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Corporate Governance Reporting, Disclosures, Monitoring, and Decision-Making: The Role of Big Data Analytics and Technological Tools

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ABSTRACT

Research Question: Using the lens of agency theory, this study seeks to reveal novel qualitative insights on how different governance actors use big data analytics (BDA) and technological tools for governance purposes. It also investigates whether there are any differences in the use of BDA and technological tools between management and the board of directors (BoDs) and whether there are any barriers to adopting new technological tools at the board and managerial levels.

Research Findings: Based on insights from 40 interviews with senior executives at the board and managerial levels across multiple geographical contexts, we reveal three key findings. First, different perspectives exist on using BDA and technological tools to enhance governance between the BoDs and management. This can lead to conflicts if the BoDs receives information from these tools that management has not shared, which further exacerbates the information asymmetry and the agency problem. Second, our findings suggest a paradox where, on the one hand, excessive use of BDA may allow managers to manipulate data or present biased reports. On the other hand, BDA use can simultaneously enable more informed decisions at the board level, even with unclear data. Lastly, we also develop a typology of factors that underpin the use of BDA at the board and managerial levels.

Theoretical Implications: This study's insights deepen the conversation on the use of BDA and technological tools by providing a conceptual framework of a typology of the benefits and barriers to using BDA at both the board and managerial levels. Second, our findings reveal that some of the traditional agency assumptions of board effective monitoring may be more assumed than demonstrated when it comes to effective uses of BDA and new technology.

Policy Implications: Our study suggests that some directors may not be aware of the potential of BDA and technological tools, and many may not understand how it can benefit them. Our findings also reveal the need to educate BoDs and management to keep up with the latest technological tools.

1 | Introduction

Monitoring the management is one of the critical responsibilities of the board of directors (BoDs) and a core element of corporate governance practice and research (Dalton et al. 1999; Daily, Dalton, and Cannella 2003). This study adopts the agency theory lens, which considers the monitoring role of the BoDs (Fama and Jensen 1983) in the context of information asymmetries that exist between managers and boards. A recent qualitative study (Oliveira, Kakabadse, and Khan 2022) examined the impact of digital technologies on BoDs, revealing that digital transformation allows direct access to and

better flow of different types of information and sources. This can be improved by allowing access to consistent data from the entire organization (Grover et al. 2018). Yet, what remains unclear is how different governance actors understand and use rapidly developing technological tools and big data analytics (BDA) in their practices (Filatotchev, Aguilera, and Wright 2020) and whether it helps to reduce information asymmetries between them.

More specifically, there is a longstanding assumption that new technological tools have the capacity to improve board monitoring (Gibbons and Murphy 1992). However, a recent study for the Directorate General for Justice and Consumers of the European Commission (2021) by Ernst and Young reveals that only 13% of the respondent (EU) companies use governance intelligence in their practices, and only a further 26% will do so in the future. This low usage percentage of such tools is surprising given the significant and continuous rise of big data and new technologies. This motivates us to explore whether and how BDA are used in practice, whether technological tools can improve some functions of the BoDs, providing access to aggregated, objective information, and how this can potentially impact reporting, disclosures, monitoring, and decision-making. More specifically, we ask the following research questions (RQs):

RQ1. How do different governance actors use BDA and technological tools for governance purposes?

RQ2. Is there a difference between managers' and board members' use of BDA and technological tools?

RQ3. What are the specific barriers to adopting new technological tools at the board and managerial levels?

We build on previous governance research (Tihanyi, Graffin, and George 2014), which suggests that turning data into information can significantly improve decision-making processes. We also use theorization that links BDA and technological tools with improved reporting practices, allowing organizations to share insightful information with the regulator to avoid costly processes and fines for non-compliance (Craig 2019).

We are particularly interested in these questions because, notwithstanding the assumption that BDA can bring complex information into context, potentially leading to better decision-making (Bean 2021), evidence also suggests that more data may not lead to better decision-making and may create a worse situation due to "infobesity" (or information overload) (Karhade et al. 2021; Filatotchev, Aguilera, and Wright 2020), making monitoring more challenging than having fewer data.

Using insights from 40 interviews with senior executives at the board and managerial levels across multiple geographical contexts, our data analysis uncovered three key findings. First, we find differing perspectives that exist on using BDA and technological tools to enhance governance between the BoDs and management, potentially leading to conflicts if the BoDs receives information from these tools that management has not shared, which further exacerbates the information asymmetry and the agency problem. Second, our findings highlight an interesting paradox where excessive use of BDA may allow managers to manipulate data or present biased reports. Yet, it may also facilitate more informed decision-making at the board level, even with unclear data. Third, our findings allow us to develop a typology of factors that underpin the use of BDA at the board and managerial levels, which can be found in Table 1.

The qualitative nature of this study allows a broader exploration of the links between BDA, the BoDs, and management than previously examined in most empirical studies. At the same time, it is important to acknowledge this study's limitations. Although we aimed to reach a broad range of research participants in multiple geographical regions and governance settings, our sample for each country is small and should be treated as indicative only. Our interviewees had different perceptions of different types of technology and BDA, and we also acknowledge that different companies and industries can use BDA and technology in different ways. For example, some may have more exposure to it than others. In this study, we aimed to explore and highlight any common themes of interviewees' responses in this area that could enhance our understanding of this topic.

TABLE 1 | Typology of factors that shape the use of BDA and technological tools.

	Boards of directors		Management	
Strategic initiatives	**Benefits**	**Obstacles**	**Benefits**	**Obstacles**
Decision-making	Improved and accurate decision making	Information asymmetry and overreliance on management	Improved monitoring and information flows	Overreliance on different levels of management
Monitoring	Robust monitoring and objective information flows	Lack of ability to use data effectively Ambiguity around data collected	Quicker and improved decision making	Lack of ability to use data effectively Ambiguity around data collected
Reporting and disclosure	Improved firm performance and risk management Objective reporting and disclosures	Failing to realize the value of BDA Conflict Trust		Conflict

The remainder of the paper is structured as follows: We first introduce the theoretical underpinnings of our study, highlighting the need to explore the uses of new technological tools within different governance activities, considering differences between the BoDs and management. We then discuss international research contexts, followed by our research methodology. Next, we present our findings, followed by a discussion of the empirical and theoretical contributions. We conclude by providing some practical implications, limitations, and suggestions for future research.

2 | Theoretical Underpinnings and Literature Review

2.1 | The use of Technological Tools and BDA by the BoDs

Decision-making, monitoring, reporting, and disclosures are critical functions of the BoDs, serving as the cornerstone of effective corporate governance (Fama and Jensen 1983; Shleifer and Vishny 1997). These activities ensure that management acts in the best interests of shareholders and other stakeholders and mitigates agency problems associated with information asymmetry.

In the following section, we will provide a select overview of the emerging literature on how BDA and new technological tools could empower the BoDs to effectively perform their governance roles, fostering better decision-making, robust monitoring, accurate reporting, and transparent disclosures.

2.1.1 | Decision Making and Monitoring

BDA analyze vast amounts of data to identify trends, predict future outcomes, and assess risks, thereby allowing boards to make more informed, strategic decisions. Having immediate access to information can result in quicker decisions based on facts and less reliance on past data and intuition (Liebowitz et al. 2019). Limited research in this area suggests that AI may enhance the independence of the BoDs, who must often make decisions with tight deadlines and could find it challenging to understand all the available data to make effective decisions quickly (Kamalnath 2019). However, little is known about how BDA is used in practice and whether the BoDs use such technological tools to improve their decision-making (Merendino et al. 2018; Nutt and Wilson 2010).

BDA and technological tools may allow the BoDs to better monitor the management by improving information flows to the board; providing access to aggregated, objective information; and decreasing the information asymmetry between the BoDs and management. Creating unbiased information channels to instantly reach the board without interference may foster effective oversight, allowing access to real-time information, which can support board monitoring and decrease management's information advantage (Oliveira, Kakabadse, and Khan 2022). However, George, Haas, and Pentland (2014) noted that research has not fully explored the potential of big data in theory and practice.

The board's essential function, such as monitoring, broadly includes overseeing the company's strategy, reviewing the top management team's (TMT) performance, and rewarding managers (Hillman and Dalziel 2003). Due to information asymmetries, managers can hide information, intentions, characteristics, and actions, and the BoDs can incur very high monitoring costs (Jensen and Meckling 1976; Saam 2007).

Another key task of the BoDs also includes the assessment and analysis of information, which can often be challenging to continuously monitor, as it requires "adequate skill" and "lower barriers to information processing" (Boivie et al. 2016). The same authors also underscored the importance of IT in improving monitoring, particularly regarding directors' communication, by reducing information barriers faced by the BoDs. However, using technological tools to improve monitoring can be challenging as the management is primarily responsible for information processing and presenting reports to the BoDs (Enriques and Zetzsche 2020).

Previous research on blockchain also indicates that there is scope for blockchain and other technological tools to assist in improving corporate governance through real-time transparency of management trading, allowing shareholders and BoDs to monitor management closely (Yermack 2017). For example, recent research shows that blockchain governance can lower costs relating to monitoring, enforcement and searching but with high design costs (Lumineau, Wang, and Schilke 2021). These authors highlight the need to conduct future research on blockchain and other such data tools and how they can impact monitoring in the principal-agent relationship. Thus, we seek to explore whether and how technological tools can allow the BoDs to have more and better-processed information, potentially leading to reduced information asymmetries. To our knowledge, no study has examined whether and how BDA and technological tools are used by the BoDs to monitor management.

2.1.2 | Reporting and Disclosures

BDA and technological tools can also support reporting and disclosures by allowing the BoDs to make decisions based on accurate accounting data. Hermalin and Weisbach (2012) argued that more disclosure can increase agency problems. However, Oinaala and Sutherland (2022) contended that "AI can read, review, and validate financial reporting, which could free up capacity for more in-depth discussion and decision-making and outcomes if they adopt technology- and AI in particular." This research highlights the need to better understand how technological tools can impact reporting and disclosures. For example, Manita et al. (2020) suggest that technological advancements can improve auditing and corporate governance by reducing information asymmetry and allowing the BoDs to make decisions based on accurate accounting data.

Blockchain has shown much potential in securing safety and allowing the sharing of accounting information with relevant parties (Dai and Vasarhelyi 2017). Scholars have argued that AI and blockchain have considerable potential to monitor accounting information and reduce information asymmetry by making data manipulation difficult for management due to blockchain's ability to record data accurately (Han et al. 2023). Accounting data can be made accessible to specific individuals or systems using blockchain technology but poses the risk of permitting outsiders

access to such information (Yermack 2017). Notwithstanding, futher research is required about how BDA and technological tools can be used in reporting and disclosures in the context of the BoDs.

2.2 | The use of Technological Tools and BDA for Management

There is a growing body of research that also highlights the importance of studying new technological tools in the context of management. Eisenhardt (1989) revealed that faster strategic decisions can be achieved with real-time information. More recent studies highlighted the emerging benefits of using AI for decision-making, including increased flexibility, precision, and effectiveness (Agrawal, Gans, and Goldfarb 2017; Metcalf, Askay, and Rosenberg 2019). We also build on recent research (Jiang and Li 2024), which examined information asymmetry by having access to big data and found that new technological tools such as AI and big data have shown potential to help resolve problems. Jiang and Li (2024) highlighted the importance of studying how AI and analytics can improve decision-making at the management level. Blockchain was also put forward as a tool to help monitor an organization's operation by reducing intermediary costs, such as auditors' costs in validating manager claims and limiting the capacity of managers to make misleading statements or hide information from shareholders (Murray et al. 2021).

Cao et al. (2021) created an integrated AI acceptance-avoidance model, which offers a more thorough framework for understanding and forecasting managers' attitudes and behavioral intentions regarding the use of AI. The same authors emphasized the need for qualitative research to understand the factors influencing management attitudes and intentions in organizational decision-making.

Technologies such as cloud, big data, blockchain, and AI are crucial in accounting (Moll and Yigitbasioglu 2019). Blockchain can improve financial reporting by enhancing credibility and providing real-time information (Bystrom 2019). Kimani et al. (2020) highlighted the need for studies investigating blockchain's impact on reporting quality. Therefore, we ask whether and how BDA and technological tools are used in decision-making, monitoring, and reporting in the context of management.

3 | Research Context: International Corporate Governance Landscape

This research is positioned within broader corporate governance debates on board effectiveness, monitoring and reporting. The Anglo–American model, prevalent in the United States and the United Kingdom, emphasizes shareholder value and is characterized by dispersed ownership of shares and a strong role in capital markets. In this system, boards of directors predominantly comprise a mix of executive and non-executive directors, with a significant emphasis on independent directors. Therefore, this system is driven by the aligned interests of managers and shareholders through mechanisms such as performance-based compensation and effective monitoring and reporting (Shleifer and Vishny 1997).

In contrast, the Continental European model, observed in countries like Germany and France, focuses on stakeholder engagement and typically features concentrated ownership structures with banks and other large shareholders playing crucial roles. According to Aguilera and Jackson (2003), this model promotes stability and long-term relationships between companies and their stakeholders, often at the expense of flexibility and rapid responsiveness to market changes, making reporting of these types of boards particularly cumbersome.

The Japanese corporate governance model is rooted in Japan's historical and cultural context, emphasizing long-term relationships, corporate loyalty, and active employee participation. Although the Japanese system promotes cooperation and mutual trust among stakeholders, which can lead to efficient information sharing and collective decision-making (Aoki 1990), its main weakness is often associated with insufficient transparency in sharing financial and operational data, which impedes effective monitoring. According to Yoshikawa and Rasheed (2009), disclosure of critical information to shareholders and the public is also limited compared to Western standards, reducing accountability. Nevertheless, many Japanese firms tend to rely on traditional methods instead of adopting advanced technological tools for real-time monitoring.

While existing research provides comprehensive insights into the characteristics and effectiveness of different corporate governance systems, a notable research gap exists concerning the integration and impact of BDA and new technological tools within these systems. Despite the differences in corporate governance models, universal theoretical assumptions remain regarding the monitoring role of boards (Fama and Jensen 1983). All governance systems expect boards of directors to oversee management, ensure accountability, and protect the interests of stakeholders, including shareholders (Aguilera and Cuervo-Cazurra 2004; Adams, Hermalin, and Weisbach 2010; Monks and Minow 2011).

The common but also unique features of corporate governance models and assumptions of board effectiveness motivated us to explore different corporate governance contexts to shed more light on our research questions.

4 | Research Methodology

We developed a comprehensive program, conducting 40 semi-structured in-depth interviews with both board members and senior managers across Europe, Asia, Africa, and North America (UK, Greece, Cyprus, Canada, Germany, Austria, Qatar, UAE, United States, Japan, Finland, Mauritius, Ireland, and Kuwait), allowing us to collect data from different industries, countries, and experiences. Interviews were conducted both in-person and online via Zoom and Microsoft Teams. The interviewees have either served as board directors or worked closely with the TMT and the BoDs in different capacities. Their roles include non-executive directors, CFO, CEO, directors of divisions within organizations, professors who act as executives,

IT directors, consultants, a significant shareholder who chairs several boards, and a chief procurement officer.

The interviews were conducted from March 2022 to September 2023. The total recording time was about 26 hours, with an average length of 40 minutes each and 210 pages of transcription. Interviews were transcribed immediately after they were completed.

The qualitative nature of interviews allows us to explore interviewees' perspectives, consider how different governance actors use BDA and technological tools, and identify the differences between managers' and board members' usage of such tools. A definition of BDA and technological tools and a technical explanation of how they work were not provided to the interviewees as we wanted to understand their perceptions and usage, allowing us to move beyond examining a specific technology, such as AI and blockchain, which other studies have considered.

4.1 | Sampling and Choice of Participants

To capture perspectives from different corporate governance contexts, we contacted individuals via LinkedIn and attended in-person and online events that we knew that members of BoDs were also likely to attend. We employed convenience sampling as many initial participants had contacts who fit the profile of the participants we wanted to recruit, allowing us access to high-profile individuals (Etikan, Musa, and Alkassim 2016). Although a sample size of 20–30 participants may be enough to reach data saturation (Creswell 1998; Oliveira, Kakabadse, and Khan 2022; Merendino et al. 2018), we reached data saturation after 35 interviews but decided to complete all 40 scheduled interviews. Thus, there were 40 research participants (see Appendix A).

Identifying and interviewing individuals in senior leadership positions provided credibility due to the variation in the sample (Miles and Huberman 1994). We aimed to find individuals with experience working with boards of directors, including as members, to understand how the BoDs functions and how BDA and technological tools are used by the board and management.

Our interviewees described how BDA and technological tools improve governance through key themes, such as the role of such tools in monitoring, decision-making, reporting, and disclosures (see Appendix B). The interviewees' anonymity and confidentiality were preserved.

4.2 | Data Analysis

We employed open-coding to analyze the data (Strauss and Corbin 1998). The interview transcripts were analyzed thematically. Subsequent analysis gave rise to various categories. The iterative process of analyzing the data reduced bias and reinforced the significance of the results (Gibbs 2007). Data collection and analysis occurred concurrently, with the authors discussing coding and emerging themes (Shah and Corley 2006). The key themes that emerged were the lack of ability to use data effectively; the BoDs' lack of awareness of the value of BDA; ambiguity regarding the data collected; the potential effect of BDA and technological tools on decision-making, disclosures, and reporting by the board; and the role of these tools in improving monitoring by reducing information asymmetry. Our results also showed that some participants share the view that monitoring could lead to conflicts between the board and management.

We followed a similar approach to Tilba and McNulty (2013) in analyzing the data. We conducted a thematic analysis of the interview transcripts to extract relevant themes. NVivo 12.0, a qualitative research software tool, was used in the analysis, following the four-step approach by Dacin, Munir, and Tracey (2010). First, we entered the interview transcripts in NVivo as text files, coded based on "in vivo" words comprising interviewees' accounts of whether and how the BoDs and management use BDA and technological tools for governance purposes. Second, we expanded on first-order codes, identifying second-order codes such as "information flows," "lack of ability to use data effectively," and "the BoDs lack of awareness of the value of BDA." Third, we connected the second-order codes with the broader themes we sought to explore. This involved going back and forth between first- and second-order codes and observing patterns that evolved into themes (Dacin, Munir, and Tracey 2010). Fourth, emerging themes were connected to the overarching themes of the study, reflected in our key findings.

5 | Findings

Our data analysis reveals three main findings. First, despite geographical differences, we find similar contrasting views that exist on using BDA and technological tools between the BoDs and management. Second, our findings reveal an interesting paradox: On the one hand, too much data can allow managers to hide behind it or reveal only specific data to make managerial reports look more favorable. On the other hand, we also discover that BDA can enable better and more informed decision-making at the board level, even when the collected data is ambiguous. Third, we discovered several specific benefits and barriers to adopting new technological tools at the board versus managerial levels. These led us to develop a typology of factors that underpin the use of BDA at both these levels. Table 1 below summarizes the key findings.

5.1 | The BoDs' Use of BDA and Technological Tools

Some of our director interviewees broadly supported the view that decision-making can be improved and become more accurate with the use of BDA and technological tools. Many participants believed that quicker and more informed decision-making can positively affect their firm performance. Further, some of our interviewees expressed a view that monitoring can become more robust if objective information is available to the BoDs without the management interfering. The majority of our interviewees also explained that technological tools can support reporting and disclosures by providing objective reports directly to the BoDs, thereby reducing

information asymmetries. We will elaborate on these perceived benefits next.

5.1.1 | Robust Monitoring and Objective Information Flows

The interviewees explained that BDA and technological tools could potentially assist the BoDs in monitoring the management by aggregating and providing objective information without interference from the management. For example, one director stated:

> *Our organization suffered serious consequences because of a lower management mistake, and I believe big data could have solved that … we just cannot accept that the CEO has done their due diligence*
>
> (Participant 17).

Another director mentioned:

> *In an ideal world, you do not need people who aggregate information over ten layers of the organization. Ideally, nobody can manipulate the system tools, and then it is the same number everywhere because if you have one format, one standard, why should you touch the numbers?*
>
> (Participant 28)

5.1.2 | Improved and Accurate Decision Making

Most of our respondents considered that an essential aspect of BDA is allowing the board to make improved decisions by better understanding the organization. Steering the company in the right direction and decreasing risk in making decisions was perceived to be the key for the board to achieve the intended strategy. Most interviewees also believed that BDA allows the board to track past decisions and reflect on them in future decisions.

A director working for an investment bank discussed the importance of data in making strategic decisions:

> *We decided last year to exit clients … for a certain area based on this situation because we were unprofitable with this, and the main argument was data*
>
> (Participant 28).

Another director agreed that BDA had assisted him in different ways:

> *It has helped me be more supportive as a director of the management team because I am asking them harder questions, and if the data is objectively provided to me, I could be more analytical about how I look at the company in the future*
>
> (Participant 18).

An experienced director who has lived through an era when data was not widely used explained:

> *We have become a lot less opinion based and a lot more data based … when we started, we were making judgments that were not always anchored in facts … they were judgmental and tainted by behavioral biases*
>
> (Participant 6).

Some of our respondents also believed that BDA allows boards to improve strategic decision-making, with one providing an example of the effect it can have on law firms:

> *Partners within the same teams pitch to clients, but based on the analysis we (the finance team) perform, they will incur a loss. They immediately started shaping their strategy for making better decisions*
>
> (Participant 19).

Another interesting insight came from a very experienced director highlighting the value of BDA in the consumer goods sector for making strategic decisions, explaining that:

> *We feel that consumer tastes are changing in the beverage space, and we think it is wrong for us as a company to spend X per cent of our budget on carbonated water, when in fact consumers are now wanting flavored water or non-carbonated water or energy drinks; that could be a strategic finding*
>
> (Participant 6).

Most of our interviewees pointed out that BDA can significantly affect strategic decisions, giving directors visibility and insights into the market and allowing the board to adapt its strategy quickly and effectively by analyzing different types of data. For example, a director with a financial background shared an interesting approach:

> *We now have so much technology that everything can be automated … you can cut out the management completely if you want to … If I were a CEO, I would have more peace of mind if I knew that my board was getting information that I have not filtered … because that gives them a broader view*
>
> (Participant 19).

Some interviewees revealed that BDA and technological tools could assist decision-making by providing better and less biased strategic insights, allowing the BoDs to be more analytical and make data-based decisions.

5.1.3 | Improved Firm Performance and Risk Management

In our interview discussions, many respondents indicated the BDA and using new technological tools are important for managing risks and improving firm performance. An experienced director stated:

> *I think there is plenty of empirical evidence suggesting that informed boards can make good-quality decisions, which should help them with their performance … over the long haul it does allow us to have superior risk-adjusted returns*
>
> (Participant 6).

A participant who is a board member and has acted as CEO in multiple companies stated:

> *I think you can increase performance because it allows for quicker decisions, minimizes the risks in the decisions being made, and provides the means to communicate how and why you made those decisions to your stakeholders. There is a lot of subjectivity in managing performance, and big data eliminates a big chunk of that*
>
> (Participant 17).

The majority of our interviewees support the view that technological tools could enhance performance by enabling faster decision-making, and some highlight that they can provide better risk-adjusted returns.

5.1.4 | Objective Reporting and Disclosures

We believe it is crucial to understand whether and how technological tools are used with regard to reporting and disclosures. Literature reveals that BDA and technological tools have great potential in influencing reporting and disclosures, and we wanted to explore this impact further. Interview discussions particularly focused on exploring the impact of such technology on providing objective, unfiltered information to the BoDs.

One interviewee explained:

> *Having at least some key information going directly to the board from the reporting system is useful and eliminates the agency risk of having management select and filter raw data* (Participant 23).

Another participant discussed the importance of independence of information reaching the BoDs:

> *A different issue is the independence of reports going directly to the board because of that additional layer of information coming from the executive team; then, the monitoring is muted*
>
> (Participant 19).

Some of our participants suggest that technological tools can allow the BoDs to access the reports without management interference, which can greatly reduce agency risk, but not all of our interviewees hold this view, and we will elaborate on this in the next section.

5.2 | Obstacles to BDA/Technological Tool Use for BoDs

Notwithstanding the benefits of using BDA and other technological tools, many interviewees also argued that big data has various limitations. A fundamental limitation is the information overload due to the vast amount of data that can be analyzed and presented to the board, which can hinder rather than improve governance. Furthermore, information would still have to pass through management in many instances, allowing management to hide specific data and present only what they want. Providing "clean" data to make decisions confidently and presenting it in an easy-to-use format for the BoDs remains challenging. Other barriers include the lack of awareness of the value of BDA, the lack of ability to use data effectively, the ambiguity around data collected, and the conflict that can arise between the BoDs and the management.

5.2.1 | Information Asymmetry and Overreliance on Management

Some interviewees were doubtful whether big data can help reduce information asymmetry due to the difficulty in controlling the information that reaches the BoDs and the practical difficulty of continuous monitoring. One interviewee stated:

> *Whether you use big data or not, if the executive team is trying to keep information away from the board, this will happen anyway*
>
> (Participant 8).

An executive director highlighted the issues that may arise when having immediate access to live information:

> *Even though under company law they all (executive and non-executive directors) have the same responsibility as board members, if somebody was to offer me a daily dashboard, my answer would be that I am not an executive of the company. If I receive information, then I have to read it 365 days a year and decide whether it comprised actionable data. If it did, I would have to decide whether I need to speak to someone about it or call a board meeting*
>
> (Participant 36).

These findings suggest that reducing reliance on management can be challenging in practice, as the majority of our interviews highlighted the importance of management in passing information to the BoDs. Another critical issue raised is that even if the BoDs can access up to date and relevant information, it might not be in its scope to monitor such information regularly.

5.2.2 | Lack of Ability to Use Data Effectively

Interestingly, interviewees had different views on whether or not organizations utilized BDA and technological tools. Some highlighted the issues the systems face in collecting the data and using data effectively.

One interviewee pointed out:

> *Most companies are overwhelmed by the data their systems collect, and very few understand how to use it ... the data is not that useful*
>
> (Participant 21).

Technology may have assisted to an extent with handling data. However, one interviewee stated:

> *There seems to be a big issue with how much information you receive ... because in the '80s and '90s, they would have a couple of pages, and now you can have 200, 300, or 400 pages ... It is a huge issue ... it does mean that you are asking for a lot more information very often. So, yeah, the packs can get pretty big*
>
> (Participant 35).

The above interview extracts serve to highlight a perception of some BoDs' inability to use data effectively due to the inadequate skills and significant volumes of information now available. The next section introduces the next key finding associated with the ambiguity of the data collected.

5.2.3 | Ambiguity Around Data Collected

In our discussions, several interviewees mentioned that even though data could eliminate biases in theory, it would be difficult to do so in practice. One interviewee noted:

> *Data is going to be biased because the sample sets used to generate those datasets are also biased*
>
> (Participant 5).

This often leads to the board questioning the outcomes of the data and debating the findings:

> *Quite often, we do not conclude because the data is not clean enough*
>
> (Participant 6).

Almost all participants highlighted the issues around collecting and analyzing data. For example, the data analyzed do not always provide a clear answer. Further, many BoDs members that we interviewed do not trust technology and the source of the data, which is problematic when attempting to make decisions based on the analysis of data sets. This leads to the next key finding on the BoDs' lack of awareness of the value of BDA.

5.2.4 | Lack of Awareness of the Value of BDA

The majority of our interviewees contended that many members of the BoDs do not realize the value of BDA and technological tools, making it difficult to implement those that would prove helpful. For example, the findings revealed that many directors face difficulties understanding BDA's benefits. An interviewee used an analogy to emphasize his point:

> *It is like when someone is losing their eyesight because of old age ... and you put glasses on them ... BDA to a board is somewhat like that. They do not know they need it until it is presented to them*
>
> (Participant 20).

Another interviewee mentioned the lack of understanding of BDA:

> *You need members of the BoDs who understand what BDA is. Differentiation is important to cover new requirements and challenges*
>
> (Participant 7).

An experienced professional working in human resources added that:

> *I think a considerable amount of colleagues ... are still not exactly making the most of what they can do with this information or do not realize that it exists*
>
> (Participant 30).

Overall, most interviewees revealed that BDA and technological tools could be used in a way by the BoDs that can lead to more accurate decision-making, consequently improving performance. Further, some interviewees revealed that objective information can be communicated to the BoDs, which can lead to more robust monitoring, reporting, and disclosures.

We will now move to discussing the management's use of BDA and technological tools as well as the associated benefits and obstacles.

5.3 | Managerial Use of BDA and Technological Tools

Interviews with managers reveal that some of them believe that technological tools can improve monitoring by having information on a secure blockchain platform and using a tool called management cockpit, which aggregates information to convey to the BoDs without interference from various levels of management. However, interviewees also considered that the BoDs are often skeptical of this information because they believe that management does not present an accurate picture. According to the majority of the interviewees, decision-making can nevertheless be improved by being quicker and providing confidence when making decisions. However, several obstacles remain, as most managers highlighted the lack of not only the ability to use data but also the willingness of the board members to monitor effectively.

5.3.1 | Improved Monitoring and Information Flows

Our interviews with managers revealed that they held different views on the ways in which BDA and technological tools can improve monitoring. For example, a few respondents highlighted blockchain's potential and that younger members of the BoDs had the ability to use technological tools for monitoring.

Another participant commented that important information can be shared directly with the CEO and the board through:

> *... a secure blockchain platform that nobody can go and change*
>
> (Participant 10).

This could eliminate some biases in how information is presented by middle or even lower management.

Our interview discussions focused on exploring whether and how technological tools can affect information flows so that the board can access objective information. A senior manager mentioned a new technological tool called management cockpit that has helped both the BoDs and senior managers in monitoring lower levels of management:

> *It is a uniform set of key performance indicators and metrics for every functional area. It stopped people from being able to hide behind what they prefer to report ... Now, everybody's reporting is very transparent. It has been a real positive*
>
> (Participant 22).

The way management cockpits work is by aggregating information into one report:

> *They aggregate up into one overarching view so that you will have a cockpit for procurement, for finance, for commercial, for operations, for health and safety, and so on, but they all aggregate up into one report. You are not allowing stakeholders to influence what the data tells you*
>
> (Participant 22).

An executive manager commented on the technical literacy of the younger board members as a good indication of reducing reliance on management for information:

> *The young generation that is entering our executive boards have been working with these tools so they are also doing their analysis. They do not just depend blindly on the report presented by the CEO, which is important. ... Nothing can be manipulated*
>
> (Participant 34).

Several managers explained that it would be useful for them to receive information from different levels of management quicker, allowing them to provide the BoDs with the appropriate information and, most importantly, monitor lower management.

5.3.2 | Quicker and Improved Decision Making

Our discussions with managers revealed that interviewees appreciated the value of BDA, particularly that it can assist in making managerial decisions by instilling confidence, enabling quicker decision-making, and allowing reflection on past decisions.

For example, one interviewee explained that:

> *Big data provides us with insight and confidence about decisions we want to make and can also tell us what it cannot tell you. We often ask questions for which there is no data*
>
> (Participant 4).

Similarly, several other interviewees highlighted the importance of technology in improving decision-making by saying that:

> *Assuming the data is correct, directors can make better and quicker decisions. It can help you make decisions in areas where it was impossible many years ago*
>
> (Participant 7).

> *I used to make decisions based on rough, incomplete data. Now I have apparent costs and very clear margins ... I will be able to scale up and grow*
>
> (Participant 27).

Some interviewees also believed that BDA has significantly impacted decision-making and will continue to do so:

> *Moving forward, data analytics will drive decision making far more than who has got the loudest voice around the exec table and those types of less tangible drivers and influencers*
>
> (Participant 22).

Many also believed that the board could use BDA to reflect on past decisions and outcomes:

> *We have a lot of textual data on board meetings, conversations,* etc. *It allows us to examine how the previous board worked*
>
> (Participant 10).

All in all, most participants suggested that managers can make better and quicker decisions by using BDA and technological tools.

5.4 | Obstacles to BDA/Technological Tools Use for Management

Our data analysis also revealed a number of obstacles to using BDA and new technologies for management. These obstacles include overreliance on different levels of management and a lack

of managerial ability to use data effectively. We will elaborate on these findings in more detail next.

5.4.1 | Overreliance on Different Levels of Management

Several interviewees shared some important concerns and questions regarding information asymmetry that exists not only between managers and boards but also between different levels of management who are responsible for running the firm's daily operations. At the same time, our interviewees also suggested that blockchain or the management cockpit can provide a platform where vital information aggregated from the different levels of management can reach the CEO and the board. Most interviewees were generally skeptical about whether and how reliance on management for information can be reduced:

> *Everything has to go through the management and then the BoDs*
>
> (Participant 17).

Another interesting point came from an academic who highlighted the importance of:

> *... making sure there is a proper culture within the institution that encourages accurate information reporting. As we saw before, there are institutions, particularly around the previous crisis (2007–2008 financial crisis). For instance, you have aggressive sales targets. This can lead to a breakdown in the quality of reporting, and things tend to get hidden and swept under the carpet*
>
> (Participant 38).

A venture capital analyst who sits on various boards of start-up companies explained that:

> *The people that have access to that data come from within the company ... the rest of the BoDs ... are blind to the real data, so the founders, or whoever is internally in the company does not present the accurate picture*
>
> (Participant 9).

This is particularly important as board members who are not involved with the company daily cannot effectively monitor it.

5.4.2 | Lack of Ability to Use Data Effectively

Many of our interviewees suggest that the lack of ability to use BDA and technological tools effectively can be an obstacle to management in their work. Interviewees considered that it is challenging to provide data in an easy-to-use format to make decisions. Further, companies may not have the expertise to use the data available.

An interviewee with experience handling BDA noted that a specific challenge involves:

> *... making this data available to all the decision-making bodies in an easy-to-use format*
>
> (Participant 10).

Further, it became apparent that many organizations lack the expertise to use the data. As an interviewee noted:

> *Most important is the organization's mindset; if it is static, you will have a lot of problems while gathering data*
>
> (Participant 15).

Companies often pay too much money to collect data, but many fail to embed it in their decision-making. Some interviewees also pointed out that the organizations that collect the data differ from those that analyze the data. From a managerial perspective, this can be problematic because, while there may be experts to analyze data, domain expertise to uncover key findings may be lacking.

5.5 | The Paradox With Data and Using BDA and Technological Tools

The findings of both perceived benefits and obstacles have highlighted an interesting paradox associated with the use of BDA and technological tools. Most interviewees agreed that better-processed information could help monitor and present a more objective perspective of the firm to the BoDs, leading to improved decision-making, disclosures, reporting and, consequently, better governance. However, at the same time and as highlighted by our interviewees, various obstacles exist, particularly because data and technology can act as a double-edged sword. Too much information, no matter how well processed, can cause the BoDs to "drown" in data, allowing the management to hide information within the data. Additionally, while the majority of the managers we interviewed highlighted that they could use technology to improve governance many participants also revealed that technology can also hinder governance. Possessing more data can cause infobesity, leading to worse governance compared to effectively managing fewer data. Managers can take advantage of the vast amount of information available by obfuscating the information they present, hiding behind it, or presenting it in a way that can be misinterpreted.

6 | Discussion

In this study, we explored how different actors—the BoDs and management—use BDA and technological tools for governance purposes and whether there are differences in their use of such tools. Through exploratory, semi-structured interviews, we sought to shed light on our interviewees' perceptions of the use of technological tools in decision-making, monitoring reporting, and disclosures. In so doing, this study deepens the existing discourse on the use of BDA and technological tools by providing

a more nuanced conceptual framework of a typology of benefits and barriers to using BDA at both the board and manager levels.

Our empirical findings also cast doubt on some of the traditional agency assumptions of the BoDs monitoring role may be more assumed than demonstrated when it comes to effective uses of BDA and new technology. Namely, the BoD's lack of use of new technologies to obtain better and more accurate information for monitoring contradicts some of the traditional agency theoretical assumptions that boards would aim to reduce information asymmetry by making better use of information available to them.

6.1 | Empirical Contributions

This paper makes several important empirical contributions. First, our findings reveal differing perspectives that exist on the use of BDA and technological tools to enhance governance between the BoDs and management, potentially leading to conflicts if the BoDs receives information from these tools that management has not shared, exacerbating information asymmetry and the agency problem. Second, some of our findings highlight an interesting paradox where excessive use of BDA may allow managers to manipulate data or present biased reports. Yet, it may also facilitate more informed decision-making at the board level, even with unclear data. Third, our findings allowed us to develop a typology of factors that underpin the use of BDA at the board and managerial levels.

Our study finds that technological tools, such as management cockpits, can allow aggregated information to reach the BoDs without interference from different management levels, reducing information asymmetries. This is important in the context of agency theory, as having critical information passed on directly to the BoDs from the reporting system can reduce, if not eliminate, information asymmetries rather than allowing management to filter the process.

Some of our interviewees highlight the potential of blockchain technology to improve the BoDs' monitoring of management. This is consistent with previous research (Yermack 2017) arguing that real-time transparency of information (Bystrom 2019) and management trading would allow the BoDs and shareholders to monitor management more closely. We contribute to this discussion by providing empirical data that support this view. However, our findings also reveal that this can lead to conflicts between the BoDs and management.

Oliveira, Kakabadse, and Khan (2022) found that digital transformation can improve information gathering, sharing, and communication flows between board members by interviewing 26 board members from medium-sized companies in the United Kingdom. We expand on this research by interviewing both board members and managers from a wider set of countries through the agency theory lens. Our findings revealed contrasting views regarding the BoDs receiving information to improve decision-making, monitoring, and reporting from within the organization. While some interviewees stated that information can reach the BoDs directly, others felt that this would be difficult in practice as the management controls the data.

We also expand on the study by Cao et al. (2021), which highlighted the need for qualitative research collecting primary qualitative data to examine managers' attitudes and intentions toward using AI for organizational decision-making. From the perspective of managers, various technological tools, such as AI and predictive analytics, are currently used to analyze and monitor trends, and using real-time information can allow for immediate notifications to management when issues arise. Firms can leverage these opportunities to tackle challenges, prepare accordingly, and improve disclosing processes (Jiang and Li 2024).

Prior research argues that blockchain technology can assist with monitoring, particularly regarding the need for third parties, such as auditors, to validate information provided by managers (Murray et al. 2021). Our research expands on this by qualitatively examining how blockchain affects monitoring across multiple contexts and governance actors. Most of the interviewees shared the view that technological tools and BDA can help the BoDs receive relevant and up-to-date information, thereby reducing opportunities for management mistakes.

6.2 | Theoretical Contributions

Our empirical findings enable us to make two key theoretical contributions. Firstly, our qualitative insights allow us to deepen the existing conversation on the use of BDA and technological tools in the context of different governance actors. We are doing so by providing a conceptual framework of a typology of benefits and barriers to using BDA at both the board and manager levels. More specifically, our study extends the work by Manita et al. (2020), which revealed that the use of digital technology could potentially revolutionize the audit function as a governance mechanism to restrict the authority of managers. Some of our findings do support this view, suggesting that technology can reduce the authority of managers by having some key information go directly to the BoDs, thereby preventing management from filtering data.

We also build on studies by George, Haas, and Pentland (2014), which emphasize the need for further exploration of big data's potential in corporate governance, and by Tihanyi, Graffin, and George (2014), which suggest that scholars should consider the role of BDA in corporate governance. Our primary data indicate that some interviewees believe that access to real-time information can support board monitoring despite others highlighting the challenges of implementing this in practice.

Further, we build on research by Lumineau, Wang, and Schilke (2021), which highlights the importance of researching blockchain in monitoring through the agency theory lens. Our interviewees discussed the potential role of blockchain in monitoring, reporting, and disclosures, highlighting its importance in providing a platform where information can be stored securely. This allows the BoDs access to information that has not been filtered by different levels of management, potentially reducing information and improving the monitoring role of the BoDs.

While our findings reveal that access to real-time data can support monitoring, we also find that BDA and technological tools may hinder monitoring by the BoDs due to overreliance

on management for information processes and reports sent to the BoDs (Enriques and Zetzsche 2020). Eisenhardt (1989) contended that faster strategic decisions can be achieved due to real-time information. Our findings suggest that this is indeed the case for managers. The majority of our interviewees agreed that access to information could facilitate quicker decisions, with intuition playing a less significant role due to the availability of information (Liebowitz et al. 2019).

Second, and significantly, our findings cast doubt on the nature of core relationships in agency theory assumptions. For example, some of our findings reveal that managers act as agency theory would predict by obfuscating data. At the same time, we also find that the BoDs, as principals, are often not able to prioritize the members' best interests by utilizing BDA and technological tools. This observation suggests that the nature of board roles seems more assumed than demonstrated when it comes to the uses of new technological tools to help with core governance and strategic initiatives such as decision-making, monitoring, and reporting. Therefore, "infobesity" remains significant and can contribute to concealing information, thereby impeding governance (Karhade et al. 2021), allowing management to manipulate or present only partial information to the BoDs, ultimately hindering reporting and disclosures.

We extend the agency theory discussion by questioning the BoDs' role, as our findings indicate that the BoDs do not always act effectively to monitor managerial opportunism (Fama and Jensen 1983). Some of our BoDs interviewees expressed concerns about conflicts between them and management regarding the use of technological tools. This is because the tools can provide the BoDs with information that has not passed through management. This information may be critical in tackling managerial opportunism as it may reveal behaviors and information that would otherwise be extremely difficult for the BoDs to access.

Although monitoring costs to control the behavior of management can be high (Jensen and Meckling 1976), our findings cast doubt on this assumption. Due to technological advancements (management cockpits), some of the information that has traditionally been expensive to access now reaches the BoDs directly. More effective and potentially cheaper monitoring can be achieved due to a technological tool called management cockpit, which allows the BoDs to access information, thereby reducing information asymmetry and the barriers to information processing (Boivie et al. 2016).

6.3 | Implications for Policy and Practice

Our research reveals an important tool that can provide aggregated, objective information to the BoDs: the management cockpit. It aggregates information from different company units and creates a report that the CEO and board can access without allowing lower, middle, and upper management to interfere with the data. Some interviewees hold the view that this can improve the BoDs' governance functions by ensuring that objective information on the company's performance reaches the board. However, it can also create friction and mistrust between the TMT and the BoDs.

The management cockpit may influence broader public policy implications for private and public companies and organizations in the public sector, which ought to be more scrutinized. Our findings also reveal the need to educate the BoDs and management on remaining up-to-date with the latest technological tools.

7 | Conclusion and Future Research

This exploratory study based on in-depth semi-structured interviews generated a lot of rich, qualitative data that helped reveal some complex issues. Our qualitative insights deepen the existing conversation on using BDA and technological tools. We contribute to the corporate governance literature and agency theory by developing a conceptual typology on the uses of BDA at both board and managerial levels.

Although our study recruited a broad range of research participants across multiple geographical regions, countries, governance settings, industries, and roles, we do not attempt to generalize our findings, which is very difficult to do with a qualitative study (Saunders et al. 2018). Additionally, our interviewees had varying perceptions of the types of technology and BDA, which are used by companies and industries in different ways. Some had more exposure to such technology than others. However, we aimed to explore common themes of interviewees' responses that could enhance our understanding of this topic. Further, we recognize that this study comprised a relatively small sample of individuals and organizations, and its findings should be treated as indicative only.

Given our study's limitations, which we acknowledged at the start of the paper, future research could examine BDA uses in each geographic context in more detail and also explore specific industries, such as for example, pension schemes, to understand better how BDA and technological tools are used at the board level for different functions. Researchers can also conduct a study to explore how younger members of the BoDs would react to using such tools.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Appendix A

Participant	Role	Country*	Company information	Sector	Timeline
Participant 1	Non-executive director	Cyprus	Real estate investment company	Real estate	29/03/2022
Participant 2	Managing director	United Kingdom	Consulting firm focused on the pension industry	Pensions	30/03/2022
Participant 3	Proposition manager	United Kingdom	Consulting company focused on the pension industry	Pensions	30/03/2022
Participant 4	Professor and executive	United Kingdom	University and consulting	Higher education	30/03/2022
Participant 5	Professor, executive director, and consultant	United Kingdom	University and financial industry	Higher education and financial	31/03/2022
Participant 6	Board member and chief investment officer	Greece and Cyprus	Family office	Asset management	05/04/2022
Participant 7	Director of banking division	Greece	Audit, accounting, and consulting firm	Audit, accounting, and consulting	05/04/2022
Participant 8	Head of analytics	United Kingdom	International markets infrastructure business	Financial information company	06/04/202
Participant 9	Analyst	Greece	Venture capital	Financial services	08/04/2022
Participant 10	Academic and consultant	United Kingdom	University and consulting	Higher education and automotive	11/04/2022
Participant 11	IT director	Greece	Multinational dairy cooperative	Consumer goods	12/04/2022
Participant 12	Project manager	Greece	Research center	Research services	20/04/2022
Participant 13	Head of infrastructure and ex board member	Greece	Multinational professional services	Consulting and financial sector	20/04/2022
Participant 14	Professor and executive	UK	University and consulting	Higher education and consulting	21/04/2022

Participant	Role	Country*	Company information	Sector	Timeline
Participant 15	Senior consultant	Germany	Multinational professional services	Consulting	25/04/2022
Participant 16	Investor, board member in multiple companies	Cyprus	Shipping, start-ups	Technology and shipping	28/04/2022
Participant 17	CEO, board director	Canada	Financial services and public organization	Financial services	29/04/2022
Participant 18	Founder, CEO, chairman of boards	Canada	Seafood, charities	Consumer goods	01/05/2022
Participant 19	Board member of charities and tax director	United Kingdom	Technology for risk and governance	Business consulting	03/05/2022
Participant 20	Consultant and business owner	United Kingdom	Consulting board of directors	Consulting	05/05/2022
Participant 21	Shareholder and chairman of several boards	Canada	Communication and Internet services	Internet services and communication	05/05/2022
Participant 22	Chief procurement officer	United Kingdom	Multinational utility company	Energy	11/05/2022
Participant 23	Managing partner and president	Canada	Private equity firm	Financial services	06/06/2022
Participant 24	Executive director and board member	United Arab Emirates	Real estate development, hospitality, manufacturing	Real estate	31/01/2023
Participant 25	Partner	United Kingdom	Audit, accounting, and consulting firm	Audit, accounting, and consulting industry	01/02/2023
Participant 26	VP model validation	United Kingdom	Bank	Financial services	09/02/2023
Participant 27	Partner	Qatar	Audit, accounting, and consulting firm	Audit, accounting, and consulting industry	13/02/2023
Participant 28	Head of group HR, board member	Germany and Austria	Investment bank	Financial services	13/02/2023
Participant 29	CFO	United States	Vehicle manufacturer	Automotive industry	14/02/2023
Participant 30	Human resources manager	Greece	Shipping	Shipping	01/03/2023
Participant 31	Academic	United Kingdom	University	Education	09/05/2023
Participant 32	Chairman	United Kingdom	NHS trust	Healthcare	11/05/2023
Participant 33	Director of compliance	United Kingdom	NHS trust	Healthcare	11/05/2023
Participant 34	Executive manager (head of development)	Kuwait	Bank	Consumer banking	16/05/2023
Participant 35	CEO and non-executive director	Ireland	Marketing	Marketing	18/05/2023

Participant	Role	Country*	Company information	Sector	Timeline
Participant 36	Non-executive director (multiple organizations)	Mauritius	Software development, financial services, construction	Construction, financial services	16/06/2023
Participant 37	Director of strategy and planning and non-executive director	United Kingdom	University	Higher education	23/06/2023
Participant 38	Academic	Finland	University	Higher education	05/07/2023
Participant 39	Strategy consultant and board member	Japan	Business consulting	Consulting	10/07/2023
Participant 40	Director of group research	United Arab Emirates	Media	Broadcast media production and distribution	13/09/2023

* Country in which participants reside and where the company employs them.

Appendix B

Interview Protocol: My introduction.

Brief introduction of the research project and participant's role in the project.

START RECORDING.

Introduction

- Perhaps we can start by you sharing a bit about your background, your role and responsibilities here.

Interview Questions

1. Big data and information

➔ Can you please share your thoughts on how companies deal with their increasing amount of available data?

➔ Could you share your opinion on challenges encountered in extracting useful information from data?

➔ Can good-quality insights be derived from vast data? Is it a question of quantity vs quality of information? Can you please elaborate on the above questions?

2. Big data analytics, board of directors, and decision-making

➔ Does your organization employ BDA on a board level? If yes, how?

➔ Please share your thoughts on whether the availability of more data has assisted in making better informed decisions on an individual (director) and on a collective (board) levels?

➔ How has BDA changed board processes? Can you please explain?

➔ In your view, can you please explain the implications of BDA for strategic decision-making?

➔ How have BDA disrupted the decision-making dynamics in the board room?

➔ Is there a clash between old and new ways of working? Please elaborate.

➔ Can BDA improve the decision-making ability of directors? If so, how?

➔ Can the board be more efficient as a decision-making body with the help of BDA? If yes, please explain how.

➔ Do you believe that smaller organizations find value in big data for board level decision-making? Please explain how.

➔ Has the pandemic accelerated the use of BDA on the board level to improve decision-making? If yes, how?

3. Big data analytics, monitoring, firm performance

➔ Can directors improve managerial oversight (monitoring) by employing BDA? If yes, please explain how?

➔ Drawing from your own experience, can BDA reduce the BoDs' reliance on management?

➔ Could BDA allow information to reach the BoDs without going through management? If yes, how?

➔ Please share your thoughts on whether there are technological tools, apart from BDA, exist that can improve monitoring.

➔ How can we reduce information asymmetry by introducing BDA/technological tools? Please elaborate.

Conclusion

- Is there anything else you would like to add?
- Do you have any questions?
- Do you have any contacts who would be willing to take part in our study?
- Thank you for your time.

SWITCH OFF RECORDING.