, 2021). The concept of a business model was introduced extensively earlier in the IIRC discussion paper Towards Integrated Reporting – Communicating Value in the 21st Century (IIRC, 2011). It stated that although "there is no single, generally accepted definition of the term "business model" [...] it is often seen as the process by which an organisation seeks to create and sustain value" (IIRC, 2011). In 2013, the IIRC published a document entitled Business Model Background Paper for IR (IIRC, 2013a), the aim of which was to reconcile divergent approaches and concepts in relation to the business model and business model reporting and to develop a common and widely accepted definition of the business model, as well as its use in integrated reporting.

The organisation's business model has, therefore, been identified as one of the fundamental disclosures within integrated reporting. It is a key concept for understanding how organisations operate and how it creates value. The IR Framework emphasises that the business model is at the very centre of the organisation and is based on various capitals referred to as inputs. As a result of performing various business activities, the capital is transformed into outputs and, as a result, into outcomes. In order to organise the disclosures about the business model, a map of the business model was also proposed. The input elements are the individual capitals that the organisation uses. The IR Framework emphasises that the business model is based on various capitals as inputs and transforms them into outputs (products, services, by-products and waste) through activities. The activities of the organisation and the outputs lead to outcomes in terms of impact on capital. The ability of a business model to adapt to change affects the long-term viability of an organisation.

Inputs include key capitals (resources) at the organisation's disposal and on the basis of which it operates. Capital is important for the ability to create value in the short, medium, and long term and for the sustainability of the business model (IIRC, 2013a).

The second element of the business model is the organisation's business activities. i.e., activities performed in the organisation that contribute to creating value. Therefore, these are activities directly related to the specificity of the activity (trade, production, services) and include production, business, and environmental activities as well as activities in favour of employees. The goal of all the indicated activities of the organisation is to create valuable effects through consumption and/or transformation of inputs/resources.

In the Business Model Background Paper for IR (IIRC, 2013a), it was emphasised that a description of the business activities should present the way in which the company intends to distinguish itself from the competition (distribution channels, market segmentation, etc.). It should be determined to what extent the company's revenue generation depends on after-sales activities (e.g. extended warranty or technical service costs). An important element of business activities disclosure is the description of activities implemented in order to introduce innovations as well as changes in the business model caused by changes in the environment. This section should also describe the most important initiatives, such as process improvement and employee training, which are expected to lead to the company's success in the long term.

The description of key business activities should include:

- characteristics that distinguish the organisation on the market (e.g. through product differentiation, market segmentation, supply channels and marketing),

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- how the business model generates revenue,
- the organisation's approach to innovation,
- how the model has been designed to adapt to change.

Attention was also paid to the description of the contribution made to the long-term success of the organisation by initiatives such as process improvement, employee training and relationship management.

Outputs include not only major products and services but also by-products and waste (including emissions) that are relevant to the organisation. Outcomes are defined as the internal and external consequences affecting the capital as outcomes of the company's business activities.

The description of the business model requires disclosure of both internal effects (e.g. employee morale, organisational reputation, revenues and cash flows) and external effects (e.g. customer satisfaction, tax payment, brand loyalty and social and environmental effects). The disclosure should also include the net increase in equity that creates value or the negative results that reduce equity and thus reduce the value (IFRS Foundation, 2021). The IR Framework also lists features that can increase the efficiency and comprehensibility of the description of the business model. They include:

- unambiguous identification of the key elements of the business model and their presentation in the form of a simple diagram (a simple chart/scheme showing the key elements, supplemented with a clear explanation of the key elements for the organisation),
- appropriate description (narrative), which presents the conditions and circumstances in which the organisation operates,
- identification of key stakeholders and other dependencies, as well as important factors influencing the organisation,
- description of key factors influencing the creation of value (key value drivers),
- description of the value chain, connection with other aspects of reporting, including reporting on the organisation's strategy, opportunities and risks, as well as key performance measures (IFRS Foundation, 2021).

The IR Framework also includes guidelines for organisations with multiple businesses. When organisations use more than one business model (IFRS Foundation, 2021), reflecting, for example, the different market segments, each is required to be considered and discussed separately (if relevant) and commented on the connectivity between the business models. The discussion article (IIRC, 2011) also noted that strategy and business model disclosures should be clearly distinguished – they are intended to be separate elements of the report. The goal of the business model is to use this strategy to achieve the desired results/outcomes, which can be assessed on the basis of performance indicators.

Business model reporting should, therefore, be a basic element facilitating a better understanding of organisational aspects:

- What is the impact of key factors on the organisation?
- What does the organisation do to create value for customers and other stakeholders, and thus for providers of financial capital?

The business model map proposed in the Business Model Background Paper for IR (IIRC, 2013a) provides practical guidelines for organising disclosures regarding the business model. Individual elements on the disclosure map are not definitive and should be adapted individually to the specifics of the activities of a particular organisation. The literature on the subject also emphasises that in order to ensure effective communication and the holistic and multifaceted image of the business model, information about it must be presented in the form of a story (Magretta, 2002; Beattie & Smith, 2013; Bini et al., 2016), in the form of numbers, visualisation and narration. Among the qualitative features of business model disclosures, the following are emphasised: focus, completeness, and connectivity.

To sum up, the concept of the business model, according to the IIRC, has gained great popularity in the literature on the subject and in business practice, as it has become a starting point for organisations looking for effective ways to build a competitive advantage based on an innovative business model. The business model in integrated reporting, combining financial and non-financial information, is indicated as a key disclosure that enables better understanding, assessment and communication of the value that an organisation create for stakeholders. In addition, the integration of individual aspects of the organisation's activities in one report also enables more effective identification and management of risk. As a result, organisations can better assess the impact of their activities on the environment, community and other stakeholders, which is particularly important from the perspective of sustainable development and long-term business success.

The business model provides basic information to analyse the organisation's activities and presents its vision, mission, way of creating value and key success factors.

In conclusion, it should be emphasised that the integrated report should answer the question: What is the business model of the organisation? The quintessence of a business model is that it defines how a business enterprise creates, maintains, and delivers economic, social, and other values to stakeholders, encourages customers to pay for that value, and transforms inputs into profit. It is the driving force behind the company's core business and links strategy, management style/method, actions taken and prospects.

It can, therefore, be concluded that both the concept of the business model canvas and the concept proposed by the IIRC (now part of the IRFRS Foundation) help organisations build a competitive advantage and provide comprehensive information about the value they generate for stakeholders.

Business Model Disclosure – A Review of Research

Research on disclosures regarding the business model can be divided into three main groups. The first group comprises literature studies on the concept of disclosing the business model itself and the search for a clear definition of the business model for reporting purposes. The second group concerns guidelines and regulations regarding the business model, while the third group relates to the practice of disclosing information about the business model.

Literature studies focus on analysing the concept of the business model and searching for a universal definition of the model. The definitions of the business model most frequently quoted in the literature on the subject are those of Osterwalder and Pigneur (2009) and Teece (2010). The definition of Osterwalder and Pigneur, which is the foundation of many works, indicates that "a business model describes the rationale of how an organisation creates, delivers, and captures value" (Osterwalder & Pigneur, 2009). The business model proposed by Osterwalder and Pigneur is described through nine basic building blocks: customers, value proposition, channels (distribution, communication, sales), customer relationships, revenue streams, key resources, key activities, key partnerships and cost structure. Similarly, the business model is defined by Teece, who states that "business model defines how the enterprise creates and delivers value to customers, and then converts payments received to profits" (Teece, 2010), and the basis for the analysis of the business model is the presentation of the way in which the organisation creates value for customers and outlining "the architecture of revenues, costs, and profits associated with the business enterprise delivering that value" (Teece, 2010). According to the quoted definition, the business model not only determines the way in which the company delivers value to customers but also determines the structure of revenues, costs and profits related to this activity. In fact, a business model is a comprehensive tool that enables an organisation to accurately describe how it creates and delivers value to customers and converts revenue from business activities into profit. The business model also takes into account the organisational and financial structure of the organisation. As a consequence, the business model is essential for success in the market, and its effective use allows for the creation of a sustainable and profitable business.

Analysis of the content of the definition of business models presented by Morris et al. (2005) showed that there are three main groups of definitions, emphasising successively other decision-making areas of the organisation (Morris et al., 2005):

- definitions emphasising financial elements, which define the business model as a financial model, indicating how the company generates profits,
- operational-based definitions that emphasise the internal processes that enable the organisation to create value and decisions related to the architecture and configuration of these processes,
- definitions taking into account the strategic dimension – they indicate aspects related to the positioning of the organisation, cooperation with other entities and the possibilities of development.

In turn, Shafer et al. (2005) distinguished four groups of definitions, emphasising:

- strategic choices – customers, value proposition, capabilities, revenues, competitors, offering, strategy, branding, differentiation, mission,

- capturing value – profits, costs, financial aspects,
- creating value – resources and assets, processes and activities,
- value network – suppliers, customer relationships, customer information, information flow, products and services flow (Shafer et al., 2005).

The different approaches relate to another widely discussed problem in the literature on business models – the issue of its components. This situation may result from an attempt to include many different elements related to the functioning of the organization in the business model but also from the lack of one recognised theory consolidating the existing various approaches in management science (Falencikowski, 2013).

Research by Chang et al. (2021) allowed to indicates that the business model is a configuration of the following elements: segmentation, target customers, value proposition; communication channels, customer relationship, key resources; key activities, key partners; cost structure; revenue model.

A critical challenge for research on the business model is its lack of consistency. Attempts to review the literature and reach a consensus tend to generate comprehensive definitions that encompass established organisational constructs such as value creation and strategy.

On the other hand, research on the practice of disclosures regarding the business model was mainly conducted within the framework of content analysis of integrated reports and focused on comparing disclosures related to the business model with the framework proposed by the IIRC. Several researchers have focused on examining the quality of disclosures regarding the business model. The selected empirical studies on business models in corporate reports are presentedin Table 1. Key findings indicate that companies provide users with information about their business model concerning all major themes, such as input elements, business activities, output elements, and outcomes, as well as selected component elements (e.g., financial, human capital). However, it was found that a significant majority of disclosures lack quantitative or prospective character.

In some studies, concerns have also been raised about the quality of disclosures, mainly their relevance, completeness, and consistency. It has also been observed that the business model is currently disclosed in various reports (e.g., annual reports, CSR reports, management commentaries, environmental reports, and others). The disclosures are, therefore scattered, and the recipient faces difficulty in filtering out relevant information describing the organisation's business model. The disclosures can also be considered incomplete; a lack of mutual relationships between the components of the business model has been observed, as well as a lack of clearly expressed connection with the measures of the organisation's performance.

Table 1. The Business Model in Corporate Reports – Selected Empirical Studies

Authors	Description of the study
Melloni et al. (2016)	Authors conducted a study of disclosures about the business model through the linguistic analysis of the reports' content, taking into account three specific language attributes of information – type (whether it is quantitative or qualitative), tone (positive or non-positive), and time perspective (whether it is forward looking or not). The survey showed that most of the presented information on the business model is qualitative, do not refer to the future, and half disclosures are positive and half negative.
Eccles and Krzus (2014)	Authors analyzed English-language reports published for 2012 by listed companies and assessed the quality of disclosure, including the disclosure on BM. The disclosures about the BM was assessed as average.
Eccles et al. (2015)	Authors reviewed the reports of 25 multinational companies thatparticipated in in the International Integrated Reporting Council's Pilot Programme Business Network (a network of peer group organizations to exchange knowledge about integrated reporting) including disclosure on business model.
Melloni et al. (2016)	The paper investigates the informativeness of business model disclosure questioning whether companies adopt impression management strategies by manipulating the tone of the business model disclosures provided in their reports. Authors performed a manual content analysis of all the reports identified in the IIRC website and a multivariate statistical analysis to assess if a positive tone of business model disclosure is significantly associated with weak corporate governance, bad performance and low verifiability of the disclosure itself. The findings support the idea that managers use business model disclosure as an impression management strategy.

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Authors	Description of the study
Bagnoli and Redigolo (2016)	Authors conducted the assessment of voluntary disclosures about the BM based on Italian production companies. It has been shown that companies with a BM based on technology-push and design-driven innovation have a lower propensity to fully disclose their BM, especially intangible resources.
Bini et al. (2016)	The study (Bini et al., 2016) conducted on a sample of 35 British high-tech companies listed on the stock exchange showed difficulties in distinguishing the description of the business model from other management concepts and lack of links between the individual components of the business model.
Bek-Gaik and Rymkiewicz (2015a)	An analysis of the structure of disclosures concerning fundamental elements of the business model in corporate publications was conducted, and key elements of the business model for an energy company for the year 2013 were analyzed.
Walińska et al. (2015)	Analysis of disclosures regarding the business model in corporate publications of PKN Orlen for the year 2013.
Bek-Gaik and Rymkiewicz (2015b)	A study on the practices related to the preparation and publication of integrated reports by companies listed on the Warsaw Stock Exchange for the years 2013 and 2014.
Morioka et al. (2016)	A study showed that there are difficulties in visualizing the links between the reported business model components, moreover some of the components have not been reliably reported.
Bek-Gaik and Rymkiewicz (2016a)	Authors analysed the disclosures regarding the business model in the practice of integrated reporting by Polish listed companies. The study addressed the business model as a key element of the integrated report and examined disclosures about the business model in the integrated reports of companies listed in the WIG30 index for the year 2014.
Bek-Gaik (2016)	The study is presenting views and opinions on the disclosure of the business model in organizational reporting – both financial and non-financial.
Bek-Gaik and Rymkiewicz (2016b)	Authors analysed reports published by companies listed in the WIG20 and mWIG40 indices for the years 2013-2014 to present practices in integrated reporting. The topic of the business model was also addressed as one of the fundamental elements of the integrated report.
Bek-Gaik and Rymkiewicz (2017)	Authors conducted an analysis of disclosures regarding the business model contained in management commenntaries of companies listed in the WIG20 index for the year 2015. Elements of the business model consistent with the Integrated Reporting Framework presented by the IIRC were analyzed. The study employed research methods such as content analysis of corporate publications and comparative analysis.
Lüdeke-Freund and Dembek (2017)	This article reflects on the current state of the dynamically growing research and practice related to sustainable business models.
Bini et al. (2018)	The paper proposes business as a communication device to frame non-financial key performance indicator disclosure. By linking business model and non-financial indicator disclosure, companies may offer an integrated communication that is capable of showing the connections between a company's strategy and the way resources are combined to generate value.
Ritala et al. (2018)	Authors examined the diversity of sustainable business models adopted by the largest global corporations, over the period 2005-2014. The results show that large capitalized firms have mostly adopted the environmentally-oriented business model archetypes, and to much lesser extent the societal and organizational ones.
Bini et al. (2019)	Authors explore whether current non-financial KPIs disclosure practices are useful to users of financial reports, and whether those additional performance indicators are indeed 'key'. The study focussed on the disclosures of 67 listed UK companies, as reported in their 2016 annual accounts, and compared against their 2014 reports.
Sukhari and de Villiers (2019)	Authors in their study showed that after implementing the requirement to publish an integrated report in South Africa, companies disclose their strategic goals more transparently, but still do not link these goals to business model, key performance indicators, risks or opportunities.
Rosa et al. (2019)	The article proposes a systematic literature review on existing circular business models and their classification methods, by selecting the most promising ones.
Bini et al. (2021)	Authors focused on investigating preparers' and users' perceptions of the business model and its elements in relation to reporting and disclosure requirements. The aim was to highlight how preparers and users of financial statements understand and consider this concept.

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In summary, the key findings of researchers indicate that organisations describe their business models in a highly diverse manner. Although they provide users with information about their business model concerning all key issues outlined in the conceptual framework of integrated reporting, namely inputs, business activities, outputs, and outcomes, the way they present this information varies greatly. It has also been observed that a significant majority of disclosures regarding the business model lack quantitative or prospective character, as indicated by earlier studies conducted by the authors (Bek-Gaik & Surowiec, 2019).

Concerns have also been raised in the research regarding the quality of disclosures – mainly completeness and consistency.

It should also be noted that disclosures regarding the business model in corporate practice are constantly evolving. This is evidenced by a change in approach to describing the business model – many companies present a description of the business model, starting with detailed disclosures of inputs, i.e., precisely describing the six types of capitals indicated in the framework. Such an approach ensures the possibility of transparently presenting the relationships between all elements of the business model proposed in the framework, taking into account performance measurement.

Research methods and results of the research

The aim of the study was an assessment of how business models are presented, what are the key elements of the business models of fuel and energy companies, and what their quality is. The research procedure involved the following stages:

- identification of fuel and energy companies publishing integrated reports,
- quality assessment of business model presentation,
- case study of selected fuel and energy companies.
- The following arguments support the use of case studies:
- knowledge about the business models of fuel and energy companies is important due to the strategic significance of this industry in the national economy,
- there is a need to identify business models of the fuel and energy industry,
- sources of information on business models of the fuel and energy industry are dispersed.

Comprehensive case studies were developed on the basis of integrated reports of selected companies. The case studies made it possible to learn the principles of operation of fuel and energy companies in Poland, which enabled a better exploration of the phenomenon and its analysis.

The basis for the quality analysis of business model disclosures was integrated reports of Polish fuel and energy companies. Reports of 11 capital groups in 2013-2021 (Table 2) were analysed. The quality was assessed in such aspects as information on capital, business activities, key partners, sales markets, products, and use of key performance indicators. A six-point Likert scale was used to assess disclosures, where zero meant that there was no disclosure in the content of the report, and 5 meant that the information was very well described.

Table 2. Fuel and energy companies publishing integrated reports

No.	Company	2013	2014	2015	2016	2017	2018	2019	2020	2021
	WIG20									
1	JSW						+	+	+	+
2	KGHM	+	+	+	+	+	+	+	+	+
3	PGE			+	+	+	+	+	+	+
4	ORLEN		+	+	+	+	+	+	+	+
	WIG30									
6	LW Bogdanka		+	+	+	+	+	+	+	+
	mWIG40									
7	Famur (Grenevia)								+	+

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No.	Company	2013	2014	2015	2016	2017	2018	2019	2020	2021
5	TAURON			+	+	+	+	+	+	+
	Other – not listed									
8	GAZ-SYSTEM	+	+	+	+	+				
9	LOTOS	+	+	+	+	+	+	+	+	+
10	PGNiG					+	+	+	+	+
11	PSE				+	+	+	+	+	+
	Total	3	5	7	8	9	9	9	10	10

The quality assessment of business model disclosures in integrated reporting was comprised of two steps: analysis of average disclosure scores in each of the analysed years and case study analysis.

Analysis of average scores of disclosures in each of the analysed years

In the first step of the study, the average score of variables for each of the analysed years was assessed (Table 3). The average scoring of business model disclosures in integrated reports of fuel and energy companies indicates that the results for most items (except for the social and relationship capital and key stakeholders) have slightly improved over the years analysed. The dynamics of changes in the quality of disclosures of the business model elements were assessed in relation to the preceding year (Table 4) and for the last year also in relation to 2016 due to the fact that in the three previous years (2013-2015) the number of reports was significantly different from the number of reports in 2021.

Based on the data analysed, it can be stated that most of the information related to the business model is included in the integrated reports published by fuel and energy companies. The majority of reports (68) also present a graphic illustration of key elements of the business model. Almost all of the analysed reports (97%) indicate capital as business model inputs, and only two reports of LW Bogdanka Group (for the year 2014 and 2015) did not use the capital approach suggested by IR Framework. Business activities are indicated in all reports, as well as disclosures on key suppliers, customers, business model opportunities and risks. Only three reports (GAZ-SYSTEM for years 2013, 2014, and 2015) do not present business model outputs in terms of products and services, while the description of waste or by-products is not presented in 14 reports, but still 80% include such information. Outcomes of the business model are presented in a descriptive form as well as using key performance indicators, both financial and non-financial. All reports present the outcomes from activities and outputs, and only two reports (KGHM) do not identify the effects of the outcomes on environmental capital and social capital. The effects of the outcomes on environmental and social capital are indicated in almost all of the reports (97% of reports). This may suggest that most companies want their business model to be perceived as sustainable.

In the overall assessment of business model disclosures, it can be observed that all reports indicate a value creation model and present some disclosure on key stakeholders, market differentiation, innovation activities, adaptability of the business model and financial information. A small number of reports (39%) have been externally verified, and only 7 reports have not been prepared in accordance with the IR, IFRS Foundation guidelines.

Deviations in the level of average scores of the analysed variables (Table 4) in the majority do not exceed 15%, except for the first three years, when the number of reports was considerably less than in the following years. A significant improvement occurred in 2021 compared to 2016 in the case of such items as key suppliers (increase of 85%), adaptability of the business model (increase of 77%), connection of business model to opportunities and risks (increase of 56%), and description of business activities (increase by 52%).

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Table 3. Average scores of selected business model disclosures in years 2013-2021

No.	Variables	2013	2014	2015	2016	2017	2018	2019	2020	2021	Mean
1	Overview of the financial capital	3,00	1,80	3,00	3,38	3,56	4,00	3,89	3,90	4,00	3,54
2	Description of manufactured capital	3,67	2,00	3,14	3,88	4,00	4,11	4,11	4,10	4,10	3,80
3	Description of human capital	3,67	1,80	3,00	3,25	3,67	3,89	3,78	3,90	3,90	3,53
4	Value creation through intellectual capital	2,33	1,40	2,57	3,50	3,56	3,44	3,33	3,50	3,50	3,19
5	Description of natural capital	2,67	1,60	2,71	3,13	3,56	4,00	4,00	4,10	4,20	3,53
6	Social and relationship capital	3,00	1,40	2,71	3,13	3,56	3,89	3,67	3,70	3,70	3,34
7	Business activities	4,00	4,00	3,86	2,63	2,78	2,44	2,56	4,00	4,00	3,29
8	Market differentiation	3,00	3,00	3,29	2,88	3,00	2,78	2,78	4,00	4,10	3,26
9	Encouraging a culture of innovation	3,33	3,20	2,86	2,75	2,89	2,78	2,78	3,40	3,20	3,00
10	Adaptability of the business model	3,33	3,40	3,86	2,38	2,67	2,44	2,56	4,00	4,20	3,20
11	Products/services	2,67	3,00	3,14	3,88	4,00	4,00	4,00	4,10	4,10	3,80
12	Waste/by-products	0,00	0,20	0,00	1,63	1,67	1,67	1,67	1,60	1,60	1,30
13	Outcomes from activities and outputs	3,67	3,40	3,71	3,63	3,67	3,89	3,78	3,80	3,80	3,73
14	Outcomes' effect on environmental/natural capital	3,67	3,20	3,29	3,25	3,33	3,11	3,44	3,60	3,80	3,41
15	Outcomes' effect on social capital	3,00	3,20	3,29	3,13	3,11	2,78	3,00	3,50	3,70	3,21
16	Graphic presentation of key elements of the BM	3,00	2,40	2,86	3,38	3,33	3,22	3,78	3,90	3,90	3,41
17	Add. explanation of the relevance of BM elements	3,00	3,00	3,29	3,00	3,11	3,00	3,22	4,00	4,10	3,37
18	Description of all material matters	3,67	3,60	3,71	3,25	3,33	3,22	3,22	4,10	4,10	3,59
19	Key stakeholders	4,00	4,00	3,43	3,88	3,78	3,78	3,78	3,80	3,80	3,79
20	Position of the organization within the value chain	2,33	2,60	2,71	2,38	2,44	2,11	2,22	3,50	3,70	2,73
21	Key suppliers	3,67	3,20	3,43	2,38	2,44	2,11	2,22	4,30	4,40	3,11
22	Key customers	3,33	3,40	3,29	3,25	3,56	3,33	3,56	3,60	3,70	3,47
23	Connection of BM to opportunities, risks	3,67	4,20	4,14	2,50	2,89	3,11	3,11	3,90	3,90	3,44
24	Connection of BM to KPIs	4,00	4,60	4,43	3,38	3,56	3,33	3,33	4,20	4,30	3,86
25	Connection of BM to financial information	1,67	1,80	2,43	3,38	3,44	3,56	3,67	3,50	3,50	3,20
26	Value creation model	3,33	2,80	2,86	3,13	3,11	3,33	3,67	3,60	3,60	3,31

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Little change over the last five years has taken place in reporting on key stakeholders, waste/by-products, value creation through intellectual capital, and the connection of business models to financial information.

Table 4. The dynamics of average scores of business model disclosures in years 2013-2021

No.	Variables	2014/2013	2015/2014	2016/2015	2017/2016	2018/2017	2019/2018	2020/2019	2021/2020	2021/2016
1	Overview of the financial capital	-40%	67%	13%	5%	13%	-3%	0%	3%	19%
2	Description of manufactured capital	-45%	57%	23%	3%	3%	0%	0%	0%	6%
3	Description of human capital	-51%	67%	8%	13%	6%	-3%	3%	0%	20%
4	Value creation through intellectual capital	-40%	84%	36%	2%	-3%	-3%	5%	0%	0%
5	Description of natural capital	-40%	70%	15%	14%	13%	0%	2%	2%	34%
6	Social and relationship capital	-53%	94%	15%	14%	9%	-6%	1%	0%	18%
7	Business activities	0%	-4%	-32%	6%	-12%	5%	57%	0%	52%
8	Market differentiation	0%	10%	-13%	4%	-7%	0%	44%	2%	43%
9	Encouraging a culture of innovation	-4%	-11%	-4%	5%	-4%	0%	22%	-6%	16%
10	Adaptability of the business model	2%	13%	-38%	12%	-8%	5%	57%	5%	77%
11	Products/services	13%	5%	23%	3%	0%	0%	2%	0%	6%
12	Waste/by-products	-	-	-	-	0%	-	-	0%	-2%
13	Outcomes from activities and outputs	-7%	9%	-2%	1%	6%	-3%	1%	0%	5%
14	Outcomes' effect on environmental/natural capital	-13%	3%	-1%	3%	-7%	11%	5%	6%	17%
15	Outcomes' effect on social capital	7%	3%	-5%	0%	-11%	8%	17%	6%	18%
16	Graphic presentation of key elements of the BM	-20%	19%	18%	-1%	-3%	17%	3%	0%	16%
17	Add. explanation of the relevance of BM elements	0%	10%	-9%	4%	-4%	7%	24%	2%	37%
18	Description of all material matters	-2%	3%	-13%	3%	-3%	0%	27%	0%	26%
19	Key stakeholders	0%	-14%	13%	-3%	0%	0%	1%	0%	-2%
20	Position of the organization within the value chain	11%	4%	-13%	3%	-14%	5%	58%	6%	56%
21	Key suppliers	-13%	7%	-31%	3%	-14%	5%	94%	2%	85%
22	Key customers	2%	-3%	-1%	9%	-6%	7%	1%	3%	14%
23	Connection of BM to opportunities, risks	15%	-1%	-40%	16%	8%	0%	25%	0%	56%
24	Connection of BM to KPIs	15%	-4%	-24%	5%	-6%	0%	26%	2%	27%
25	Connection of BM to financial information	8%	35%	39%	2%	3%	3%	-5%	0%	4%
26	Value creation model	-16%	2%	9%	0%	7%	10%	-2%	0%	15%

In general, the quality of disclosures in the analysed period increases, and the descriptions are clearer and legible. The companies presented information on capital in the context of their contribution to value creation, the reports also described the risk associated with individual capital, links

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between capitals and key performance indicators related to capital. Companies from the fuel and energy industry, in particular, describe natural and production capital, which results from the specificity of their operation. Another key element of the business model, business activities, is described in a variety of ways – some companies presented only diagrams with short descriptions, others describe activities extensively and in detail. A high quality of disclosures also characterises the company's outputs. They primarily describe the effects of their activities, while much less information concerns by-products. The effects in the form of key performance indicators are also presented in various ways. Some of the information is presented in the description of individual capitals, and some are presented in separate chapters, especially financial ratios. Moreover, the companies also comply with the GRI guidelines. To sum up, companies from the fuel and energy industry present a holistic story of business model. However not all guiding principles of the IR Framework: future orientation, connectivity of information, conciseness, reliability and completeness, and consistency and comparability are applied. In order to illustrate different approaches to the presentation of the business model by fuel and energy companies, the next part of the analysis describes three case studies.

Business model in selected integrated reports – case study

The concepts of the business model presented in IR Framework have been confronted with reporting practice in order to answer the question: how diverse is the practice of presenting the business model in integrated reports of fuel and energy companies? The study analysed disclosures about the business model in integrated reports prepared by three capital groups: PGE, Bogdanka, and Orlen.

Key elements of the business model (IIRC, 2013a) were analysed in accordance with the International IR Framework (IFRS Foundation, 2021), namely:

- Inputs (paragraph 4.14–4.15),
- Business activities (paragraph 4.16–4.17),
- Outputs (paragraph 4.18),
- Outcomes (paragraph 4.19).

The study is illustrative, and therefore, case studies were used.

Polska Grupa Energetyczna (PGE Group), in its integrated report for 2021, revealed a business model using the approach suggested by IIRC based on 6 capitals (Table 5). The company, in its integrated report for 2021, presented a business model schema – an infographic showing how the company creates value for the company, the environment and society (including the main segments: conventional generation, renewables, district heating distribution and supply). The company revealed a business model presenting inputs, business activities, outputs and outcomes. Disclosures about the business model focus on value creation. Inputs are presented in detail as capital on the basis of which the organisation creates value. As part of disclosures about individual types of capital, the Group discussed key figures and cash transfers related to the capital. Presenting its value creation model, the Group stressed building a sustainable social and economic value and linked the model to the following issues: strategy, organisational capital, perspectives, surroundings, ESG, business segments, financial results, operating results, sustainable investments, sustainable development goals, employees, customers, society, and natural environment. The Group precisely characterised the individual elements of the business model suggested in the IR Framework, which facilitates the analysis. It can, therefore, be said that the Group has adopted the Guiding Principles of IR, IFRS Foundation (formerly IIRC) in describing the business model.

Table 5. PGE Group business model in Integrated Report 2021

Inputs	Business activities	Outputs	Outcomes
Human capital: Number of employees Employee volunteering Management of diversity Social dialogue Intellectual capital: Research and Development Centre for Circular Economy Research and development programs Cooperation with scientific institutions Natural capital: Lignite output Wind power capacity Volume of water used for generation purposes at hydropower stations Financial capital: Equity Cash Available credit lines Production capital: Installed electricity capacity Conventional Generation Installed electricity capacity Renewables segment Installed thermal power District Heating segment Length of distribution network Social capital: Just Transition for mining regions PGE Group Code of Ethics in relations with counterparties Involvement in charitable activities (PGE Foundation) Sponsoring culture and sport Nurturing national identity	Production of electricity and heat: Conventional generation Renewables District heating Energy market Supply Distribution Additional activities Circular economy	Electricity: • Produced electricity • Electricity sold to end customers Electricity supply services: • TWh of energy supplied Heat: • Production of heat Heat supply services: • amount of heat supplied Construction materials and fertilisers: • Volume of combustion by-products collected from Supplies	Outcomes for employees: Total number of training days Cost of employee benefits Competence Development Centre Outcomes for the environment: CO_2 emissions Land rehabilitated (ha) Number of R&D programs focused on environmental protection Construction of offshore wind farms Processed Combustion By-Productions Financial outcomes: EBITDA Capital expenditures Financial standing: long-term -rating Baa1 (Moody's), BBB+ (Fitch), stable outlook Outcomes for customers: Customer Satisfaction Index (for Contact Center) Connection of new customers to the district heating network Renewable energy sales offering Social outcomes: Taxes paid Institutions supported by PGE Foundation donations Volunteer hours for community purposes Concept for the transition of the Bełchatów region

Source: authors' work based on PGE (2021).

Subsequently, disclosures about the business model at Lubelski Węgiel Bogdanka Group were analysed (Table 6). The Group states that the report was prepared in accordance with the requirements of the Global Reporting Initiative Standards (GRI Standards) and according to the International Integrated Reporting Framework guidelines. However, when presenting the business model, the company adopted a different solution than suggested by the IR Framework. A short description of the business model and value creation model, without graphic presentation, is presented in the subchapter "3.5 Creation of value". The subchapter contains only a brief mention of the six capitals without presenting any performance indicators. In general, disclosures about the business model could be found throughout the entire report, which makes analysis much more difficult, as data are dispersed and difficult to interpret. The report is divided into chapters, each of which contains disclosures about the business model. Individual elements of the business model are contained in the following chapters: "Sustainable development in an uncertain environment"; "LW Bogdanka Group"; "Stability and Safety"; "Care for the environment"; "Dialogue and Cooperation".

The Group has not precisely characterised the individual elements of the business model suggested in the IIRC IR Framework, which significantly hinders the analysis. It can, therefore be said that the Group has adopted its individual way of describing the business model. Compared to reports published in previous years, it can be said that the capital approach in the presentation of the business model has been abandoned.

Table 6. LW Bogdanka Group business model in Integrated Report 2021

Capitals	Activities	Outputs	Outcomes
Financial capital Economic value generated (revenue) Economic value retained Manufactured capital Three mining fields Average annual expenditures on fixed assets under construction Human capital Number of persons employed Employment structure Intellectual capital Research and development projects Social capital Social affairs Science, education, health National memory and identity Environmental protection, ecology Environmental capital Prevention and removal of mining damage Maintaining recovery methods for mine waste Increasing the electricity use efficiency	Production of fine coal and pea coal Social activities Improvement of road safety (installation of monitoring) Membership of associations Subsidies for education and health care Donations Sponsorship and promotion Environmental activities Recoverable reserves Electricity consumption Water withdrawal Gross volume of direct greenhouse gas emissions Activities in favor of the employees Benefits provided to employees Average number of training hours Workers covered by the OHS management system	Production and sales of the Company's commercial coal: Gross coal production Production of commercial coal Sales of commercial coal New workings (km) Application: electricity heat cement production	Financial outcomes: Economic value distributed of which: operating expenses workers' remittances payments to government social investments Revenue EBITDA Net profit EBIT margin capital expenditure Outcomes for customers: Market share of coal for the commercial power sector

Source: authors' work based on BOGDANKA (2021).

Another approach to presenting the business model was adopted in the integrated report of ORLEN Group. The ORLEN Group also presented its own approach to the presentation of its business model. The specific approach consisted of a separate presentation of the business model, without connection with capitals, and a separate presentation of the value creation model using the approach of six capitals. The integrated report of the ORLEN Group for 2021 revealed a scheme of the business model, not referring to its individual elements. The business model was presented by indicating the outputs in individual business segments (Table 7). The section on the business model in the Orlen Group integrated report was linked to the following key elements in detail:

- operating segments along with specification of the products offered under each segment, i.e., refining, petrochemicals, energy, retail, upstream,
- main assets in each of the segments,
- key financial results in each of the operating segments,
- sales volumes of the operating segments,
- sales markets and market shares of the operating segments.

On the other hand, the group presented the graphic illustration of the value creation model using a capital approach, with a division into financial, manufactured, intellectual, human, social, and natural capital in the other subsections of the report. The illustration was linked to comprehensive information about the contribution of capital to value creation, management of each capital, and outcomes by capital. The disclosure on capitals also included information on how particular capital interacts with other capitals.

Table 7. ORLEN Group value creation model in Integrated Report 2021

Contribution of capitals	Business activities	Outputs by segments	Performance	Outcomes by capitals
Financial capital Total assets Equity Net debt Net cash from operating activities Net cash from investing activities Free cash flow Capital expenditure Manufactured capital Refining: refining assets; total processing capacity of refineries; logistics infrastructure Petrochemicals: petrochemical assets integrated with the refining assets Energy: Power generation assets; share of electricity from renewable sources in total energy output; licence to construct a wind farm; total length of power lines Retail: position in retail fuel sales; number of service stations; electric vehicle charging stations; hydrogen stations; CNG stations; RUCH retail outlets; new service ORLEN Parcel Upstream: building a multi-utility group by the acquisitions; projects related to onshore and offshore wind farms, solar photovoltaics, a and electric car charging infrastructure. Human capital Number of employees to be involved in the ORLEN Group strategy implementation Multinational team Representatives of various professions Multigenerational workforce Former employees with long years of service to ORLEN Group Potential employees Intellectual capital Knowledge and unique experience Management systems Due diligence policies and procedures Strategic Research Agenda R&D programmes Own R&D units Social capital Code of Ethics CSR Strategy until 2022 Sustainable Development Strategy for 2021–2023 Dialogue and work with the local communities Health care initiatives Care for national heritage and support sports Natural capital Generation of electricity in hydropower plants, wind farms, biomass combustion installations Crude oil and natural gas reserves	Refining Petrochemicals Energy Retail Upstream	Refining 6 refineries Amount of annual crude throughput Length of product and feedstock pipelines and number of storage depots Amount of biofuel production Petrochemicals Number of petrochemical products Market share, depending on the product Modern Research and Development Centre (Flock) Energy Electricity and heat generation from conventional and renewable sources Installed capacity: heat, electricity Installed electrical capacity and thermal capacity at the ORLEN Group Electricity generated from zero- and low-carbon Territory covered by power grid Retail Number of service stations Number of food and beverage outlets Number of EV charging stations Number of RUCH outlets ORLEN Group's share of the fuel market Base of loyal active customers ORLEN brand value Number of electricity customers Upstream Exploration and production projects Oil and gas reserves Average hydrogen production Number of wells	Financial performance: Net profit LIFO–based EBITDA Revenue Operating performance: Capital expenditure Power generation assets – installed capacity 2P oil and gas reserves ESG performance: Issue of of green Eurobonds Number of employees Expenditure on environmental protection	Financial capital: LIFO-based EBITDA before impairment of non-current assets LIFO-based EBITDA LIFO effect EBITDA LIFO-based EBIT EBIT Net profit/(loss) Manufactured capital: Middle distillate yield Sales volume by segments Net electricity generation Number of ORLEN Group's service stations ORLEN Group's hydrocarbon production Wells Human capital: Workforce structure Employees agreements Average training hours Total number of accidents Intellectual capital: External and internal audits of Integrated Management System Workforce by education Social capital: Number of employees involved in Employee Volunteering Programme Amount of funds transferred to local communities Number of beneficiaries Scholarship programmes – grant holders Sports programmes Natural capital: Water withdrawn Water reused Emissions Waste generated Effluents discharged to the environment Capital expenditure on environmental projects Volumes of biofuels used

Source: authors' work based on ORLEN (2021).

To conclude, disclosures about the business model vary in terms of their presentation in integrated reports published by Polish fuel and energy companies. The scope of presented information on the business model is also diverse. In general, the business model disclosures focus on value creation. In most reports, inputs, outputs and outcomes are presented in detail as capitals on the basis of which the organisation creates value. As part of disclosures about individual types of capital, the companies present key figures and cash transfers related to the six capitals – financial, manufactured (operating), human, intellectual, social, and natural –which they use to conduct business activities. The companies presented financial and non-financial performance measurement indicators. The disclosure of activities focuses on those aspects of the business that, due to the nature of the business activity, are key areas of economic, social and environmental responsibility.

It seems that companies are still looking for the optimal way of presenting the business model in integrated reports, and some issues – such as distinguishing between results and effects – cause them many problems. Also, the description of business activities is carried out with varying degrees of detail.

According to the authors, a good presentation of the business model will facilitate understanding and presenting the method of creating value in the organisation and preserving the value by the organisation, at the same time facilitating the understanding of the specificity of the organisation and the risks to which it is exposed. The study of the presentation of business models in non-financial reports and their usefulness for stakeholders requires further research.

Discussion and Conclusions

Literature studies show that the concept of the business model is not always understood in the same way. However, there is a widespread agreement, as evidenced by the positions of various authors, that if the term "business model" is used in non-financial reporting, it focuses on the value creation process by the organisation, i.e., on how the organisation creates value-cash flows. Placing particular emphasis on reporting the business model requires standards for the scope of reporting the business model, its elements and indicators, as well as presenting the relationships between the elements of the business model accurately to illustrate how a particular entity creates value and generates cash flows.

The results of research on the practice of reporting the business model in integrated reports are also ambiguous; however, they indicate the weaknesses and strengths of these disclosures.

In particular, the organisation's strategy, selected capital and key measures of their performance are disclosed. However, there are no forward-looking disclosures, and in most cases, comparisons of performance over time are important for the analysis of trends in the organisation's activities.

The research results conducted by the authors, despite certain limitations, are consistent with the findings of other authors, but they have certain limitations. Firstly, the study is limited to fuel and energy companies and includes a small research sample. Secondly, the study focuses on companies with extensive experience in preparing integrated reports. Thirdly, content analysis is inherently subject to concerns about credibility and validity. The authors applied the Likert scale for quality assessment, where the basis for awarding points was their own judgment. Despite the study's limitations, the research findings clearly indicate that the introduction of Integrated Reporting Framework covering also business model reporting guidelines could potentially lead to improvements or enhancements in the quality of business model disclosures. Certainly, the quality of disclosures improved after the implementation of the Framework.

In conclusion, the current practice of oil and energy companies regarding the disclosure of information on the business model during the last ten years varies. The quantitative and qualitative content analysis of integrated reporting, performed in order to assess the current status of business model disclosures, proved that many elements of the business model have the nature of qualitative narrations regarding strategy, various forms of capital, business activities and outputs, while less attention was paid to business model adaptability, the position of the organisation within the value chain, waist/by-products, and outcomes' effect on various forms of capital.

Reports published by companies in this industry generally present high-quality disclosures that are mostly guided by the GRI Standards and IR Framework guidelines. It should be noted that the

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surveyed companies refer in their integrated reports to almost all elements of the business model proposed by the IIRC in the integrated reporting guidelines but in a very diverse way. Also, the quality and accuracy of individual disclosure categories vary significantly. The links between individual elements of the business model and their contribution to value creation are very poorly articulated.

It is positive that companies more and more often use the term business model to distinguish the basic capital of the organisation and capital's transformation in order to create value in accordance with the guidelines of the IR Framework. Taking into account that the business model is perceived as a very important element for stakeholders, used to assess the organisation's ability to create and sustain value over time, the form of describing the business model proposed in the IR Framework should be improved in order to provide all stakeholders with clear and transparent information about the business logic of an organisation.

To sum up, given that the business model is perceived as a very important element for stakeholders, used to assess the organisation's ability to create and maintain value over time, the form of describing the business model proposed in the framework should be improved in order to provide all stakeholders with clear and transparent information on the method and logic of running a business entity.

The contribution of the authors

Conceptualisation, B.B.G. and A.S.; literature review, B.B.G. and A.S.; methodology, B.B.G. and A.S.; formal analysis, B.B.G. and A.S.; writing, B.B.G. and A.S.; conclusions and discussion, B.B.G. and A.S.

The authors have read and agreed to the published version of the manuscript.

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Bogusława BEK-GAIK • Anna SUROWIEC

MODEL BIZNESU SPÓŁEK PALIOWO-ENERGETYCZNYCH W RAPORTACH ZINTEGROWANYCH

STRESZCZENIE: Model biznesu jest niewątpliwie nowym zagadnieniem w badaniach naukowych i obecnie cieszy się dużą popularnością, a w ostatnich latach przyciąga coraz większą uwagę w odniesieniu do sprawozdawczości przedsiębiorstw o charakterze finansowym, jak i niefinansowym. Badanie, któremu poddano 70 raportów zintegrowanych za lata 2013 i 2021, polegało na przeanalizowaniu ujawnień informacji o modelu biznesu oraz analizie zawartości raportów zintegrowanych spółek i sprawdzeniu zakresu i treści ujawnianych informacji w części raportu dotyczącej modelu biznesu. W badaniu zastosowano metodę analizy treści, a do pomiaru poziomu/jakości ujawnień wykorzystano skalę Likerta. Ocena jakości ujawnień modeli biznesu w raportach zintegrowanych obejmowała dwa etapy: analizę średnich wyników ujawnień w każdym z analizowanych lat oraz analizę studium przypadku w celu porównania praktycznego podejścia do ujawniania informacji na temat modelu biznesowego. Wnioski potwierdziły, że ujawnienia dotyczące modelu biznesu są na wysokim poziomie, w większości przypadków firmy stosują podejście kapitałowe, uzupełniając prezentacje modelu biznesu schematami tworzenia wartości. Wyniki badania pozwalają na lepsze zrozumienie logiki prowadzenia działalności przez firmy paliwowe i energetyczne dla wszystkich interesariuszy. Artykuł jest wynikiem oryginalnego badania empirycznego, dotyczącego analizy informacji niefinansowych ujawnianych przez polskie spółki i wypełnia lukę w badaniach naukowych nad ujawnianiem informacji o modelu biznesu w raportach zintegrowanych. Przedstawione w artykule badanie przyczynia się do aktualnej literatury na temat raportowania zintegrowanego poprzez wykorzystanie nowego zestawu danych.

SŁOWA KLUCZOWE: model biznesu, raportowanie zrównoważone, sektor energetyczny

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