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Accounting inscriptions as mediating instruments in a supply chain: pathways to proactive risk management

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Abstract

Purpose – This paper aims to understand the role that accounting inscriptions play in mediating uncertainties between a central company and other supply chain actors in anticipation of a novel geopolitical risk.

Design/methodology/approach – An exploratory comparative analysis is conducted on three large multinational food companies, each of which faced significant supply chain challenges arising from the threat of Brexit. Brexit refers to the United Kingdom's (UK's) decision to leave the European Union (EU), following a referendum, resulting in negotiations and substantial changes in trade relations between the UK and the EU.

Findings – The findings reveal three distinct supply chain risk management pathways, shaped by the calculative cultures of the central companies and the actors they aim to engage with through mediation. When the central company prioritises mediating actions from suppliers and the government, and is sceptical of calculations, risk talk is primarily used. When mediation involves various supply chain actors, and the central company adopts a pragmatic approach to calculations, risk tools are integrated with risk talk to enable cohesive discussions. Finally, when the focus is on internal mediation between the finance and supply chain procurement functions, and the central company adopts a calculative idealist approach, familiarity with risk tools makes these tools central to the mediation process.

Originality/value – The authors adopt a comparative ex-ante field study perspective to (1) contextualise central company decisions within this uncertainty setting, illustrating how calculative cultures shape adjustments in mediating instruments and (2) theorise how a broad set of accounting inscriptions, including both risk tools and risk talk, can be used and combined in stimulating inter- and intra-organisational mediation under supply chain uncertainty.

Keywords Supply chain, Risk management, Accounting inscriptions, Calculative cultures, Risk anticipation, Geopolitical risk

Paper type Research article

1. Introduction

This paper explores the role played by accounting inscriptions in mediating uncertainties between a central company and other supply chain actors, as they prepare for a geopolitical risk, namely Brexit. Drawing on arguments about the critical role of accounting in mediating uncertainties between actors (Miller and Power, 2013; Power, 2016), we examine how accounting inscriptions can establish pathways for proactive risk management in the pre-Brexit setting [1]. Managing risks with foresight becomes particularly important as competing geopolitical powers complicate the management of global supply chains (World Economic Forum, 2024). Amid the potential for disruption, the challenging task of supply chain risk management has never been more crucial for businesses (PwC, 2024) or society (Pournader *et al.*, 2020).

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The accounting literature has long examined how accounting inscriptions mediate between distributed actors and domains in socio-technical networks (Christner and Strömsten, 2015; Jordan *et al.*, 2013; Miller and O'Leary, 2007). Accounting inscriptions refer to artefacts and processes that materialise representations of reality in accounting terms, serving as a means of managing at a distance (Robson, 1992). These inscriptions range from measurement through accounting techniques to communication, control and audit. While some studies have discovered how material accounting artefacts may inscribe reality (Jordan *et al.*, 2013), other studies have alluded to the potential for discourses, such as evaluation dialogues (Dambrin and Robson, 2011) and socio-material negotiations (Pollock and D'Adderio, 2012), to work as accounting inscriptions. Importantly, artefactual and discursive efforts are often combined in risk management (Kaplan and Mikes, 2016), as actors visualise accounting inscriptions, either physically or imaginatively (Nordlund *et al.*, 2025).

As such, accounting inscriptions are intricately linked to risk management, since they materialise bodies of risk knowledge and practices (Power, 2016; Soin and Collier, 2013). Referring to the concept of accounting inscriptions as "mediating instruments", a term coined by Miller and O'Leary (2007), Miller and Power (2013, p. 581) argued, "accounting is also a mediating practice, meaning that it links up different actors with a common narrative and may constitute a network of relations within and beyond the boundaries of the enterprise". Specifically, mediating instruments are defined as inscriptions that connect actors and domains to reconcile differing interests by establishing a common idea of what constitutes performance (Jordan *et al.*, 2013; Miller and O'Leary, 2007). Given the interdependencies of risks faced by global supply chains today, it is important to explore the role of accounting inscriptions in mediating uncertainties among actors to enhance our understanding of risk management.

Recent studies have highlighted how accounting inscriptions are used to navigate supply chain risks, emphasising the interconnectedness of risk reporting and accountability (Crovini *et al.*, 2022) and the relevance of disseminating accounting information to supply chain actors under disruption (Velayudhan *et al.*, 2021). Still, there is much to be explored. First, supply chain and risk management research streams are largely disconnected in the accounting literature (Taschner and Charifzadeh, 2020). Second, existing research mostly relies on retrospective accounts to establish how accounting helps businesses respond to risk after a crisis has occurred (Becker *et al.*, 2016; Carlsson-Wall *et al.*, 2021; Hardy and Maguire, 2020). This post-crisis emphasis leaves a significant gap in understanding the proactive measures businesses take before disruptive events potentially unfold (Power, 2016). Third, existing research has predominantly focused on traditional risk management approaches, which aim to transform potentially hazardous uncertainties into knowable, manageable risks (Hardy and Maguire, 2016). However, the contemporary global "risk climate" is associated with a wide range of novel risks characterised by uncertainty and unfamiliarity, which pose significant challenges for supply chains.

Importantly, companies may differ in their calculative cultures – that is, the attitudes held by senior managers toward calculative practices (Mikes, 2009) – shaping how risk is represented and acted upon (Arena *et al.*, 2010; Tekathen and Dechow, 2020). This opens an opportunity to explore how accounting inscriptions that mediate risk, particularly in complex supply chain arrangements, interact with central companies' calculative cultures. To address existing research gaps, we examine the following two research questions:

RQ1. How do central companies' uses of accounting inscriptions reflect their calculative cultures as they prepare for an external risk?

RQ2. How do central companies use accounting inscriptions as mediating instruments in proactive risk management?

We conducted a comparative ex-ante field study within the unique context of Brexit, focusing on how three large food companies headquartered in Ireland used accounting inscriptions as mediating instruments when preparing for the same geopolitical risk, a hard Brexit [2].

Drawing on the supply chain literature, we refer to these three case companies as central companies, as they are the main decision-makers, owing to their information, control and contractual power to implement decisions, which also makes them the main risk bearers (Giannoccaro and Pontrandolfo, 2004). Consequently, the study is based on the perceptions of senior managers in the central companies regarding their efforts to mediate uncertainties between supply chain actors in preparation for Brexit.

Building on the understanding of accounting inscriptions as mediating instruments (Miller and O'Leary, 2007; Miller *et al.*, 2008; Pollock and D'Adderio, 2012), we frame the uncertainties surrounding Brexit as the "risk object", which places demands on proactive supply chain risk management. Our findings demonstrate how visual accounting artefacts, i.e. risk tools, and risk discourses, i.e. risk talk, are employed to prepare for a hard Brexit. Inspired by Mikes' (2009) notion of sceptic and idealist calculative cultures, we find that mediating instruments are shaped by senior managerial attitudes toward calculative practices. Specifically, we observe that risk talk was employed by a central company exhibiting calculative scepticism, where the primary objective was to prompt actions from suppliers and the government. Where the focus was on mediation across various supply chain actors and the central company exhibited calculative pragmatism, risk tools were integrated with risk talk. Finally, for a central company exhibiting calculative idealism, where the emphasis was on mediation between internal finance and supply chain procurement functions, we observe that familiarity with risk tools made them central.

Based on these observations, our study makes two primary contributions. First, we contribute to the accounting literature on risk management (Arena *et al.*, 2010; Mikes, 2009, 2011) by providing a comparative account of how accounting inscriptions shape supply chain relationships and facilitate risk management. By differentiating between risk tools and risk talk, we illustrate their distinct and combined roles in risk management. We extend previous studies of risk reporting (Crovini *et al.*, 2022) and accounting information (Velayudhan *et al.*, 2021) under supply chain disruption by examining how the calculative culture of the central company shapes accounting inscriptions across and within organisational boundaries. Drawing on Mikes' (2009) distinction, we identify three distinct calculative cultures – scepticism, pragmatism and idealism – which orient companies toward different uses of risk tools and risk talk. Overall, in a setting marked by high uncertainty, we demonstrate how calculative cultures shape the way accounting inscriptions are used as mediating instruments.

Second, we extend the accounting literature on mediation (Miller and O'Leary, 2007; Pollock and D'Adderio, 2012), which has increasingly focused on understanding how accounting inscriptions serve as mediating instruments to facilitate discussions (Christner and Strömsten, 2015; Tekathen and Dechow, 2020). Our findings demonstrate how a broad range of accounting inscriptions – including both risk tools and risk talk – can be used and combined to stimulate inter- and intra-organisational mediation amid evolving uncertainties. Given the potential for accounting inscriptions to mediate across actors (Robson, 1992), our study shows that risk tools, e.g. heat maps, and risk talk, e.g. facilitating discussions between actors, can serve as stand-alone mediating instruments depending on the intended audience, thereby complementing previous work on mediation and risk management (Carlsson-Wall *et al.*, 2021; Jordan *et al.*, 2013).

The remainder of the paper is organised into five main sections. The second section situates the study within the supply chain accounting literature and introduces our theoretical approach by reviewing and interrelating the literature on accounting inscriptions, mediation and risk management. The third section outlines the research approach adopted. The fourth section presents the findings of how risk tools and risk talk were shaped by calculative cultures and how this guided supply chain mediation and risk management, externally and internally. The fifth section discusses the findings of the field study, integrating them with existing literature. This final section also outlines the contributions of the paper, acknowledging its limitations and offering suggestions for future research.

2. Theoretical underpinnings

The following sections establish the theoretical foundations of this study. Emphasis is placed on the role of accounting inscriptions, with Tables 1–3 providing an overview of the inscriptions identified across studies. Inspired by ideas about calculations and human bodies working as socio-material inscription devices (Hardy and Maguire, 2016, 2020), we conceptualise accounting inscriptions broadly as materialisations of reality in accounting terms, ranging from artefacts, such as risk maps (Jordan *et al.*, 2013), to discursive processes,

Table 1. Accounting inscriptions in supply chain management

Supply chain management study	Accounting inscriptions	Inscription through risk tools	Combining risk tools and risk talk	Inscription through risk talk
Carr and Ng (1995)	Target costing		X	
Seal *et al.* (1999)	Relations and trust			X
	Cost data	X		
	Cost and price negotiation			X
Van der Meer-Koistra and Vosselman (2000)	Trust			X
	Cost of ownership	X		
Mouritsen *et al.* (2001)	Open-book accounting	X		
	Functional analysis		X	
Tomkins (2001)	Open-book accounting	X		
	Trust			X
Cooper and Slagmulder (2004)	Functionality-price-quality trade-offs	X		
	Target costing		X	
	Parallel and simultaneous cost management		X	
Dekker (2004)	Outcome control	X		
	Behaviour control	X		
	Social control			X
Ramos (2004)	Open-book accounting	X		
	Target costing		X	
	Kaizen costing		X	
	Activity-based costing	X		
	Balanced scorecard	X		
	Value chain analysis		X	
	Cost of ownership	X		
Seal *et al.* (2004)	Financial and cost information sharing	X		
Joyce (2006)	Value analysis		X	
	Vendor analysis	X		
	Make-or-buy analysis	X		
Chua and Mahama (2007)	Performance measures	X		
	Incentive systems for suppliers	X		
Free (2008)	Open-book accounting	X		
	Joint performance management	X		
	Trust talk			X
Agndal and Nilsson (2009)	Target costing		X	
	Functional analysis		X	
Velayudhan *et al.* (2021)	Short-term accounting information evaluating supply chain uncertainties	X		
	Medium-term accounting information regarding economies-of-scale and liquidity demands	X		
	Long-term accounting information for scenario planning	X		
Crovini *et al.* (2022)	Risk reporting		X	

Source(s): Authors

Table 2. Accounting inscriptions in mediation

Mediation study	Accounting inscriptions	Inscription through risk tools	Combining risk tools and risk talk	Inscription through risk talk
Miller and O'Leary (2007)	Technology roadmaps		X	
Pollock and D'Adderio (2012)	Rankings		X	
Jordan *et al.* (2013)	Risk maps		X	
Carlsson-Wall and Kraus (2015)	Technological maturity staircase		X	
Christner and Strömsten (2015)	Accounting calculations		X	

Source(s): Authors

Table 3. Accounting inscriptions in risk management

Risk management study	Accounting inscriptions	Inscription through risk tools	Combining risk tools and risk talk	Inscription through risk talk
Hall *et al.* (2015)	Early warning indicators		X	
	Economic capital	X		
	Risk Management Framework	X		
Labelle and Rouleau (2016)	Risk reporting		X	
Vargha (2016)	Customer risk questionnaires	X		
	Pre-packaged software	X		
Arena *et al.* (2017)	Risk model		X	
	Risk sheets	X		
	Risk maps	X		
	Network of focal points	X		
	Risk workshops			X
Jordan *et al.* (2018)	Risk matrices		X	
Braumann *et al.* (2020)	Budgets		X	
	Performance measures		X	
	Tone from the top			X
Hardy and Maguire (2020)	Risk translation and management			X
Posch (2020)	Risk-focused results controls	X		
	Risk-focused information sharing		X	
Tekathen and Dechow (2020)	Risk assessment	X		
Jemaa (2022)	Risk governance structures			X
	Risk management policy	X		
	ISO 31000 standard	X		
	Extending the risk line		X	
Grieser and Pedell (2022)	Value-based risk culture controls		X	
	Symbol-based risk culture controls		X	
	Clan-based risk culture controls		X	

Source(s): Authors

including evaluations (Dambrin and Robson, 2011). These inscriptions are categorised as either risk tools or risk talk. Risk tools are accounting artefacts designed to materialise risk representations, sometimes embedded into existing accounting inscriptions, such as scenario planning (Hall *et al.*, 2015), and other times developed separately from these (Jordan *et al.*, 2018). Risk talk is the communicative practices, supported by accounting, that develop a common language to discuss risks and facilitate collaboration. The categorisation of research is interpretative, as the terms risk tools and risk talk are not explicitly used in all the reviewed studies.

2.1 Accounting inscriptions and supply chain management

Previous research has extensively explored the role of management accounting in supply chain management (Free, 2008; Joyce, 2006; Ramos, 2004; Seal *et al.*, 2004). This research has highlighted the significant benefits of fostering long-term collaborations within the supply chain by leveraging accounting techniques (Dekker, 2004; Mouritsen *et al.*, 2001). As shown in Table 1, studies have demonstrated how accounting inscriptions – such as target costing (Agndal and Nilsson, 2009; Carr and Ng, 1995), Kaizen costing (Ramos, 2004), open-book accounting (Mouritsen *et al.*, 2001) and incentive and reward systems (Chua and Mahama, 2007; Dekker, 2004) – can enhance cost efficiency and support lean supply chains. Empirical research has also explored the role of accounting inscriptions in fostering trust and collaboration (Cooper and Slagmulder, 2004; Free, 2008; Tomkins, 2001). Taking a more critical perspective, studies have shown that accounting inscriptions may be used by companies to integrate developing markets (Dekker, 2004), seek lower prices (Anderson and Dekker, 2009) and extract value to maximise profits (Free and Hecimovic, 2021). Meanwhile, research has investigated how governance structures contribute to constructing supply chain risk management (Mishra *et al.*, 2016; Wiengarten *et al.*, 2016), particularly under conditions of uncertainty (El Baz and Ruel, 2021). However, relatively few studies have connected accounting and risk management in a supply chain setting (Taschner and Charifzadeh, 2020).

Collectively, existing research supports the crucial role of accounting inscriptions in creating cost-efficient and lean supply chains. Until recently, such strategic orientations were regarded as providing companies with a competitive advantage (Crovini *et al.*, 2022; Mouritsen *et al.*, 2001), but the singular emphasis on cost-related issues is increasingly criticised for making organisations rigid and ill-equipped to respond effectively to external risks (Velayudhan *et al.*, 2021). For example, Free and Hecimovic (2021) argued that companies' dependence on accounting inscriptions, such as cost minimisation and lean management, has exposed vulnerabilities in managing complex external risks. They highlighted how such dependence contributes to a lack of transparency across supply chains, complicating responses to geopolitical shifts.

While recent studies (Crovini *et al.*, 2022; Velayudhan *et al.*, 2021) have provided valuable insights into how companies can use accounting inscriptions to navigate challenges posed by external crises, much more remains to be known. Existing research has primarily focused on the role of accounting inscriptions in helping companies respond to and manage crises post facto, for instance, focusing on initiatives taken after the financial crisis (Becker *et al.*, 2016; Carr and Beck, 2023), a corporate scandal (Arena *et al.*, 2017) or regulatory intervention (Ringgaard *et al.*, 2025). Since a crisis can also be studied as an unfolding event that organisations manage proactively (Hardy *et al.*, 2020), we argue that it is equally important to explore how companies prepare for risks in their supply chains ex ante. The mediation perspective on accounting (Miller and Power, 2013) offers a useful lens to clarify how a central company employs accounting inscriptions as mediating instruments, facilitating coordination between supply chain actors and ensuring risk management. As argued by Hardy and Maguire (2016, p. 87), "Not all hazards are amenable to quantification and prediction [….] In such cases, we suggest that is important to problematize traditional risk knowledge [. . .] This means challenging the privileged position of risk assessors in producing risk knowledge by drawing on alternative discourses [. . .] to include more stakeholders".

2.2 Accounting inscriptions as mediating instruments

Drawing on the notion of mediation from the sociology of science literature (Callon, 1998; Latour, 1988), Miller and O'Leary (2007) introduced the concept of a mediating instrument.

They described how accounting inscriptions can mediate between dispersed actors and distinct domains, such as those in a supply chain. By quantifying realities, accounting inscriptions not only represent but also actively intervene in reality (Hacking, 1983). Accounting represents a performable space for actors to navigate, and its representations often extend beyond the original purpose (Miller and O'Leary, 2007). However, actors do not passively adapt to the performable space set out by accounting but can embed their own performance ideals into mediating instruments.

Research has examined the role of mediating instruments in market formation (Miller and O'Leary, 2007; Pollock and D'Adderio, 2012), inter-organisational collaborations (Jordan *et al.*, 2013) and the diffusion of innovations (Carlsson-Wall and Kraus, 2015; Christner and Strömsten, 2015). By acknowledging the dynamic interrelationships between companies and their environment, studies have demonstrated how accounting creates representations that are stable, mobile and combinable (Robson, 1992), thereby mediating within and across organisational boundaries. For instance, Miller and O'Leary (2007) studied how technology roadmaps mediated between market actors in the semiconductor industry by constructing chains of calculations that coordinated investment decisions. The performativity of accounting in making markets was further illustrated by Pollock and D'Adderio (2012), who showed that rankings and markets are mutually constitutive, specifying how the graphic visualisation of rankings served as a mediating instrument.

While earlier studies focused on macro-level performativity (MacKenzie, 2006), Jordan *et al.* (2013) explored the role of mediating instruments at a project level. They found that risk maps mediated between dispersed actors by fostering a shared vision of the project's future, as intra-organisational discussions were used to determine both the content and format of information shared with inter-organisational collaborators. Similarly, studies examining mediating instruments in innovation and product development processes have emphasised how inter-organisational accounting tools, such as a technological maturity staircase (Carlsson-Wall and Kraus, 2015) or accounting calculations (Christner and Strömsten, 2015), mediate internally across hierarchies, and externally between innovators and investors. Altogether, these studies highlight how mediating instruments encapsulate diverse representations that enable actors to envision a collective future. Table 2 presents the various accounting inscriptions that facilitate organisational and inter-organisational mediation.

2.3 Mediating instruments in risk management

A growing body of research has emphasised the role of artefacts in risk management (Tekathen and Dechow, 2020; Vargha, 2016). While Jordan *et al.* (2013) convincingly demonstrated the importance of risk maps in fostering a shared understanding of the future, their study also highlighted the critical role of discussions among project participants. Robson (1992) argued that accounting inscriptions become impactful as instruments of representation only when they are integrated into calculative practices alongside human actors. To fully understand the role of mediating instruments in supply chain risk management, it is therefore essential to consider not only how accounting inscriptions are designed but also how they enter calculations (Miller and Power, 2013) and how actors engage in discussions about them (Hardy and Maguire, 2020, p. 687).

Mikes (2009) conceptualised the role of calculative cultures in shaping accounting inscriptions used for risk management purposes. Calculative culture denotes the attitude held by senior managers toward calculative practices. Calculative scepticism, where managers often override numbers with discretionary judgement to account for uncertainties, can be distinguished from calculative idealism, where managers place strong trust in numbers and view robust quantification as essential for risk management (Mikes, 2009). Studies have demonstrated how a company's calculative culture influences risk management strategies (Mikes, 2009, 2011), the effectiveness of risk workshops for identifying risks

(Bellora-Bienengräber *et al.*, 2023) and the performative power of models (Svetlova, 2012). Millo *et al.* (2024) expanded previous notions of calculative cultures, demonstrating how the reliance on algorithmic modelling is more complex, since model developers and managers neither critically doubt nor entirely rely on models.

Moreover, studies have shown that organisational characteristics, such as expertise and technologies, shape risk management (Arena *et al.*, 2010; Hall *et al.*, 2015). Risk experts are the people in an organisation with professional expertise in risk management (Mikes, 2011). They employ risk talk, which Mikes (2016, p. 255) defined as the "organisational discourse about risk issues ranging from task-related problems and perceived organisational weaknesses to concerns about resources planning", to make risks comprehensible to organisational actors. Risk tools can be important for directing attention toward risks (Jordan *et al.*, 2013), but they may not sufficiently facilitate cross-functional risk talk (Jemaa, 2022).

Table 3 presents the various accounting inscriptions found to mediate in risk management. This table shows how a range of accounting inscriptions, existing (Hall *et al.*, 2015) as well as evolving ones (Jordan *et al.*, 2018), get used for risk management purposes. Jordan *et al.* (2018) demonstrated how risk matrices gain influence in risk management practices by enabling interdiscursive risk talk, visualising risk in a simple, imaginable and manageable way. Labelle and Rouleau (2016) observed risk reports being transformed by the actors who consulted them. In contrast, Tekathen and Dechow (2020) highlighted how risk tools can narrow organisational understandings of risk, leading to compliance-focused risk management. This occurs when risk tools are not integrated into reflexive risk talk across organisational functions.

Other studies have explored how risk experts construct tools to maintain relationships with decision-makers (Hall *et al.*, 2015), aiming to influence decisions by integrating risk tools with other management control systems, such as performance measurement (Braumann *et al.*, 2020; Posch, 2020) or cultural control (Grieser and Pedell, 2022). Notably, risk talk has been highlighted to position risk management as a strategic priority rather than a compliance requirement (Arena *et al.*, 2017; Jemaa, 2022). Jemaa (2022) demonstrated that the combination of material and discursive efforts by risk experts was critical in recoupling risk management policies and practices within a company that had previously experienced decoupling.

2.4 Summary of theoretical underpinnings

While much is known about risk management within organisations, there is more to uncover about how accounting inscriptions become mediating instruments in a supply chain. In particular, contemplating how calculative cultures shape supply chain risk management presents a compelling avenue for exploration in today's uncertain environment, where globalised supply chains are increasingly exposed to external shocks that threaten their operations and collaborative networks (Pournader *et al.*, 2020). The proposal by Hardy and Maguire (2020) that existing understandings of risk can influence the construction of novel risks, particularly those characterised by uncertainty and unfamiliarity, motivates investigating the mediating role of accounting within the ex-ante context of significant, evolving external risks.

Miller and O'Leary's (2007) conceptualisation of mediating instruments allows us to unpack how accounting inscriptions facilitate the management of uncertainties. Importantly, we understand mediation not as requiring all actors to be physically present but as a process that occurs through inscriptions that link dispersed actors and domains. Accordingly, we focus on how managers of central companies represent uncertainties and use inscriptions to align supply chain actors. Further, we draw on a broad conceptualisation of accounting inscriptions as risk tools and risk talk, acknowledging that companies in supply chain settings frequently rely on inscriptions that may not be designed for risk-related purposes but get mobilised in risk management during moments of uncertainty (Velayudhan *et al.*, 2021). We consider not only how accounting inscriptions are intended to manage risks but also how existing inscriptions are re-purposed and combined as uncertainties escalate (Hall *et al.*, 2015).

3. Research approach

3.1 Brexit: an evolving supply chain risk

On June 23, 2016, the UK voted to leave the EU. The referendum created political, social and economic uncertainty with significant ramifications for nearly all aspects of society. Trading relationships that had evolved since the establishment of the EU in 1993 were fundamentally compromised (PwC, 2018). While all EU member states were aware of the potential negative impacts of a changed trading environment with the UK, Ireland and its companies were identified as being especially vulnerable (Government of Ireland, 2018). In 2018, Ireland exported €16.1 billion worth of goods to the UK and imported €19.9 billion (Central Statistics Office, 2019), indicating the high level of integration and dependence between Ireland and the UK. Especially in the agricultural sector (including food and animals), which is the context of this study, the high reliance on UK trade was evident. In the dairy sector, for instance, 53% of Irish cheese was exported to the UK in 2018 (Irish Farmers Association, 2019). Figures for the food sector in 2018 were similar, with Ireland exporting €4.8 billion worth of food to the UK – representing 43% of Ireland's total food exports that year (Central Statistics Office, 2019).

The UK is not only a critical trade partner for Ireland but also serves as a key transit hub for markets in the EU, given Ireland's peripheral island status. Irish food companies heavily rely on the UK's road network as a land bridge to transport goods to mainland Europe (Brady, 2021). However, the decision to reroute shipments – whether to avoid congested UK ports or comply with new regulations – could potentially increase transportation costs and transit time. Moreover, Brexit posed the risk of stricter customs control checks at UK entry and exit points, which could adversely impact transit times, costs and administrative burdens for Irish companies. This introduced significant sourcing and logistical risks, particularly in obtaining ingredients and packaging materials from the UK due to potential delays and cost escalations. Of greatest concern, the absence of a UK-EU trade agreement could enforce World Trade Organization (WTO) tariffs of up to 50% under rules of origin requirements, a so-called hard Brexit, thereby reducing market access and profitability (Lawless and Morgenroth, 2019). The timeline in Figure 1 illustrates the heightened uncertainty surrounding the Brexit process from 2016 to 2020, especially regarding the approval of a withdrawal agreement to avoid WTO tariffs. Uncertainty persisted as the withdrawal agreement repeatedly failed to gain parliamentary support in the UK, leading to multiple delays in the EU exit deadline.

This exploratory comparative study aims to document and understand how the significant uncertainties, especially related to a hard Brexit, were mediated by accounting inscriptions in three of the largest food companies headquartered in Ireland. Given their dominant roles in their respective supply chains, we refer to these as central companies. To highlight similarities and differences in how each company used accounting inscriptions to mediate the specific evolving uncertainties surrounding a hard Brexit among supply chain actors, we draw on data from interviews and internal documents. Short case company descriptions are provided in the next subsection.

3.2 Case companies

The first company, Company A, is known for its significant role in the dairy industry. The company operates as a cooperative, which means it is owned and controlled by its dairy farmer members, who supply milk and other dairy products. Company A has grown to become one of Ireland's largest dairy processors, with a diverse range of products including milk, cheese, butter and nutritional powders. Company A has 7,000 shareholder members and 1,200

Figure 1. Brexit timeline. Source: Authors

employees. It has production facilities in Ireland and the UK, as well as sales offices in Germany, Spain and China. The second company, Company B, is a privately owned retail and wholesale company headquartered in Ireland. It operates a diverse portfolio of brands across grocery retail, convenience stores and wholesale distribution. Company B employs 41,000 people across more than 1,400 stores and offices, generating combined retail sales of €5.4 billion a year. The third company, Company C, is a publicly traded food company with a listing on both the Dublin and London Stock Exchanges. With over 26,000 employees, Company C supplies 15,000 food ingredients and flavour products to customers in over 140 countries.

3.3 Data collection

The fieldwork was conducted in two stages. The first stage took place between September 2019 and March 2020, during the trade negotiations, and included 13 semi-structured interviews across the case companies. The interviewees were selected by their companies for their expertise as risk professionals and their ability to provide systematic insights into supply chain uncertainties arising from the risk of a hard Brexit. All interviews were conducted on the premises of the companies, with each session lasting an average of two hours.

Adopting an exploratory approach, the interviewees were initially asked open-ended questions to elicit their perspectives on how Brexit was perceived by their company. Subsequently, the questions focused on the risks associated with Brexit in relation to their supply chains, the specific supply chain vulnerabilities identified due to Brexit, the strategies implemented to mitigate these risks, the perceived effectiveness of these strategies in addressing supply chain disruptions caused by Brexit and the contingency plans in place to manage unexpected supply chain disruptions post-Brexit. Interviewees were also asked how the timing of Brexit developments influenced supply chain management decisions and Brexit response responsibilities. Finally, interviewees were asked about the processes, practices and systems, i.e. accounting inscriptions, that had been expanded or put in place. The interview guide can be found in Appendix 1. As data analysis abductively progressed alongside data collection, the questions became increasingly specific, delving deeper into how the supply chain issues were managed. During this stage, internal position papers, briefing presentations and planning documents were also obtained, providing detailed descriptions of how accounting artefacts and discourses were adapted to inscribe uncertainties.

A second stage of data collection was conducted between November 2021 and March 2023. The developed narrative was shared with the case companies and discussed with eight individuals, some of whom had participated in the first stage, while others offered fresh perspectives. Hence, we sought company reflection and feedback on preliminary interpretations (Madill and Sullivan, 2018). The interview questions in the second stage of the field research were designed to assess the emerging findings and interpretations of the researchers. Conducting interviews over an extended period enabled observation of patterns in responses and helped address the "practice-research gap" by demonstrating the value of research to the case companies (Bromwich and Scapens, 2016). Table 4 lists the interviewees.

3.4 Data analysis

Consistent with the exploratory approach, data analysis began during the data-gathering phase (Grodal *et al.*, 2021). Although more abductive than inductive, the analysis was guided by the structuring principles of Gioia *et al.* (2012). An overview of the data structure, including the

Table 4. Interview details

Designation	Company	Month, year
Stage 1 interviews		
Chief Finance Manager	A	Sep, 2019
Finance Manager – Dairy Services	A	Nov, 2019
Elite Buyer	A	Nov, 2019
Logistics Manager	A	Nov, 2019
Finance Manager – Agric Services	A	Jan, 2020
Lead Buyer – Dairy Ingredients	A	Mar, 2020
Commercial Director	B	Dec, 2019
Brexit Planning Lead	B	Dec, 2019
Brexit Planning Executive	B	Jan, 2020
Group Chief Financial Officer	C	Nov, 2019
Pricing Manager	C	Dec, 2019
Strategic Marketing Director	C	Dec, 2019
Brexit Programme Manager	C	Feb, 2020
Stage 2 interviews		
Group Chief Financial Officer	A	Dec, 2021
Finance Manager – Dairy Services	A	Dec, 2021
Commercial Director	B	Nov, 2021
Brexit Planning Lead	B	Nov, 2021
Strategic Marketing Director	C	Jan, 2023
International Trade Manager	C	Jan, 2023
Vice President – Supply Chain Europe	C	Jan, 2023
European Finance Director	C	Mar, 2023

Source(s): Authors

first-order themes, second-order themes and aggregate dimensions, can be found in Appendix 2.

First, we examined the first-order themes related to the overarching research focus, staying close to the interviewees' language. Second, we abstracted second-order themes from these by comparing data gathered across interviews. While interviewee terms, such as the distinctions between "uncertainties" and "risks", were retained, certain second-order themes, including "risk tools" and "risk talk", were informed by the academic literature to encapsulate the groups of accounting inscriptions used by the case companies. The literature guided our coding not only through narrow conceptualisations of accounting inscriptions for risk management, but also through broader insights into how inscriptions become implicated in risk work when companies confront external shocks (Hall *et al.*, 2015; Jemaa, 2022). Third, we organised second-order themes into aggregate dimensions to address our research questions. The first dimension, "supply chain uncertainties and risks", captured uncertainty and risk perceptions across the case companies. We found that the perceived reliability of quantification and the extent of engagement with supply chain actors shaped how risks were mediated. Accordingly, we developed "calculative cultures" as the second dimension, reflecting the historical development of senior managerial attitudes toward calculations and their perspectives on how calculative practices might evolve (Mikes, 2009). The third dimension, "intended audiences of mediation", was identified as important for the case companies (Miller and Power, 2013). Finally, the fourth dimension addressed the "accounting inscriptions in risk management" and encompassed the material and discursive practices through which organisational realities were inscribed.

The aggregate dimensions served as constructs for iteratively re-analysing all data, including interview transcripts, company documents and public reports (Bamberger, 2018). To triangulate, we compared interview accounts and internal documentation with publicly available annual reports, focusing on expressions of calculative cultures and the use of accounting inscriptions before, during and after the study period (Hoque *et al.*, 2013). This process enabled developing rich company descriptions and theoretical insights into the role of accounting inscriptions in mediating supply chain uncertainties. Throughout the analysis, we examined similarities and differences across cases, often using tables to compare constructs. While we initially documented each case separately, our developing understanding enabled a comparative narrative grounded in theory.

Although other supply chain actors may hold different perspectives, confidentiality constraints prevented data collection from them. We therefore traced the three companies' preparations for Brexit from a central company perspective. Our aim was not to establish causal differences, but to develop deep insights into the development and mediating role of accounting inscriptions. Thus, the comparative approach was used to "understand how differences make a difference" (Bechky and O'Mahony, 2015, p. 169).

4. Findings

We present our findings from the three case companies in four subsections. Section 4.1 explores the calculative cultures of each of the three case companies, highlighting how the historical and cultural contexts influenced their risk management approaches. Section 4.2 focuses on external mediation and examines how accounting inscriptions are employed to manage relationships and uncertainties with supply chain actors outside of the central companies. Section 4.3 shifts to focus on internal mediation and analyses how accounting inscriptions are used within the central companies to align internal decision-making. Finally, Section 4.4 outlines the broader impacts of supply chain mediation on proactive risk management pathways. Table 5 provides a summary of the accounting inscriptions used by the case companies, offering a comparative view of how these mediating instruments were applied. We note that the findings reflect solely the perspectives of the central companies, as conveyed in interviews and annual reports.

Table 5. Calculative cultures, intended audiences and accounting inscriptions across case companies

	Calculative culture	Intended audience of mediation	Accounting inscriptions used for external mediation	Risk tools	Combining risk tools and risk talk	Risk talk	Accounting inscriptions used for internal mediation	Risk tools	Combining risk tools and risk talk	Risk talk
Company A	Calculative scepticism	Suppliers Government	Increasing stock levels through supplier negotiation			X	Adjusting operating budget and profit forecasts	X		
			Engaging with government about tariffs			X	Engaging cooperative members in dialogues			X
Company B	Calculative pragmatism	Suppliers Customers	Increasing stock levels through supplier negotiation			X	Using budgets to plan for financial year	X		
			Establishing cross-functional teams	X						
			Creating heat maps and charts	X			Using contingency budgets to motivate alternative decisions		X	
			Developing mitigation plans with suppliers		X					
Company C	Calculative idealism	Customers Internal functions	Developing costing strategies	X			Combining rolling projections with budgeted numbers	X		
			Cascading costs to customers	X			Acquiring a Business Intelligence tool for budgeting	X		
							Creating a shadow budget	X		
							Reducing capital expenditures through capital budgeting	X		
							Acquiring an SAP Global Trade system for tariff management	X		

Source(s): Authors

4.1 Calculative cultures and paths of supply chain engagement

As described by Mikes (2009), a company's calculative culture influences how risks are managed. All companies in this study experienced the uncertainties associated with the potential for a hard Brexit, even though they relied on different risk management strategies, depending on their calculative cultures, to manage them. Their strategies encompassed an array of accounting inscriptions, with risk tools and risk talk being configured differently to improve operational decision-making across the three companies.

The Commercial Director in Company B explained their reliance on supply chain partners from the UK, saying, "Our supply chain in this country is very linked with the UK, and we knew that when it came to it, Ireland as a market to the UK will be the tail wagging the dog". The companies were all aware of the looming uncertainties, such as WTO tariffs, documentation requirements and market distortion. Attempts were made to transform certain uncertainties into monetised risks, e.g. increased transportation or administrative costs, but the constantly shifting Brexit scenarios implied that the associated uncertainties remained unpredictable.

The Finance Manager of Agric Services in Company A expressed, "There were times when prospects looked bleak, only to change dramatically just hours later". As a cooperative, the company prioritised reassurance and member involvement in its risk management strategy, relying on discussion forums to inscribe risks. When Brexit emerged, Company A listed Brexit-related uncertainties alongside other risks that were considered unquantifiable, such as those related to long-term environmental impacts. The Lead Buyer of Dairy Ingredients spoke to "the uncertainty of knowing, was it going to be a hard Brexit or a soft Brexit".

Due to the prioritisation of cooperative members, the calculative culture in Company A was characterised by a scepticism toward quantification and an emphasis on collaborative learning. The Elite Buyer in Company A said that "we met cross-functionally across the whole organisation to understand the impact", further noting that "there were some good conversations [. . .] you know, knowledge and people kind of learned". Suppliers were also involved in these conversations. The Elite Buyer in Company A considered how "From a supplier's perspective, they have likely incurred costs that have not been reimbursed, similar to some of the costs we have absorbed", acknowledging the importance of reassuring members of financial performance across the supply chain.

Prior to Brexit, Company B had a dynamic approach to risk management, developing diverse accounting inscriptions for different risk types. Reflecting its pragmatic calculative culture, operational risks were inscribed using heat maps, while strategic risks that were difficult to quantify were discussed with actors within and outside the company on an ad-hoc basis rather than embedded in artefacts. When Brexit arose as an emerging risk, Company B used "this proactive approach, coupled with ample stock within the country and suppliers' strategic adjustments pre-Brexit", as described by the Commercial Director.

Wary of Brexit's influence on the supply chain, Company B sought insight into how it could mitigate risks, although not all of them could be quantified. The Brexit Planning Lead described, "Taking apart our supply chain, lifting the bonnet, I suppose, and starting to understand [. . .] what could be done differently to help mitigate against some of the potential risks". Learning remained central, and calculations provided a starting point for growth discussions rather than definitive answers. According to the Brexit Planning Lead, "Understanding and learning. There has been a huge amount of that [. . .] if Brexit does not happen, you can go back and revisit that new knowledge and say there is an opportunity to do things here more efficiently, differently".

Although the three companies agreed that Brexit caused uncertainties that were difficult to quantify, Company C was accustomed to quantifying risks in terms of probabilities and consequences based on calculative idealism. Company C relied on analyses of probabilities, impact assessment and mitigation plans, and Brexit was treated as a new risk requiring financial quantification. The Strategic Marketing Director expressed that "keeping us awake at night was then the times when you would say "oh my god if it does happen, then this is a really huge impact" and it is a very big negative financial impact". After calculating risks, decision-makers in Company C felt less afraid, since they were used to comprehending uncertainties in quantified terms. The Brexit Programme Manager specified how "once we were able to quantify the impact [. . .] it got a lot of traction, and people understood what the impact of it would be".

While "Targets had been set before Brexit, and they remained *in situ*", as noted by the Group Chief Financial Officer, Company C relied not only on internal steering but also extended its quantification exercises toward customers. The Strategic Marketing Director highlighted customers' limited preparation for a hard Brexit, observing, "If we had felt that the customer base was 60% or 75% prepared, we would have taken a different approach [. . .] In the volume of business, it probably was not that high, but in terms of numbers of customers, I would say less than 50% were fully tuned into what needs to happen". Given the continued emphasis on hitting financial targets, internal steering groups comprising finance and supply chain representatives were established to monitor and control supply chain costs. Figure 2 provides an illustration of the division of risk responsibilities. As explained by the European Finance Director:

> We got into a phase of very quickly putting a team around that who would have a weekly steering call that would involve kind of finance, supply chain procurement. And we were trying to understand what our total exposure is going to be for the year. And how much of that we could mitigate internally.

Influenced by their historical context and calculative cultures, the three case companies adopted different risk management strategies and used diverse accounting inscriptions to mediate Brexit uncertainties within their supply chains. In the next subsections, we trace how the companies used accounting inscriptions to mediate these uncertainties, focusing first on external and then on internal audiences.

4.2 External mediation in supply chain risk management

All three companies engaged externally, albeit focusing on different actors. Members of Company A agreed to increase stock levels in case "there was a hard Brexit in the morning, and they all got together and started talking and sort it out, we have bought ourselves a few months, to sit back and watch", as expressed by the Finance Manager of Agric Services. In addition to increasing stock based on internal assessments, Company A negotiated delivery terms with suppliers and used proactive communication to seek information about safeguarding plans. Follow-ups continued until responses were deemed satisfactory, mediating an understanding of uncertainty in accounting terms. The Lead Buyer of Dairy Ingredients described Company A's supplier communication the following way:

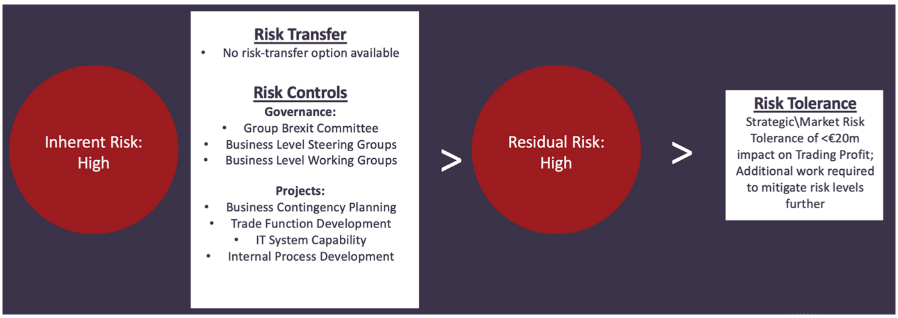

Figure 2. Internal division of risk responsibilities – Company C. Source: Extract from company documentation

> We sent out a communication, a general email to all 1,000 suppliers [. . .] Most of what came back was, if they were sourcing it from the UK, they had a backup plan to bring it from somewhere in Europe [. . .] As we got closer and closer, we started to focus a bit more on certain areas.

Balancing financial and quality objectives required discursive construction in discussions at supplier meetings. Rather than investing in additional tangible resources, the members of Company A constructed risk talk across the supply chain. Although certain members considered the discussions to be "awkward", they were essential to bring the actors together around a common risk management narrative. The Elite Buyer explained, "We could have invested in more holding tanks [to hold chemicals for making cheese] because the tanks would cost too much, we avoided some of those decisions [. . .] But we had those awkward conversations".

Company A also engaged verbally with the government, emphasising the strategic impacts of WTO tariffs to enrol this actor into the narrative, believing, "The government will help us out for a period of time", as expressed by the Chief Finance Manager. The members used risk talk as the primary accounting inscription, and the Manager elaborated, "Working with government, working with the other key players within the industry to get the message out there, what a hard Brexit meant. What are the consequences of it? Why we needed transition periods?" Risk talk functioned as the primary accounting inscription, as the Group Chief Financial Officer reflected:

> I think to be very fair, I think we might have been light on the operational side of [Brexit planning]. But we were very, very heavy when it came to the tariff side of it. And the influence and the effort that we put into influencing that whole area and getting the government to clearly understand the impact for [Company A] and for the dairy sector.

Considering the strategic impact of Brexit, decision-makers in Company B engaged with various actors in the supply chain to mediate an understanding of the related uncertainties. As with Company A, the Commercial Director described how Company B also increased its stock levels based on internal assessments, acknowledging the potential that "if a product is high tariffs and there is a risk in terms of shelf life, and that it may no longer be available here". These stock level decisions were informed by the central company's calculations rather than consensus among the supply chain actors. About their talks with suppliers about stock management, this Director expressed:

> We stockpiled and suppliers stockpiled [. . .] But for the long term as well in certain areas where things like product abandonment, origin products, short shelf-life products, if there is any delay in the supply chain, we are now saying, "suppliers, you will have to hold stock that they did not before".

Company B also established inter-organisational teams and information systems to develop a shared understanding of uncertainty. Ascribing to a form of calculative pragmatism, managers combined visual artefacts with discussions in mediation. Certain risk tools, such as heat maps and charts, which can be seen from Figure 3, were developed by the finance function upon request from senior managers to illustrate how Brexit might affect operations. The Commercial Director explained that "we had done heat maps of the store to say this area will be affected, this area will not [. . .] So, we looked at a lot of pie charts like dairy [. . .] We did a lot of that assessment". These accounting artefacts were used to mediate reality by fostering discussions across the supply chain, given the uncertain nature of Brexit, not to provide predictability. The Commercial Director in Company B said that "then we worked with a lot of suppliers to create mitigation plans to minimise the impact. In some cases, that would have been changing sourcing from the UK to Europe".

Sometimes, Company B would make strategic decisions as the central company and cascade them to its suppliers. These strategic decisions stemmed from comprehensive supply chain analyses and the development of new risk tools, including contingency budgets, which were shared with suppliers to visualise the potential impacts of Brexit. Although contingency budgets were not traditionally part of its dynamic risk management approach, the Commercial

Ambient Staple		Impulse	
Category	Disruption	Category	Disruption
Biscuits		Confectionery	
Cereals		Crisps	
Canned Dried Veg		Soft Drinks	
Canned Fish Meats		Beer	
Canned Fruit & Desserts		Wine	
Condiments packet		Cider	
Condiments tabletop		Spirits	
Foods of the World		Tobacco	
Home Baking			
Hot Bev			
Health & wellness			
Instant Hot Snacks			
Italian			
Oils			
Preserves			
Soups			
Sugar			
Ambient Juice			

Category Level (Colour Only - RAG)	Turnover L52WTY(€)	Category Level3	Disruption (Colour Only - RAG)	RAG Rationale (Commentary)	Mitigation in place (Commentary)
S0002 - IMPULSE CRISPS AND SNACKS		C0008 - IMPULSE CRISPS		Whilst Walkers, Doritos are a potential risk there are plenty of substitutes available ROI suppliers have taken action to protect supply	
		C0009 - IMPULSE SNACK			
		C0010 - IMPULSE POPCORN			
		C0011 - IMPULSE NUTS			
		C0012 - IMPULSE DRIED FRUIT			

Figure 3. Supply chain risk management tool – Company B. Source: Extract from company documentation

Director described a more directive use of risk talk, saying, "We made no apology really for pushing [suppliers'] planning early and forcing them to put contingency plans in place. But in hindsight, they came back to us and said, 'we did not think we would be here either, but it is a useful thing all round'". Senior managers viewed contingency budgets as a way to prepare for a hard Brexit and draw attention to risk management across the supply chain.

At other times, Company B adopted a more engaging approach to risk talk, similar to Company A, to secure acceptance of the strategic changes. Without cutting costs or transforming uncertainties into calculable risks, efforts by senior managers led to learning and collaboration. Bringing together cross-functional decision-makers and using accounting inscriptions for Brexit planning helped in subsequently cascading strategic decisions to suppliers. Taking the necessary initiatives, based on accounting information materialised in risk tools, became a supply chain strategy, as reflected by the Commercial Director:

> It has also made us work more effectively across divisionally. [. . .] It has probably extended our relationship with suppliers beyond normal sales and trading interaction. [. . .] Has it taken cost out? Probably not yet. Sometimes we are very collegiate, and we can spend a bit of time getting everybody on board. And some were saying just cut through, decide once and get on with it. So, yes, been helpful. Not dramatic.

In contrast, Company C's strong emphasis on financial performance shaped a different engagement with supply chain actors. Senior management emphasised costing strategies to manage operational risks. Like the other companies, Company C worked closely with brokers who "helped us through the process immensely, in terms of just getting product moving", as described by the Strategic Marketing Director. Still, unlike Companies A and B, Company C calculated the total cost of a hard Brexit and used these calculations to cascade costs to customers. As the European Finance Director explained:

> I think at the offset of Brexit there was probably clarity on the fact that we would have additional kind of processing cost and documentation fees [. . .] We were able to put an estimate around that and we were able to then pass that onto customers and to mitigate and manage that cost [. . .] over the subset of all our customers, we were able to recover that cost.

Thereby, cost transference enrolled external actors in the quantitative risk management approach. Due to its longstanding calculative idealism, emphasis on mitigating risks based on quantitative analyses, and the centrality of Company C in its supply chain, most customers accepted the additional costs, as noticed by the Pricing Manager:

> But if I guess if you factored that into the total number of customers and the number of people that were coming back, saying, “you know this charge is unfair, why are you charging me for this, why do I need to pay this?” There were relatively few, I would say, in the context of how many customers we have.

In summary, the three case companies engaged external actors in different ways to mediate the uncertainties associated with Brexit across their supply chains. While Jemaa (2022) highlighted the effectiveness of combining risk tools and risk talk, the companies in this study leveraged accounting inscriptions, and combinations thereof, differently. Companies A and B increased stock levels and initiated supplier discussions – Company A primarily through verbal meetings that engaged the Irish government and Company B through risk tools and cross-functional teams. By contrast, Company C focused on cascading monetised risk representations to customers, reflecting its reliance on calculative idealism.

4.3 Internal mediation in supply chain risk management

Emphasising financial performance and risk-based calculations, senior managers in Company C focused strongly on creating internal alignment between strategy and operations. The European Finance Director explained how “finance does have, and this is a cultural thing, finance does have a big say within the organisation”. Reflecting its calculative idealism, strategic authority rested with the finance department to shape the narrative of risk management. As the overarching accounting inscription, the budget became central in encapsulating Brexit in internal decision-making and mediating related uncertainties toward internal actors.

The budgeting process changed as Brexit uncertainties made early finalisation difficult. Rolling projections increased precision, supported by a new Business Intelligence tool that predicted Brexit impacts at granular line-item levels. As the Pricing Manager explained, “We developed a Business Intelligence tool that enabled us to assess the potential duty implications a site would face post-Brexit. For instance, we could determine the impact on profitability”.

The finance function also created a shadow budget. Unlike Company B’s contingency budgets, Company C did not attempt to fully quantify Brexit uncertainties within profit planning. The Strategic Marketing Director noted that “only the realisation of the risk will impact performance”. As this Director explained, “Anything more extreme [. . .] the introduction of tariffs [. . .] was considered too low probability to incorporate into profit forecasts”, though scenario numbers were shared at the board level. Further, the Director described the process of creating a shadow budget and its existence alongside the budget used for profit planning and control, which was believed to be important in mediating Brexit-related uncertainties:

> So, not recognised in profit planning, but recognised within the organisation internally, and the reason being is that we were factoring in what we could prepare for and what we had prepared for, and the costs related to that. [...] But the numbers were available, as in the [Brexit] scenarios, were available and were shared board level.

In contrast to companies A and B, which used accounting inscriptions to mediate externally, Company C used traditional and shadow budgets as risk tools to guide internal decision-making at the senior managerial level:

> We overlaid the impact of Brexit on our financials by integrating it with our existing financial performance trajectory. [. . .] However, it is important to note that this information was not widely shared. It was primarily limited to senior management to provide them with a sense of the potential financial impact in the event of Brexit. This analysis was not shared with shareholders or external stakeholders but was intended for internal purposes only.

Risk talk was not used internally by Company C. According to the Brexit Programme Manager, “Everyone was aware that there was a Brexit project on the way, but we had not updated people [. . .] because we wanted to focus it [. . .] on the project team and not pull from the business as usual”. Awareness of the Brexit project was contained within the project team to avoid disrupting business-as-usual. Thus, internal mediation was not a result of discursive enrolment but rather top-down enforcement of quantified and monetised accounting artefacts.

Senior management in Company C tightened capital budgeting, suspending some investments amid Brexit uncertainties. At the same time, Company C invested in SAP Global Trade Services to manage potential trade disruptions. The system automated import/export declarations and re-pricing, which increased from annual to quarterly adjustments. While SAP had long been considered useful, the threat of a hard Brexit accelerated its adoption, replacing manual processes with automated risk tools. The Pricing Manager explained, “We implemented Global Trade Services after considering its viability for some time [. . .] but the situation changed when we determined that a substantial number of product movements would be subject to tariffs in a hard Brexit scenario”. The pricing calculations, which were traditionally managed via Excel, were automated through SAP, as Brexit increased the frequency of re-pricing. The European Finance Director noted, “Historically, we re-priced our products once a year. We have changed that to four times a year”.

By contrast, Company B’s contingency budgets supported supply chain mediation but did not drive internal decision-making. The Brexit Planning Lead said, “If the worst happens, we will roll back [the budget] and reassess”. Risk tools facilitated discussion rather than dictating decisions. The Commercial Director added, “We pushed the teams to define how they would deal with [UK reliance and tariffs] [. . .] maybe adjust promotional strategy, but we never pressed the button on any of it”. Consequently, risk tools mediated uncertainties by facilitating discussions around accounting numbers rather than dictating decisions or promotional strategies.

Member discussions were key to facilitating internal engagement in Company A. The members adjusted the operating budget and profit forecasts, ensuring flexibility for a Hard Brexit. The Chief Finance Manager stated, “We built flexibility into performance forecasts to communicate the message”. Rather than imposing decisions through accounting inscriptions, Company A worked to adapt them in reflection of different Brexit scenarios. Consistent with its discursive approach toward external actors, the company prioritised openness and transparency. The Chief Finance Manager emphasised the importance of including cooperative members in this process:

> We informed them about the potential impact of Brexit, particularly regarding tariffs, and we are now informing them about what needs to be done from a sustainability perspective. After all, it is their livelihoods that are at stake. Unlike multinationals and public companies, which are more accountable to institutional investors or financial investors due to their share price, we have a responsibility to our members. They rely on us for their primary source of income.

In summary, Company C, driven by calculative idealism and financial performance goals, developed its risk tools to sustain internal mediation. Although budgeting processes evolved, and investments in automation replaced manual calculations, profit planning did not formally incorporate Brexit uncertainties. In contrast, Company B used contingency budgets and Company A leveraged budgets and forecasts to mediate through engagement and risk talk rather than top-down control.

4.4 Effects of mediating instruments on proactive supply chain risk management

Although a hard Brexit never materialised, the changes in accounting inscriptions introduced by the central companies had lasting effects on supply chain risk management. All three companies reported adjustments: Company A focusing on building a resilient supply chain to reassure members, Company B investing in digital solutions to proactively discuss emerging risks, and Company C classifying and quantifying uncertainties to sustain financial performance.

Specifically, given the status of the finance function, Company C intensified its focus on cost management through budgets, leading to learnings about cost containment and capital investment. The European Finance Director noted that "we knew we had an exposure, and we had to manage that [. . .] in some areas, we found that we had more of a competitive advantage than previously". The Pricing Manager observed that risk tools, rather than risk talk, had a lasting impact, since "no one talked about [Brexit] anymore, it just became part of the normal day-to-day activities". Despite the company's longstanding tradition of focusing on financial performance, Brexit acted as a catalyst for engaging customers and internal functions through cost calculations embedded in new accounting artefacts. As stated in the 2021 financial report, "Despite ongoing challenges, such as the global COVID-19 pandemic and global supply chain disruption, our performance continues to highlight the resilience of our people, our business model and our proven track record of delivery through uncertainty".

Meanwhile, Company B relied on calculative pragmatism in its proactive risk management of Brexit, which triggered learning in terms of how to engage with other supply chain actors. New learnings needed to be implemented into everyday supply chain practices, and the Commercial Director elaborated:

> As recently as yesterday, we had conversations with the joint supply commercial team, where we need suppliers to tell us week by week, what availability is going to be like [. . .] And there is nothing like a very clear request of them to focus their own minds on their own business and to have senior people who may normally leave the supply chain team alone but now become familiar with the supply chain issues and stuff [. . .] So, we have definitely learned the importance of top management input. That we are using for other circumstances.

Decision-makers valued these learnings, and the Commercial Director expressed, "It has given us a better understanding of our supply chain [. . .] that is definitely a value in the future. It has probably tightened our relationship further with retail partners". The 2020 financial report emphasised the company's adaptability in a "post-Brexit landscape" and its pragmatic calculative culture, stating that "what we can take from our performance is how nimble and adaptable we can be as a business – qualities we will need as we adapt to the new normal and a post-Brexit landscape". Regarding the collaboration with other supply chain actors, the report noted that "extensive Brexit preparations and robust and agile supply chain and logistics network ensure any disruption was minimised and availability was protected. We continue to work closely with our suppliers".

Company A, which had viewed Brexit as an uncertain but manageable scenario, saw its expectations largely confirmed. While disruptions occurred, they aligned with forecasts and did not escalate into a hard Brexit outcome. Nonetheless, proactive risk management improved. As explained by the Group Chief Financial Officer:

> I think our risk management and the way we record it, and through this Enterprise Risk Management forum, has improved significantly over the last number of years. And for identifying and managing those risks. Whereas before, maybe a lot of people used to deal with them ad hoc and manage them ad hoc. Whereas now they will go through a formal structure.

The 2020 financial report stated, "The primary focus during the year was on the continued wellbeing of all stakeholders and maintaining business continuity". However, mediation extended beyond the cooperative members of Company A. The expansion of risk talk also facilitated learning in relation to government engagement. As the Chief Finance Manager explained, "Regarding Brexit, we were proactive in areas where we felt it necessary, such as tariffs. We made efforts to engage with key influencers to ensure they understood the situation".

The threat of a hard Brexit led to changes in accounting inscriptions among all three case companies, consistent with their calculative cultures and mediation audiences. By mobilising risk tools and risk talk to represent diverse strategic and operational concerns, the companies developed mediating instruments that continued to shape supply chain risk management even after the immediate threat subsided.

5. Discussion and conclusion

This study explored how accounting inscriptions mediate uncertainties between a central company and other supply chain actors in response to Brexit. Although supply chain risk has become a salient organisational concern, its implications for accounting and control remain relatively underexplored (Crovini *et al.*, 2022; Velayudhan *et al.*, 2021). By examining how three central companies developed and used a variety of accounting inscriptions as uncertainties evolved, we contribute to a better understanding of the risks that organisational actors tend to consider "pretty obvious and self-evident" (Tekathen and Dechow, 2020, p. 15), particularly after a crisis.

Situated in a novel risk setting, our findings showed how the companies considered Brexit a major source of uncertainty that required coordinated responses across both external and internal supply chain actors. Accounting inscriptions were adjusted in anticipation of potential disruption, supporting the view that proactive risk management involves organising around the unknown rather than rationalising events in real time or ex post (Hardy *et al.*, 2020). While all three companies developed and used accounting inscriptions as uncertainties evolved, they did so in notably different ways, conditioned by their calculative cultures and the actors toward whom they sought to mediate representations of uncertainty.

Furthermore, although a hard Brexit never materialised, the changes had lasting effects on the central companies' risk management practices. Company A started mediating with the government by lobbying through risk talk in reference groups, which intensified the discursive approach. Company B started working cross-functionally to develop contingency budgets and mitigation plans, mediating supplier decisions based on a collaborative approach. Finally, Company C intensified internal steering to mediate decision-making, relying on the quantification approach. Figure 4 summarises these findings, highlighting the importance of central companies leveraging risk tools and risk talk to construct shared risk narratives and coordinating responses across their supply chains (Miller and Power, 2013).

5.1 Accounting inscriptions and calculative cultures in risk management

Contributing to the accounting literature on risk management (Arena *et al.*, 2010; Mikes, 2009, 2011), this study demonstrates how accounting inscriptions mediate risk in supply chain management. While the companies relied on distinct inscriptions, they were all used to establish a common idea of proactive risk management. The use of mediating instruments depends on how risk tools and risk talk are aligned with central companies' calculative cultures, as well as the actors between whom the accounting inscriptions are intended to mediate (see Figure 4). Previously, calculative cultures have been shown to influence managerial predilections towards risk management strategies (Mikes, 2009, 2011) and the reliance on algorithmic modelling in risk quantification (Millo *et al.*, 2024). Our study extends this research by showing that calculative cultures also shape how central companies develop and use accounting inscriptions in a supply chain.

The first calculative culture identified reflects Mikes' (2009) concept of calculative scepticism, where risk tools are largely disregarded, and discussions take place without formal quantitative measures, indicating a mistrust of numerical data and a high validity of organisational risk talk. The second culture, which we term calculative pragmatism, represents a middle ground, where risk tools are used but not relied upon exclusively. Decision-making integrates both qualitative judgements and non-financial factors, balancing calculations with practical considerations. The third culture identified mirrors Mikes' (2009) concept of calculative idealism, where risk tools dominate discussions and exclude alternative perspectives, reflecting a strong reliance on risk quantification. Altogether, we find that in the supply chain context, risk talk plays a key role in external mediation while risk tools are more significant in internal mediation. We also propose that uncertainty and unfamiliarity drive companies to pursue outcomes without a clear sense of what they are aiming for, relying on their existing calculative cultures to mediate and manage risks.

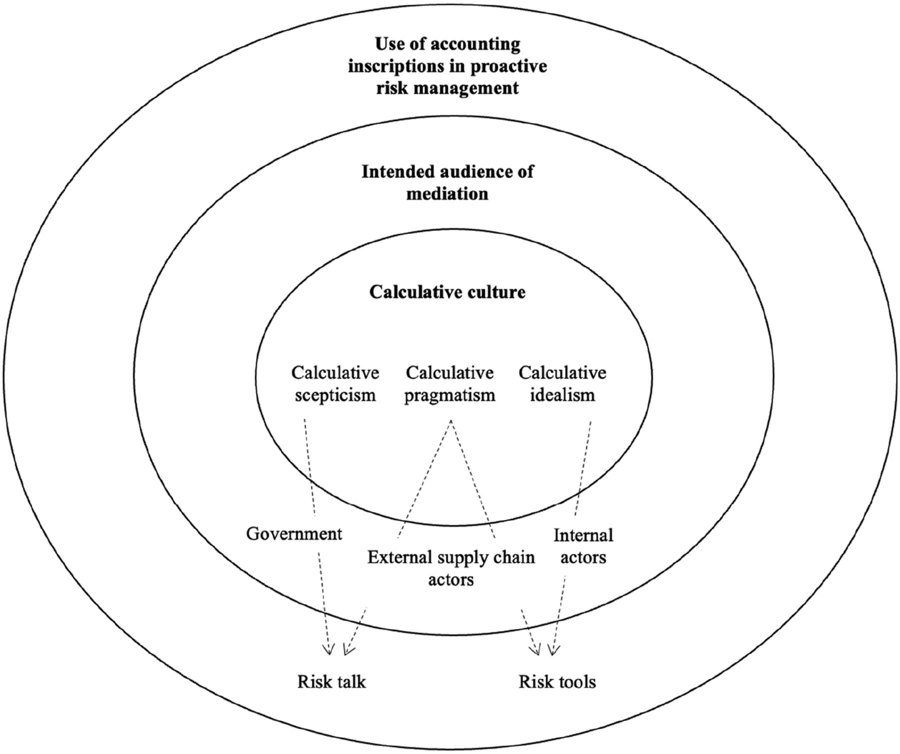

Figure 4. The directional relationships between calculative cultures, intended audiences of mediation and the use of accounting inscriptions in proactive risk management. Source: Authors

Despite all case companies holding a central position in their supply chains, they focused on mediating uncertainties with different actors, leading to three distinct pathways to proactive risk management. Company A primarily used risk talk to prompt action from suppliers and the government. In interactions with the government, accounting inscriptions were not used to demonstrate compliance (Tekathen and Dechow, 2020) but rather to engage regulators in mitigating WTO tariff uncertainties. Prioritising mediation across suppliers, retailers and customers, Company B integrated risk tools with risk talk to foster cohesive discussions. Consistent with other studies on inter-organisational mediation (Carlsson-Wall and Kraus, 2015; Christner and Strömsten, 2015), accounting calculations provided direction and facilitated discussion but were used in anticipation of risk, rather than to manage them in real time. Finally, Company C focused on internal mediation between the finance and supply chain procurement functions. Risks were quantified and monetised as costs, which were passed on to customers without further discussion. While prior studies have highlighted the integration of risk quantification with performance measurement (Carlsson-Wall *et al.*, 2021), Company C established budgetary targets based on a business-as-usual scenario, aiming to sustain financial performance by separating traditional budgets used for target-setting from shadow budgets enabling proactive planning.

5.2 The mediating abilities of risk tools and risk talk

Building on research that views accounting inscriptions as mediating instruments (Miller and O'Leary, 2007; Pollock and D'Adderio, 2012), this study contributes by adopting a broad conceptualisation of inscriptions to show how central companies mobilise both material and discursive inscriptions in preparation for external risks. Regarding risk tools, we find that artefacts remain central to managing at a distance (Robson, 1992). While prior research shows how calculative idealism can transform risk tools into ammunition machines (Jørgensen and Jordan, 2016; Mikes, 2009), the case companies in this study leveraged the tools in more nuanced ways. Only one company exhibited calculative idealism, yet all three developed proactive costing strategies, either to learn about uncertainties or to guide decision-making. Jordan *et al.* (2013) emphasised mediation through co-orientation toward a single tool, i.e. risk maps, whereas our findings highlight that a broader repertoire of risk tools, such as traditional budgets, contingency budgets and shadow budgets, can serve as mediating instruments.

Regarding risk talk, we find that such inscriptions also play a critical role, either complementing risk tools or operating independently to engage actors in discussions about an uncertain future. Existing research has emphasised the importance of open discussion when uncertainties are difficult to quantify (Jemaa, 2022; Tekathen and Dechow, 2020). We extend this work by showing that understanding risk talk requires looking not just within-function discussions, but also considering the interactions between functions, companies and even institutions (Mikes, 2016). Our study shows that while discussion-driven processes generally support mediation, the nature of these discussions varies. In some instances – consistent with prior studies of internal risk talk (Arena *et al.*, 2017; Jemaa, 2022; Jordan *et al.*, 2018) – interactive discussions with external audiences facilitate learning about uncertainties. In others, risk talk may take a more top-down, directive form, functioning primarily as a mechanism of control and enforcement. We assert that both forms of risk talk provide a critical language through which uncertainties are articulated and inscribed as risk objects.

5.3 Practical implications, limitations and future research opportunities

This study offers several insights for companies managing supply chain risks. First, our findings show that recognising and reinforcing a company's underlying calculative culture can help anticipate how risk information will be interpreted, enabling more targeted and credible risk management. Second, our findings emphasise the value of tailoring accounting inscriptions to specific audiences. Rather than relying on standardised inscriptions, companies should adapt both risk tools and risk talk to the needs of external and internal actors to enhance their mediating effect. Third, the study highlights the benefits of accounting inscriptions that can be adjusted as conditions evolve, enabling companies to better coordinate responses across the supply chain.

We acknowledge the limitations of the study, which we see as opportunities for future research. The circumstances did not allow for considering the perspectives of other supply chain actors than the central companies, but future studies might include data from suppliers, customers or regulators to enhance our understanding of mediation. Additionally, while we documented decisions such as increasing stock levels, it is important to clarify that these observations were derived from managers' internal assessments of supplier capacity and broader market conditions, rather than from direct insight into supplier responses. Future research could therefore examine such decisions in supply chains without significant central actors. To date, our understanding of proactive risk management is at an early stage, and considering perspectives from various external and internal supply chain actors would provide additional insights. For example, studies could include concerns about risk appetite and characteristics of the risk management function (Mikes, 2016).

Future research could also explore the interplay between different accounting inscriptions when organisations face external risks. Prior research has suggested that accounting inscriptions often embody different assumptions and temporalities, which can lead to misalignment in how risks are interpreted and acted upon (Callon, 1998; Christner and Strömsten, 2015; Habran *et al.*, 2021). Understanding how organisations use diverse inscriptions – and how legitimacy is assigned to them – would offer important insights into the conditions under which mediating instruments can effectively support the management of uncertainty. Additionally, the findings of this study could be expanded through studies of other geopolitical risks than Brexit, such as natural disasters, pandemics or economic crises, which may require different approaches. While our study captured a specific period before the Brexit decision was implemented, long-term adjustments to risk management were not considered. As argued by Power (2011), past crises should not be forgotten, and future longitudinal studies could show how companies manage uncertainties when they become known unknowns upon crisis materialisation.

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Appendix 1
Interview guide

(1) What management control practices are used in the organisation and its supply chain?

(2) How are management control practices generated, adapted and communicated?

(3) How are key success factors issues brought to the attention of employees and managers? Are key performance measures linked to key success factors?

(4) Does the organisational and supply chain structure impact the operation of the management control practices in place? What is the lowest level of management that reports on performance?

(5) Can you identify particular strengths in the management control system in dealing with the pending Brexit situation?

(6) Can you identify any aspects of the management control system that need to be changed or improved in order to deal with the pending Brexit issues?

(7) What, if any, financial or non-financial rewards will managers/employees/the organisation gain by achieving performance targets, or conversely, what penalties will they suffer by failing to achieve them? Has Brexit been factored into the reward process for next year?

(8) How does the management control information flow in the organisation and its supply chain – feedback and feedforward? Are the information flows functioning, helping to effectually deal with Brexit issues?

(9) What do you think management control practices should achieve in dealing with the problems posed by Brexit overall in the organisation?

(10) How well are the management control practices achieving a balance between freedom to manage and accountability for results?

(11) In your opinion, what factors influence how appropriate management control practices are for accomplishing organisational and supply chain control? Which issue do you consider the most influential? Why?

(12) What is your assessment of the communication process across the organisation and its supply chain with regard to the dissemination of management control information related to Brexit?

(13) Does the communication process differ depending on the management control practices being considered?

(14) Are there any other issues that influence the appropriateness of management control information?

(15) One of the key issues highlighted in prior research is the inability of management control practices to deal with environmental uncertainty. Do you consider this to be an issue? If yes, can you identify explanations for this lack of usefulness?

(16) One of the key issues highlighted from prior research is that, in the main, the functions of budgetary control change when high levels of environmental uncertainty are prevalent. Functions include planning/resource allocation/performance evaluation. Do you consider this to be an issue? Do you have any observations on why this might be?

(17) Is there anything the organisation has done or could do to improve its preparation for the Brexit situation?

(18) For you individually, has the change (presumably increase) in environmental uncertainty affected your decision-making and reliance on management control practices?

(19) For you individually, how has the change (presumably increase) in environmental uncertainty affected/controlled your behaviour?

(20) What type of support and/or changes would you like to be made to the management control practices in preparation for Brexit? Do you feel they will be forthcoming?

Appendix 2

Table A1. Data structure

First order themes Themes	Illustrative quotes	Second order themes	Aggregate dimensions
Production challenges	*"Timing does matter in this industry [. . .] it was going to hit us at the worst possible times in terms of revamping" (Elite Buyer, A)*	Strategic uncertainties	Supply chain uncertainties and risks
Export and import	*"Understanding the product flow, the supply chain flows of products, both imports and exports" (Chief Finance Manager, A)*		
Data storage	*"You would never have thought about why would Brexit impact on your data centre in the UK [. . .] It makes you think twice because it could go way outside the box" (Finance Manager – Agric Services, A)*	Operational uncertainties	
Stationary equipment	*"If I did not have paper or there would be mayhem here" (Lead Buyer – Dairy Ingredients, A)*		
Tariffs	*"There was very little direction coming because everyone was focused on the tariffs and [. . .] a finished product, but people had kind of forgotten, what is going to happen along the chain" (Elite Buyer, A)*	Operational risks	
Documentation	*"Documentation requirements will change straight away. If their WTO tariffs apply, you are into a whole new market" (Logistics Manager, A)*		

(*continued*)

Table A1. Continued

First order themes Themes	Illustrative quotes	Second order themes	Aggregate dimensions
Shareholder value	*"We are a financially driven company [. . .] focus on hitting targets [. . .] the importance we plan on shareholder value" (European Finance Director, C)*	Historical calculations	Calculative cultures
Cooperative member value	*"Our members would [. . .] directly suffer the impact of a hard Brexit [. . .] there is more pressure on us to keep them informed [. . .] and outline mitigate strategies" (Finance Manager – Agric Services, A)*		
Customer value	*"The consumer will have no appetite for inflation. [. . .] They would be looking for more value for money, and that is in our challenge to suppliers" (Commercial Director, B)*		
Quantifying risks	*"We can quantify the differences – how much we built in for Brexit [. . .] and excluding Brexit [. . .] – in terms of our targets and stock holdings" (Group Chief Financial Officer, C)*	Attitude toward risk quantification	
Monetising risks	*"We looked at the tariff risk [. . .] the biggest from a material perspective in terms of impact" (Group Chief Financial Officer, C)*		
Connecting risks to profit numbers	*"Anything more extreme [. . .] the introduction of tariffs [. . .] was considered too low probability to incorporate into profit forecasts" (Strategic Marketing Director, C)*		
Discussing risks	*"We would have the discussions here and around the office with people who are not working on Brexit" (Brexit Planning Lead, B)*		
Learning	*"So, we have definitely learned the importance of top management input. That we are using for other circumstances" (Commercial Director, B)*		
Risk aware	*"The whole issue of concentrated risk in specific markets is key learning" (Finance Manager – Agric Services, A)*	Change in calculative practices	
Anticipating worst-case scenario	*"Adopted the worst-case scenario for planning – a complete hard Brexit scenario" (Brexit Programme Manager Officer, C)*		
Anticipating best-case scenario	*"Analysis, it was based on the best portion we had at the time" (Pricing Manager, C)*		
Future preparedness	*"Our risk management [. . .] has improved significantly over the last number of years. [. . .] now they will go through a formal structure" (Group Chief Financial Officer, A)*		

(*continued*)

Table A1. Continued

First order themes Themes	Illustrative quotes	Second order themes	Aggregate dimensions
Suppliers	*"We worked a lot with suppliers to create mitigation plans" (Commercial Director, B)*	External mediation	Intended audiences of mediation
Customers	*"Communicating with those key customers [. . .] We do have very robust plans in place" (Brexit Planning Lead, B)*		
Stock markets	*"We have kind of changed budget timeliness to give us more certainty" (European Finance Director, C)*		
Government	*"Working with government [. . .] to get the message out there, what a hard Brexit meant" (Chief Finance Manager, A)*		
Consultants	*"We are very fortunate being a large organisation, we can pick up the phone to PwC and [. . .] and get some guidance there" (Brexit Planning Lead, B)*	Internal mediation	
Internal actors	*"Re-established a form between commercial and middle office, [. . .] supply chain procurement etcetera" (Brexit Programme Manager Officer, C)*		
Uncertainty definitions	*"Uncertainty is the word [. . .] nobody really knew" (Lead Buyer – Dairy Ingredients, A)*	Risk management strategies	Accounting inscriptions in risk management
Risk definitions	*"We brainstormed, put the risk then into a few different categories" (Group Chief Financial Officer, C)*		
Risk mitigation	*"Identified means to mitigate against the risk" (Pricing Manager, C)*		
Cost focus	*"Processing cost and documentation fees [. . .] We were able to put an estimate around that and we were able to then pass that onto customers" (European Finance Director, C)*	Risk tools	
Forecasting	*"Adding a profit margin. And there is an element of forecasting in that" (European Finance Director, C)*		
Budgeting	*"We did do shadow budgeting" (Supply Chain Director, C)*		
Capital investment	*"I cannot think of any actually where an investment did not happen because of Brexit, but certainly decisions were slowed down" (Vice President – Supply Chain Europe, C)*		
Contingency planning	*"Pushing [suppliers'] planning early and forcing them to put contingency plans in place" (Commercial Director, B)*		
Stock levels	*"Stock management was called out [. . .] mitigate the immediate impact" (Brexit Programme Manager Officer, C)*		
Production plans	*"If Brexit had happened, we would have changed our own production plans" (Elite Buyer, A)*		
Guarantees	*"The tariffs and the other costs that will come [. . .] customs, administration" (Commercial Director, B)*		

(*continued*)

Table A1. Continued

First order themes Themes	Illustrative quotes	Second order themes	Aggregate dimensions
Internal auditing	*"They do an audit [. . .] push for the continent now because [. . .] in a post Brexit scenario" (Pricing Manager, C)*		
Performance management	*"No excuse to pull back on your performance until Brexit happens" (Strategic Marketing Director, C)*		
IT systems	*"We implemented a new system called Global Trade Services [. . .] to scale up on the number of import and export declarations" (Brexit Programme Manager Officer, C)*		
External discussions	*"In talking to all the industry and all that kind of stuff and all the influencers" (Finance Manager – Agric Services, A)*	Risk talk	
Internal discussions	*"We have talked about ourselves there and making sure that they are prepared for that" (Commercial Director, B)*		
Collaboration	*"Collaboration focused on getting the industry ready" (Chief Finance Manager, A)*		

Source(s): Authors inspired by Gioia *et al*. (2012)

Notes

1. We distinguish between uncertainties and risks based on the measurability of probabilities and consequences, which can be quantified for risks but not for uncertainties (Knight, 1921). Although Brexit posed a novel risk, several uncertainties were associated with the risk of Brexit and needed to be managed and mediated across supply chain actors.

2. A hard Brexit refers to the UK leaving the EU without agreements on trade, customs or regulatory alignment, leading to a complete break from the EU's single market and customs union. This scenario would have also affected the application of World Trade Organization (WTO) tariffs of up to 50% within the supply chain (Lawless and Morgenroth, 2019). However, a hard Brexit was ultimately avoided in 2020. The subsequent transition period was characterised by efforts to establish new agreements aimed at managing the economic and regulatory separation.

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