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Article

Examining the Complexity Effect on Shareholder Information in Slovenia

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Abstract

This study investigates how managers communicate with shareholders, balancing impartiality and transparency against their vested interests. We examine management communication behaviour through the lens of information asymmetry in Slovenia, exploring how information overload and complexity in disclosures may influence shareholder decision making. Drawing on semi-structured interviews with top managers and a textual readability analysis of annual report letters to shareholders, we find that managers often introduce high levels of complexity in communications, sometimes deliberately, to safeguard their own interests. This observed 'complexity effect' provides new insight into information asymmetries in modern organizations, highlighting how excessive complexity can undermine transparent and effective shareholder communication.

Keywords: behavioural economics; complexity effect; agency problem; information asymmetry; corporate governance; Slovenia
JEL: G41, D83, M14

1. Introduction

The aim of this research is to examine the characteristics of management communication with stakeholders through written reports and to determine to what extent information asymmetries in the form of information overload and complexity can be exploited. As Jensen and Meckling (1976) articulated, in an agency relationship, the principal cannot fully guarantee that the agent will act in his best interests, especially if such action entails high control costs. In this regard, understanding the information provided by the management to the principal is crucial. According to Ndofor et al. (2015) the agency problem in form of information asymmetry leads to strategic actions that may disproportionally benefit management at the expense of shareholders.

We assume that when information is too extensive or too complex, its recipients are often unable to fully understand it. For example, if management provides shareholders with inaccurate or incomplete information, it can lead to faulty assumptions and result in investors buying or selling stocks at the wrong time or price.

Furthermore, the agent's communication style—including the scope, manner, and form of disclosure—directly impacts the principal's decision-making process. We define the "complexity effect" as occurring when agents (management), whether for self-interested reasons or due to operational complexities, present information in a form that is not tailored to the principal's understanding, thereby potentially misleading the principal. In such cases, the agent's actions result in the principal receiving incomplete or non-usable information.

Main research question:

To what extent is information complexity present in the provision of information to stakeholders, and is this the result of conscious or unconscious manipulation of information by management?

Addressing this research question is important because regulators and investors often assume that more disclosure automatically improves transparency. However, an excessive volume of complex information can overwhelm stakeholders and obscure key insights. In recent years, corporate disclosures have grown significantly in length and detail, which paradoxically may make them harder to interpret. Slovenia provides a pertinent context for this study: as a post-transition economy with a relatively small capital market (only nine prime-listed companies), it faces evolving transparency standards and investor experience. By investigating the "complexity effect" in this setting, our study highlights the potential risks that overly complex communications pose to effective shareholder oversight.

The paper proceeds as follows: First, we present the literature review, discussing relevant theory and prior findings on information overload, bounded rationality, asymmetric information, and managerial communication. Next, we describe our methodology, including the interview study and the Flesch readability analysis of shareholder letters. We then present the results of the empirical analysis from both methods. This is followed by a discussion of the findings in the context of decision-making biases and agency theory. Finally, we conclude with the study's contributions, limitations, and suggestions for future research.

2. Literature Review

In recent decades, many studies by behavioural economists have called into question the rationality of individual decision-making (Camerer et al., 2004). The way in which people interpret information is a central concern of behavioural economics, particularly with regard to framing biases and statistical misinterpretations (McAuley, 2010). Several factors have been examined to explain why some individuals are more susceptible to misinformation, including repeated exposure to false claims (Fazio et al., 2015; Pennycook et al., 2018) and confirmation bias, whereby misinformation aligns with an individual's pre-existing beliefs (Cha et al., 2020; Ling, 2020). Another important factor identified in the literature is information overload, which can hinder individuals' ability to critically evaluate information (Bawden and Robinson, 2020).

2.1 Theoretical Background

Numerous studies have identified information overload in the context of financial and accounting decisions, and the related literature is extensive (Paredes Troy, 2003). Information overload occurs when the supply of information exceeds the capacity for their interpretation (Eppler and Mengis, 2003). These hinder the decision maker's ability to optimally define the best decision. Information overload is a situation in which the decision-maker is faced with a large amount of information (i.e., a type of information with informative characteristics such as number, complexity, as well as the level of redundancy, contradiction and inconsistency), which make up a bunch of individual informative cues of different sizes and complexity (Roetzel, 2019). Hwang and Lin (1999) found that there is a relationship between information overload and the ability of managers to process information for the decision-making since it reduces decision makers' ability to make the best possible decision (Roetzel and Fehrenbacher, 2020), and reducing the quality of decisions (Letsholo and Pretorius, 2016). The phenomenon of information overload is one of the main challenges of the information age (Roetzel and Fehrenbacher, 2020).

Information overload is related to how individuals navigate the presence of multiple choices. While having options is often a positive experience, the presence of too many options at some point can become cognitively challenging for individuals (Tandoc and Kim, 2022). Lazer et al. (2017) also argued that information overload, coupled with limited individual attention, may prevent adequate assessment of information on social media, which may contribute to misinformation. The main causes of information overload are the result of a number of developments that are mutually interdependent and relate to various levels or scales. On a societal scale, these developments are mainly the accelerated production of information through institutions such as science, the media, or the globalized business community which operates on ever faster innovation cycles, and the more efficient distribution of that information through information and communication technology. Such societal factors are usually not discussed extensively in information overload literature dealing with organizational or business-related issues (Eppler and Mengis, 2003).

An important cause of information overload is the nature of the information itself. Schneider (1987) pointed out that the extent of information overload is not only affected by the amount of information, but also by its specific characteristics (level of information uncertainty, level of ambiguity, novelty, complexity or intensity). Simpson and Prusak (1995) advocated the views that changing the quality of information can have a great impact on the probability of information overload, as it can improve the quality of information (conciseness, consistency, comprehensiveness, etc.) and improve an individual's information processing capabilities. In the last decade, some approaches to "soft" characteristics (i.e., subjective experiences and user trust) have been identified, which shift the focus from technical to psychological aspects (e.g., Koroleva and Bolufé Röhler, 2012; Wu and Lin, 2006).

2.2 Empirical Background

Regulators, both national and international, have made significant contributions in response to the growing amount of information and its diverse sources, recognizing the need to establish clearer standards for managerial and financial practices. This regulatory shift was particularly pronounced following major financial scandals, such as the collapse of Enron, and the global financial crisis of 2008, which exposed systemic weaknesses in investor protection and corporate governance. In the wake of these crises, both regulators and investors began to question the transparency and integrity of financial markets, as well as the ethical standards of the entities operating within them. This erosion of trust triggered a wave of regulatory and legal reforms, including the establishment of the Public Company Accounting Oversight Board and the enactment of the Sarbanes–Oxley Act of 2002, which aimed to enhance corporate accountability and financial reporting standards.

Securities regulations have traditionally been grounded in the assumption that more information is inherently beneficial for market efficiency. Accordingly, regulatory frameworks have increasingly mandated extensive disclosures in an effort to improve transparency and bolster investor confidence. However, the proliferation of information has also introduced new challenges, particularly in terms of cognitive load and decision-making complexity at the managerial level. The growing volume and complexity of available data underscore the importance of cognitive factors—defined here as both conscious and unconscious mental processes involved in processing, storing, and transmitting information. Within this context, managerial tools such as goal-setting have come under increasing scrutiny.

Although goal-setting remains a widely used and empirically supported managerial practice (Locke and Latham, 2013), recent research has raised concerns about its unintended consequences for ethical behaviour (Niven and Healy, 2016). Specifically, while well-designed goals can enhance motivation and performance, they may also create pressure that fosters moral disengagement or justifies unethical conduct, particularly when goals are overly ambitious or narrowly focused.

Managers are typically required to disclose performance-related information to shareholders. However, this information is often highly condensed, selectively presented, and potentially subject to manipulation (Desai et al., 2006). When outcomes are not objectively measurable and must be interpreted or contextualized by management, the causal relationship between managerial actions and shareholder value becomes increasingly opaque. Consequently, complexity-based information asymmetries can mask opportunistic behaviour and elevate the risk of financial reporting fraud. Empirical research by Ndofor et al. (2015) confirms that such asymmetries are positively associated with the likelihood of fraudulent financial reporting.

The transmission of incomplete, ambiguous, or misleading information by management can cause recipients—investors, regulators, or other stakeholders—to make decisions they might not otherwise have made had they received accurate and comprehensible data. Thus, the format, content, and delivery of managerial communication play a critical role in shaping stakeholder perceptions and responses. This underscores the need for a deeper understanding of the strategic decision-making and communication processes within organizations.

The principal–agent relationship is particularly susceptible to three canonical issues in the presence of information asymmetry: moral hazard, adverse selection, and challenges related to unverifiable information. These phenomena impair the efficiency of the principal–agent dynamic, especially when the agent has both the motive and the means to distort information to serve personal interests.

Much of the literature on financial reporting fraud has focused on incentive structures, particularly the role of stock-based compensation in encouraging executives to overstate performance (Ndofor et al., 2015). In addition to economic motives, personality traits and leadership styles have also been implicated in unethical decision-making. For example, personalized charismatic leaders—those who seek power and influence over others—are more likely to manipulate followers to achieve self-serving goals (House and Howell, 1992). This leadership profile has conceptual overlap with the construct of harmful, self-centered leadership, which has been linked to unethical organizational behaviour (Niven and Healy, 2016).

Further evidence of strategic communication practices is provided by Persson (2018), who identified deliberate information obfuscation by management. Specifically, firms may intentionally induce information overload or employ "complexification"—i.e., adding unnecessary complexity to disclosures—to reduce stakeholder comprehension. While this behaviour can be strategic and intentional, complexity in communication may also arise unintentionally, due to excessive optimism or the unstructured presentation of large volumes of data. Ultimately, complexity-based information asymmetry remains a critical risk factor in corporate governance. It facilitates opportunistic behaviour, hinders effective oversight, and exacerbates the classic agency problems that underlie many instances of financial misconduct.

Among the most important sources of information provided by management are public announcements, annual reports, and interviews with senior management. As annual reports represent the primary communication channel between management and shareholders, they play a central role in shaping perceptions of corporate performance and transparency. Given their dual purpose—to inform stakeholders and to project a positive corporate image—they provide a particularly suitable medium for examining how complexity affects the clarity and accessibility of information. Accordingly, our empirical analysis focuses on the letters to shareholders contained within these reports, which are discussed in greater detail in Appendix A.

3. Methodology

The main objective of our empirical research is to determine how managers fulfil their role as agents in the context of prescribed forms of communication and information provision to existing and potential shareholders when, on the one hand, they pursue the objective of impartial and transparent information and, on the other hand, they are confronted with vested stakeholders' interests, including their own, and related objectives. Our study examines the corresponding management practice in Slovenia.

As the overarching research strategy, we adopted a qualitatively driven mixed-method design grounded in the phenomenological approach, which facilitates an in-depth understanding of the analysed phenomenon. The primary method of data collection consisted of semi-structured interviews that captured managers' perspectives on communication practices and decision-making processes. To complement these qualitative insights, we additionally conducted a document analysis using the Flesch Reading Ease formula to evaluate the readability of letters to shareholders. Although this analysis employs numerical measures, it was not designed as an independent quantitative study but rather as an auxiliary technique to triangulate and substantiate the qualitative findings concerning information complexity and comprehensibility. This approach follows the framework proposed by Creswell and Plano Clark (2018), who emphasize that in qualitatively driven mixed-method designs, quantitative techniques can serve as supportive tools to enhance the credibility and depth of qualitative inquiry.

3.1 Interviews

The interview sample was purposeful and non-random. There are only few empirically grounded studies on the process of information use by capital market actors (Hjelström et al., 2014), hence we engaged in discussions with individuals who are most knowledgeable about the issue - the top management of each company (i.e., purposive sampling).

The interviewees were selected using purposive sampling based on the following criteria: each was a top management board member (Chief Executive Officer (CEO), Chief Financial Officer (CFO), or similar) with at least 12 years of senior management experience in a company obligated to publish annual reports or to issue securities; each interviewee's company was classified as a medium-sized or large enterprise under Slovenian legislation; and each company had been established for at least ten years.

The selected people were contacted, informed about how the data would be collected and how the interviews would be conducted, and asked to participate. 10 of the 14 invited interviewees responded positively and were interviewed. All 10 interviewees who agreed to be interviewed are top management members, comprising 4 CEOs, 4 CFOs, and 2 Chief Risk Officers (CROs). Their collective experience spans diverse sectors and industries (port and logistic system, banking group, power generation company, food manufacturing, asset management, government owned holding company, and financial institution), making them valuable assets to the company's management boards. The companies, in which they act as representatives of the company's management, are leaders in the industry and are among the largest and most important companies in the country. The average managerial experience of the interviewees in the top tier positions was 20 years. Seven of them have also had experience as members of supervisory boards (as presidents or members of supervisory boards of large companies). One of the 10 interviewees was a woman. We clarify that the 10 experts interviewed are not necessarily connected to the 9 analysed companies. We believe that such a purposive sample is appropriate for the aims and objectives of the research.

The interviews were conducted over a period of five months between November 2020 and March 2021. The basis for preparing the semi-structured interview were the research question presented in the introduction.

At the beginning of each interview, we posed a general question regarding the communication of management or supervisory board members regarding annual reports. Subsequently, we progressed to more specific questions pertaining to the study of the reasons, conditions, and consequences of the information overload. Throughout, we maintained a consistently meaningful order of questions, facilitating data analysis. The number of all questions varied slightly between individual interviewees based our judgment that the respondent had already answered a given question directly or indirectly. The content of the recorded interviews (literal transcription) was typed into an individual document. The recorded interview therefore enabled us to make an accurate record and subsequently transcribe the content of the interview. After the completion of the translation into text, we rechecked the content of the transcription for the adequacy of each interview, whether the recording corresponds to the reality of the audio recording.

We followed the standard protocol when conducting the individual semi-structured interview. The conversation took place via Zoom application (audio only, no video), with an average interview length of 38 minutes. By agreeing to the interview, the interviewees gave their consent for the recording of the conversations.

The basis for preparing the questions for the semi-structured interview were research questions from the research, which we expanded or deepened after the analysis of the literature and placed them into three sets of questions covering: (1) managers' role in communication with the company's key stakeholders, (2) the position of management in the field of communication, especially in relation to investors, and (3) information overload and the complexity effect. The interviews (see Appendix B (Appendix Table 8) for the full question list) were designed to elicit the personal opinions and experiences of the company leaders regarding their communication in form of annual reports.

For the analysis of the interviews, we used the content analysis method, which structures qualitative data in a formally valid way. The method was implemented in the following stages: categories were determined by categorization, and codes were determined by coding. The categorization process was carried out according to the following steps: distribution of interviews by person; classification of answers by content groups and content analysis; defining and numbering categories; and content re-analysis.

For the analysis, we developed a coding scheme based on eight behavioural economics concepts: moral hazard, excessive optimism (overconfidence and arrogance), attention manipulation (adverse selection), heuristic-driven bias, herd behaviour, bounded rationality, information overload, and the complexity effect. Comments in the interviews that correspond to the answers to the research question and subquestions have been marked separately. Codes were assigned to the coding units (sentence, paragraph, chapter), which were used to mark the essential components of the data. A code is a word, characteristic, or thing that indicates the meaning of words. It also refers to quotations, which are a verbatim extract of a specific part of the content. We grouped the codes into categories, which are repeating patterns, extreme phenomena, processes, etc. Appendix C (Appendix Table 9) provides an example of the coding structure. Our aim was to understand how managers communicate while balancing impartiality and transparency against vested interests, and to illuminate the information relationship between agent and principal.

3.2 Document Analysis (Flesch Reading Ease)

To study letters to shareholders in the annual reports of all 9 Slovenian companies which are traded on the Prime Market of Ljubljana Stock Exchange (see Table 1), we used the Flesch Reading Ease formula. The conditions for inclusion of a public company in the primary listing of the Ljubljana Stock Exchange are represented by the criteria listed in Table 2.

Table 1. Composition of the prime market of the ljubljana stock exchange.

Company
Intereuropa, d. d.
Krka, d. d.
Luka Koper, d. d.
Mercator, d. d.
NLB, d. d.
Petrol, d. d.
Sava Re, d. d.
Telekom Slovenije, d. d.
Zavarovalnica Triglav, d. d.

Source: Ljubljana Stock Exchange, 2020.

We estimate that one of the most appropriate forms of showing increased complexity in a corporation is their letter to shareholders within annual report, in which management reports to stakeholders about all aspects of the corporation's operations.

Abrahamson and Amir (1996) argue that a letter to shareholders may be the most interesting part of an annual report to read, as it is the only section where the author has considerable freedom in choosing the content and faces few restrictions on how information is presented. Hyland (1998) likewise suggests that letter to shareholders is the one part of an annual report that readers scrutinize thoroughly. Furthermore, Amernic et al. (2010) contend that the CEO's shareholder letter is a key medium through which corporate leaders communicate their attitudes and values, providing insight into the "tone at the top" of a company.

In theory, the effectiveness of financial reporting rests upon annual reports that facilitate reading and interpreting financial information. Readability can be defined as the perception of a text, which is usually measured by the speed of reading, comprehension, and memorization. In the world, mostly in English-speaking countries, several different readability methods and measures have been developed, the aim of which is to determine whether a text is too difficult for a target age group. The Flesch Reading Ease Scale uses two variables to determine the readability score (Srinivasan et al., 2015): average sentence length in words (W/S) and syllables per 100 words (S/W). The Flesch Reading Ease is a calculated score tied to standards defined in written texts and classified according to reading difficulty.

Studies have confirmed that among the many readability formulas, the Flesch formula is the most widely used, and it is also considered one of the most tested and reliable (DuBay, 2006). The readability of an important element of the annual reports—the letter to shareholders—was calculated using the Flesch Reading Ease formula, which measures text complexity using two variables:

- average sentence length, measured by the number of words, and
- average syllable length per word, which indirectly measures word complexity.

Formula for measuring the level of ease of reading (DuBay, 2006):

Reading Ease Level = 206.835 – 1.015 (W/S) – 84.6 (S/W)

The index takes values between 0 and 100, whereby a higher index value indicates better readability of an individual text (or easier to read text), and an index value of 50 indicates the average difficulty of the text to read. Interpretations are summarized in Table 3.

4. Results

We present the results of the Interview Findings, and the Readability Analysis.

4.1 Interview Findings

We present the findings of 10 in-depth interviews with personnel in managerial positions of companies in Slovenia. We interpreted management thinking according to eight categories of behavioural economics. We marked the categories with labels from r to y and list of ten persons from A to J. The characteristics of the category had to be sufficiently broad, and we checked whether they were supported by citations. For easier interpretation of the explanation, we classified the answers of the management and members of the supervisory board according to the categories of behavioural economics attributed to each answer, as we wanted to understand the parallels between them. Selected data highlights with comprehensive responses grouped into individual behavioural economics categories are available in Appendix C (Appendix Table 9). Table 4 provides an overview of the behavioural economics categories and their corresponding subjects of influence, distinguishing between management, individual, and combined effects. As shown in Table 4, certain categories are specifically linked to managerial decision-making, while others reflect broader individual or shared behavioural patterns.

Table 2. Quantitative criteria.

Criterion	Requirement
Years of business	3
Reality and objectivity of financial statements	Audited annual reports for three business years
The minimum capital value	10 mio EUR
The percentage of the class in the public	at least 25% (or at least 10% if the size of the class of shares in the public is EUR 25 million)
Class of Shares	Common Shares

Source: Ljubljana Stock Exchange, 2020.

Table 3. Interpretation of flesch index.

Reading ease level	Difficulty of reading	Type of reading	School (Education Level)
90–100	Very easy	Comic strip	US 4th grade
80–90	Easy	Airport novel	US 6th grade
70–80	Fairly easy	Fiction	US 7th grade
60–70	Standard	Magazine	US 9th grade
50–60	Fairly difficult	Quality literature	US 10 to 12th grade
30–50	Difficult	Academic work	Undergraduate level
0–30	Very difficult	Scientific work	Graduate level

Source: (DuBay, 2006).

Table 4. List of behavioural economics categories and subject of influence.

	Behavioural economics categories	Subject of influence
r	moral hazard	management
s	excessive optimism, self-assessment, arrogance	management
t	attention manipulation, adverse selection	management
u	heuristic	individual
v	herd instinct	individual
z	bounded rationality	both
x	information overload	both
y	complexity effect	both

4.1.1 Moral Hazard

Moral hazard refers to a situation in which managers pursue their own interests while shareholders bear the consequences of their actions, often resulting in selective or biased information disclosure. The interview responses confirm that managers can burden shareholders by introducing excessive or even irrelevant information and by being selective in what they disclose. Interviewee B noted: "Unfortunately, I recall a situation in which the method of informing stakeholders was adapted with the intention of influencing their decision-making." Comments from several participants, such as interviewee J, further illustrate the presence of managerial moral hazard and the complexity effect in corporate governance. Some interviewees also indicated that companies occasionally communicate ambiguous information or delay decision-making out of concern for potential legal consequences. Increasing regulatory demands and procedural obligations appear to reinforce this cautious approach, supporting our assumption about the relationship between transparency requirements and managerial reluctance to assume certain business risks.

4.1.2 Excessive Optimism, Self-Assessment, Arrogance

Excessive optimism (optimism bias) denotes a cognitive tendency to overestimate positive outcomes and underestimate potential risks, leading to overly favourable managerial reporting and forecasts. For example, interviewee H remarked: "I would say that some management teams often repeat the same narrative—grandiose claims and displays of craftsmanship intended to suggest deeper insight or greater contribution to the company's or industry's development. On the other hand, when this is not the case, they justify the lack of progress with seemingly logical explanations about why growth is not possible and what external factors are to blame." Another respondent observed that negative business information is rarely communicated directly and that most business forecasts tend to be overly optimistic. A third interviewee admitted that, in some cases, he did not wish to be fully understood; behind the "poker face" lay a desire for recognition beyond what was actually deserved. Previous studies have similarly shown that grandiose narcissists, believing themselves to be exceptional, are more prone to manipulation, deceit, and self-serving behaviour (Schroeder-Abe and Fatfouta, 2019).

4.1.3 Attention Manipulation, Adverse Selection

Attention manipulation refers to a communicative strategy whereby managers emphasize favourable information and obscure or downplay negative aspects to influence shareholders' perceptions. Eight of the ten interviewees directly or indirectly touched on the behavioural category dealing with attentional manipulation or adverse selection. They offered different perspectives on information asymmetry. Individual interviewees note that the benefits of transparency are greater than the harm that can arise from non-transparent reporting. Several interviewees even believe that any information, no matter how detailed, is useful for external stakeholders. This means that it is important for management to formally meet the requirements for transparency, even if the users of certain information will not be able to place it in the context of the final investment decision. Responsible management, according to one interviewee, weighs between the method of communication so as not to cause additional damage to the company with its communication in the sense that it does not additionally upset the stakeholders. In general, they observed that information containing a lot of promotional material is intentionally made overly extensive. This assumption finds support in other research such as the work of Persson (2018) where she argues that consumers' limited attention gives information providers, such as firms, incentives to be active.

4.1.4 Heuristic

Heuristic decision-making refers to the use of mental shortcuts that simplify complex judgments but may lead to systematic biases and errors in evaluating corporate information. Six interviewees highlighted the problem of oversimplification in decision-making. As interviewee G explained: "I follow some people who hold stakes in certain companies. Some do not follow the company at all, while others do but have no understanding of what particular published information means for the company. I get the feeling that they often cannot tell whether the news is good or bad for the company. At first glance, some information may appear positive, but someone with a deeper understanding of the business realizes that the strategy is completely wrong." Interviewee B added that the average investor is often unable to make a rational investment decision based solely on the annual report. Similarly, interviewee C emphasized that mandatory disclosures are overly complex and contain too much irrelevant information, which reduces transparency and impairs investors' ability to form sound judgments.

4.1.5 Herd Instinct

Herd instinct describes the tendency of investors or managers to imitate the actions of others rather than rely on independent analysis, thereby reinforcing collective bias in markets. Four managers highlighted the herd behaviour of small shareholders when investing in companies. Several interviewees confirmed that small investors often follow stock market experts and exhibit herd-like behaviour, as they struggle to understand the information provided by company management. Interviewee D observed that a large proportion of people invest intuitively or rely on recommendations rather than on thorough analysis—particularly those who lack the necessary background knowledge or analytical capacity. Interviewee C similarly noted that most small shareholders pay little attention to financial indicators and often fail to interpret managerial disclosures. According to most respondents, a significant share of individual investors make decisions based on intuition or external advice instead of conducting fundamental analysis, contrary to the principles of responsible financial behaviour. Previous studies have also suggested that the complexity of financial products may be deliberate, as shown by DellaVigna and Malmendier (2004), Célérier and Vallée (2015), and Grubb (2015).

4.1.6 Bounded Rationality

Bounded rationality refers to the condition in which decision-makers operate under cognitive and informational constraints, limiting their ability to fully process complex or extensive information. Six interviewees' responses were categorized under this concept. They confirmed the presence of both conscious and unconscious bias in managerial communication. Moreover, most interviewees emphasized that the quantity and complexity of information significantly affect shareholders' comprehension, noting that small shareholders often lack the ability to effectively utilize the information provided. Regarding shareholders' competence to accurately interpret and apply transparency-related information, interviewees G and F pointed out that only those who are actively engaged in shareholding tend to understand it properly, while the majority do not. Overall, the findings suggest that management may not prioritize ensuring that investors fully understand the information disclosed by the company.

4.1.7 Information Overload

Information overload denotes a cognitive state in which the volume of information exceeds an individual's processing capacity, thereby reducing comprehension and decision quality. The findings of our research indicate that senior management recognizes the potential hazards associated with information overload. Most interviewees acknowledged that managers themselves confront this issue and that the information disseminated to investors is often overly extensive or imprecise. Interviewee B observed that if shareholders had access to all available information, "they would be very confused because they would never be evenly informed", adding that such openness would require—and lead to—excessive communication. This comment illustrates management's awareness of the risk of information overload and its effort to synthesize and structure information in order to maintain comprehensibility. It also underscores the broader dilemma identified in our research—the need to balance transparency with clarity to ensure that disclosure remains both sufficient and digestible. Interviewee J supported this view, noting that while information asymmetry in the past often left investors with too little information to make informed decisions, they are now confronted with an overwhelming amount of complex data related to potential investment opportunities. As interviewee C remarked, "I think managers themselves are also victims of information overload". Manager D added that "there are management strategies where nothing is behind the volume—a lot is said, and nothing is said at the same time". Similarly, interviewee G emphasized that when information is presented with excessive quantities of data, the essential message becomes diluted, whether intentionally or unintentionally. Effective communication, therefore, requires presenting information as clearly and precisely as possible, avoiding extraneous detail that adds no real value to the message.

4.1.8 Complexity Effect

This article introduces the concept of the complexity effect as an alternative explanation of information asymmetry, offering a novel perspective on managerial communication behaviour. It refers to a communication phenomenon in which increasing the technicality, length, or structural density of information reduces stakeholders' ability to interpret and evaluate it effectively. Most interviewees agreed that the average investor is often unable to make a fully rational investment decision based solely on reading the annual report. According to interviewee A, the information presented may not necessarily be overly complex, but the average investor frequently lacks the knowledge required to interpret it. When asked whether there have been changes in the way stakeholders are informed with the intention of influencing their decision-making, interviewee A confirmed that such adjustments are indeed occurring. He provided an example of a company that, while negotiating a debt repayment with a bank, selectively presented information designed to influence the extension of its credit terms.

Interviewee B reported being aware of a situation in which relevant information was intentionally obscured by presenting excessive details or by increasing product complexity in order to restrict comprehension. He acknowledged that management has employed the complexity effect—both consciously and unconsciously—in their operations. This observation supports our assumption regarding the existence of the complexity effect as conceptualized in this study. The majority of interviewees (including A, B, C, D, G, H, and I) concurred that the average investor is unable to make an informed investment decision solely on the basis of annual reports, which are often so information-dense that they primarily serve as reference material for analysts or experts. Interviewee G expressed confidence that some managers engage in this practice deliberately, thereby confirming the opportunistic use of the complexity effect. When asked whether he knew of a case in which relevant information was intentionally concealed by providing excessive detail or by making the product more complex, interviewee D responded affirmatively but declined to provide further details.

The results indicate that complex explanations are harder to comprehend and, paradoxically, often easier to defend than simple ones. Moreover, several responses align with previous research showing that, in public communications and corporate announcements, management frequently employs long sentences, passive voice, abstract or redundant language, excessive footnotes, and visually dense layouts (Goergen et al., 2010; Ndofor et al., 2015; Bavec, 2005). Interestingly, shareholders often perceive information presented in a complex manner as more credible or sophisticated than the same information conveyed simply. This suggests that investors may not fully understand the disclosed information but tend to interpret its complexity as a sign of managerial competence and authority.

4.2 Readability Analysis Findings

From the LJSE website (https://seonet.ljse.si) we obtained the annual reports of all 9 listed companies from Prime Market of the Ljubljana Stock Exchange and exported the letters to shareholders from them into the Microsoft Word program, using only the text (without the title) and without separate sub-headings or management signatures. The studied annual reports of Slovenian companies, published in English for the business year 2019, represent 100% of the composition of the prime market (9 companies in year 2019). Table 5 presents the scope of the analysed annual reports by indicating the number of pages in both Slovenian and English versions for each company. As shown in Table 5, the length of the reports varies across companies, while remaining broadly comparable between language versions.

Table 6 summarises the descriptive statistics of the Flesch Reading Ease scores for the analysed reports. As shown in Table 6, the results indicate generally low readability levels, with most values concentrated in the lower range of the scale.

Table 7 presents a year-over-year comparison of Flesch Reading Ease scores between 2013 and 2019 at the company level. As shown in Table 7, readability trends vary across companies, with some showing improvement while others exhibit a decline over time.

The results of the readability analysis for the management reports of 2019 indicate a range between 15.1 and 46, with a median of 24.7 and an arithmetic mean of 27.5. The median results demonstrate that the readability of the reports of Slovenian companies is difficult, ranging between 0 and 30. The variation gap is also high, indicating significant differences in readability between the most and least comprehensible texts. The annual report of Luka Koper exhibited the highest level of readability due to the publication of an interview with the president of the management board instead of a traditional management report. The lowest Flesch index value of the worst-performing company

Table 5. Annual reports - number of pages.

Company	Year	Number of pages in Slovenian language	Number of pages in English language
Intereuropa	2019	243	241
Krka	2019	293	298
Luka Koper	2019	316	330
Mercator	2019	238	237
NLB	2019	364	364
Petrol	2019	275	277
Sava Re	2019	297	297
Telekom Slovenije	2019	141	142
Zavarovalnica Triglav	2019	298	299

Source: Ljubljana Stock Exchange, 2020.

Table 6. Flesch Reading Ease 2019.

Statistic	Value
Arithmetic mean	27.5
Median	24.7
Variance	96.8
Standard deviation	9.8
Minimum value	15.1
Maximum value	46.0
Mean Range	30.9
First quartile	19.4
Third quartile	34.2
Quartile range	14.8

Source: Ljubljana Stock Exchange, 2020.

Table 7. Flesch Reading Ease – YOY comparison 2013 and 2019.

Company	2013	2019
Intereuropa	23.2	20.8
Krka	32.8	24.6
Luka Koper	32.1	46.0
Mercator	34.9	24.7
NLB	/	30.1
Petrol	38.6	38.2
Sava Re	30.8	18.0
Telekom Slovenije	34.8	15.1
Zavarovalnica Triglav	30.8	29.9

Source: Annual reports 2013 and 2019.

(Telekom Slovenije) is likely due to the length of the sentences.

The Flesch index shows an arithmetic mean of 27.5 and a median of 24.7. The results of our analysis of annual reports show that letters to shareholders in Slovenia are difficult or very difficult to read, which undoubtedly makes it more difficult for investors to glean useful information. We found that most annual reports include statements that are long-winded and could be simplified accordingly without diminishing their meaning. The fact is that the readability of annual reports contributes to improving the quality of information and helps to ensure that the needs of internal and external users of financial statements are met.

5. Discussion

Our findings underscore the complexity effect as a genuine phenomenon in corporate communications, complementing established perspectives from agency theory and behavioural economics. Evidence from the manager interviews suggests that, in certain cases, managers consciously frame or structure information in ways that may take advantage of shareholders' limited attention and understanding. However, this behaviour frequently coexists with unintentional complexity stemming from cognitive, procedural, or regulatory constraints rather than deliberate attempts to mislead. In many instances, complexity arises without malevolent intent, as managers unintentionally produce overly technical or voluminous reports due to cognitive biases, institutional norms, or compliance obligations. Overall, both deliberate (conscious) and inadvertent (unconscious) drivers of the complexity effect were observed, addressing the central question of whether managers manipulate information complexity knowingly or as an unintended outcome of organizational and cognitive limitations.

While our findings confirm that managers sometimes use complexity strategically, they also reveal that not all instances of information overload result from deliberate obfuscation. Several interviewees emphasized the dilemma of balancing transparency with comprehensibility—that is, providing enough information to meet regulatory and ethical expectations without overwhelming shareholders. Complexity may thus arise unintentionally, as a by-product of well-intentioned disclosure efforts. The challenge lies in achieving an optimal balance between completeness and clarity, suggesting that the complexity effect reflects not only manipulation but also structural and cognitive limits in corporate communication.

At the same time, insufficient or overly selective disclosure can be equally problematic, depriving shareholders of essential context for informed decisions. Both extremes—too much and too little information—can therefore impair transparency and reinforce information asymm-

Table 8. Interview Script.

No.	Question
Section: Your Role in Communicating with the Company's Key Stakeholders	
1	How important is communication (both oral and written) with key stakeholders for the management/supervisory board?
2	What are the objectives of this communication, and why do you believe it's crucial to provide systematic, transparent, and comprehensible information?
3	Do you think management tailors its communication methods for individual key stakeholders, and if so, how?
4	Does management actively seek feedback from key stakeholders, particularly shareholders?
Section: Transparency and Protection of Business Secrets	
5	What, in your opinion, constitutes complete and fully understandable information when communicated to key stakeholders?
6	Where do you draw the line between transparency in informing key stakeholders and safeguarding your company's business secrets to maintain competitiveness?
7	How does management ensure that sensitive business secrets are not disclosed when providing information?
Section: Complexity of Information	
8	Do you believe that the complexity of your company leads to complex management, consequently resulting in information complexity?
9	What organizational and business factors exert the most significant influence on the complexity of information?
10	In the context of a complex business environment, how do you ensure that information is both comprehensive and fully understood by key stakeholders?
11	How does the volume and complexity of information impact its comprehensibility?
Section: Transparency, Regulation, and Decision-Making	
12	Does the legal obligation to disclose information about the company's operations to regulators increase transparency levels and consequently enhance management?
13	Do the requirements for transparency in company management lead to longer decision-making processes and increased caution among managers?
14	In your opinion, do the benefits of transparency outweigh the harm caused by excessively cautious decision-making?
15	Can shareholders accurately understand and effectively utilize the information provided in public announcements, based on their prior knowledge, to capitalize on the opportunities offered by transparency?
Section: Annual Reporting	
16	What importance does your company and you personally attach to the company's annual report?

Table 9. The highlighted answers of the interviewees.

	Answers	Code	Theme	Category
A				
Ar2	Sometimes the problem is that many managers protect themselves in complex situations by giving too much information forward. You have 100 things and you will tell every detail so that if there is a bigger problem from this detail, then you can say—I told you. This is a little different than saying it so that nothing is clear to anyone. One is the avoidance of responsibility and postponing decisions to the Supervisory Board—which is a big problem in Slovenia—that is, in times of uncertainty, the decisions that management has to make escalate on the Supervisory Board, which does not have enough information to make decisions.	postponement of decisions	deliberate complexification, shifting of responsibility	moral hazard
Ay1	I have a problem to set a reference value, which is too complex. If you're in a complex industry where you have to explain everything, it's by definition complex. If you have a simple business model, it's probably not. Your question I understand if companies go too far, but with the revelations, they go three dimensions deep so that no one knows what they read there. If I can answer, I would say no, but there are several dimensions within it. The average investor is not able to make a rational decision on a financial investment for himself. At the same time, I do not think that the content is too complex, or the average investor understands them, but I would also say no. If you ask me if this is too complicated for the average investor, I would say absolutely yes, absolutely too. But again, the question of for what purpose the average investor looks at the annual reports. Because company communication is a much more legitimate issue towards stakeholders, creditors, corporate structures (professional investors)—this seems to me to be a very legitimate issue. But when we talk about the average investor who is part of this story, everything is absolutely too complex. But the question is whether it is the intention at all that he does it in this way. I think management can and does indeed take advantage of it. I think yes. I will not say that this is something that is very common, but it certainly is. The only solution in this direction is to communicate very selectively with different stakeholders within individual groups. That is, it is very clearly defined which information who needs it and that it gets it very personalized, and in light of this, the level of complexity depends. This level of complexity is necessarily related to providing information to an excessively wide range of different clients with different needs regarding this information. Here we have an annual report handicap, as it addresses different audiences. The only answer is to address the needs of different recipients of information individually.	selective communication between stakeholders	reducing the effect of complexity and information supersaturation, deliberate complexification, presenting content to the average shareholder	complexity effect
Az1	I think that management must be able to filter information overload. This is absolutely happening, yes, management passes on forward, but this is not right. Management should have no reason to do so, they are here precisely to turn complex things into things that are suitable for a particular way of communicating. But this is happening, but it absolutely happens. It's just an overload, here's a push forward. The reason lies in ignorance, non-motivation. I think management exploits the complexity effect, so this is what is happening. That is why there are so many differences between those companies that are effective and those that are not.	filter information	management behaviour in negative information, shareholders as victims of limited rationality	bounded rationality
Ar3	If you ask me if information is filtered, absolutely it is. That is even right. The question is where the line between manipulation and healthy transparency is. You may have negative information, which can also be an opportunity. Absolutely this is done. I would like to put forward the thesis that transparency is the right way to go, but that it should be done carefully so as not to cause negative externalities.	filter information	transparency, exploiting the impact of complexity in an environment of uncertainty	moral hazard
B				
Bu1	I do not think that, on the basis of the annual report read, the average investor is able to make rational decisions about a financial investment. Since the annual report talks too little about strategy, when we say that a retail investor is someone who expects a return on what has been invested, I think it is very difficult to make a decision based on the annual report.	rational decision-making	Understanding and use of information from small shareholders	heuristic

Table 9. Continued.

	Answers	Code	Theme	Category
By2	I think that some mandatory disclosures are too complicated.	complexity of mandatory disclosures	providing an excessive amount of information that is substantively demanding	complexity effect
Br1	Unfortunately, I recall a situation in which the method of informing stakeholders was adapted with the intention of influencing their decision-making.	adapting the way information is provided	transparency, exploiting the impact of complexity in an environment of uncertainty	moral hazard
Bt2	I've experienced negative information relativized to shareholders in my career and put negative information in a different context. Someone who is not management may understand it as less important for the future business of the company. Subordinates perform relativization or indentation to management, as in the meantime they try to influence them and bring them to the positive one. No one likes to give negative information.	relativization of negative information	adapting the way stakeholders are informed with the aim of influencing their decision-making	attention manipulation, adverse selection
C				
Cv1	In order for companies to publish data in still reduced forms, this is an additional burden. The question is whether this would be an added value. Small investors in some way follow the specialists on the stock exchange, that is, they behave herdly.	retail investors behave herds	understanding and use of information from small shareholders	herd instinct
Ct1	During the crisis, communication transparency declined, partly due to attempts to conceal essential information. Managers focused on positive content and tried to downplay the problems they faced—a typical example of natural self-defence.	communicating about things that have tried to conceal the essence	an attempt to minimize the importance of problems - an example of self-defense	attention manipulation, adverse selection
Ct3	In essence, I think that even in difficult circumstances, responsible management weighs between the way they communicate, so that it does not cause further damage to the company through its communication in the sense that it does not additionally upset stakeholders.	stakeholder excitement		attention manipulation, adverse selection
Cx1	I think managers themselves are also victims of information overload.	victims of information oversaturation	information overload management	information overload
Cr1	To have adapted the way of communicating to mislead shareholders, absolutely not. This matter is not compatible with the law. However, that communication was, for example, what was relevant did not jeopardise or bring additional unrest to stakeholders – that is true. So enough information was given, but not all those sensitive information that management judged would cause more harm to company than transparency itself. I find this thesis important at a critical time, such as when a company is in crisis. It is somewhat easier if the crisis is systemic, but it is significantly more difficult when the crisis is individual.	avoiding sensitive information	transparency, exploiting the impact of complexity in an environment of uncertainty	moral hazard
D				
Dx1	This is a tricky question from your introduction. I myself regularly monitor the Seonnet (LJSE webpage). If you look at what companies publish, you have very different strategies. You have strategies behind the volume there is nothing, and you have companies that really communicate short announcements, but they may be important. If I had to make a general judgment, again, I absolutely am not talking about my company here, but what I am following, I would say that this information is too extensive, insufficiently precise, PR wrapped texts that say too little.	PR wrapped texts	the amount of information and its complexity in terms of content	information overload
Dy1	The annual report contains such a large amount of information that it may serve as a useful basis for knowledgeable analysts or experts. However, for someone who is not an expert, it represents overwhelmingly complex material that can obscure rather than enhance understanding.	for someone who is not an expert, this is an absolute, absolutely nonthinking bulky material	providing an excessive amount of information that is substantively demanding	complexity effect

Table 9. Continued.

	Answers	Code	Theme	Category
Dv1	Personally, I think there is a large proportion of people who invest more intuitively or based on recommendations than on the basis of some thorough analysis – especially those who do not have background capacities.	there is a large proportion of people who invest more intuitively or based on recommendations	understanding and use of information from small shareholders	herd instinct
Dy2	(When asked if he knows the case where he deliberately tried to conceal certain relevant information with more information on the topic or by complexifying the product in order to limit consumer understanding). The answer is yes, but I will not go into details.	masking relevant information through excessive information or complexification	deliberate complexification	complexity effect
Dt4	I think there is no dilemma that the delivery of management information is generally too extensive, not sufficiently targeted. Every time a manager makes any decision, he must keep in mind someone who has invested his last 100,000 euros in his company and try to identify with him. Without shareholders, there is no business.	providing management information too extensively		attention manipulation, adverse selection
E				
Ex1	I have always been in favor of transparency. This provides maximum security. If you are transparent, no one in the end can say that I did not know, I was not informed, you worked past me, which then can be the reason for complications, prolongation in decision-making.	transparency enables maximum security	a large amount of information as an excuse for transparency	information overload
Et2	There is nothing too much. Any information is useful to external stakeholders. On the other hand, this is always the case; if something is mandatory, it is good for company to use it to its advantage.	if it is mandatory, it is good to use this to your advantage and publish everything	the amount of information and its complexity in terms of content	attention manipulation, adverse selection
Ey2	If I’m thinking about the people you sometimes listen to in a meeting, like an hour and don’t know what he wanted to say, that exists. Either because he didn’t want to be understood, or because he didn’t have anything to say, he tried to show himself important or smart, and talked for 45 minutes. There is no other reason either. If someone has taken over a meeting and talked some gibberish, it’s hard to tell whether it’s because of an attempt to be important or because of increasing complexity. I had no problem with this, because if it is not clear to me, I ask a question. Very simple and direct. Then you see if he knows or wants and is able to answer.	there are cases when you listen to people and do not know what he wanted to say	deliberate complexification	complexity effect
F				
Fy3	If you can’t or don’t want to say something for any reason, probably packing it in some complex answer that says nothing may not be the best communication. Perhaps it is better to say that you cannot communicate something. I find it hard to say that anyone would now like to hide something from – maybe that was what happened in those times of crisis. Concealment never has a good ending. People are not stupid and often feel that someone is hiding something. Then it makes more sense to say what are the reasons why you can’t comment on certain things than to bluff or, worse, lie.	a complex answer that says nothing, maybe not the best communication	management conduct, deliberate complexification	complexity effect
Fz3	(When asked by the question of shareholders’ ability to properly understand and use transparency information). I would say that those who are actively engaged in shareholding, yes. Most small shareholders, however, don’t.	most small shareholders, however, don’t think	victims of limited rationality	bounded rationality
Ft1	I had quite different experiences in the position of Supervisory Board member. I had quite open and direct communication with almost everyone. However, responses varied widely. I had a CEO who bluffed nonstop, which was not related to an agency problem, but to the personality of the person. Someone can be a great expert, but they don’t know how something needs to be said. Therefore, this is an important area for research.	bluff of CEO	biased management behavior	attention manipulation, adverse selection

Table 9. Continued.

	Answers	Code	Theme	Category
G				
Gt1	I would say that management differs in the way it communicates, absolutely. It communicates with the owners differently than with other retail stakeholders. However, it seems that you are trying to please the owners and give them information that you may think might suit them, even if they don't need to communicate something. In this way, you get from the owners of a positive "jolly", you communicate with them more pleasantly than with other stakeholders, where we adhere more to the letter of the law or rules.	you try to please and give information to the owners	biased management behavior	attention manipulation, adverse selection
Gr1	Certainly, due to transparency requirements, the decision-making process of managers is being extended, as it is necessary to follow certain protocols. If this were not the case, or if we assume that we have a smaller company, where the manager is also the owner, this goes very quickly there. In the case of listed companies, however, it is important where it is published, how it is published, how much in advance. All this takes time. Absolutely the process is prolonged. However, caution is also increasing, precisely because it needs to be judged all the time. Making judgments absolutely, given that it can have legal consequences, leads to someone perhaps not communicating a certain thing, because they fear the consequences and prefer to be more careful and conservative.	maybe someone is not communicating something because they are afraid of the consequences and prefer to be more careful and conservative	caution in decision making	moral hazard
Gv1	(When asked about shareholders' ability to properly understand and use transparency information). Professional investors follow and understand information very well, while retail investors-because of their herd instincts—they do not even understand the information provided by the company's management. That is what I think is a fact.	due to herd instincts and advice, retail investors do not even themselves understand the information provided by the company's management	understanding and use of information from small shareholders	herd instinct
Gu1	I follow some people who hold stakes in certain companies. Some do not follow the company at all, while others do but have no understanding of what particular published information means for the company. I get the feeling that they often cannot tell whether the news is good or bad for the company. At first glance, some information may appear positive, but someone with a deeper understanding of the business realizes that the strategy is completely wrong. Most retail investors do not have this knowledge. I say this from the experience of the people around me.	investors do not even understand whether something is good for the company or bad for the company. Most retail investors do not have this knowledge	provides complete and fully understandable information	heuristic
Gz2	For retail investors, I fear that they do not read annual reports at all or know how to read them. But I think it's more of a problem that people don't read it.	retail investors do not even read or read the annual reports	understanding and use of information from small shareholders	bounded rationality
Gy3	(To the question of whether he feels that in conditions of uncertainty in the operation and development of the company, he struggles to cope with numerous and complex information). I think this is a big problem. There is simply a lot of information, often also contradictory, so it is difficult to separate the seed from the weeds. So the answer is yes.	conscious or unconscious behavior	managing complexity	complexity effect
Gz3	(When asked about encountering an example of exploiting the complexity effect, either consciously or unconsciously). Both exist in my view. If I already communicate in this way with the owners, it can absolutely only be unconscious, because consciously I am not doing this. If I am a victim, then I inadvertently pass on, then ok. But I am sure that there are managers who do this and work consciously.	but I am sure that there are managers who do this and work consciously	harnessing the effect of complexity consciously or unconsciously	bounded rationality

Table 9. Continued.

	Answers	Code	Theme	Category
Gy2	In my previous company, this was the practice. There were many senior executives there in one point. Clusters began to form inside the company, there was a huge amount of smoke and complexity. In this way, they provided information that you could not say that they were lying, but it was evident that they communicated in such a way that the member of the Management Board or the decision-maker had to work very hard to get to the point. It was a modus operandi.	there was a huge amount of smoke and complexity. You couldn't say that they were lying, but it was evident that they communicated in such a way that a member of the Management Board or the decision-maker had to work very hard to get to the point	deliberate complexification	complexity effect
H				
Hs1	I would say that some management teams often repeat the same narrative—grandiose claims and displays of craftsmanship intended to suggest deeper insight or greater contribution to the company's or industry's development. On the other hand, when this is not the case, they justify the lack of progress with seemingly logical explanations about why growth is not possible and what external factors are to blame. Many inefficiencies or the story of several decades can be hidden under this rubric, which also affects the culture of the company.	it is addressed with the same story every time; about grandiose, about the craftsmanship of presenting that you see something a little longer; that you contributed something more to the development of company in the industry - in business	complacency, arrogance	excessive optimism, self-assessment, arrogance
Ht2	Why is it important to me that more is reported? Because you are persuasive in your intentions, in what direction you are leading the system. We all know that there is always a time lag before projects are reflected in realization and data. delay. Many times they say to this or that company that they do not experience the effects of their scale or on a very small scale. It also applies in a negative sense, some moves also do the opposite. Then we come to this field, when we said that gestures are justified and beautified, perhaps with this general address.	justification of moves and beautification	biased management behavior	attention manipulation, adverse selection
Hy1	However, I would say that simplifying this complexity or ultimately the basic KPI logic exists, always. In every company, you need to be able to extract and simplify the complexity or present in a relatively simple way how you see the group, the company, the activity itself, where are the key trends and what the development drivers are. To understand where are you within an area or region, key trends and where you see yourself in a certain period. This is important for every management. This is what it should be done.	you need to be able to extract and simplify the complexity or present it in a relatively simple way	the amount of information and its complexity in terms of content	complexity effect
Hs2	Perhaps it is the intention that whoever comes into a company or group works and wants to give it some aura of importance.	management wants to give some aura of importance	complacency, arrogance	excessive optimism, self-assessment, arrogance
Hs3	(When asked about the existence of cases where the manager does not want to be fully understood for legitimate reasons). I think yes. Here lies the driver, what is a loop, what the matter spins, what is the so-called added value, the comparative advantage that drives the entire system—whether it is in people, in monopoly activity or in marketing behavior. If it is ethical and moral, it would be difficult for me to take a position. Behind this poker face lies the search for recognitions for more than it really is.	behind this poker face lies the search for recognitions for more than it really is	examples of misunderstanding for legitimate reasons	excessive optimism, self-assessment, arrogance
Ht3	There were cases where there was an answer where nothing was answered really. You answer all the time in the same style, so that they (journalists) get tired. Today's news is old news tomorrow. You avoid answering directly, especially where unpleasant or personal topics are involved. I also experienced ignoring. I do not like this at all. I respect journalists, I do not respect ignoring them, because they raise awareness and give the image as they see it. And when they don't get an answer, they get it somewhere else. This is usually much worse.	so you answer that you answer nothing. You answer by getting tired	biased management behavior	attention manipulation, adverse selection

Table 9. Continued.

	Answers	Code	Theme	Category
I				
Ix2	Experience as a manager—the transparency requirements are pure junk for me. Management has been mainly concerned with whether it has satisfied all these regulations that it has, and basically devotes itself to this all the time. It leaves the operational matter of company management to the secondary level, a lower level, where this is definitely not as it should be. If level two is better, then the first and second levels should be replaced.	transparency requirements are pure junk	regulation, amount of information and its complexity in content	information overload
	To small investor, transparency is certainly at least of formal help to him. Realistically, this helps him, in principle, he feels that this is regulated that everyone else has reviewed it, and all this is fulfilled. And that his financial contribution is the most secure.	transparency helpful, feeling more secure		
It2	Now, when competing on which annual report is nicer and has more graphic, this seems deceptive to me, to put it plainly. You put attention from the content on the form.	the competition in the functionality of annual reports is assessed as misleading	biased management behavior	attention manipulation, adverse selection
J				
Jt2	Yes, management tells information in a way that he cannot tell because it can be a trade secret. Management discloses information, but at the end of it is a disclaimer that it can disclose as it disclosed, but it cannot disclose more, because the disclosure would constitute a trade secret and threaten the interests of the company's continued operations.	he tells the information in a way that he cannot tell	communication with individual stakeholders	attention manipulation, adverse selection
Jz1	Frankly speaking, when a company publishes information that the management board considers to be price sensitive and publishes it through Seonet and discloses to its shareholders, in any of the companies in which I operated, the management did not deal with how the information was understood by shareholders. There was no such feedback.	the management did not deal with how the information was understood by shareholders	understanding and use of information from small shareholders	bounded rationality
Jy1	I worked in a company as a group where all companies did consolidation. They had many subsidiaries. These are absolutely complex companies, the largest companies in Slovenia. Absolutely, the complexity of management results in the complexity of information. The biggest influence is the size, diversification of the group, operations in foreign markets.	absolute complexity of management results in complexity of information	the amount of information and its complexity in terms of content	complexity effect
Jz3	(Asked by the question of shareholders' ability to properly understand and use transparency information). I don't think they're able to understand.	shareholders are unable to understand and use the information	understanding and use of information from small shareholders	bounded rationality
Jv1	One thing is the herd instinct when investors decide to invest in companies according to the "hear say" principle. The average investor in Slovenia—to him financial indicators and financial data on operations mean practically not much. Institutional investors are the ones who study things. I definitely think that the individual average shareholder did not deal much with financial indicators, but made decisions on the basis of herd instinct, and on information who already owns the company. It would be responsible that each individual behaves responsibly towards his or her property. In fact, in our country, apart from institutional investors, this is not.	decision principle "Hear say". The individual average shareholder was not much concerned with financial indicators but made decisions based on herd instinct	understanding and use of information from small shareholders	herd instinct
Jx1	I definitely think that governance in this respect is more difficult than it was 15 years ago, when information was limited or there was no such possibility of access, you could not inquire or even before the internet even existed. Today, significantly more information is available to investors, which, of course, also presents a certain problem in the management of companies, because it faces so many and so many questions every day and, as I say, they have to defend or transmit certain information through the media.	today, significantly more information is available to investors	the amount of information and its complexity in terms of content	information overload

Table 9. Continued.

	Answers	Code	Theme	Category
Jy2	(When asked if he knows of a case where a certain relevant information was deliberately attempted to be concealed by more information on the topic or by complexifying the product with the aim of limiting consumer understanding). I faced this. These things exist.	these things exist	deliberate complexification	complexity effect
Jr1	About misleading information—not the one resulting in a criminal act—ambiguous information that the reader can interpret it in one way or another. Some time ago, I encountered cases where the management of company communicated in a way that was not clear (those of us who knew what it was about, we knew) and that the average shareholder had a hard time explaining to himself, what is actually the purpose of a certain story. Yes, they were, ambiguous information was transmited to Seonet.	ambiguously published information, including on Seonet	examples of misunderstanding for legitimate reasons, exploiting the effect of complexity in an environment of uncertainty	moral hazard
Jt5	Clearly, as much as the information is negative, the management wants to present it in a perspective way and wrap it in cellophane. But I would say that shareholders are smart enough, at least institutional, to assess the impact of negative information on their investment.	management wants to provide negative information in a promising way and wrap it in cellophane	biased management behavior	attention manipulation, adverse selection

etry. Applying this logic to corporate communication suggests that future transparency standards should address not only the volume but also the readability, accessibility, and contextual adequacy of disclosures, ensuring that reports remain both informative and digestible for shareholders.

These insights bridge the gap between decision-making biases and the principal–agent problem. The interview data revealed classic behavioural patterns: managers exhibited self-serving biases (e.g., excessive optimism and selective disclosure strategies), while acknowledging that shareholders suffer from limited attention and understanding (bounded rationality, heuristic decision-making, herd behaviour). Our results confirm prior suggestions that increasing information complexity can serve as a strategic tool for agents (managers) to maintain information asymmetry to their advantage. At the same time, they highlight that even well-intentioned transparency efforts can fail if shareholders are unable to process the excessive detail—effectively an unintended consequence of bounded rationality.

In the context of Slovenia's capital market, these dynamics are particularly salient. Slovenia has relatively robust disclosure regulations (aligning with the premise that more information is better) and a small set of listed companies, yet our analysis of shareholder letters shows that communications remain highly complex and difficult to read. This suggests that formal transparency requirements alone do not guarantee effective communication. In a post-transition economy with many first-generation investors, the complexity effect might be even more problematic—as indicated by managers noting that small shareholders often rely on intuition or external advice rather than deciphering annual reports. This contextual finding is consistent with prior research comparing markets: for example, the long-standing practice of plain-language financial communication in Western Europe has led to more readable reports than in Slovenia. Our study therefore extends the discussion of shareholder–manager relations by illustrating how context and human cognitive limits jointly influence the transparency outcome.

Overall, our research contributes to the literature by identifying information complexity as an important and understudied mechanism of managerial influence over shareholders. We provide empirical evidence that complements quantitative disclosure studies with qualitative insights from executives themselves. The dual-method approach—interviews coupled with readability analysis—proves valuable: the interviews offer a rare glimpse into managers' thought processes and potential strategic intentions, while the document analysis objectively confirms that the content received by shareholders is indeed difficult to comprehend. Together, these findings enrich the understanding of how disclosure "tone and form" can be used (knowingly or unknowingly) as a subtle means of retaining informational power in the principal–agent relationship.

6. Conclusion

This study demonstrates that the complexity effect plays a significant role in shareholder communications. Slovenian managers—acting as agents in a corporate governance context—sometimes deliberately make disclosures complex, and at other times unintentionally produce communications that shareholders struggle to understand. In either case, the outcome is an increase in information asymmetry between management and shareholders. By answering our research question, we find that information complexity is present in corporate reports and can result from both conscious manipulation and unconscious factors.

Our findings contribute to the ongoing debate on manager–shareholder information dynamics in several ways. First, we introduce the complexity effect as a conceptual extension of agency theory, highlighting that simply increasing disclosure volume can be counterproductive if the information is not comprehensible. This adds nuance to the traditional view of transparency by showing how managers might fulfil formal transparency requirements while still obscuring key information. Second, we connect behavioural decision-making biases to corporate disclosure practices: the evidence of bounded rationality and attention limitations among investors helps explain why complexity can be an effective (and perhaps tempting) strategy for managers. Third, methodologically, our dual approach combining qualitative interviews with quantitative readability analysis offers a more holistic understanding of the issue than either method alone—an approach that could be applied in other settings.

Based on our research, we define complexity effect as ambiguity in management communication, where information could be presented in a clearer and more accessible manner for principals but is not, due to various factors on the part of the agents. This effect may be relevant in the broader context of the separation between ownership and management. It touches upon the dynamics of the agent–principal relationship and the associated imbalances in access to and understanding of financial information. Managers typically possess more specialized knowledge, qualifications, and access to internal company data than private investors, who are often constrained by the limited scope and complexity of publicly available information.

From a practical perspective, the insights from this study urge caution to both corporate communicators and regulators. Firms should be aware that obscuring information behind complexity—even if unintentional—can erode stakeholder trust and lead to suboptimal market decisions. Regulators and standard-setters might consider guidelines not just for the quantity of information disclosed, but also for clarity and readability. One potential solution is to leverage emerging technologies: for example, advanced language-processing AI tools can translate dense financial text into more accessible summaries, helping to bridge the comprehension gap for investors. Such tools, along with a conscious effort by management to simplify communication without sacrificing content, could mitigate the negative consequences of the complexity effect.

This research is not without limitations. The interview sample was limited to ten top managers in Slovenia, which may restrict the generalizability of the results. The study focused on annual report letters in a single country and did not directly measure shareholders' reactions or decision outcomes. Cultural and market-specific factors (such as personal preferences, financial literacy levels, and regulatory environments) might influence the prevalence and impact of the complexity effect. Future research could expand the scope by examining a broader range of countries or industries, or by quantifying the relationship between disclosure complexity and investor decision-making (for instance, via experiments or large-sample archival studies).

In sum, this study sheds light on a subtle yet important aspect of corporate governance—how the manner of communication can be used to influence stakeholders. By documenting the complexity effect and its conscious and unconscious drivers, we hope to pave the way for further inquiry into improving transparency and aligning corporate communications with the needs of their audience.

Possibilities for Further Research

We believe that the theoretical foundations and empirical findings of this study can offer valuable insights beyond the realm of corporate governance, particularly in contexts where agency relationships are present. The complexity effect may also influence communication in public administration, nonprofit organizations, healthcare, or international institutions—sectors where information asymmetry and strategic communication play a critical role in stakeholder relations.

One promising avenue for addressing the complexity effect lies in the application of artificial intelligence, particularly large language models (LLMs). These models, based on artificial neural networks and designed for natural language processing tasks, have the potential to translate complex and technical content into clear and accessible language. By identifying intricate language patterns, extracting key concepts, and generating concise summaries or explanations, LLMs can help bridge the comprehension gap between information senders (agents) and receivers (principals). This technological approach could enhance information transparency and democratize access to knowledge across a broad range of audiences.

Future research could explore the effectiveness of such tools in corporate communication settings—for instance, by measuring whether AI-assisted simplification improves investor understanding and decision-making. Comparative studies between AI-mediated and traditional forms of disclosure could yield insights into how best to balance legal, strategic, and ethical considerations in corporate reporting. Additionally, interdisciplinary research combining corporate governance, behavioural finance, and computational linguistics could open new frontiers in understanding and mitigating the impact of complexity in organizational communication.

Availability of Data and Materials

Not applicable.

Author Contributions

GŽ designed the research study, performed the research and analyzed the data. RB provided help and advice on the experiments. Both authors contributed to editorial changes in the manuscript. Both authors contributed to critical revision of the manuscript for important intellectual content. Both authors read and approved the final manuscript. Both authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

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Conflicts of Interest

The authors declare no conflicts of interest.

Appendix

Appendix A:
Overview of Annual reports

The role of the annual report is to provide relevant, useful and reliable financial and other information to potential investors, shareholders and other interested parties about the financial position and operations of corporations, as well as future perspectives, thus helping existing shareholders with corporate governance and new potential shareholders facilitates making investment decisions. The responsibility for ensuring that the annual report accurately reflects the company's financial position and activities rests within the company's top management. They have a duty to provide timely, accurate, and transparent information to shareholders and other stakeholders. The credibility of information is crucial, particularly when it comes to financial reporting. Data and information in annual reports achieve their fundamental purpose if they are presented in a way that is understandable, reliable and comparable. Readers must be put in a position that information presented can be understood without problems and additional questions. What is essential for one user does not mean it is essential for another. We speak of reliability when there are no significant errors in the statements or perhaps even biased views (Odar, 2014).

Published information should therefore reflect the business reality of organization, promote fairness and help form appropriate investment decisions. In that view annual reports have been described as a complex genre serving two subordinate communicative purposes: to give a true and fair view of the company's financial position and to provide a positive image of the company (Ditlevsen, 2012).

Letter to shareholders serves the purpose of presenting the management's perspective on the company's strategies, financial condition, and financial performance. Many studies have focused on the narrative sections of corporate disclosures by studying the text (Miller and Skinner, 2015). Narratives are generally used in annual reports to make complex financial and accounting content accessible to non-expert audiences (Jameson, 2000). Beattie et al. (2004) argue that there are five genres of narrative analyses around annual report texts: subjective analyst ratings, disclosure index studies, thematic content analysis, readability studies, and linguistic studies (Ginesti et al., 2013). Berger (2011) demonstrates that prior methods have limitations in their approaches to measuring readability and tone of disclosure, and that they disagree on what text is valuable in corporate narrative reports. Therefore, Berger (2011) agrees with Core (2001) in calling for new techniques from other fields of research that liberalize the boundaries of the empirical literature on corporate storytelling. The report will need to adapt to provide a compelling narrative which can inform a genuine understanding of purpose and sustainability that extends beyond financial characteristics (Griffiths, 2020). Berger (2011) demonstrates that prior methods have limitations in their approaches to measuring readability and tone of disclosure, and that they disagree on what text is valuable in corporate narrative reports.

Appendix B:

See Table 8.

Appendix C:

See Table 9.

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