Voluntary Disclosure and Relational Connectivity – The Case of the Polish Bond Market

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ABSTRACT

The purpose of our research is to evaluate the voluntary disclosure strategy and effective communication between issuers and investors on the Polish bond market Catalyst. We conducted a questionnaire among issuers on the Catalyst. To evaluate the data and find answers to the research questions, we used the Qualitative Comparative Analysis. As our analysis shows that management board engagement seems crucial for effective communication, we claim that in relatively smaller capital markets, personal engagement of board members in preparing voluntary disclosure should be considered a proxy of a high disclosure strategy quality. We prove that companies use dialogue with investors in private rather than in public to understand their communication expectations. This finding indicates the essential limitations of previous research

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evaluating relational connectivity through social media. We point out the existence of many paths to achieve a high level of companies' perception of investors' voluntary disclosure needs and companies' relational connectivity regarding voluntary disclosure. We developed a new approach to measuring relational connectivity, which can be successfully applied to other markets and stock exchanges, allowing verification of previous findings and the development of a new approach to conducting research. We claim that it is necessary to put more pressure on the management board's engagement in preparing the financial report as it is crucial for understanding investors' voluntary disclosure needs. Our conclusions question the growing societal pressure on engaging in activity in social media as a key concept of effective communication.

JEL Classification: G14, G23, D82

Keywords: voluntary disclosure, relational connectivity, bond market, Poland, corporate communication.

1. INTRODUCTION

Information is crucial for effective financial markets and their development (Bebczuk, 2003; Goldstein & Yang, 2017; Stiglitz, 1989). Nevertheless, only information that is useful for investors' valuation models in a decision-making process fulfils its function (Blankespoor et al., 2020). Nowadays, managers of listed companies recognise the corporate communication and disclosure strategy as an essential part of firms' strategic management, allowing them to keep effective relationships with their key stakeholders (Frandsen & Johansen, 2018). One of the crucial elements of disclosure strategy lies in the non-mandatory information disclosure decision. For decades, managers of public companies paid little attention to the disclosure strategy and their stakeholders' information needs. Still in the 1980s, the main focus was on publishing mandatory information, underestimating the significant and long-lasting effects of voluntary disclosures for companies and their stakeholders (Lev, 1992).

Voluntary disclosure and its quality can be seen as exogenous, i.e. used to mitigate information asymmetry, or as exogenous, i.e. reflecting the underlying information environment (He et al., 2018). Both perspectives, theoretical and empirical, confirm that under certain conditions publishing non-mandatory information and fulfilling stakeholders' information expectations influence companies' financial and market ratios positively in the long run. As a consequence, nowadays, much of public information is in the form of voluntary disclosure (Beyer & Guttman, 2012).

Despite the fact that since the 1990s, there has been a growing body of empirical research trying to find patterns and logical explanations for different levels of voluntary disclosure, the discussion is still open and clear answers have not been delivered yet (He et al., 2019). The legal environment is constantly changing to improve transparency in financial markets, new channels of dissemination are appearing with growing awareness and pressures of different groups of stakeholders to disclose non-mandatory information. However, at the same time, all those factors have influenced dramatically the length of periodic reports decreasing their specificity, readability, and the relative amount of hard information (Dyer et al., 2017). It seems, though, that the only way to find a balance in voluntary disclosure, understood as effective communication, is the continuous dialogue with stakeholders followed by companies' reactions to match their needs (Blankespoor et al., 2018; Blankespoor et al., 2020, Hadro et al., 2022). Dialogue, feedback, and customisation between companies and their audiences are the reflection of relational connectivity in corporate communication (Brennan & Merkl-Davis, 2018, p. 561).

Companies' uncertainty about stakeholders' information needs usually results in either very limited or exaggerated extent of voluntary disclosure (Beyer et al., 2010). Relational connectivity seems crucial for voluntary disclosure to match stakeholders' needs and information environment obligations that change over time. At the same time, the aim is not to produce an excessively large amount of information, negatively influencing investors' decision-making process and obfuscating the company picture.

In the great majority of academic publications in the area of voluntary disclosure, periodic reports and other sources of companies' written and spoken information are investigated. Researchers usually use textual analysis or financial and market indices as proxies of the voluntary disclosure level and quality (Hassan & Marston, 2019).

In contrast to that approach, we conducted a questionnaire with listed companies. Our research aims to indicate the determinants of the voluntary disclosure strategy and relational connectivity between issuers and investors on the Polish bond market Catalyst. To achieve our goal, focusing on empirical research, we conduct a literature review and indicate variables that potentially can significantly influence companies' disclosure strategy, and as a consequence, we implement appropriate questions into our survey.

Our research also differs from the others in terms of the market that has been analysed. We focused on listed companies from the Polish bond market called Catalyst, which is a part of the Warsaw Stock Exchange (WSE). To give a new insight into the literature, we decided to peer at the public debt market of non-financial companies as it is considered less risky than the equity market. At the same time, it usually suffers from low liquidity, which causes a higher level of information asymmetry (Bardos, 2011). In this situation, companies' investors should demonstrate greater needs for voluntary disclosure (Beyer et al., 2010), and better companies should be more willing to understand those information needs using the concept of relational connectivity and deliver non-mandatory information that is of interest to their investors.

To analyse the questionnaire, we used the Qualitative Comparative Analysis (QCA) tool infrequently applied in financial qualitative research. The method was first presented by Ragin (1987) and was initially predominately used in sociology and political science. Lately, it has also become explored in business and management studies (Cucari, 2019; Wagemann et al., 2016), developing a new wave of «neo-configurational» research (Greckhamer et al., 2018).

Through QCA, our results show the different sets of companies' characteristics that convey voluntary disclosure strategies. In general, CEO engagement seems to be crucial for effective communication. With that result, we answered the call of Bamber et al. (2010) to explore the role of individual managers in reporting choices. We claim that, especially in relatively smaller capital markets, the CEO's personal engagement in preparing voluntary information can be seen as a proxy for a high-quality disclosure strategy. We suggest that concentrating the investigation more on the CEO's personal role and not only on the board of directors' characteristics, which is the most frequent approach in the literature, can give new answers to effective communication. We also confirm the results of a stream of previous research (like Gomez-Carrasco & Michelon, 2017; Jung et al., 2017; She & Michelon, 2019) on social media's limited role in effective corporate communication and fulfilment of the investors' information needs. We prove that companies use private rather than public dialogue to understand investors' communication expectations. That finding indicates the essential limitations of previous research evaluating relational connectivity through social media.

The study may be of interest to researchers, practitioners, policymakers, and society as it implies that how the disclosure occurs is equally important as the content of the information disclosed. Our paper contributes to the debate on effective corporate communication in financial markets; specifically, it sheds new light on both strategies regarding voluntary disclosure and disclosure dissemination. Finally, we developed a new approach to measuring relational

connectivity, which can be successfully applied to other markets and stock exchanges, allowing verification of previous findings and the development of a new approach in research.

Our paper is structured as follows: in Section 2, we present a literature review that brings us to the development of two research questions; in the third section, the questionnaire process, methodology, and variables are described, which is followed by the research results in Section 4. The final section (number 5) consists of the conclusions and suggestions for future research.

2. LITERATURE REVIEW AND RESEARCH QUESTIONS DEVELOPMENT

2.1. Voluntary disclosure

Financial reporting plays a crucial information role in the capital market; however, even in an efficient capital market, managers have superior information to outside investors on their firms' future performance (Healy & Palepu, 2001). Therefore, voluntary disclosures allow managers to convey their private information to the marketplace. "Disclosure" refers to a specific signal from a firm report or communication (Blankespoor et al., 2020). Consistent with Healy & Palepu (2001), corporate disclosure includes both regulated financial reports (e.g., financial statements) and voluntary communication (e.g., management forecasts and public earnings conference calls). In the case of mandatory disclosure, the firm is required by regulators to disclose its information to the general public (Goldstein & Yang, 2019).

According to current legal regulations, depending on whether the bonds are listed on a regulated market or in an alternative trading system, the issuer is obliged to publish periodic financial reports. Even if they are adequately prepared and follow the accounting requirements, they do not always explain all the material issues sufficiently. For this reason, issuers often decide to provide additional disclosures and thus allow stakeholders to get more informed. According to the Financial Accounting Standards Board (FASB, 2001), the term voluntary disclosure describes disclosures, primarily outside financial statements, that are not explicitly required by generally accepted accounting principles (GAAP) or specific national rules (García-Meca & Sánchez--Ballesta, 2010). Firms use disclosure as a mechanism to communicate with their stakeholders, reduce information asymmetries between managers and investors, reduce firms' capital costs, increase stock prices, and ultimately increase shareholders' wealth (Enache & Hussainey, 2020).

Disclosure is a potential governance tool to manage conflicts of interest between different parts by reducing asymmetries in information; therefore, it may be a useful tool for managing the agent-principal problem (Richards & Safari, 2021). Managers have incentives to voluntarily provide more information than mandated by regulation. Khlif et al. (2017) underline that corporate voluntary disclosure is an important means for management to communicate firm performance and governance to outside stakeholders and has remained a significant field of empirical and theoretical studies since the 1970s. Until today, voluntary disclosures represent one of the most widely studied topics in finance and accounting research (Hales et al., 2018). Previous literature shows that voluntary disclosures reduce the cost of capital (Glosten & Milgrom, 1985, Barry & Brown, 1985; Botosan 1997; Sengupta, 1998; Easley & O'Hara, 2004; Hughes et al., 2007; Lambert et al., 2007, He et al., 2019), improve firm performance and stock liquidity (Diamond & Verrecchia 1991; Kim & Verrecchia 1994; Healy et al. 1999), and increase information intermediation (Lang & Lundholm 1993; Francis et al. 2008).

Voluntary disclosure is also a mechanism for improving managers' accountability (Enache & Hussainey, 2020). It also gives a greater opportunity to reduce information asymmetry between informed and uninformed investors, a far-reaching determinant of stock liquidity (Grossman, 1981; Diamond, 1985; Diamond & Verrecchia, 1991; Balakrishnan et al., 2014, Schoenfeld, 2017). Voluntary disclosure also improves the credibility of financial statements and enhances the

perceptions of market participants of future corporate performance (Athanasakou & Hussainey, 2014). In effect, voluntary disclosure is simultaneously a mechanism of greater accountability. Managers voluntarily disclose their private information because rational market participants would otherwise interpret nondisclosure as unfavourable news and consequently discount the value of the firm's assets (Grossman & Hart, 1980, Milgrom, 1981, Verrecchia, 1983). Francis et al. (2008) focus on the extent of voluntary disclosure and financial reporting quality and conclude that higher quality in reports is significantly related to a higher level of voluntary disclosure.

The potential benefits of voluntary disclosure are a vast area of research; however, the type and content of the information expected by investors are still not thoroughly investigated. Already in 1971, Rawls (1971) underlined that investors demand information about the performance and prospects of the firm in the capital market. This is, however, a very general statement. Previous research confirms that investors monitor bad and good news disclosed by companies. However, voluntary disclosures with favourable news can increase stock liquidity to a greater extent than those with unfavourable news (Cho & Kim, 2021).

Voluntary disclosure could reveal information that the firm would otherwise not reveal to competitors, potential entrants, regulators, customers, and suppliers (Enache & Hussainey, 2020). Several studies underline the interest of stakeholders in voluntary disclosure. Ajinkya et al. (2005) argued that institutional investors desire and demand more voluntary disclosures and that such disclosures, especially earnings forecasts, are closely watched by market participants. Zahller et al. (2015) provide evidence that investors perceive companies' legitimacy to be higher with a high level of disclosure. Capital market participants benefit when a firm provides transparent and adequate information to assess the firm's future performance (Enache & Hussainey, 2020). Therefore, managers must trade benefits from reduced information asymmetry and other benefits of voluntary disclosure against the costs of reducing competitive advantage (Wagenhofer, 1990; Hayes & Lundholm, 1996).

Because of the voluntary disclosure's nature, they may freely and arbitrarily choose the subject matter, scope, and depth of the issues described. In their communication strategies, companies should satisfy the information needs of their stakeholders, primarily investors. While preparing the voluntary disclosure content, companies try to understand and meet those needs. Therefore, our research question no. 1 (RQ1) is formulated as follows:

RQ1: What influences companies' perception of investors' voluntary disclosure needs?

2.2. Connectivity between investors' information needs and issuers' disclosure strategy

In the financial market, while voluntarily communicating with their audience, companies try to meet investors' disclosure expectations (Blankespoor, 2018; Blankespoor et al., 2020) and consequently, they create and maintain relations based on the conversation with investors, which is known as connectivity. According to Brennan and Merkl-Davis (2018), meaningful and effective communication can only be present when connectivity exists.

The notion of connectivity contrasts with the approach that sees corporate communication as reporting only. Reporting implies a monologic view and one-directional process, meaning that companies provide and disseminate information and the audience is a passive recipient. Unlike reporting, connectivity is seen as corporate communication: a two-way, dialogic process with information flowing in both directions (Brennan & Merkl-Davis, 2018, p. 554). Connectivity consists of three components: textual connectivity, intertextual connectivity, and relational connectivity. As the first concept refers to the text cohesion and coherence (textual connectivity) and the second one to the stakeholders' ability to interpret the text (intertextual connectivity), in our research and following Masiero et al. (2019), we focus on the broadest view of connectivity, represented by the third concept. Relational connectivity is defined there as connecting firms to

audiences by creating opportunities for feedback, dialogue, and customisation (Brennan & Merkl-Davis, 2018, p. 561).

The manifestation of relational connectivity can also be understood as signals that investors communicate by contacting the issuer (reporting information through public or private channels) and/or acting on the securities, which has an impact, among other things, on securities liquidity, turnover, and rates of return. Usually, investors send signals when the disclosure processing costs are high, thus making it impossible for them to use publicly available information for the pricing models and the decision-making process regarding trading securities (Blankespoor et al., 2019). High disclosure processing costs (awareness, acquisition, and integration costs) usually indicate that companies prepare biased information with only selective facts that are hard to interpret. In relational connectivity, issuers should react to signals and adapt the manner and content of the information provided to meet investors' expectations (Blankespoor, 2018; Blankespoor et al., 2020).

Relational connectivity relates to an earlier approach linking voluntary disclosure with the stakeholders theory. Following this theory, a stakeholder is any group or individual who can affect, or is affected by, the achievement of a corporation's purpose (Freeman, 1984). The stakeholder theory was developed by management theorists to provide a framework for analysing how large corporations interact and manage their relationships with various parties who are involved in or affected by the activities of the corporation. Based on this theory, non-mandatory information published by companies is the response to stakeholders' pressure (Farneti et al., 2019; Krasodomska & Zarzycka, 2020). However, it sticks to the concept of effective dialogic communication (Masiero et al., 2019) as relational connectivity is seen as co-creation engaging all stakeholder groups and not as the manifestation of influential stakeholders' behaviours.

Although the concept of two-way corporate communication is not new, empirical research investigating relational connectivity is very limited. In the most recent decade, we can observe an increasing number of new academic publications in the area of corporate communication and its role in financial markets (Hamilton & Winchel, 2018) as the use of social media gives us more possibilities to directly observe stakeholders signals on disclosed information and companies' reactions to that (see, for example, Bryl et al., 2021). The analyses of social media disclosure gives inconsistent results. Some show that companies selectively satisfy stakeholders' information needs even if stakeholders' signals are unambiguous (Cade, 2018; Gómez-Carrasco et al., 2020; Jung et al., 2017; Manetti & Bellucci, 2016; She & Michelon, 2019). However, single studies suggest that direct dialogue between a company and its stakeholders significantly improves the effectiveness of corporate communication (Castelló et al., 2016; Grant et al., 2018; Saxton et al., 2019). Therefore, our second research question (RQ2) is as follows:

RQ2: What influences the company's relational connectivity regarding voluntary disclosure?

2.3. Factors that influence voluntary disclosure and relational connectivity
Monologic vs. dialogic communication/openness

As most previous research analysing connectivity focuses on the information (voluntary information) disclosed on social media, we looked closer at the types of dissemination channels a company uses. Companies may decide to use or not to use social media and other interactive, less traditional channels to publish information. The dissemination choices are seen as an important part of the disclosure strategy, potentially influencing a firm's value by increasing its visibility (Jung et al., 2017). Empirical research highlights that a greater number of dissemination channels influences investors' decisions, observed as a decrease in information asymmetry (Blankespoor et al., 2014), an increase in market liquidity (Blankespoor et al., 2014) and trading volume (Gomez-Carrasco & Michelon, 2017), changes in stock prices (Gómez-Carrasco et al., 2020;

Gomez-Carrasco & Michelon, 2017; Lee et al., 2015) and their formation process (Drake et al., 2017; Twedt, 2015).

We follow the approach presented in Brennan and Merkl-Davies (2018), where corporate communication has two perspectives: monologic and dialogic. Companies that use traditional dissemination channels with few feedback opportunities, conducting their communication through routine and ad-hoc mandatory and voluntary corporate reporting are labelled as monologic. In contrast, dialogic companies use social media where there is room for comment and criticism, consequently conducting a continuous exchange of ideas with stakeholders leading to mutual understanding. That perspective is critical for building effective communication and, as a result, connectivity between companies and their stakeholders (Brennan & Merkl-Davies, 2018).

2.3.1. CEO engagement

Following Garcia Osma and Grande Herrera (2021), we understand CEO engagement as the CEO's actions taken to influence corporate reporting. For many decades, CEO engagement in corporate choices such as voluntary disclosure was recognised as insignificant (Bamber et al., 2010). In contrast to previous publications, the results of Bamber et al. (2010) indicate that CEOs play a critical role in shaping voluntary disclosure and personal managerial attributes explain systematic variations in the disclosure policy among companies. More recent research confirms that CEO characteristics influence firms' likelihood to voluntarily disclose information and affect this information (Huang, 2013, Lewis et al., 2014, Bochkay et al., 2019). In particular, further research confirms the importance of CEOs' personal engagement in increasing the credibility of financial disclosure (Asay et al., 2018) and market participants' willingness to invest in a company (Elliott et al., 2018). One of the latest studies in this field highlights that CEOs that are more able in the field of firms' disclosure policies are at the same time more willing to disclose comparable and useful non-financial information that favours stakeholder commitment (García-Sánchez et al., 2020). We expect, therefore, that CEO engagement plays a crucial role in the perception of stakeholders' voluntary disclosure needs and connectivity between them and a company.

2.3.2. Self-confidence

Strategic decisions like those regarding voluntary disclosure may also depend on a company's perception regarding its ability to deliver a good quality of reporting (Hribar & Yang, 2016). Numerous investigations in psychology prove that people tend to be biased in evaluating their own abilities, resulting in self-confidence (overconfidence) (Charness et al., 2018). Self-confidence enhances motivation for continuous improvement, but also it manifests itself in actions influencing the decisions of others (Benabou & Tirole, 2002). Therefore, we believe that how companies rate their competencies in delivering information to stakeholders may impact the awareness of their investors' non-mandatory information needs and at the level of relational connectivity.

2.3.3. Individual investors

Especially to individual investors, effective corporate communication is essential (Lawrence, 2013), as their information costs resulting from using financial disclosure in a trading decision are very high (Blankespoor et al., 2019). Individuals invest more in firms with clear and concise financial disclosures (Lawrance, 2013). Usually, they are considered unsophisticated investors with preferences for clear and more concise disclosures that are easy to process and to infer in the firm value (Fishman & Hagerty, 2003; Lawrence, 2013). On average, individual investors choose companies whose disclosure information costs are lower than investment benefits (Blankespoor et al., 2019; Lawrence, 2013). The study of Naveed et al. (2020) confirms the role of financial and non-financial information in shaping the trading behaviour of individual investors and indicates that, on average, retail investors invest in firms with detailed financial and non-financial

disclosures. They also indicate that improved financial and non-financial disclosure practices support retail investors in making sound stock investment decisions.

Moreover, the disclosure form is important while considering individual investors; less readable and longer reports require more time and energy to extract relevant information (e.g., Bloomfield, 2002). It is imperative to consider limited attention among individual investors (e.g., Hirshleifer & Teoh, 2003). We expect that the high fraction of individual investors will result in a low level of investors' non-mandatory information needs and a low level of relational connectivity.

3. METHODOLOGY AND DATA

3.1. Data and sample selection

As the first step, we sent an online questionnaire to all bond issuers listed on the Catalyst market, excluding financial sector companies. In March 2020, when we conducted our research, there were 95 issuers listed on the Catalyst, 27 of which were commercial banks and insurance companies. Finally, we sent our online questionnaire to 68 companies. In return, we received 20 questionnaires filled correctly and completely. It constitutes 29.41% of all companies that met our initial criteria, forming a sample for further analysis.

3.1.1 Catalyst – bond market on the WSE

The Catalyst bond market started on September 30, 2009. Until the foundation of the Catalyst, the public bond trading market in Poland was practically insignificant. The separation of the debt securities market from the main market of the WSE increased the interest in these instruments; however, the turnover on the secondary market remained at a low level all the time. The crisis in the financial markets was the moment of the Catalyst market establishment and consequently, there was a decline in the issuers' credibility, which caused communication with investors to be a key factor that allowed building investors' confidence in the market itself and among individual issuers. This market is also characterised by a fairly high default rate. The first debt default case occurred in 2011 (by issuer Anti S.A.). The default rate index at the end of 2014 was 7%; in the following years, its value decreased significantly, reaching the lowest level (1%) in the second quarter of 2017. However, the highest level of this indicator was recorded at the end of 2020 (over 8%). On the one hand, the drop in interest rates increased interest in debt as a source of financing, but on the other hand, the introduction of new regulations related to information obligations, i.e. the MAR / MAD directives, which tightened, among other things, penalties for the management boards of listed companies resulted in a decrease in the number of issuers since 2016 and, in particular, in the number of IPOs.

The Catalyst bond market consists of four platforms: two operated as a regulated market and two operated as the so-called Alternative Investment Market (AIM) as Multilateral Trading Facility (MTF). In the regulated market, when going public, the Act on Public Offering requires an Issue Prospectus (with a few exceptions, Okoń & Gemra 2020). It is different at the AIM, where the WSE Internal Regulations impose publication of the so-called Information Document. Despite the different regulations acts, there is no substantial difference in current and periodic disclosure obligations.

3.2. Questionnaire

To find drivers influencing bond issuers' willingness to publish non-mandatory information and answer our RQs, we formulated 51 closed-ended questions divided into four sections. The first section included five questions regarding organisation of investor relations and valuation

of issuers' communication with investors. We asked companies to indicate: who is responsible for investor relations, how companies value different investors' communication channels, who is responsible for preparing Management Discussion and Analysis (MDA) in the annual report, what causes the most significant difficulties in fulfilling disclosure obligations, which elements of the MDA are the most important from the management perspective.

In the second section, there were three questions about the companies' events and activities which are of investors' interests: in companies' opinion, what is the important information for individual investors in their decision-making process, what investors most often ask while contracting with the company, what kind of collateral is expected by individual investors. The third section dealt with companies' opinions on the importance of the events explained in the MDA. We asked four questions regarding the importance of companies' activities context, whether bad news is more important than the good ones, whether opinions and interpretations of the management board are relevant to investors, or whether forward-looking statements are relevant to investors. The last section, including six questions, covered companies' demographic information and control variables: size, type of investor, planning of new bonds' issuance, and type of debut on the Catalyst market.

3.3. Research variables

For RQ1, we developed four dependent variables representing types of voluntary disclosure that are most widely investigated in the literature: Context, Bad News, Forward-Looking-Statements (FLS), and CEO Opinion. Table 1 explains the definition and calculation methods of dependent variables for RQ1.

Table 1
Dependent variables for RQ1

Name	Description	Questionnaire	Calculation
Context	Expressing the respondents' opinion about additional information concerning MDA report.	The companies indicated whether they agree that investors need additional information explaining the context of events, not just the presentation of the results themselves ("bare facts").	The Likert scale was used here, where 5 means that the company fully agrees that it is necessary to show the context and 1 means that the company believes that it is not necessary to show context.
Bad News	Expressing the respondents' opinion about additional information concerning MDA report.	The companies indicated whether they agreed that investors needed additional information explaining negative events rather than explaining positive events.	The Likert scale was used here, where 5 means that the company fully agrees that explanations for negative events are needed more than for positive events. A 1 means that the company does not agree with this approach.
Forward Looking Statement (FLS)	Expressing the respondents' opinion about additional information regarding MDA report.	The companies expressed their opinion that investors expect the management board to present its own expectations as to future results and the situation in the environment.	The Likert scale was used here, where 5 means that the company entirely agrees that the presentation of the management board's expectations as to the results and situation is desired by investors. A 1 means that the company does not agree with this approach.

Table 1 – continued

Name	Description	Questionnaire	Calculation
CEO Opinion	Expressing the respondents' opinion about the need to include additional information in the MDA report.	The companies assessed whether they agreed that the management board should not present their opinions and interpretations of events in the report.	A 1 means that the company believes it does not agree with this approach. The variable prepared in this way was transformed into a variable expressing a positive attitude. A CEO op with a value of 5 means positive recognition that the management board should present its opinion and interpretations in the financial statements. Value 1 – that it shouldn't do this.

Source: own elaboration.

For RQ2, we use one variable – Connectivity, which is an indicator that was created by comparing the respondents' answers to two groups of questions:
- the first concerned the importance of factors which, in the opinion of the respondents (i.e. IR representatives), are important for individual investors in making a decision to invest in bonds (IO, *investors' opinions*),
- in the second, the respondents indicated which areas in the MDA report are the most important to describe (DO, *directors' opinions*).

In both groups, there were questions concerning three areas (*A*): future, history and risk. We checked the consistency between the assessments of importance within these three areas by calculating the connectivity as:

$$Connectivity = \sum_{A=1}^{3} (IO_A - DO_A)^2.$$

The higher the value of the indicator, the greater the diversity of opinions about what is important for managers and what is important for investors according to managers. In the "future" group, the credibility of the management board, the financial forecasts, the future factors influencing the financial results and the strategy were assessed. The group relating to the "historical analysis" encompassed the opinions about the importance of the factors explaining the historical results and the historical financial results. In the "risk" group, we analysed the importance of presence of covenants, risk description and the level of security.

Next, we calculated four independent variables (Table 2): Openness, CEO engagement (CEO) and Self-confidence and type of majority investors (Individual Investors).

Table 2
Independent variables for RQ1 and RQ2

Name	Description	Questionnaire	Calculation
Openness	Indicates if dialogic communication channels are used within corporate communication.	Five-point Likert scales ranging from 1 (totally disagree) to 5 (totally agree) 9 questions about communication channels, where 5 questions are related to the monologic approach, and 4 to the dialogic approach.	A measure of a company's openness based on calculating the mean value for the set of answers regarding dialogic corporate communication.

Table 2 – continued

Name	Description	Questionnaire	Calculation
CEO (CEO engagement)	Indicates whether CEO is (also) responsible for investor relations.	Respondents could indicate more than one of the following answers: CEO, Public Relations Agency, one of the departments, Nominated Advisor.	It equals 1 if the CEO is engaged and 0 otherwise.
Self-confidence	Indicates that a company assesses obligations regarding investor relations and corporate communication with low difficulty.	Respondents could indicate the following answers: • preparation of periodic reports, • preparation of current reports, • identification of events causing the need to prepare a report, • technical publication of reports, • dialogue with the supervisor (correspondence, explanations).	The arithmetic mean for the ratings of these five measures was taken as the difficulty rating index. The self-confidence index was taken as 5 – the difficulty index, with 5 being the highest degree of difficulty. The higher the self-confidence index, the lower the company's assessment of the difficulty of its obligations related to investor relations.
Individual Investors	Indicates that the main group of investors are individual investors.	Respondents could indicate, whether the main group of investors are individual or institutional ones.	It equals 1 if respondents indicated individual investors as the main group and 0 otherwise.

Source: own elaboration.

We also added three control variables (Table 3) that indicate: company size (Size), planning of bonds new issuance (New Issuance), and type of debut (Public First Issuance).

Table 3
Control variables for RQ1 and RQ2

Name	Description	Measure
Size	Indicates the size of a company measured by the value of annual revenues	It equals 1 if a company generates revenues above PLN 100 million and 0 otherwise.
New Issuance	Expresses the respondents' opinion on the plans for new bond issues in the next 12 months.	It equals 1 if the company intended to issue new bonds in the next 12 months and 0 otherwise.
Public First Issuance	Informs about the legal formula according to which the company obtained capital from the issue of bonds.	If the issue was a private one, the value of the variable is 0. If there was a public offering without a prospectus, then the index has a value of 0.5. Ultimately, if the offer was public with a prospectus, the value of the variable is 1.

Source: own elaboration.

3.4. Methods

To overcome the limitation of a small sample and to find the answer to our research questions, we used QCA, which lately has been more widely used in management and finance studies also as a method to analyse the questionnaire research (Cheng et al., 2013; Mastrangelo et al., 2019). QCA is a set-theoretic method that uses sets and searches for set relations to form concepts and formulate casual relations between social phenomena applying Boolean algebra rules (Schneider & Wagemann, 2012).

QCA, based on configuration analyses (also referring to conjunctural causation in the set theory), assumes that combinations (configurations) of factors (variables) which form patterns or profiles rather than individual independent variables lead to an outcome (Schneider & Wagemann, 2012). This view is consistent with the systemic and holistic approach to organisations, where structures, activities and environment interpenetrate and interact defining different configurations (Fiss, 2007). Also, QCA distinguishes between necessary and sufficient conditions for an outcome. A sufficient but not necessary condition allows the existence of other sufficient conditions for the same outcome. It means that the set-theoretic perspective assumes the existence of equifinality understood as alternative factors that can produce the same outcome (Schneider & Wagemann, 2012). Usually, statistical analysis is uni-finally oriented (Wagemann et al., 2016), which contrasts with organisational reality, where more than one causal condition often explain a specific outcome (Fainshmidt et al., 2020). Finally, the set theory also encompasses the asymmetry of concept and causal relations. The asymmetry indicates that the same configurations of factors rarely explain at the same time both negative and positive outcomes (Seny Kan et al., 2016). In other words, the causal explanation of asymmetry says that different conditions can cause the occurrence and absence of an outcome (Greckhamer et al., 2018). That is often the case in management practices, where the knowledge about the paths that explain a phenomenon's existence does not influence the understanding of its absence (Seny Kan et al., 2016).

Set-theoretic methods operate on membership scores of elements in sets (Schneider & Wagemann, 2012). In the QCA technique, there are two types of variables – crisp sets variables and fuzzy sets variables. Crisp sets have dichotomies variables, where 1 stands for full membership in a set and 0 for full non-membership in a set. If a variable is a dichotomy by its nature, it belongs to a crisp set. In the case of non-dichotomy, continuous variables, the first step in QCA analysis is a calibration of the degree of membership in a set. To calibrate continuous variables from our sample, we use the Fuzzy Set Direct Calibration Method described by Ragin (Ragin, 2007).

Once all variables are calibrated, we use fs/QCA software (downloaded from http://compasss.org/software/) to run the QCA analysis. fs/QCA uses the Quine-McCluskey algorithm with the simplification rules of Boolean expressions to determine configurations that are sufficient or necessary conditions for specific levels of an outcome (Fiss, 2007; Schneider & Wagemann, 2012). Finally, the QCA analysis results for each outcome are presented as models of sufficient and necessary conditions configurations separately, along with the degree of consistency and coverage.

The consistency and coverage are evaluated for each configuration (solution) as well as for each model as a whole. They are similar metrics to correlations and coefficient of determinations for a symmetric test (Cuadrado-Ballesteros et al., 2017). Consistency is defined as the degree to which empirical evidence is consistent with the set-theoretic relation in question (Rihoux & Ragin, 2008). At the same time, coverage can be interpreted as a numeric expression for the empirical importance (sufficiency) and relevance (necessity) of a given condition (or a combination) for producing an outcome (Schneider & Wagemann, 2012). The formulas expressing consistency and coverage are as follows (Rihoux & Ragin, 2008):

$$Consistency(X_i \leq Y_i) = \frac{\sum(\min(X_i, Y_i))}{\sum(X_i)} \qquad (1)$$

$$Coverage(X_i \leq Y_i) = \frac{\sum(\min(X_i, Y_i))}{\sum(Y_i)} \qquad (2)$$

Where min indicates the selection of the lower of two values, X_i represents membership scores in a combination of conditions, and Y_i represents membership scores in the outcome.

To apply QCA analysis with our data, we used models described by the following equation:

$$y = f(x_1, x_2, x_3, x_4, x_5, x_6, x_7) \qquad (3)$$

We ran five models with the same seven conditions (x_1, …, x_7). As outcomes (y), we defined five dependent variables (Context, Bad News, Forward-Looking-Statements (FLS), CEO Opinion and Connectivity). As conditions, in each model four explanatory variables (Openness, CEO engagement (CEO), type of majority investors (Individual Investors) and Self-confidence and three control variables were included (company size (Size), planning of bonds new issuance (New Issuance), and type of debut (Public First Issuance)).

4. RESULTS

Table 4 presents sufficient conditions for the five outcomes (models): a high level of companies' awareness of stakeholders' voluntary disclosure information needs (for each type of information, we ran a separate model, in total, four models) and a high level of relational connectivity between companies and their stakeholders (one model). Except for the FLS model, where we have only one solution, all other models give two solutions with different sets of co-occurring conditions.

Table 4
High level of companies' awareness of stakeholders' voluntary disclosure information needs and high level of relational connectivity between companies and their stakeholders – QCA results

Model	Context		Bad News		FLS	CEO Opinion		Connectivity	
Solution	S1	S2	S1	S2	S1	S1	S2	S1	S2
Dialogue (openness)		~	~	~			~	●	~
CEO	●	●	●	●	●	●	●	●	●
Self-confidence				●		●	●	●	~
Individual Investor	~	●	●	●	~	~	~	~	~
Size	●	●	●	●	●	●	●		
New Issuance	~	~	~	●	~	~	●	~	~
Public Debut	~	●	●	●	~	~	●	~	~
Raw Coverage	0.34	0.09	0.11	0.11	0.42	0.22	0.08	0.17	0.14
Unique Coverage	0.34	0.09	0.11	0.11	0.42	0.22	0.08	0.08	0.05
Consistency	0.80	1	0.77	1	0.81	0.91	1	0.88	0.88
Solution Coverage	0.48		0.22		0.42	0.30		0.28	
Solution Consistency	0.97		0.86		0.81	0.93		0.89	

Where: ● indicates the presence of a condition, ~ indicates the absence of a condition, and a blank cell means that a condition is not relevant for the particular solution.

Source: own elaboration with fs/QCA software.

Looking at the single conditions (variables), the CEO is present in all models and solutions. While Size is present in all solutions regarding awareness of stakeholders' voluntary disclosure information needs, it is not relevant to the presence of relational connectivity between companies and their stakeholders. Relevant conditions (both as being present or absent) for each solution

are Individual Investor, New Issuance and IPO. In contrast to our expectations, the Dialogue condition seems to be indecisive for the appearance/high level of companies' awareness of stakeholders' voluntary disclosure information needs. In three solutions, that variable is not relevant to the outcome, whereas in four paths, we observe its absence. Dialogue is relevant for both solutions in the Connectivity model, but its presence in one solution and the second is absent.

To answer RQ1, we look at the four models for the Context, Bad News, FLS and CEO Opinion outcomes. Where the main investors are individual investors, solution paths include similar sets of conditions. In those companies, only two types of voluntary information (one solution for Context and two solutions for Bad News) are recognised as of high importance for investors. These companies are also users of traditional communication channels (close companies); they entered the public debt market through public placement and, in two solutions, do not plan a new issuance.

Where the main investors are institutional investors, also solution paths include similar sets of conditions. For that group of companies, we find configurations for three types of voluntary information: Context (one solution), FLS (one solution) and CEO Opinion (two solutions). In all models (except for one solution for CEO Opinion), whether companies use social media to contact their investors is irrelevant to the outcomes. Contrary to the first group, those companies entered the debt public market through private placement but did not plan any new issuance. Solution 2 for CEO Opinion presents the unique set of conditions where companies are planning new issuances are self-confidence and entered public debt market through public placement.

The connectivity model with two solutions allows answering RQ2. In both solutions, the main investors are institutional investors, companies' size is irrelevant, they entered public debt market through public placement and did not plan any new issuance. The solutions differ for open and closed companies. For companies that use more interactive communication channels (open), self--confidence seems crucial for a high level of connectivity, while in close companies, the lack of self-confidence leads to the same result.

As the QCA permits to analyse sets of conditions that lead to opposite outcomes, Table 5 presents models representing a low level of companies' awareness of stakeholders' voluntary disclosure information needs and a low level of connectivity with investors. Looking at the first group of models, we did not obtain any solution for the CEO Opinion variable, which gives us three models for RQ1. For the variable ~ Context, there is only one path that leads to the outcome, which overlaps with one solution (S2) for ~ Bad News and one (S2) for ~ FLS. Companies which are unaware of stakeholders' voluntary disclosure information needs regarding discussion about context, bad news and future (forecasts) share the same characteristics: they choose traditional communication channels, the CEO is not involved in the preparation of the financial report but is self-confident with the majority of individual investors. These companies are small, not planning new issuances and entered the public debt market under private placement. Solutions 3 (S3) for ~ Bad News and ~ FLS also share the same set of conditions, which indicates that open companies where the CEO participates in financial reports preparation can also be unconscious about investors' information needs if the latter are insecure, can have a majority of institutional investors, can be small, but entered the debt public market within the public offer.

Table 5
Low level of companies' awareness of stakeholders' voluntary disclosure information needs and low level of relational connectivity between companies and their stakeholders – QCA results

Model	~Context	~Bad News			~FLS			~Connectivity
Solution	S1	S1	S2	S3	S1	S2	S3	S1
Dialogue (openness)	~		~	●	~	~	●	●
CEO	~	●	~	●	●	~	●	●
Self-confidence	●		●	~	●	●	~	~
Individual Investor	●	~	●	~	●	●	~	~
Size	~	●	~	~		~	~	~
New Issuance	~	~	~	~	~	~	~	~
IPO	~	~	~	●	●	~	●	●
Raw Coverage	0.28	0.44	0.10	0.08	0.17	0.11	0.09	0.09
Consistency	1	0.68	1	1	0.95	1	1	0.90
Solution Coverage	0.28	0.71			0.37			0.09
Solution Consistency	1	0.76			0.98			0.90

Where: ● indicates the presence of a condition, ~ indicates the absence of a condition, a blank cell means that a condition is not relevant for the particular solution.

Source: own elaboration with fs/QCA software.

The third paths (S1) have only two common conditions: CEO presence and lack of planning for new issuance. For ~ Bad News Openness and Self-confidence are irrelevant, but being a big company and having institutional investors is important. In the case of ~ FLS, solution 1 indicates that closeness with self-confidence and individual investors are the conditions that lead to the low awareness of the necessity to publish forward-looking statements.

To answer RQ2 extensively, we look at the model for the ~ Connectivity variable, which has only one solution. Companies that present a low level of connectivity with their investors share the openness and CEO engagement, but they are insecure, small, have the majority of institutional investors and entered the public debt market within the public offer.

CONCLUSIONS

The scope of our research was to indicate the determinants of the voluntary disclosure strategy and relational connectivity between issuers and investors on the Polish bond market Catalyst. Even though voluntary disclosures represent one of the most widely studied topics in finance and accounting research (Hales et al., 2018), we deliver new insight into academic discussion. Generally, we show that what influences companies' perception of investors' voluntary disclosure needs differs from what influences the company's relational connectivity regarding voluntary disclosure. We also point out that there are many paths to gain a high level of companies' perception of investors' voluntary disclosure needs and the company's relational connectivity regarding voluntary disclosure. We obtain equifinality (alternative factors that can produce the same outcome) in our models thanks to QCA, which indicates that more than one set of variables explains a specific outcome (Fainshmidt et al., 2020). These results could partially explain the contradictory results of previous research where traditional analysis tools were applied.

Remarkably, our results show that the management board's engagement in preparing reports is crucial for understanding investors' voluntary disclosure needs. It can indicate that involvement stays together with the management board's professional knowledge of practical implications and mandatory information disclosure limitations. To date, management involvement in the preparation of reports has not been discussed in depth and was frequently taken for granted in the academic literature. In our research, we point out that this is not the case in the public bond market in Poland. Therefore, we call for considering that issue as one of the avenues for future research, looking also at the institutional determinates that can have an impact on the management board's engagement in corporate communication.

We also found out that active communication, mainly through social media (openness), based on dialogue with investors, did not turn out to be a critical factor that influences companies' perception of investors' voluntary disclosure needs. It seems that companies use dialogue in private rather than in public to understand investors' information needs. That conclusion puts into question the growing societal pressure on engaging in activity in social media as a critical concept of effective communication of companies.

Additionally, we confirm the necessity of the management board's engagement in reporting to maintain relational connectivity. Strong relational connectivity appears together with open communication channels only if a company is self-confident regarding reporting obligations. That observation indicates the essential limitations of previous research evaluating relational connectivity through social media. Accordingly, we consider our research as one possible way to verify effective communication conceptual models presented in Brennan and Merkl-Davis (2018), Blankespoor (2018) and Blankespoor et al. (2020) regarding voluntary disclosure.

This work contributes to the enrichment of existing literature on the determinants of the voluntary disclosure strategy on the Polish bond market Catalyst. It also focuses on the relational connectivity between issuers and investors and its impact on disclosure. It is an important topic that is scarcely researched. With our study, we try to contribute to filling this research niche. Our paper also contributes to the debate on effective corporate communication in financial markets; specifically, it sheds new light on both strategies regarding voluntary disclosure and disclosure dissemination. This study also broadens the field of application of the stakeholder theory. Our analysis enriches the list of determinants of voluntary disclosure beyond those frequently analysed in the existing research.

Furthermore, this work presents a unique tool of analysis, the QCA, still rarely used by researchers, notwithstanding its considerable merits. Furthermore, this work stimulates reflections on the applications of analytical tools as the results obtained in our work derived from the application of QCA approach not always confirm the results of previous research. This demonstrates the contribution of our work to the critical international debate on the determinants of voluntary disclosure.

This study has limitations that must be considered in the context of formulating conclusions and their generalisation. The first is that it analyses limited determinants of voluntary disclosure. The second is connected with exclusively one-country analysis. Further studies could focus on more factors impacting voluntary disclosure and might consider other countries and diverse markets. Still, the proposed approach and tool is universal and applicable in a broad context.

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