Understanding Challenges of GDPR Implementation in Business Enterprises: A Systematic Literature Review

Abstract

Purpose: The General Data Protection Regulation (GDPR) was designed to address privacy challenges posed by globalisation and rapid technological advancements; however, its implementation has also introduced new hurdles for companies. This systematic literature review aims to analyse and synthesise the existing literature that focuses on challenges of GDPR implementation in business enterprises, while also outlining the directions for future research.

Design/methodology/approach: The methodology of this review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. It employs an extensive search strategy across Scopus and Web of Science databases, rigorously applying inclusion and exclusion criteria, yielding a detailed analysis of 16 selected studies that concentrate on GDPR implementation challenges in business organisations.

Findings: The findings indicate a predominant use of conceptual study methodologies in prior research, often limited to specific countries and technology-driven sectors. There is also an inclination towards exploring GDPR challenges within SMEs, while larger enterprises remain comparatively unexplored. Additionally, further investigation is needed to understand the implications of emerging technologies on GDPR compliance.

Originality: The originality of this review lies in its exclusive focus on analysing GDPR implementation challenges within the business context, coupled with a fresh categorization of these challenges into technical, legal, organizational, and regulatory dimensions.

Research limitations: This study's limitations include reliance of the search strategy on two databases, potential exclusion of relevant research, limited existing literature on GDPR implementation challenges in business context, and possible influence of diverse methodologies and contexts of previous studies on generalisability of the findings.

Keywords:

General Data Protection Regulation (GDPR), data protection, data privacy, privacy compliance, personal data processing, EU data regulation, business enterprises

1. Introduction

Globalization and rapid technological change have fostered the increase of collection, processing, and storage of large amounts of personal data (Choi et al., 2019; Huth, 2017; Teixeira et al., 2019). The ubiquity of digital services and the pervasiveness of artificial intelligence facilitated citizens to continuously share data about their behaviour and preferences (Emmert-Streib, 2021; Peltz & Street, 2020). However, the collection and sharing of this data raise legitimate concerns regarding individual privacy and data protection. Frequently without prior consent of individuals, personal information becomes globally available to other organisations (Poritskiy et al., 2019). This has made individuals, as well as organisations, highly vulnerable about security and data privacy (Naughton & Daly, 2020; Pastor-Galindo et al., 2021; Tikkinen-Piri et al., 2018).

The General Data Protection Regulation (GDPR) was introduced as a fundamental regulatory framework aiming to harmonize data privacy and personal data protection in the European Union (EU). Nevertheless, since its approval in 2016, the GDPR has posed organisations with numerous challenges in achieving compliance, ensuring data protection, and adapting to the evolving data privacy landscape (Piras et al., 2021; Yeung, Bygrave, 2022). This systematic literature review *aims* to explore and analyse the challenges business organisations face in implementing the GDPR, examining the research gap, and contributing to the existing body of knowledge by identifying directions for future research.

The GDPR served as a crucial step towards establishing standardised data protection criteria across all EU member states, superseding the 1995 Data Protection Directive (de Hert & Papakonstantinou, 2016). Its primary objective was to update and strengthen requirements related to managing personal data and privacy. However, the GDPR's impact goes beyond mere regulatory updates; it seeks to revolutionise how organisations perceive and manage data, facilitating the seamless flow of personal data across borders within the EU (Sirur et al., 2018). By removing barriers to cross-border trades, the GDPR fosters the organic expansion of businesses throughout Europe while ensuring the unencumbered movement of personal data among EU member states (Jakobi et al., 2020; Yakovleva & Irion, 2020). In this manner, the GDPR lays the groundwork for a harmonised and interconnected digital landscape, safeguarding data privacy and fostering greater trust among individuals, businesses, and governments (Li et al., 2019; Vanberg, 2021).

The GDPR has introduced significant changes to data protection laws, necessitating considerable efforts from organisations to align their processes, policies, and systems with the regulation's requirements. Prior research has shed light on various aspects of GDPR compliance (e.g., de Carvallo et al., 2020; Mangini et al., 2020; Pathak et al., 2023; Politou et al., 2018); however, there remains a need to consolidate and synthesise the available literature to gain a comprehensive understanding of the challenges encountered by organisations (Teixeira at al., 2019). This study seeks to address this gap by conducting a systematic review of the existing literature to understand the factors influencing the ability of organisations to implement the regulation effectively and putting forth the following research questions:

1. What was the context in which previous studies were conducted, including countries, industries, and types of firms?
2. Which methodologies were employed to investigate the challenges related to GDPR implementation?
3. How can we categorize the challenges encountered during GDPR implementation?
4. What are the underlying methodological and theoretical foundations that can guide future research in this field?

While there has been considerable academic interest in GDPR implementation and the associated challenges faced by organizations, prior research has predominantly concentrated on privacy and data protection concerns within sectors like public health, education, and public administration. A limited number of studies has addressed GDPR implementation issues within business enterprises, possibly stemming from difficulties in collecting primary data from companies and accessing business-specific information. To bridge this gap, this review aims to integrate and synthesise existing research that underscores the challenges of GDPR implementation in the realm of business, providing insights into prior work while guiding future research directions.

The forthcoming sections of this review detail the methodology of the study, including search strategy, criteria for inclusion and exclusion, data extraction procedures, and quality assessment.

Additionally, we propose a novel approach classifying GDPR implementation challenges based on the scrutiny of relevant studies. Furthermore, we explore potential methodological and theoretical under foundations that could shape the trajectory of future research agenda.

The outcomes of this study might be useful for multiple stakeholders. Scholars can leverage our findings to discern gaps in the existing literature, business practitioners can gain insights into a spectrum of conceivable challenges that GDPR implementation might entail, and policy makers can utilize our analysis to correlate identified challenges with prospective solutions and updates to the regulatory framework.

3. Methodology

3.1 Search Strategy

This study utilised a systematic literature review methodology following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (Page et al., 2021). The search for articles on the challenges of GDPR implementation was conducted on the 12th of May 2023. The search encompassed reputable academic databases, granting access to peer-reviewed journals, conference proceedings, and reports. The selected databases were Scopus and Web of Science.

The search for relevant articles was executed by exploring the title, abstract, and keywords sections of the electronic databases mentioned above. These sections were chosen as they typically contain the relevant search terms (Vrontis & Christofi, 2021). The search strategy involved various combinations of keywords related to GDPR implementation challenges and EU companies, employing Boolean operators ("AND" and "OR") to combine the search terms.

Thus, the search keywords used for the literature exploration were as follows:

("general data protection regulation" OR "GDPR") AND ("implementation" AND "challenges") AND ("European Union" OR "EU" OR "Europe")

To enhance precision, the search was later narrowed down to specific document types, years, and language. The initial search yielded 233 documents, which were then evaluated for eligibility in the study. After eliminating duplicates, 172 documents were subjected to further screening.

3.2 Inclusion / Exclusion Criteria

We began by analysing the initial sample of potentially relevant studies and applied general exclusion/inclusion criteria to refine the selection (Table 1). We included articles published in peer-reviewed journals and conference proceedings, while excluding studies from books and book series. Books are subject to a less codified review practice than journal articles or conference papers (Hammarfelt et al., 2021), and therefore can potentially introduce author bias and varying degrees of reliability and validity.

Additionally, we excluded non-English documents (in Bosnian, Croatian, German, Norwegian, Portuguese, Slovakian, and Spanish languages) to ensure a clear understanding of each eligible article's content. Furthermore, we focused only on articles published after 2016, when the GDPR was approved.

Next, we manually scanned the titles and abstracts of all remaining articles to evaluate their relevance to the researched topic of challenges in GDPR implementation. All irrelevant articles were discarded, including those focusing on the impact of GDPR implementation in non-EU countries.

Table 1

Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
- Publications in peer-reviewed journals and conference proceedings	- Studies published in books and book series
- Articles in English language	- Non-English articles
- Articles published between 2016-2023	- Articles published before 2016
- Relevance of the title and abstract to GDPR implementation challenges	- Studies that do not focus specifically on GDPR implementation challenges
- Studies that focused on companies operating in the EU	- Articles that focused on the impact of GDPR implementation outside of the EU

Source: own elaboration

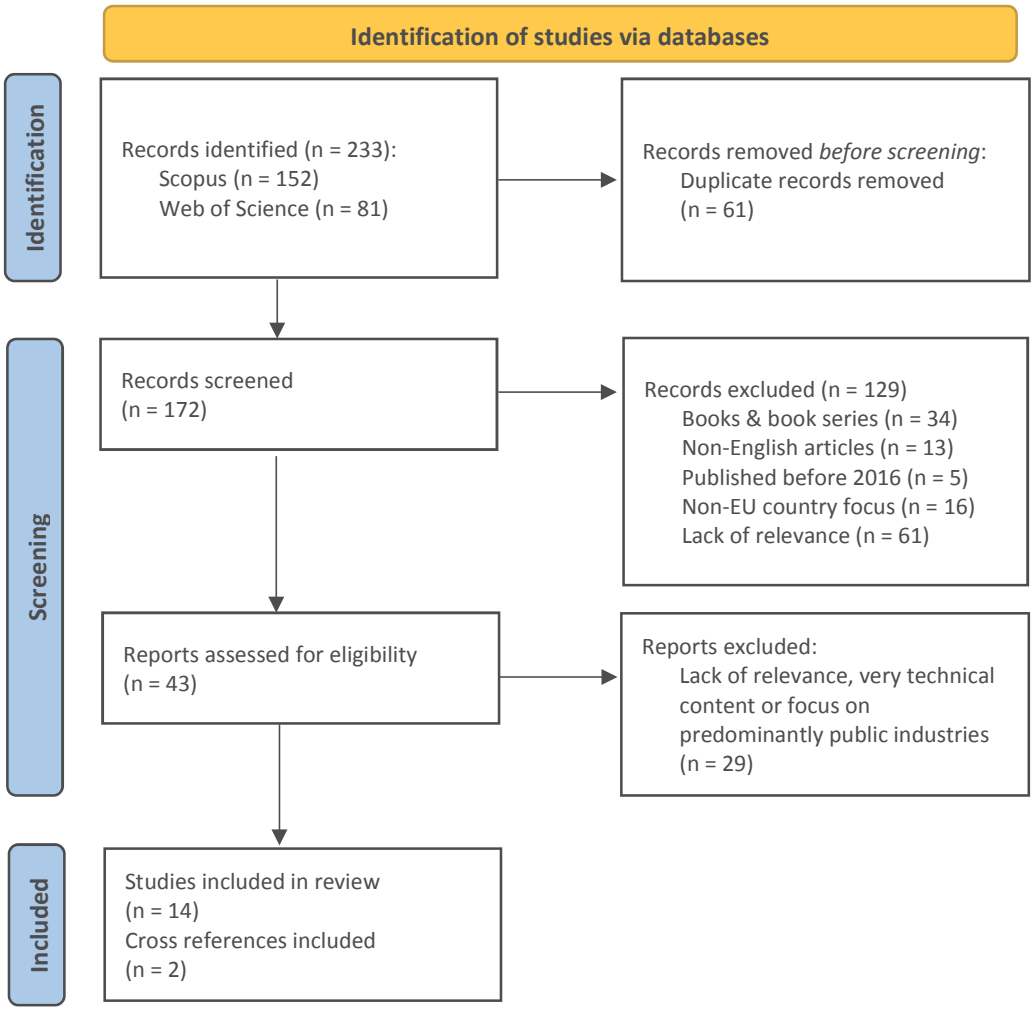

Figure 1

Systematic Literature Review Protocol: PRISMA Flow Diagram

Source: own elaboration based on Page et al. (2021)

After conducting the initial screening process, we identified 43 eligible studies for further examination. These articles were thoroughly revised to assess their relevance to the purpose of this review. Within this evaluation, we excluded 29 studies for various reasons. These reasons included the lack of relevance, highly technical content (e.g., concentrating on challenges specific to constructing a GDPR-compliant data architecture), or an overly narrow focus on predominantly public sectors that such as healthcare, public administration, education, etc. The latter were discarded because our review focuses on GDPR implementation challenges in business enterprises.

Simultaneously, we discovered two additional studies through cross-referencing checks deemed relevant that we subsequently added to the study pool. In the end, the sample included in the data extraction and analysis consisted of 16 studies. A detailed protocol outlining the process of identifying, screening, and including/excluding articles is provided in Figure 1.

3.3 Data Extraction and Quality Assessment

The data extraction process is a critical component of a systematic literature review, and it should be carefully tailored to align with the research questions (Carrera-Rivera et al., 2022). In this regard, Kitchenham and Charters (2007) have provided valuable insights by suggesting additional pertinent data points that can be captured to enrich the analysis. Apart from standard information, such as authors, publication year, and source, our data extraction method encompassed a comprehensive set of elements to ensure a thorough understanding of the studies.

For each selected study, we meticulously extracted the following information: purpose and objectives, country/region and industry focus (if applicable), sample characteristics and size (if applicable), methodology, GDPR challenges detected, main conclusions, recommendations/ implications, limitations, and future research agenda.

The comprehensive data extraction process described above is directly linked to the quality assessment phase in our systematic literature review, which is a crucial step to evaluate the reliability and validity of the selected studies. To facilitate this process, the Critical Appraisal Skills Programme (2018) offers a CASP checklist that guides reviewers through assessing the quality of research studies. In our review, we followed this practice, with two review authors conducting independent assessments for each included study using the CASP checklist.

After completing the individual assessments, the review team convened to discuss the findings and resolve any discrepancies that surfaced during the evaluation. Since there were no significant disagreements, the team reached a consensus obviating the need to seek external expertise.

4. Findings

4.1 Overview of Included Studies

The review comprehensively analysed 16 studies, comprising 7 articles published in peer-reviewed conference proceedings and 9 in reputable academic journals. The relatively constrained pool of research on GDPR implementation challenges within the business sector can be attributed to several factors. Firstly, the GDPR itself is a relatively new regulation, enacted in May 2018, rendering this field of study relatively underexplored. Secondly, researchers might have encountered obstacles in collecting data from organizations and accessing relevant business information. Lastly, the dynamic evolution of the GDPR regulation may have contributed to the relatively restrained number of studies during its initial stages of implementation.

Nevertheless, despite the initial scarcity of the literature in this field of knowledge, it is reasonable to expect that the number of studies on GDPR implementation challenges are likely to increase over time. In the current review, we offer a comprehensive examination of the existing research. Table 2 presents the key characteristics of the reviewed studies, including the research purpose, methodology, industry/sector context, and the countries of origin on which the studies focused.

Table 2

Summary of Included Studies

Author(s) / Year	Research Purpose	Methodology	Industry/Sector Context	Country / Region Focus
de Carvalho et al. (2020)	Explore ongoing and recent developments in the area of GDPR implementation in the EU space and the efforts by a set of EU projects to address the challenges related to it	Conceptual	n/a	EU
Freitas and Mira da Silva (2018)	Aim to understand the challenges faced by SMEs in complying with the GDPR of the EU	Qualitative, face-to-face interviews with 10 industrial SMEs	Industrial sector	Portugal
Härting et al. (2020)	Examine the factors influencing the implementation of GDPR in existing business models of SMEs through a quantitative approach	Quantitative, 103 German experts in the field of data protection	n/a	Germany
Härting et al. (2021)	Investigate the impacts of the GDPR implementation on already existing business models of SMEs in Germany	Qualitative, survey of 13 German experts in the field of data protection and data security in SMEs	n/a	Germany
Kutyłowski et al. (2020)	Bring attention to some critical challenges related to the GDPR regulation from the technical implementation perspective	Conceptual	n/a	EU
Leite et al. (2022)	Explore the changes imposed by the GDPR on software engineering practices.	Qualitative, case studies of 4 companies	Software engineering	Portugal
Mangini et al. (2020)	Explore the impact of the GDPR and the right to be forgotten from both the organisations' and users' perspectives	Quantitative, 49 survey responses from organisations, 389 responses from users	n/a	EU
Marotta and Madnick (2021)	Identify positive and negative aspects of GDPR requirements and present a new framework for analysing them from a security point of view	Conceptual	n/a	EU
Martínez-Martínez (2018)	Discusses the challenges and implications of the GDPR implementation in EU companies	Conceptual	n/a	EU
Pathak et al. (2023)	Explores the implications of GDPR on the IT industry and Fintech companies	Mixed methods, 25 survey responses from industry professionals	IT services and the Fintech industry	EU

Politou et al. (2018)	Evaluates existing methods and technologies for their effective integration of GDPR concepts and requirements into current computing infrastructures	Conceptual	n/a	EU
Poritskiy et al. (2019)	Explore the benefits and challenges of the GDPR implementation in the IT sector	Quantitative, 286 survey respondents from IT companies	IT sector	Portugal
Saniei (2021)	Discusses the challenges and gaps in GDPR compliance	Conceptual	n/a	EU
Sirur et al. (2018)	Investigates real challenges faced by organisations in engaging with the GDPR	Qualitative, 12 interviews with representatives from SMEs and large organisations	n/a	EU
Teixeira et al. (2019)	Identify enablers and barriers to GDPR implementation	Conceptual	n/a	EU
Zaman and Hassani (2019)	Explores the challenges associated with implementing and complying with the GDPR, specifically the right to be forgotten	Conceptual	n/a	EU

Source: own elaboration

Our first research question centres on the context in which these studies were conducted, such as the countries, industries, and firm types involved. The data from Table 2 reveals that most studies discuss the challenges of GDPR implementation within the broader context of the EU, reflecting a more generic approach. Only a few studies examined industry sectors and country contexts. Notably, technology-related industries, such as the IT sector (Pathak et al., 2023; Poritskiy et al., 2019), Fintech (Pathak et al., 2023), software engineering (Leite et al., 2022), and the industrial sector (Freitas & Mira da Silva, 2018), were common subjects of investigation. Regarding geographical dispersion, the dominant countries in the reviewed studies were Germany (Härting et al., 2020; Härting et al., 2021) and Portugal (Freitas & Mira da Silva, 2018; Leite et al., 2022; Poritskiy et al., 2019), indicating that GDPR implementation might be perceived as a complex issue in these economies.

The analysis of the literature also showed that researchers exhibited a greater academic interest in studying GDPR implementation challenges faced by SMEs, which were the focus of studies conducted by Freitas and Mira da Silva (2018), Härting et al. (2021), and Leite et al. (2022). Interestingly, two studies carried out by Poritskiy et al. (2019) and Sirur et al. (2018) did not only explore SMEs but also examined the challenges faced by large organisations. Their findings revealed that the size of the company could potentially influence how GDPR implementation challenges are perceived. It is also important to note that large organizations appeared to find GDPR compliance more manageable, whereas SMEs encountered a broader range of challenges stemming from diverse sources (Poritskiy et al., 2019). This suggests that the impact of GDPR implementation and the challenges faced might vary depending on the size of the organisation being studied.

The second research question focused on investigating the diverse methods that were used to examine the challenges associated with the implementation of GDPR. Our review revealed that out of the 16 studies analysed, 8 studies followed a conceptual approach. In contrast, the remaining studies utilised different research methodologies, including qualitative (4 studies), quantitative (3 studies), and one study employed a mixed methods approach.

Conceptual studies, by their nature, involved in-depth discussions based on scholarly perspectives and thorough analysis of legal documents. One of these conceptual studies also utilised a mapping methodology, for example, the approach adopted by Marotta and Madnick (2021).

In the case of qualitative studies, the most frequently employed methods included interviews, as seen in the research by Freitas and Mira da Silva (2018) and Sirur et al. (2018). Additionally, Härting et al. (2021) used surveys, while Leite et al. (2022) conducted a comprehensive case analysis of two SMEs and two micro companies to delve into the GDPR implementation challenges. At the same time, a study conducted by Pathak et al. (2023) exemplified the use of a mixed methods approach. Their research incorporated both qualitative and quantitative tools, leveraging 25 survey responses from IT services and Fintech industry professionals to gain a deeper understanding of the challenges. This diversity of methods sets the stage for further exploration of the GDPR challenges in subsequent sections of this review.

4.2 Classification of GDPR Challenges

Based on the analysis of the information from the retrieved articles, we have categorised the challenges of GDPR implementation into four distinct groups: technical challenges, legal challenges, organisational challenges, and regulatory challenges. By structuring the challenges into these four categories, we aim to provide a clear and structured understanding of the various hurdles that organisations may encounter while implementing GDPR.

Table 3 serves as a visual aid, allowing easy reference and comparison of challenges within their respective subcategories, and the sections below provide a comprehensive and detailed explanation of challenges in each category and their corresponding subcategories.

4.2.1 Technical Challenges

The primary aim of the GDPR is to offer business enterprises a comprehensive framework for addressing data privacy concerns. Nevertheless, the practical implementation of the regulation's guidelines has presented challenges for companies. An essential requirement of the GDPR is processing personal data in a manner that safeguards its confidentiality, integrity, and availability. However, complexities arise in the context of linked data and data aggregation, where personal data may be combined with other sources, making GDPR compliance difficult (Kutyłowski et al., 2020). This challenge becomes even more pronounced in the realm of complex IT systems (de Carvalho et al., 2020) and emerging technologies like blockchain and the Internet of Things, which involve sharing personal data across multiple parties (Kutyłowski et al., 2020; Politou et al., 2018).

Another technical hurdle that companies face is accurate identification and mapping of personal data to ensure its integrity and completeness (Pathak et al., 2023). Additionally, implementing the right to be forgotten can pose technical challenges, particularly for organisations with vast data repositories stored in various systems (Mangini et al., 2020). This issue complicates the timely and effective management of data breaches and incidents (de Carvalho et al., 2020). Zaman and Hassani (2019) suggest that developing stable online conformance checking and model repair techniques may offer a potential solution to this problem, ensuring compliance with the regulation.

Companies must also ensure that their security measures adequately protect personal data throughout its lifecycle (de Carvalho et al., 2020; Marotta & Madnick, 2021; Pathak et al., 2023). This becomes imperative in today's interconnected digital landscape, where cyber threats and privacy concerns continue to evolve, reinforcing the need for robust and vigilant data security practices at every stage of the data's journey.

Table 3

Classification of GDPR Challenges Identified in Studies

No	Categories of challenges	Subcategories of challenges	Challenges identified	Author(s) / Year
1	Technical	*Technical Complexity*	• Redesigning systems to comply with the GDPR • Managing data, especially aggregated • Enforcement of security means • Mapping personal data	de Carvalho et al. (2020), Kutyłowski et al. (2020), Mangini et al. (2020), Marotta and Madnick (2021), Pathak et al. (2023), Politou et al. (2018), Zaman and Hassani (2019)
2	Legal	*Legal Compliance*	• Legal documentary complexities • Legal uncertainty • Difficulty of balancing between GDPR and other legal and regulatory requirements	Härting et al. (2021), Mangini et al. (2020), Marotta and Madnick (2021), Martínez-Martínez (2018), Pathak et al. (2023), Saniei (2021)
3	Organisational	*Lack of Expertise*	• Lack of knowledge, expertise, and experience	Härting et al. (2020), Härting et al. (2021), Poritskiy et al. (2019), Teixeira et al. (2019)
		Cost Concerns	• Monetary costs • Human costs • Expenditure of time	de Carvalho et al. (2020), Freitas and Mira da Silva (2018), Härting et al. (2020), Härting et al. (2021), Mangini et al. (2020), Marotta and Madnick (2021), Sirur et al. (2018), Teixeira et al. (2019)
		Process Adaptation	• Adaptation of internal processes • Establishing new procedures	de Carvalho et al. (2020), Härting et al. (2020), Härting et al. (2021), Kutyłowski et al. (2020), Leite et al. (2022), Poritskiy et al. (2019), Politou et al. (2018), Sirur et al. (2018), Zaman and Hassani (2019)
		Corporate Governance	• Resistance to change, culture of privacy, systems/policy change, risk management models	Martínez-Martínez (2018), Pathak et al. (2023), Poritskiy et al. (2019), Teixeira et al. (2019)
		Vendor Management	• Ensuring compliance by third-party vendors • Relationship management • Dealing with third parties to erase private data	de Carvalho et al. (2020), Leite et al. (2022), Pathak et al. (2023), Politou et al. (2018)
4	Regulatory	*Regulation Complexity*	• Complexity of the GDPR Regulation • Lack of awareness and understanding of the GDPR requirements	de Carvalho et al. (2020), Freitas and Mira da Silva (2018), Mangini et al. (2020), Marotta and Madnick (2021), Pathak et al. (2023), Sirur et al. (2018), Saniei (2021), Teixeira et al. (2019)
		Insufficient Government Support	• Incomplete or vague guidelines and little support from authorities	Härting et al. (2020), Härting et al. (2021), Sirur et al. (2018), Teixeira et al. (2019)

Source: own elaboration

4.2.2 Legal Challenges

In a continuously evolving landscape of GDPR compliance, organisations encounter legal complexities (Marotta & Madnick, 2021) that require diligent attention. As legal texts and documents often possess an open-textured nature accommodating diverse interpretations, seeking guidance from legal professionals becomes crucial (Saniei, 2021) to ensure accurate and precise GDPR interpretation and its implementation. Integrating legal compliance into business processes becomes a paramount consideration for companies (Härting et al., 2021) to maintain a robust data protection framework.

Considering the multifaceted legal landscape, scrupulously prepared documentation assumes significant importance as companies must demonstrate ongoing compliance with GDPR requirements (Pathak et al., 2023). Thorough and systematic record-keeping aids organisations in showcasing their commitment to data privacy protection and facilitates transparency during regulatory audits.

Another complex challenge faced by companies today lies in maintaining a balance between the fundamental right to personal data protection and the preservation of other fundamental rights, such as freedom of expression and information, guided by the principle of proportionality (Martínez-Martínez, 2018). Notably, the right to be forgotten, while preserving individuals' privacy, may encounter conflicts with data retention laws and other legal obligations (Mangini et al., 2020), accentuating the complexities involved in implementation. To navigate this complex landscape effectively, companies must skilfully manage GDPR requirements in conjunction with other legal and regulatory frameworks (Pathak et al., 2023).

4.2.3 Organizational Challenges

In the scope of this paper, organisational challenges encompass the internal difficulties encountered by companies while striving for GDPR compliance. Through an in-depth analysis of the selected articles, we have identified five key factors that may impede the effective implementation of GDPR within organisations. These factors include lack of expertise, cost concerns, process adaptation, corporate governance, and vendor management.

- *Lack of expertise*. Companies tend to become more efficient as they learn, and the same principle might apply to GDPR implementation. A quantitative study on Portuguese IT companies by Poritskiy et al. (2019) revealed that advanced GDPR implementation led to improved knowledge of GDPR, subsequently reducing perceived challenges. On the other hand, Härting et al. (2021) found that a lack of technical and legal know-how hindered some companies from fully complying with GDPR. However, another study by Härting et al. (2020) showed no significant impact of expertise on SMEs' existing business models.
- *Cost Concerns*. The GDPR compliance process is extensive, time-consuming and requires substantial financial and human resources (Härting et al., 2021; Mangini et al., 2020; Teixeira et al., 2019). Since the legislation's adoption, companies have had to allocate extended budgets for GDPR compliance (Sirur et al., 2018). Besides hiring new professionals, investments are necessary for systems, procedures, standards (Mangini et al., 2020), and cybersecurity (Marotta & Madnick, 2021). Härting et al. (2020) point out various costs involved, including implementation costs, running expenses for external data protection officers, potential revenue losses, opportunity costs, and time expenditures. Although larger companies may have financial and human resources to invest in GDPR compliance, the same does not necessarily apply to SMEs (de Carvalho et al., 2020). The latter face limitations in

human and financial resources, making it challenging to undertake the required measures for compliance (Freitas & Mira da Silva, 2018).

- *Process Adaptation*. The GDPR, primarily a legal document, lacks comprehensive technical guidance for its implementers, leading to unforeseen complications in adapting internal processes (Härting et al., 2020; Politou et al., 2018; Sirur et al., 2018). Challenges emerge in operational adaptation towards privacy-aware and compliant business practices (de Carvalho et al., 2020), establishing processes for straightforward data deletion (Poritskiy et al., 2019), and superseding existing work processes (Härting et al., 2021). Moreover, identifying data origins, determining necessary information retention, and tracking data activities during data collection pose additional difficulties (Leite et al., 2022). These complexities are further amplified for organisations with interconnected or cascading business processes, spanning multiple entities (Zaman & Hassani, 2019).
- *Corporate Governance*. The GDPR has brought not only legal and technical changes but has also induced cultural transformations in companies (Poritskiy et al., 2019). To comply with GDPR requirements and ensure data security (Pathak et al., 2023), organisations must develop new systems, policies, procedures, and standards (Mangini et al., 2020). Building a culture of privacy necessitates adopting new measures in corporate governance, risk management models, and regulatory compliance (Martínez-Martínez, 2018). However, a significant challenge lies in overcoming resistance to change (Teixeira et al., 2019) at various organisational levels. Addressing this resistance becomes essential to successfully implement the necessary cultural shifts.
- *Vendor Management*. While achieving GDPR compliance within their own organisations is manageable for many companies, ensuring compliance by third-party vendors and service providers poses significant challenges (de Carvalho et al., 2020; Leite et al., 2022; Pathak et al., 2023). For example, GDPR mandates data controllers to inform third parties when a data subject requests the erasure of their personal data; this process can be burdensome or even impossible in specific scenarios (Politou et al., 2018). Additionally, erasing data from the public domain involves coordination with external parties, who may not prioritise the swift processing of these requests, making it difficult to trace all instances of data use (Leite et al., 2022). Thus, managing compliance complexities with third-party vendors is a significant challenge for organisations striving to comprehensively meet GDPR requirements.

4.2.4 Regulatory Challenges

Previous research persistently highlights the challenges of implementing GDPR requirements, primarily attributing them to the ambiguity and complexity of legal texts. These difficulties are further exacerbated by the lack of practical guidelines and insufficient government support.

- *Regulation Complexity*. Prior studies suggest that some organisations may lack awareness of GDPR obligations or struggle to fully comprehend them, resulting in potential non-compliance (de Carvalho et al., 2020; Freitas & Mira da Silva, 2018; Mangini et al., 2020; Pathak et al., 2023). Furthermore, many companies encounter challenges in implementing processes accurately due to ambiguous interpretations of the GDPR regulations (Marotta & Madnick, 2021).

  The use of ambiguous terms in legal texts that intend to apply norms broadly can contribute to varied interpretations, even within the same context. Different components of legislative texts may possess direct links to other sections or necessitate external legal knowledge,

further complicating understanding. Moreover, the lack of suitable open-source vocabularies and ontologies to describe GDPR's concepts and entities adds to the regulation's complexity (Saniei, 2021), making it difficult to understand the qualitative expectations of GDPR concerning real systems (Sirur et al., 2018). These factors collectively contribute to the complexity of GDPR (Teixeira et al., 2019), posing challenges in comprehending and applying its requirements effectively.

- *Insufficient Government Support*. The support of local authorities plays a pivotal role in facilitating GDPR implementation. While large companies can easily hire new personnel to handle compliance, small companies tend to rely on their own efforts to interpret the legislation and ensure compliance. Due to limited knowledge and expertise in GDPR, SMEs may perceive insufficient practical guidance and lack of support from authorities (Härting et al., 2021; Teixeira et al., 2019). For example, in their study, Sirur et al. (2018) reported strong criticism about the timing of guidance for SMEs as they lacked a dedicated focus on data protection and felt unequipped to handle the GDPR regulation alone. At the same time, Härting et al. (2020) discovered that inadequate information provision by government authorities negatively impacted GDPR implementation among German SMEs. Thus, it follows that the lack of sufficient support from government authorities emerges as a significant challenge for SMEs in their efforts to achieve GDPR compliance.

5. Methodological and Theoretical Underpinnings of Future Research

Previous research has identified various limitations, creating opportunities for employing novel research designs in future studies. Firstly, a significant portion of the analysed studies relied on the conceptual approach, potentially limiting the depth of insights as they lacked empirical evidence and relied on theoretical arguments and examples. While some studies used qualitative and quantitative methods (e.g., Leite et al., 2022; Mangini et al., 2020; Pathak et al., 2023), the overall diversity of research methodologies was limited. Therefore, we suggest that *more empirical research*, such as involving a mixed-methods approach (Härting et al., 2020), is needed to derive quantitatively comparable results and capture the full complexity of the challenges faced by organisations (Martínez-Martínez, 2018; Saniei, 2021; Sirur et al., 2018; Teixeira et al., 2019; Zaman & Hassani, 2019).

Secondly, most studies primarily discussed GDPR implementation challenges within the broader context of the EU, providing a more generic perspective. Only a limited number of studies examined specific country contexts, such as Germany (Härting et al., 2020; Härting et al., 2020) and Portugal (Freitas & Mira da Silva, 2018; Leite et al., 2022; Poritskiy et al., 2019), which also might suggest that GDPR implementation complexities are more pronounced in these regions. Moreover, technology-related industries, including software engineering, IT, and Fintech, were frequently investigated subjects (Leite et al., 2022; Pathak et al., 2023; Poritskiy et al., 2019). To enhance the generalizability of the findings, future research could focus on examining the challenges of GDPR implementation *in the context of different countries and industries*.

Thirdly, there has been a predominant academic interest in studying GDPR implementation challenges focusing mainly on SMEs, while fewer studies have explored the challenges faced by large organizations. Research conducted by Poritskiy et al. (2019) and Sirur et al. (2018) highlighted the differences in perception of GDPR implementation challenges based on the organisation's size. Larger organisations tended to find compliance more manageable, whereas SMEs encountered a broader spectrum of challenges. This observation indicates that the impact of GDPR implementation may vary

depending on the *organisation's size*, making it an aspect that could benefit from further exploration and validation in future research.

Fourthly, it is essential to acknowledge that previous research has primarily utilised a cross-sectional approach and collected data at specific moments in time. This limitation may not fully capture participants' views over an extended period, as research participants' perspectives may change or evolve over time (Mangini et al., 2020). In this regard, Härting et al. (2021) and Sirur et al. (2018) advocate for investigating the *long-term impact of GDPR implementation* on organisations to gain a more comprehensive understanding of its effects over time.

Fifthly, previous studies have not fully explored how GDPR implementation affects *different organisational aspects*. To bridge this gap, upcoming research could explore how adhering to GDPR regulations impacts the performance of SMEs, including factors such as profitability, productivity, and competitiveness (Härting et al., 2020). Furthermore, Poritskiy et al. (2019) propose analysing the benefits and challenges at different implementation stages and categorising them based on company size (Leite et al., 2022). Additionally, Härting et al. (2020) emphasise the need to explore not only the adverse implications of GDPR implementation on SMEs, but also positive effects. Moreover, de Carvalho et al. (2020) advocate for further research to delve into technical and organisational challenges endured by GDPR compliance for the purpose of obtaining a more holistic perspective. By pursuing these research trajectories, scholars will be able to gain a more in-depth understanding of the complexities and implications of GDPR implementation in business organisations.

Furthermore, another important area of concern highlighted by several previous studies was the impact of technical innovations on GDPR implementation and the application of GDPR principles to *emerging technologies*. Notably, researchers such as Marotta and Madnick (2021), Politou et al. (2018), and Saniei (2021) emphasise the need for empirical studies to investigate how emerging technologies, like artificial intelligence and blockchain, affect GDPR compliance. Understanding the use and impact of these technologies on data protection can provide valuable insights for organisations. On the other hand, Kutyłowski et al. (2020) raise the necessity for further clarification on applying GDPR principles to specific technologies, including artificial intelligence, blockchain, the Internet of Things, and facial recognition. This emerging research area can potentially strengthen GDPR compliance and enhance data protection measures across various organisations.

Lastly, prior research also highlighted some other potential areas for further investigation. For instance, Härting et al. (2020) suggested exploring the impact of GDPR implementation on the *broader regulatory environment* for SMEs. Politou et al. (2018) advocated for expanding studies into *legal, ethical, and social implications* of GDPR requirements, while Marotta and Madnick (2021) proposed examining the role of GDPR compliance in the broader context of *data governance* and *data ethics*. Additionally, studying the influence of *industry support versus government guidance* (Sirur et al., 2018) and the *effectiveness of support mechanisms* for SMEs in GDPR compliance (Härting et al., 2021) deserve focused attention. These research avenues can provide new vision of addressing the challenges of GDPR implementation and ensuring robust data protection measures in organisations.

6. Conclusions and Limitations

In this systematic literature review, we analysed and synthesised previous studies that focused on exploring the challenges that business organizations encounter while aligning their operations with the GDPR requirements. Our findings revealed four primary categories of challenges: *technical*, *legal*, *organizational*, and *regulatory*. Within each category, we identified different issues, such as complexities in data processing, resource limitations, shifts in company culture, difficulties in

managing vendors, complexity in interpreting and understanding regulation, etc. These challenges underscore a multifaceted nature of the GDPR compliance, considering the vast amount of personal data collected, processed, and stored in today's technologically advanced and interconnected world.

The review also sheds light on the research gaps in this area, emphasising the scarcity of empirical studies exploring GDPR implementation challenges, particularly for large organisations. The focus of existing research has predominantly centred on SMEs, leaving room for further investigation into the complexities faced by larger enterprises operating in diverse industries and countries.

This study emphasises the need for employing diverse empirical methodologies and exploring specific country contexts and industries in future research on GDPR implementation. Understanding the impact on organisations of different sizes and investigating the long-term effects are crucial. Further examination of GDPR's influence on organisational aspects and its interaction with emerging technologies is essential. Additionally, scholars could explore legal, ethical, and social implications, industry support, and government guidance to develop effective compliance strategies and strengthen data protection measures.

While this systematic literature review provides valuable insights into the challenges of GDPR implementation in organisations, it is essential to acknowledge certain limitations of this review. Firstly, the study's search was limited to two academic databases, Scopus and Web of Science. Although these are considered among the most reliable and all-encompassing databases, there is a risk that we have excluded some relevant research available in other databases or grey literature sources. Additionally, the study's search was conducted on a specific date, inadvertently excluding more recent investigations on GDPR implementation challenges that have emerged since that time.

Secondly, as the GDPR is a relatively recent legislation, the available pool of scientific papers addressing this subject remains limited, thereby constraining the scope of this literature review. The relatively scarce number of studies on GDPR implementation challenges can be attributed to several factors, like the novelty of the research field, ever-evolving nature of the legislation, limited access of scholars to business organizations, and difficulties of collecting primary data.

Thirdly, this review focused on English-language documents to ensure a clear understanding of each eligible article's content. However, it is important to acknowledge that research in languages other than English, which was excluded from this study, might have also explored GDPR implementation challenges. This exclusion could limit the overall inclusivity of our review and could have potentially resulted in overlooking GPDR implementation challenges mentioned in non-English sources.

Lastly, despite we used a quality assessment tool, the review's findings might have been influenced by divergent methodologies of previous studies and different contexts in which they were conducted. This implies that the findings we have presented are specific to the studies included in this review and may not be universally applicable to all types of business organisations and industries.

Despite the limitations mentioned above, this systematic literature review provides a detailed analysis and classification of GDPR implementation challenges faced by business enterprises. Further research in different contexts, as well as more empirical studies, are needed to gain deeper understanding of the complexities involved in the GDPR compliance process across diverse organisational settings.

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