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Contents

| | |
|--|-----|
| Introduction | 7 |
| Piotr Bednarek, Rolf Brühl, Michael Hanzlick: Long-range planning and cross-cultural research. A literature review / Planowanie długookresowe i badania międzykulturowe. Przegląd literatury | 9 |
| Agnieszka Bieńkowska, Zygmunt Kral, Anna Zabłocka-Kluczka: Responsibility centres in strategic controlling / O ośrodkach odpowiedzialności w controllingu strategicznym | 21 |
| Maciej Ciołek: The lean thinking in overhead cost-cutting / <i>Lean thinking</i> w cięciu kosztów ogólnych..... | 34 |
| Joanna Dyczkowska: Do annual reports communicate strategic issues? Insight into reporting practices of high-tech companies / Czy raporty roczne komunikują kwestie strategiczne? Wgląd w praktyki sprawozdawcze spółek wysokich technologii | 47 |
| Tomasz Dyczkowski: Towards an NGO performance model / W kierunku modelu dokonań w organizacjach pozarządowych | 65 |
| Zdzisław Kes, Krzysztof Nowosielski: The process of cost assignment in a local railway company providing passenger transportation services. A case study / Proces alokacji kosztów w regionalnym przedsiębiorstwie świadczącym usługi pasażerskiego transport kolejowego | 86 |
| Petra Kroffin: Value-based management and value reporting. Impact of value reporting on investment decisions and company value perception / Zarządzanie wartością a raportowanie o wartości. Wpływ raportowania wartości na decyzje inwestycyjne i postrzeganie wartości przedsiębiorstwa..... | 99 |
| Sylvia Łęgowik-Świącik, Marcin Stępień, Sylwia Kowalska, Małgorzata Łęgowik-Malolepsza: Efficiency of the heat market enterprise management process in terms of the concept of the cost of capital / Efektywność procesu zarządzania przedsiębiorstw rynku ciepła w świetle koncepcji kosztu kapitału | 115 |
| Edward Nowak: Cost control and its role in controlling company operation / Kontrola kosztów i jej rola w controllingu działalności przedsiębiorstwa | 125 |
| Marta Nowak: Cultural determinants of accounting, performance management and costs problems. A view from the Polish perspective using G. Hofstede's and GLOBE culture dimensions / Kulturowe determinanty problemów dotyczących rachunkowości, zarządzania dokonaniem oraz kosztów. Spójrzanie z polskiej perspektywy z wykorzystaniem wymiarów kultur G. Hofstede'a oraz GLOBE | 134 |

| | |
|---|-----|
| Jari Paranko, Petri Huhtala: Productivity measurement at the factory level / Pomiar produktywności na poziomie wydziału produkcyjnego..... | 150 |
| Ülle Päril, Rodney Koyte, Salme Näsi: Examining middle managers mediating role in MCS implementation / Badanie pośredniczącej roli menedżerów średniego szczebla we wdrażaniu systemów controllingu | 164 |
| Michał Pietrzak, Piotr Pietrzak: The problem of performance measurement at public universities / Problem pomiaru efektywności w publicznym szkolnictwie wyższym..... | 191 |
| Anita Reizinger-Ducsai: Bankruptcy prediction and financial statements. The reliability of a financial statement for the purpose of modelling / Predykcja bankructwa a sprawozdania finansowe. Wiarygodność sprawozdań finansowych dla potrzeb modelowania | 202 |
| Ricardo Luiz Sichel: Intellectual property. Its relevance for the management control / Prawa własności intelektualnej. Ich znaczenie dla controllingu ... | 214 |

Introduction

Contemporary management control and reporting both face challenges. Consequently, a new and more sophisticated scientific approach is needed. From one point of view, interdisciplinary studies and theories are necessary. From another point of view, empirical research and practical issues call for a more specific and specialized approach. This complexity is reflected by the content of this book, which covers topics that emerge from present world's complexity. Therefore, the authors focus on ever-important issues (such as the strategic approach and its support by management control and reporting, survival of companies), and more modern issues (e.g. cultural aspects, measurement and reporting adjusted to branches, spheres and organizations and specific issues of management control and reporting).

The strategic approach to managerial control and financial statements and their role for company's survival is presented in papers by J. Dyczkowska (who addresses the question whether annual reports communicate strategic issues and focuses her study on reporting practices of high-tech companies), A. Bieńkowska, Z. Kral, A. Zabłocka-Kluczka (who explain the role of responsibility centers in strategic controlling), P. Kroflin (who explores the value-based management and management reporting examining impacts of value reporting on investment decisions and company value perception) and A. Reizinger-Ducsai (who discusses bankruptcy prediction and financial statements). The problems of management control and reporting and their adjustment to specific conditions and organizations are undertaken by T. Dyczkowski (who introduces his NGO performance model), Z. Kes and K. Nowosielski (who present the case study of the process of cost assignment in a local railway company providing passenger transportation services), S. Łęgowik-Świącik, M. Stępień, S. Kowalska and M. Łęgowik-Małolepsza (who analyse the efficiency of the heat market enterprise management process in terms of the concept of the cost of capital), and M. Pietrzak and P. Pietrzak (who discuss the problem of performance measurement in the public higher education). The cultural aspect of managerial control and reporting is explored in papers written by M. Nowak (who presents cultural determinants of accounting, performance management and costs problems showing the issue from Polish perspective using G. Hofstede and GLOBE cultural dimensions) and P. Bednarek, R. Brühl and M. Hanzlick (who provide a literature overview of planning and cross-cultural research). The specific problems and concepts of managerial control and reporting are investigated by M. Ciołek (who discusses the lean thinking and overhead costs), E. Nowak (who analyses the role of costs control role in controlling company operation), Ü. Päril, R. Koyte,

S. Näsi (who examine middle managers' mediating role in MCS implementation), R.L. Sichel (who discusses the relevance of intellectual property for management control), J. Paranko and P. Huhtala (who analyse the productivity measurement at the factory level).

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DO ANNUAL REPORTS COMMUNICATE STRATEGIC ISSUES? INSIGHT INTO REPORTING PRACTICES OF HIGH-TECH COMPANIES

CZY RAPORTY ROCZNE KOMUNIKUJĄ KWESTIE STRATEGICZNE? WGLĄD W PRAKTYKI SPRAWOZDAWCZE SPÓŁEK WYSOKICH TECHNOLOGII

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Summary: Due to rapid technological progress, high-tech companies are expected to be forward-looking in order to ensure shareholder value creation and respond adequately to customer needs. Moreover, stakeholders may expect that high-tech companies will inform them about strategic plans and related aspects which cover knowledge of current activities and business model, business environment and R&D achievements. Accordingly, this paper examines the extent of strategic disclosures included in 69 annual reports of IT companies listed on the Warsaw Stock Exchange. It explores also whether two factors: market value of a firm and its place of listing are related with the extent of strategic disclosures. Lastly, it scrutinizes whether a place of listing may be perceived as a moderator variable that influences a strength of a relationship between a market value of a firm and the extent of strategic disclosures. The research results suggest that the examined entities reported poorly on R&D activities and sufficiently on risk factors and future perspectives. The developmental strategy was disclosed often, however, only in annual reports of stock issuers listed on the primary market. The in-depth analysis shows that both the firm's market value and the place of listing may be perceived separately as factors which induce managers to disclose more strategic issues. Nonetheless, the empirical results do not prove that a place of listing moderates an effect between market value and the extent of strategic disclosure.

Keywords: high-tech companies, market value, place of listing, strategic disclosure index.

Streszczenie: W związku z szybkim postępowaniem technologicznym od spółek wysokich technologii oczekuje się nastawienia perspektywicznego w celu zapewnienia, że w przyszłości wartość dla akcjonariuszy będzie kreowana a potrzeby klientów zostaną zaspokojone. Co więcej interesariusze spółek wysokich technologii mogą oczekiwać, że będą informowani o planach strategicznych i kwestiach powiązanych, takich jak: bieżąca działalność, model biznesowy, otoczenie biznesowe oraz osiągnięcia badawczo-rozwojowe. W artykule zbadano zakres ujawnień o charakterze strategicznym zawartych w 69 raportach rocznych spółek in-

formatycznych notowanych na warszawskiej Gieldzie Papierów Wartościowych. Zwrócono uwagę, czy dwa czynniki – wartość rynkowa spółki oraz rynek jej notowań (podstawowy/alternatywny) – są związane z zakresem ujawnień o charakterze strategicznym. Zbadano też, czy rynek notowań może być postrzegany jako zmienna moderująca siłę związku pomiędzy wartością rynkową spółki a zakresem jej ujawnień o charakterze strategicznym. Wyniki badań wskazały, że spółki informatyczne raportowały słabo o działalności badawczo-rozwojowej i dobrze o czynnikach ryzyka oraz o przyszłych perspektywach. Strategia rozwojowa była ujawniania często, ale głównie w spółkach notowanych na rynku podstawowym. Pogłębiona analiza wskazała, że zarówno wartość rynkowa spółki, jak i rynek jej notowań mogą być postrzegane osobno jako czynniki, które mają wpływ na decyzje menedżerów, co do ujawniania większej liczby informacji o charakterze strategicznym. Niemniej jednak wyniki badań empirycznych nie potwierdziły hipotezy, że rynek notowań moderuje efekt pomiędzy wartością rynkową spółki a zakresem ujawnień o charakterze strategicznym.

Słowa kluczowe: przedsiębiorstwa wysokich technologii, wartość rynkowa, rynek notowań, indeks ujawnień strategicznych.

1. Introduction

Nowadays stakeholders no longer rely solely on traditional financial reporting but search for higher levels of disclosure which deal with forward-looking and non-financial issues rather than backward-looking, quantified and financial information [Beattie, McInnes, Fearnley 2004]. Consequently, most of the discussions are focused on how to build the regulatory framework and enhance reporting performance within non-financial reporting [Oprisor 2015].

Publication of International Integrated Reporting Framework is a milestone towards arranging an order in non-financial reporting practice. In the context of voluntary strategic disclosures, it is worth remarking that the new framework clearly determines that an integrated report should respond to the question of where an organization wants to go and how it intends to get there [IIRC 2013]. Therefore, IIRC recommends disclosing strategy and strategic objectives, resource allocation plan and information on how an organization plans to measure achievements and target outcomes resulting from reaching strategic objectives.

Moreover, an organization should explain how a strategy together with a resource allocation plan influence its business model, capitals, risk management and whether they are under an impact of external environment factors. It is also expected to disclose what differentiates an organization to give it competitive advantage and enable it to create value. It is important to pay attention to a role of innovation, development and exploitation of intellectual capital and the extent of embeddedness of environmental and social issues in corporate strategy. Finally, an organization should refer to stakeholder engagement in formulating its strategy and resource allocation plans [IIRC 2013]. These expectations towards disclosure of strategic issues are quite advanced and refer to integrated reporting, and as a result the majority of Polish high-tech companies do not follow them at the moment.

The purpose of this paper is threefold. Firstly, it explores what and how high-tech companies disclosed within strategic issues in their annual reports for the 2014 financial year. Secondly, it examines whether two factors: market value of a firm and its place of listing (primary vs. alternative investment market) were related with an extent of strategic disclosures. Lastly, it scrutinizes whether a place of listing may be perceived as a moderator variable that influences a strength of a relationship between a market value of a firm and the extent of strategic disclosures.

In order to meet the research objectives, a content analysis which allowed constructing a strategic disclosure index (*SDindex*) was applied. The data obtained were analyzed using statistical method including a two-way analysis of variance. The structure of the paper was organized as follows. Firstly, a methodology of an examination was introduced with a focus on a research sample and questions and *SDindex* structure. Secondly, the empirical results were presented.

2. Research methodology

2.1. Research sample

In order to examine how annual reports of high-tech companies communicate strategic issues, an insight into reporting practices of Polish IT enterprises was made (see Table 1). The IT sector is one of the most dynamically developing markets in Poland [Kapsch BusinessCom 2014]. As a result of rapid technological changes, the IT sector is forced to be forward-looking in order to respond adequately to customer needs. Therefore, a vision of the future and a good developmental strategy are pivotal issues to be disclosed in annual reports [Dyczkowska 2015].

Table 1 presents descriptive statistics of the research sample which consisted of 69 IT companies listed on the Warsaw Stock Exchange. It is worth remarking that the final sample covered 30 stock issuers from the primary market (86% of the population) and 39 stock issuers from the alternative NewConnect market (91% of the population). The analyzed objects were strongly diverse in terms of a size (measured both as sales revenues and total assets) and market value and moderately differentiated in terms of the length of listing period and free float.

Table 1. The examined objects – descriptive statistics

| Year 2014 | Primary Market ^A | | | | NewConnect ^B | | | |
|-----------------------------------|-----------------------------|------|-----|-----------|-------------------------|------|-----|-----------|
| Number of entities | 30 | | | | 39 | | | |
| Descriptive statistics | Max | Mean | Min | Std. Dev. | Max | Mean | Min | Std. Dev. |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Length of stock exchange listing* | 247 | 125 | 22 | 56 | 100 | 55 | 19 | 22 |
| Free float | 68% | 39% | 17% | 15% | 65% | 24% | 4% | 14% |

Table 1, cd.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--|----------|--------|------|--------|--------|-------|-------|-------|
| Sales revenues** | 1,321.30 | 204.52 | 0.37 | 290.95 | 73.62 | 11.82 | 0.00 | 15.17 |
| Total assets** | 5,520.90 | 374.23 | 6.88 | 999.96 | 83.57 | 13.49 | 0.31 | 18.34 |
| Intangible assets/ Total assets | 82% | 23% | 0% | 24% | 100% | 41% | 0% | 38% |
| Market value** | 4,233.02 | 322.85 | 4.66 | 780.28 | 154.10 | 27.49 | 0.24 | 41.59 |
| Market value/ Book value (MV/BV) | 78.79 | 4.02 | 0.15 | 14.20 | 83.50 | 6.46 | -0.40 | 13.85 |
| *in months as of 10 February 2016, ** in million PLN | | | | | | | | |

^AThe final research sample was composed of the following entities listed on the primary market: *Asseco Business Solutions, Asseco Poland, Arcus, Asseco South Eastern Europe, Atende, ATM, Beta-com, CI Games, Comp, Comarch, Cube ITG, Elzab, Indata, Infovide-Matrix, LSI Software, Livechat Software, Macrologic, Medicalgorithmics, NTT System, Opteam, Pc Guard, Procad, Power Media, Qumak, Quantum Software, Sygnity, Simple, Talax, Unima 2000, Wasco.*

^BThe final research sample was composed of the following entities listed on the NewConnect market: *EO Networks, KBJ, Sevenet, Wind Mobile, Surfland, Intelwise, Mineral Midrange, Infosystems, XPlus, M4B, Site, IAI, Bloober Team, Forever Entertainment, Stanusch Technologies, Europejski Fundusz Energii, Makolab, M10, PGS Software, Acrebit, Vivid Games, Domenomania.pl, Suntech, The Farm 51 Group, Edison, Cloud Technologies, Pilab, Planet Soft, Examobile, Madkom, Vakomtek, Perma-fix Medical, Mega Sonic, Netwise, Grupa Exorigo-Upos, Neptis, Logintrade, 2Intellect.com, 11Bit Studios.*

Source: own presentation.

Interestingly, the mean share of intangible assets in total assets was higher in companies listed on the alternative market. Although the stock issuers from the NewConnect had the mean market value of capital considerably lower than the stock issuers from the primary market,¹ their mean MV/BV ratio was higher, which consequently suggests the higher value of an intellectual capital.

2.2. Construction of a strategic disclosure index (*SDindex*)

Construction works on developing a structure of *SDindex* were preceded by the preliminary qualitative analyses of annual reports' contents of both European and Polish high-tech companies. The issue of strategic disclosure in annual reports is not regulated by the Polish Accounting Act. However, the Act refers to revelation of some aspects which may be perceived as those having impacts on strategy realization. Interestingly, a corporate governance code² which includes a set of rules directed at

¹ This tendency is not peculiar since NewConnect as an alternative investment market is dedicated to entities with small shareholder funds, where the vast majority of stock issuers would not comply with the minimum capitalization requirement on regulated stock market [Fijałkowska, Muszyński, Pauka 2014].

² Polish Corporate Governance Code presently known as – *The Best Practices of WSE Listed Companies* – was adopted by the Supervisory Board of the Warsaw Stock Exchange in 2002. Recently the code was amended. The new rules which imposed stricter requirements in selected key areas of corporate governance entered into force on 1 January 2016.

companies listed on the Warsaw Stock Exchange went further towards development of strategic disclosure practices. It imposed a requirement on stock issuers to publish legible information about strategy at the corporate website. If a company does not obey that rule, it is obliged to explain what the reason for non-adherence was.

Since I have noticed a lack of clear guidelines of what should be addressed in annual reports within strategic issues, I decided to check what high-tech companies disclosed indeed. In order to measure the extent of strategic disclosures, I developed an index (*SDindex*) which is based on four pillars exemplifying strategic orientation of a company. The *SDindex* was built upon the following checklist: (1) *general business overview*, (2) *business environment section*, (3) *research and development section*, (4) *review of strategic issues and future perspectives* (see a detailed structure in Table 1).

I assumed that a *general business overview* should reflect all information about a product or service portfolio and a business model. The Ordinance of the Finance Minister on current and periodic information disclosed by issuers of securities pursuant to the provisions of § 91.6.1 states that a stock issuer which deals with manufacturing, construction, trade or service activities should present information about basic products, goods or services in annual reports. In particular, it is expected to disclose value and quantitative-based sales data, sales shares and related changes in volumes or values in the financial year.

Incorporation of a business model into annual reports and its disclosure to investors is still a brand new notion for the majority of Polish stock issuers and therefore a voluntary practice. The idea came out together with the discussions on integrated reporting frameworks. It has to be noticed, however, that even though the Polish Accounting Act was amended in 2015, it did not refer to incorporation of a business model in annual reports at all, since in general the focus was placed on providing a significant simplification of the financial reporting for small entities.³ However, it may not be imperceptible that a business model seems to be a ‘missing link’ which combines all the

³ The pace of legislative reforms towards extension of non-financial narratives in annual reports in Poland is rather slow and limited to a discussion on whether endeavour to extend a financial statement is actually necessary [Walińska 2015]. In the UK, for example, a business model has found increased attention in annual reports due to the 2010 UK Corporate Governance Code. The Code implied the ‘comply or explain’ approach which was not sufficient indeed. In 2013 a new reform to narrative reporting was introduced [The Companies Act 2006...] and applied to financial years ending on or after September 2013. The new narrative reporting legislation introduced the *Strategic Report* which replaced the *Business Review* in an annual report. The Strategic Report was expected to present a fair review of the company’s business and constitute strategic and a holistic insight into business activity (for more see: [Blacksun 2014; Dyczkowska 2015]). In reference to Polish entities and pursuant to § 19a.1a. of EU Directive 2014/95/UE there is a provision which states that: “large undertakings which are public-interest entities exceeding on their balance sheet dates the criterion of the average number of 500 employees during the financial year shall include in the management report a non-financial statement containing information to the extent necessary for an understanding of the undertaking’s development, performance, position and impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters, including: (a) a brief description of the undertaking’s business model; (...)”. Likewise in the Corporate Governance Code, disclosure of non-financial information following the EU Directive implies the ‘comply or explain’ approach.

components of a strategic narrative and acts as a framework for telling a business story in a transparent and more convincing manner [Blacksun 2014].

Other aspects which have to be disclosed within a *general business overview* are crucial agreements made by a company during the financial year and essential events which took place during the financial year and after the end of it up to the date of approval of the financial statement. Disclosure of crucial agreements in a management report is imposed by the Ordinance of the Finance Minister pursuant to the provisions of § 91.6.3. The regulations specify that a stock issuer should provide information on crucial agreements including insurance policies, cooperation contracts or agreements between shareholders. Revelation of essential events in a management report is regulated by the Accounting Act pursuant to the provisions of § 49.2.1.

The second part of *SDindex* refers to reporting on *business environment*. The Ordinance of the Finance Minister on current and periodic information pursuant to the provisions of § 91.5.2 enforces narrative reporting on untypical factors or events which may have a significant impact on stock issuer's activities and financial results achieved during the financial year. Following this regulation a part which referred to an examination of internal and external contingency factors disclosed by high-tech companies were distinguished.

The Ordinance of the Finance Minister requires also to include information about sales markets and sources of supply in a management report (§ 91.6.2). The information about sales markets should be presented in a breakdown of domestic and foreign markets with a specification of dependence on one or more customers, and if a share of one customer reaches at least 10% of total sales revenue the name of a recipient, its share in sales and formal relations with a stock issuer should be disclosed. Likewise, a stock issuer should present a specification of dependence on one or more suppliers and disclose the name of a supplier, its share in supply and formal relations when the share of a supplier is equal at least 10% of total sales revenue.

The last part of *business environment* section examines the extent of disclosures on risk and threat factors. It is expected that these issues should be depicted in a most sufficient way since both the Accounting Act (§ 49.2) and the Ordinance of the Finance Minister (§ 91.5.3) address that necessity.

Reporting on R&D in high-tech companies is a significant strategic area although not sufficiently explored in Polish conditions in the context of financial reporting. There is a lack of both consistent regulations and clear guidelines of what should be disclosed. The Accounting Act pursuant to the provisions of § 49.2.3 determines that a management report should provide information on important R&D achievements only; however, it does not state clearly what the minimum of required information is. Text mining analysis of annual reports of European biotechnological companies indicated four areas distinguished within R&D disclosure [Dyczkowska 2016]. They covered discussions on product development, research activity, R&D performance and R&D accounting policy. Revelation of the first three areas is voluntary and therefore depends on companies' disclosure policy whereas provision of information on R&D accounting policy follows the IAS Regulations. I developed four areas

of *research and development* essential to comprehend factors which may shape strategy development and realization. They included a review of R&D activities, reporting on R&D or innovative achievements, information on R&D projects as well as patents, certificates and awards.

The last section relates directly to disclosure of strategic issues such as mission statement, corporate vision or developmental strategy which are voluntarily provided. In this section I included also a part concerning future perspectives since this is an important area inseparably related with developmental strategy and required both by the Accounting Act (§ 49.2.2) and the Ordinance of the Finance Minister (§ 91.5.2).

2.3. Research questions

In order to meet the objective of the paper I developed a primary research question

– *What and how do companies disclose within strategic issues?*

and series of additional questions, as follows:

- *Does a market value of a company induce managers to disclose more strategic issues in corporate annual reports?*
- *Does a place of listing (primary market vs. alternative investment market) influence the extent of strategic disclosures in corporate annual reports?*
- *Is a place of listing a moderator variable that influences the strength of a relationship between the market value of a company and the extent of strategic disclosures?*

The area of strategic disclosure is discussed in the literature both in the context of a quality financial reporting [Santema, Van de Rijt 2001; Santema et al. 2005; Ungerer 2013; Ungerer, Vorster 2015; Holt, Yasseen, Padia 2015; Dyczkowska 2015] and reputation management [Whittington, Yakis-Douglas 2012]. To my best knowledge, however, there is a lack of studies which examine the relation between disclosure of strategic issues by high-tech companies and their market value. Only Nekhili et al. [2012, 2016] expecting that R&D narrative disclosure will positively influences the market value of companies tested the abovementioned relation for a sample of French companies. However, as already indicated that study did not refer to the broad extent of strategic disclosure, but only to a part of it concerning R&D activity.

In my study, I examined whether there is a relation between a market value and an extent of strategic disclosure and whether the said relation is moderated by the place of listing. I expect that higher market value is a factor which motivates a management board to disclose more and in a strategic manner. Therefore, I figured out market values of high-tech companies at the balance sheet date. Although management commentary refers to business activities performed in the reporting year, it is often prepared and published after the balance sheet date in the first quarter or the first half of a year after a closing of the financial year. As a result, a management board, which is conscious of the firm's market value, has also enough time to decide what should be highlighted in the management commentary in order to meet investors' needs

since as it was evidenced more voluntary disclosure should contribute to lower cost of capital equity, particularly for firms with relatively low analyst following [Botosan 1997]. Furthermore, a management board may be eager to disclose strategic issues, since they signal the future value of a firm [Whittington, Yakis-Douglas 2012]. On the other hand, proprietary cost theory suggests that there are extra costs related with revelation of sensitive and confidential information to competitors which may limit voluntary disclosure [Verrecchia 1990; Wagenhofer 1990].

3. Research results

3.1. Character of strategic disclosure in high-tech companies

The narrative parts of annual reports were analyzed using a checklist which consisted of 16 items (see Table 2) exemplifying four pillars of strategic issues.

Table 2. *SDindex* – results of the research study

| Place of listing | Primary market | | | | | | | | | | New Connect | | | | | | | | | |
|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 0,2 | 0,4 | 0,6 | 0,8 | 1,0 | 1,2 | 1,4 | 1,6 | 1,8 | 2,0 | 0,2 | 0,4 | 0,6 | 0,8 | 1,0 | 1,2 | 1,4 | 1,6 | 1,8 | 2,0 |
| GENERAL BUSINESS REVIEW | Mean number of points: 4,7 (8,0 max) | | | | | | | | | | | | | | | | | | | |
| <i>Product or service portfolio</i> | | | | | | | | | | | | | | | | | | | | |
| <i>Business model</i> | | | | | | | | | | | | | | | | | | | | |
| <i>Crucial agreements</i> | | | | | | | | | | | | | | | | | | | | |
| <i>Essential events</i> | | | | | | | | | | | | | | | | | | | | |
| BUSINESS ENVIRONMENT | Mean number of points: 5,5 (8,0 max) | | | | | | | | | | | | | | | | | | | |
| <i>Internal & external contingency factors</i> | | | | | | | | | | | | | | | | | | | | |
| <i>Sales markets</i> | | | | | | | | | | | | | | | | | | | | |
| <i>Supply sources</i> | | | | | | | | | | | | | | | | | | | | |
| <i>Risk and threat factors</i> | | | | | | | | | | | | | | | | | | | | |
| R&D | Mean number of points: 2,1 (8,0 max) | | | | | | | | | | | | | | | | | | | |
| <i>R&D activities' review</i> | | | | | | | | | | | | | | | | | | | | |
| <i>R&D or innovative achievements</i> | | | | | | | | | | | | | | | | | | | | |
| <i>R&D projects</i> | | | | | | | | | | | | | | | | | | | | |
| <i>Patents, certificates, awards</i> | | | | | | | | | | | | | | | | | | | | |
| STRATEGIC ISSUES AND FUTURE PERSPECTIVES | Mean number of points: 3,0 (8,0 max) | | | | | | | | | | | | | | | | | | | |
| <i>Mission statement</i> | | | | | | | | | | | | | | | | | | | | |
| <i>Corporate vision</i> | | | | | | | | | | | | | | | | | | | | |
| <i>Developmental strategy</i> | | | | | | | | | | | | | | | | | | | | |
| <i>Future perspectives</i> | | | | | | | | | | | | | | | | | | | | |
| SDindex | Mean number of points: 15,2 (32,0 max) | | | | | | | | | | Mean number of points: 9,6 (32,0 max) | | | | | | | | | |

Source: own presentation.

Following Ungerer [2013] and Rea [2012] disclosure of each item was based on a three-grade scale where:

- 1) 0 meant *lack of disclosure* (no information has been disclosed);

2) 1 meant *partial disclosure* (information which has been disclosed is moderately sufficient to comprehend the presented aspect);

3) 2 meant *reasonable disclosure* (information which has been disclosed is fully sufficient to comprehend the presented aspect).

It has to be noted that a company might collect a maximum of 8 scores for each of four categories which constitutes a maximum of 32 scores in total. Table 2 shows a comparison of the mean number of scores within each category accumulated by the stock issuers representing two different stock markets.

Analysis of the first section *general business review* provides crucial information on the areas which were not sufficiently reported. Regardless of listing place, stock issuers rarely described their business model in a detailed manner. 10% of all examined objects decided to mention a business model which was evaluated as a partial disclosure whereas only 4% provided a reasonable disclosure. *Medicalgorithmics* – a company listed on the primary market – is an example of an excellent presentation of a business model. The company developed a unique system – *PocketECG* – designed to monitor heartbeat. It depicted its business model in a transparent way applying a suggestive diagram which exemplified key actions creating value and relations between business partners. Interestingly, companies listed on the alternative market did not describe crucial agreements at all or did it poorly; however, they paid much more attention to disclosure of essential events. Within the latter they were evaluated even higher than the companies from the primary market.

It is worth remarking that although reporting on business environment is substantially regulated by the Accounting Act and the Ordinance of the Finance Minister, the quality of disclosure was rather questionable particularly in the case of stock issuers from the NewConnect. The mentioned companies reported insufficiently both on untypical contingency factors which could significantly affect business as well as on sales and supply markets.

Only narratives concerning risk and threat factors were adequately disclosed since in many cases they included not only a clear distinction of a variety of risk factors but also ample comments on their interrelations with a strategy or a market situation.

The next area of interest concerned revelation of information about R&D activities. It is remarkable that the high-tech companies listed on the NewConnect performed better in terms of providing R&D review and disclosing R&D or innovative achievements in comparison to the entities listed on the primary market. Nonetheless, the mean extent of R&D disclosure was rather poor in both cases, although more noticeable on the primary market.

Strategic issues including mission statement and corporate vision were very poorly depicted in narrative parts of annual reports of Polish high-tech companies. Only one company from the NewConnect and four companies from the primary market revealed their mission statements in annual reports, which constitutes 7% of the research sample, whereas a corporate vision appeared in two annual reports. These results are not promising in comparison to those provided by Campbell, Shriver, Bohmbach-Saager [2001], who studied 100 annual reports of stock issuers included in FTSE 100 index

for the financial year 1997/98 or for the calendar year 1998. They evidenced that two thirds of companies in the FTSE 100 published their mission statements in annual reports. Based on their study, Campbell, Shrives, Bohmbach-Saager [2001] remarked that mission statements were used to signal companies' attitudes to a disparate range of stakeholders (where many of them were external) in spite of the fact that some studies have implied that mission statements are mostly used for internal communication.

In my study, the extent of narratives concerning developmental strategy was considerably better in the annual reports of entities listed on the primary market. In some cases developmental strategy was quite complex due to a detailed presentation of strategic objectives and actions which were expected to contribute to strategy realization. Delineation of future perspectives and its presentation in annual reports was adequate in the case of 48% of the examined objects and moderately sufficient in the case of 39% of the examined objects. The next part of the paper deals with examining relations between market value, place of listing and the extent of strategic disclosure.

3.2. Market value and place of listing and their relation to strategic disclosure

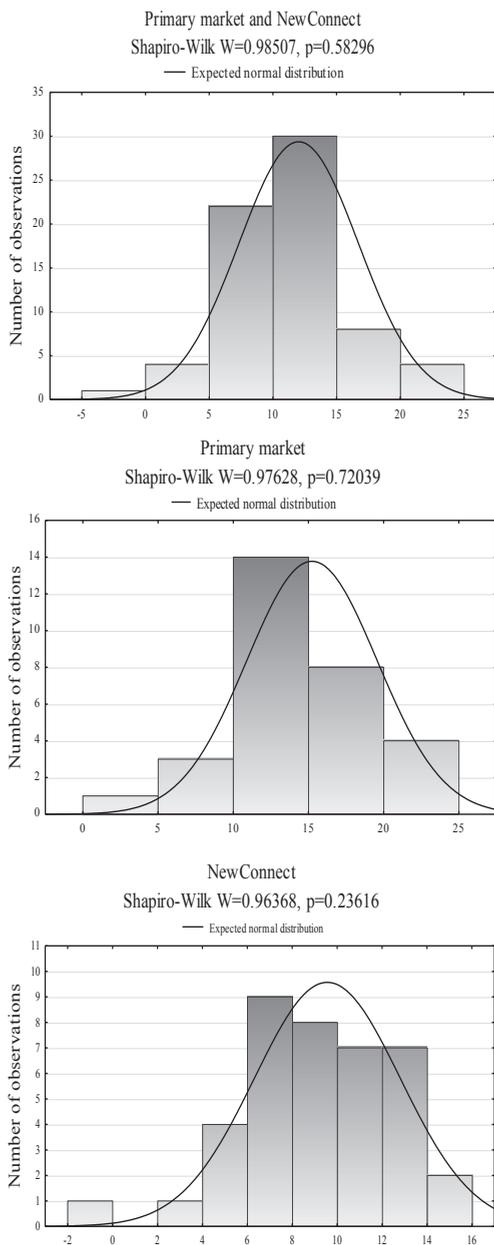
In order to respond to the additional research questions, a two-way analysis of variance (ANOVA) was performed. Two-way ANOVA was used to compare the effect of multiple levels of two factors on *SDindex*. In other words, I compared the mean differences in *SDindex* between groups that have been split into independent variables: factor 1 (market value) and factor 2 (place of listing). The dependent variable (*SDindex*) was measured at the continuous scale as a sum scores (from 0 to 32) collected within four categories mentioned in section 3.1. The assumption for two-way ANOVA is that a dependent variable should be normally distributed for each combination of the groups of the two independent variables.

Therefore, I tested for normality using Shapiro-Wilk test (which is better in the case of smaller sample) before performing two-way ANOVA. The results for the subgroups of factor 2 (primary market and NewConnect) as well as for the complete sample are presented in Figures 1–3. Since the null-hypothesis assumes that data came from a normally distributed population the results obtained (*p*-value is greater than assumed α -level 0.05) indicate that the null-hypothesis cannot be rejected. Similarly, the results for the subgroups of factor 1 (market value⁴) allow stating that the data within particular subgroups came from a normally distributed population.⁵

The next assumption of ANOVA is that variances for each combination of the groups of the two independent variables should be homogenous. In order to control the homogeneity, I performed Levene's test, which tests the null hypothesis that all

⁴ I distinguished three separate subgroups within factor 1, including stock issuers with high market value (more or equal to 100,000 PLN'000), moderate market value (less than 100,000 PLN'000) and low market value (less than 10,000 PLN'000).

⁵ Shapiro-Wilk tests are as follows for high market value ($W = 0.947, p = 0.378$); moderate market value ($W = 0.984, p = 0.957$) and low market value ($W = 0.975, p = 0.744$).



Figures 1–3. Histograms of *SDindex*

Source: own presentation.

considered samples are from populations with equal variances. The Levene’s test is calculated as follows:

$$W = \frac{(N - k)}{k - 1} \frac{\sum_{i=1}^k N_i (\bar{Z}_i - \bar{Z}_{..})^2}{\sum_{i=1}^k \sum_{j=1}^{N_i} (Z_{ij} - \bar{Z}_i)^2}$$

where, N – number of observations, k – number of subgroups, N_i – number of observations in a subgroup, $Z_{ij} = |Y_{ij} - \bar{Y}_i|$ and \bar{Y}_i is the mean of the i -th subgroup.

Levene's test rejects the null hypothesis when $W > F_{\alpha, k-1, N-k}$, where $F_{\alpha, k-1, N-k}$ presents a critical value of F -Snedecor distribution with $k - 1$ and $N - k$ degrees of freedom and significance level of α . However, as Table 3 indicates, there is no evidence to reject the hypotheses that variances for each combination of the groups of the two independent variables are homogenous.

Table 3. Results of Levene's test ($N = 69$)

| Subgroup | Levene's test W | F(critical value) | Remarks |
|------------------|-----------------|-------------------|--|
| Market value | 1.52 | ≈ 3.13 | $\alpha = 0.05$; $(k-1) = 2$; $(N-k) = 66$ |
| Place of listing | 1.83 | ≈ 3.98 | $\alpha = 0.05$; $(k-1) = 1$; $(N-k) = 67$ |

Source: own presentation.

The results obtained allow continuing two-way ANOVA. Firstly, I examined whether there were statistically significant differences in the mean values of *SDindex* regarding a separate impact of each independent variable. The effects of decomposition were presented in Tables 4-5.

Table 4. Effective hypothesis decomposition. Unweighted means – *place of listing*

| Place of listing | <i>SDindex</i> Mean | <i>SDindex</i> Std. Err. | <i>SDindex</i> -95% | <i>SDindex</i> +95% | Number of observations |
|---|---------------------|--------------------------|---------------------|---------------------|------------------------|
| Primary market | 14.72 | 0.71 | 13.30 | 16.15 | 30 |
| <i>NewConnect</i> | 10.28 | 0.74 | 8.80 | 11.77 | 39 |
| Current effect: $F(1, 63) = 18.624$, $p = 0.00006$ | | | | | |

Source: own presentation.

Table 5. Effective hypothesis decomposition. Unweighted means – *market value*

| Market value | <i>SDindex</i> Mean | <i>SDindex</i> Std. Error | <i>SDindex</i> -95% | <i>SDindex</i> +95% | Number of observations |
|--|---------------------|---------------------------|---------------------|---------------------|------------------------|
| High | 14.37 | 1.04 | 12.29 | 16.46 | 18 |
| Low | 10.83 | 0.86 | 9.12 | 12.54 | 26 |
| Moderate | 12.30 | 0.75 | 10.80 | 13.80 | 25 |
| Current effect: $F(2, 63) = 3.451$, $p = 0.03781$ | | | | | |

Source: own presentation.

It should be noted that the assumed subgroups within each factor differed statistically significant in terms of the *SDindex* mean since in both cases *p*-values for *F*-test are lower than assumed significance level ($\alpha = 0.05$). The results evidenced that a higher market value of a firm seemed to be a factor which may induce managers to disclose more strategic issues in corporate annual reports. Table 6 shows that *SDindex* mean is lower in companies with a low market value. Likewise a place of listing may be perceived a factor which influences the extent of strategic disclosures in corporate annual reports. The comparison of *SDindex* means proved that companies listed on the primary market performed better in terms of strategic disclosures. This may be explained by a stricter adherence to mandatory disclosure (better quality of disclosed obligatory information) and more in-depth awareness of a role that a voluntary reporting plays in reducing: cost of capital equity [Botosan 1997], information asymmetry and agency conflicts [Jensen, Meckling 1976; Patelli, Prencipe 2007; Nekhilli, Cheffi, Hubert 2015].

In this study a place of listing is conceptualized as a moderator which is seen to have effect on the relationship between a market value and *SDindex* (See the last research question). If a place of listing is a moderator variable, then this may suggest that the impact of a market value on *SDindex* depends on whether a company is listed on the primary market or NewConnect.

Table 6 shows that there is no common interaction between a place of listing and market value on *SDindex* mean. The changes in the number of scores (*SDindex*) for different levels of market values are similar regardless of a place of listing.

Table 6. Effective hypothesis decomposition. Unweighted means – market value x place of listing

| Market value | Place of listing | <i>SDindex</i> Mean | <i>SDindex</i> Std. Err. | <i>SDindex</i> -95% | <i>SDindex</i> +95% | <i>N</i> |
|--|-------------------|---------------------|--------------------------|---------------------|---------------------|----------|
| High | Primary market | 16.50 | 0.98 | 14.54 | 18.46 | 14 |
| Low | Primary market | 12.67 | 1.50 | 9.67 | 15.67 | 6 |
| Moderate | Primary market | 15.00 | 1.16 | 12.68 | 17.32 | 10 |
| High | <i>NewConnect</i> | 12.25 | 1.84 | 8.58 | 15.92 | 4 |
| Low | <i>NewConnect</i> | 9.00 | 0.82 | 7.36 | 10.64 | 20 |
| Moderate | <i>NewConnect</i> | 9.60 | 0.95 | 7.70 | 11.50 | 15 |
| Current effect: $F(2, 63) = .30404, p = 0.73891$ | | | | | | |

Source: own presentation.

It is also interesting to look into the nature of interactions. Table 8 provides approximate probabilities for a *post hoc* test, whereas Figure 4 shows the aforementioned interactions graphically.

After performing two-way ANOVA, I decided to apply Tukey's HSD test, which is a *post hoc* test determining which subgroups actually differ significantly in the sample. It is noticeable that the differences in *SDindex* means between the subgroups with high, moderate and low market values were not significantly valid both on the primary market and NewConnect (see Table 7).

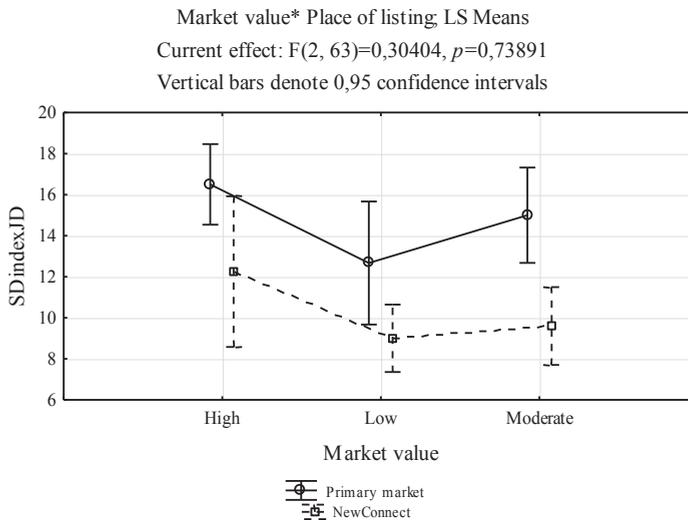
Table 7. Approximate probabilities for a *post hoc* test

| Market value | Place of listing | {1} 16.50 | {2} 12.67 | {3} 15.00 | {4} 12.25 | {5} 9.00 | {6} 9.60 |
|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| High | Primary market | | 0.282 | 0.921 | 0.332 | 0.000 | 0.000 |
| Low | Primary market | 0.282 | | 0.821 | 1.000 | 0.279 | 0.520 |
| Moderate | Primary market | 0.921 | 0.821 | | 0.803 | 0.001 | 0.008 |
| High | NewConnect | 0.332 | 1.000 | 0.803 | | 0.592 | 0.794 |
| Low | NewConnect | 0.000 | 0.279 | 0.001 | 0.592 | | 0.997 |
| Moderate | NewConnect | 0.000 | 0.520 | 0.008 | 0.794 | 0.997 | |

Tukey's HSD test; $SDindex^{JD}$, Error: Between $MS = 13.511$, $df = 63.000$

Source: own presentation.

It is illustrated in Figure 4, where constant and broken lines exemplifying the primary market and NewConnect respectively are rather flat.⁶ Consequently, it evidences that a place of listing is not a good moderator of relationship between market value and $SDindex$. In other words, a place of listing does not moderate an effect between market value and the mean number of scores collected within $SDindex$.

**Figure 4.** Means of $SDindex$ in terms of *place of listing*

Source: own presentation.

⁶ When there is no interaction of a moderator variable, we may expect that the line is more parallel as in this particular case.

However, the data presented in Table 8 allows stating that the mean extent of strategic disclosures differed with statistical significance ($\alpha = 0.05$) between the following pairs of groups:

- stock issuers listed on the primary market with a high market value and these listed on NewConnect with a moderate market value ($p = 0.000$);
- stock issuers listed on the primary market with a high market value and these listed on NewConnect with a low market value ($p = 0.000$);
- stock issuers listed on the primary market with a moderate market value and these listed on NewConnect with a moderate market value ($p = 0.001$);
- stock issuers listed on the primary market with a moderate market value and these listed on NewConnect with a low market value ($p = 0.008$).

The abovementioned results proved that the companies with at least moderate market value and listed on the primary market disclosed on average more strategic issues in their annual reports than the stock issuers listed on NewConnect with a low or moderate market value. Interestingly, the companies with a high market value listed on the NewConnect disclosed the similar extent of strategic issues that the stock issuers with a low market value from the primary market. This may suggest a higher level of maturity in terms of reporting quality, which is required while leaving an alternative market and entering the main market.

4. Conclusion

This research study contributes to a still narrow and not well-recognized topic of communicating strategic issues by high tech companies in annual reports. It reveals that there is still much to be done within improvement of non-financial reporting quality of stock issuers listed on the WSE.

The research results suggest that Polish high-tech companies reported sufficiently on risk factors or future perspectives and poorly on R&D activities. Moreover, they rarely incorporated mission statements or corporate visions into annual reports. Conversely, complex developmental strategies were disclosed in many reports of stock issuers listed on the primary market.

The in-depth analysis shows that both a market value of a firm and a place of listing may be perceived separately as factors which induce managers to disclose more strategic issues in corporate annual reports since *SDindex* means differed with statistical significance between particular subgroups. However, the empirical results did not prove that a place of listing moderated an effect between market value and *SDindex* mean.

It should be noted that this research study has also some limitations. Firstly, it refers to stock issuers acting in the IT domain, whereas the overall high-tech sector is much broader since it includes biotechnological, media and telecommunication companies as well. Therefore, there is still an area to be explored in future research. Secondly, it concentrates on the extent of disclosure of strategic issues considering an impact

of management board on the final content of annual report respecting firm's market value and a place of listing. There are, nevertheless, two other streams of literature which relate to manipulation of the timing and the characteristics of disclosure. The manipulation of disclosure timing takes place when managers decide on timeliness of issuing news considering a character of information (good vs. bad news) [Kothari, Shu, Wysocki 2009] and maximization of personal profits [Cheng, Lo 2006]. Whereas the manipulation of disclosure characteristics refers to reporting horizon, frequency or format [Files, Swanson, Tse 2009]. Actually, these two streams of literature should not be linked with disclosure in the context of annual reporting but in reference to press releases and company announcements.

Concluding, Polish high-tech companies are still on an exhaustive way towards development of annual reports consistently with stakeholders' expectations. Therefore, an evolution will be proceeding to close a gap between traditional reporting content which is now not sufficient and information actually required which enables evaluation of business value in the long-term period [KPMG 2014]. The integrated reporting framework seems to be a response to that problem since it addresses factors which drive long-term business value and presents their impacts to stakeholders in a simple way. It remains to be seen to what extent the new solutions will have an effect on improvement of a dialogue between business and investors in the near future.

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