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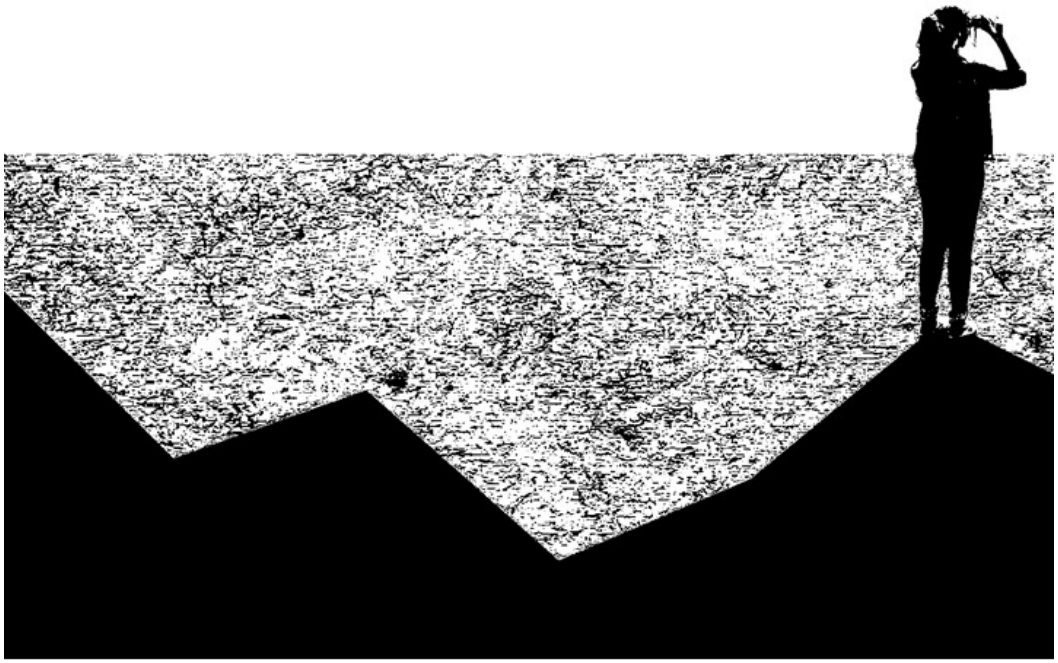
Supplier Resource Allocation during Market Uncertainty:

A mixed methods study on the impact of Dependence and Relationship Length.

Master thesis - Bart Grootenhuis



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Abstract

Suppliers' resource allocation decisions are important to buyers' success, especially during market uncertainty. This study explores how market uncertainty and supplier dependence, measured as a share of turnover, affect a supplier's resource allocation. Thereby, the moderating role of long-term buyer-supplier relationships is investigated. Understanding and potentially influencing suppliers' allocation of resources can benefit supply chain practitioners. A mixed-methods approach is adopted. Policy-capturing experiments gathered quantitative data across four companies active in diverse industries. Additionally, qualitative insights from interviews with directors working in an agrifood multinational verify and explain why decisions are made. In this industry where market uncertainty is always present, buyer-supplier relationships aim to build long-term relationships with mutual trust to cope with market uncertainty. The quantitative analysis reveals that suppliers allocate more resources to buyers on whom they are highly dependent, while high market uncertainty leads to slightly reduced resource allocation. Long-term relationships are shown to influence resource allocation positively. In both methods, cultural differences also emerge as a significant factor, with statistical evidence showing that non-Dutch suppliers allocate more resources than their Dutch counterparts. These findings contribute with empirical evidence to the literature and suggest future directions and strategic considerations in supplier resource allocation and the cultural context.

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1. Introduction

Identifying how suppliers allocate resources in the face of uncertainty is essential for navigating through the current dynamic business environment. Companies are increasingly required to strategically oversee their upstream supply chain operations (Liao et al., 2010). Christopher and Lee (2004) highlight the complexity of inter-organizational supply chain networks and the importance of managing supply chains more responsively. Resource allocation in supply chain management involves strategically distributing and utilising resources to optimise operational efficiency, meet demand, and achieve organisational objectives (Brandon-Jones et al., 2014). Suppliers' decisions regarding resource allocation can determine a buyer firm's resilience and adaptability and eventually increase performance (Brandon-Jones et al., 2014; Hatch, 2006).

Suppliers' resource allocation decisions enable buyers to stay competitive and adapt to market changes by incorporating innovative technologies or more efficient processes from their suppliers. When suppliers allocate more resources towards a buyer, such as production capacity, they are more likely to meet delivery schedules and maintain consistent quality to fulfil the needs of their customers. When a supplier decides to allocate resources in the interest of a buyer, buyers can maintain their operations without disruptions. This mechanism improves buyers' resilience to supply chain disruptions. Since suppliers have a finite number of resources, prioritising one buyer means allocating fewer resources to others, resulting in a trade-off between different buyers (Pulles et al., 2023).

All kinds of uncertainty cause risks in supply chains, arising from external and internal uncertainties that influence supply chain dynamics. These uncertainties lead to undesired results and disorder within the supply chain (Christopher & Lee, 2004). Uncertainties in supply and demand, market globalisation, shorter product and technology life cycles, and the growing reliance on manufacturing, distribution, and logistical partners have created complex international supply networks (Christopher et al., 2002). To cope with these uncertainties, businesses increasingly adopt agile and flexible strategies (Teece et al., 1997). Understanding and effectively managing market uncertainty thus becomes a critical capability.

The interplay between uncertainty and supplier dependence influences the resource allocation decisions of suppliers as they strive to navigate through uncertain conditions while meeting the demands and expectations of their buyers (Villena et al., 2016). According to Ingenbleek and Krampe (2023), the allocation of resources by supplier companies to address sustainability issues is influenced by the level of interdependency within the supply chain. Indicating the complex dynamics affecting a supplier's resource allocation. Maintaining relationships with suppliers willing and able to adapt to changes and challenges is fundamental for buyers to manage and overcome market uncertainties, as discussed by Liao et al. (2010). Supplier dependence represents suppliers' reliance on their buyers for relevant resources to continue functioning (Xiao et al., 2019). This dependence is influenced by factors such as the supplier's market share, costs associated with switching suppliers, and uneven distribution of information. This dependency significantly influences resource allocation, benefitting the buyer, with highly dependent suppliers allocating superior resources to stabilise relationships and attempting to bind the buyer to the ties (Casciaro & Piskorski, 2005). Resources, such as engineering efforts on collaborative projects, innovative technologies, expertise, and production capacity, are allocated to buyers. However, as dependence increases, the positive effect of supplier-specific investments diminishes, suggesting a substitution effect. (Pulles et al., 2022). This substitution effect adds a layer of difficulty in managing and optimising a supplier's resource allocation strategy by buyers. In cases of

uncertainty, suppliers prioritise their strategically important preferred customers for resource allocation (Schiele et al., 2012). Thus, supplier dependence can be beneficial for buyers. Hence, adaptive strategies are required in the modern market to manage dependence.

Research presents a nuanced understanding of how market uncertainty and supplier dependence affect suppliers' resource allocation. Beckman et al. (2004) suggest that market uncertainty strengthens existing ties between suppliers and buyers. This means the limited available resources a supplier can allocate are allocated towards existing buyers. Howard et al. (2016) observed a more complex relationship, where market uncertainty leads to broadening networks between suppliers and buyers through alliances without interlocking ties. When suppliers heavily rely on a particular buyer, they are more likely to prioritise and allocate their best resources to fulfil that buyer's needs and overcome uncertainty.

Buyers can use their resources more effectively by cooperating with suppliers (Pulles et al., 2016). This requires time to establish mutual understanding and leverage strengths (Asanuma, 1989). Long-term buyer-supplier relationships lead to the exchange of information Long-term. This additional information creates certainty (Li & Debo, 2009). Short-term relationships have immediate economic benefits and less essential resources (Wagner & Johnson, 2004; Heide & Miner, 1992; Uzzi, 1996). Long-term relationships are better for transactional performance and improve buyer's performance (Blonska et al., 2013). These relationships indicate a buyer's commitment and support beneficial resource allocation from suppliers (Li et al., 2022).

Despite this existing knowledge of the individual effects of these factors on resource allocation, there is a need for additional research. This can explain the interaction between relationship duration, market uncertainty, supplier dependence and their combined influence on resource allocation decisions. Understanding these dynamics enables developing strategies, allowing suppliers to allocate resources effectively, navigate uncertainties, and maintain successful relationships. It will give buyers insight into the most favourable relationships to benefit from suppliers´ allocated resources. Therefore, the following research question emerged: ''How does market uncertainty and supplier dependence affect the suppliers' resource allocation?'' This aims to contribute to both theory and practice in supply chain management.

This research addressed this question and tested hypotheses that proposed resource allocation is influenced by supplier dependence, relationship length, market uncertainty, or a combination of those. Results confirm that suppliers allocate more resources to buyers on whom they are highly dependent. This suggests a strategic motivation for buyers to benefit from this dependency. High market uncertainty causes suppliers to reduce resource allocation to avoid potential losses. Simultaneously, long-term relationships have a positive impact on resource allocation and reaching stability in a relationship where there is mutual trust. The nationality of sales managers is found to influence resource allocation significantly. This suggests that cultural differences play a role in decision-making. Interviews confirmed the importance of long-term relationships and suggested strategies for buyers to become indispensable to their suppliers. Implications for literature show that suppliers allocate more resources to buyers they depend on (Kim & Zhu, 2018; Casciaro & Piskorski, 2005). Market uncertainty consistently decreases resource allocation, which supports Howard et al. (2016), who argued that market uncertainty increases network ties instead of focusing on a single buyer. Moreover, the effect of dependence and market uncertainty in long-term relationships is discussed (Blonska et al., 2013; Patrucco et al., 2023),

2. Literature section

2.1 Market Uncertainty

Uncertainty is the extent to which incomplete information makes it impossible to accurately anticipate or predict future environmental states (Pfeffer & Salancik, 1978). Thus, uncertainties arise from insufficient comprehensive knowledge about future events. Advanced techniques and thorough analyses employed by individuals often fall short, as the future remains unpredictable (Van Der Vorst & Beulens, 2002). Beckman et al. (2004) describe uncertainty as a dominant factor in corporate decision-making, particularly partner selection and investment strategies. Uncertainty inherently increases the potential for a specific risk to arise. In practical management scenarios, as Wang et al. (2014) highlight, effectively managing uncertainty is a critical task. Uncertainty leads to unpredictability in supply chain operations. This differs from chaos, which results from miscommunications and overreactions to this uncertainty. Together, they contribute to various risks, including financial losses, inefficiencies, and reduced market responsiveness (Christopher & Lee, 2004).

Uncertainty can be subdivided into two forms: firm-specific uncertainty, which is internal and controllable, and market uncertainty, a shared experience among firms in a specific market (Beckman et al., 2004). These uncertainties stem from an inability to forecast future conditions due to incomplete knowledge. These are independent theoretical constructs. To illustrate the independence of market and firm-specific uncertainty, a firm may face high firm-specific uncertainty while operating in a market characterised by low uncertainty and vice versa (Beckman et al., 2004). Villena et al. (2016) identified market instability as a specific form of uncertainty. Both market uncertainty and instability relate to the unpredictability of market conditions. However, market instability refers explicitly to rapid and often significant changes in the market. Market Uncertainty represents an external environmental variable characterised by its nature as being outside managerial control. This includes phenomena such as fluctuations in demand, variations in price elasticity, and changes in seasonality, as explained in the study by Lü et al. (2017). Peck (2005) demonstrated that practices like reducing lead times, expanding outsourcing, and increasing global sourcing and supply contribute to market uncertainty. Also, continuous regulatory changes and the need to adapt to different legal, cultures, and environments enhance market uncertainty (Peck, 2005). Firms affected by market uncertainty might seek stability and trust by strengthening relationships with existing partners, as Gulati (1995) argued. Limited strategic options lead firms to reinforce existing networks, leveraging established connections to mitigate market uncertainty. The level of perceived market uncertainty significantly influences the choice of purchasing strategy. Low levels of market uncertainty favour strategies focusing on cost control and supply-base consolidation. In contrast, higher levels of market uncertainty prompt companies to adopt more relationship-focused strategies, emphasising internal and external collaboration to navigate uncertainties. (Patrucco et al., 2023).

2.2 Supplier Dependence

Supplier dependence refers to the degree to which a supplier firm relies on the business volumes generated by a buyer (Elking et al., 2017). According to Pulles, Ellegaard, and Veldman (2023), the degree to which a supplier depends on a specific buyer's business significantly influences how resources are allocated to that buyer. Their research indicates that when a supplier is highly dependent on a particular buyer, it is more likely to allocate superior resources to that buyer as a strategic move to secure and stabilise the relationship. Pulles et al. (2022) found that while supplier-specific investments positively affect supplier resource allocation, this effect diminishes as dependence on the

buyer grows. The results suggest supplier-specific investments and dependence function as substitutes rather than complements influencing resource allocation. The construct of supplier dependence, as articulated by Kim and Zhu (2018), pertains to the extent to which a supplying firm depends on its primary customers for financial resources. Buyer firms benefiting from dependent suppliers can capitalise on this supplier dependence to achieve economic advantages. Moreover, suppliers reliant on the ongoing relationship with a downstream buyer are inclined to take significant measures to meet the specific needs of that buyer firm. Such measures may encompass elevated service levels, expedited resupply, priority access to materials in case of disruptions, provision of higher-quality items, and similar actions (Crook & Combs, 2007). In a buyer-supplier relationship marked by supplier dependence, the supplier contributes more to this partnership's complementary resources and capabilities than it receives (Huo et al., 2017).

Nevertheless, to mitigate uncertainties, suppliers might also establish relationships with other buyers (Casciaro & Piskorski, 2005). In cases where a supplier's business is closely tied to the volume of purchases from a specific buyer, the supplier may try to limit the buyer's options for alternative suppliers and lock the buyer in the relationship. Casciaro and Piskorski (2005) describe this dynamic in which the supplier seeks to control and influence the choices made by the buyer. Jean et al. (2012) mentioned that the connection between supplier dependence and uncertainty underlines the complexities of managing supplier relationships in the face of diverse uncertainties. These uncertainties pertain to supply disruptions and extend to technological advancements and changes, requiring adaptive and robust management approaches. Consequently, when viewed through the lens of resource dependence, engaging with such a supplier may not significantly assist the buyer in managing market uncertainty (Huo et al., 2017). Xiao et al. (2019) demonstrated that when suppliers are too dependent on their buyers, it might limit their ability to adapt, innovate, or effectively contribute to managing uncertainties shared within the market.

2.3 Relationship Duration

Engaging with suppliers allows buyers to use their resources to enhance overall performance (Pulles et al., 2016). It takes time for partners to develop the necessary understanding of each other's strengths, enabling them to recognise the right moment to leverage the other party's resources and contribute resources effectively (Asanuma, 1989). Buyer-supplier relationships can be categorised as long-term or short-term connections (Wagner & Johnson, 2004). Long-term relationships enhance the exchange of market information. Moreover, critical resources are shared based on the partners' mutual trust in continuing the relationship (Heide & Miner, 1992). On the other hand, short-term relationships focus on less critical resources. In these relationships, transactions are based on short-term economic factors. This allows for a shift in partners if transaction conditions change (Uzzi, 1996). Long-term relationships yield more favourable results than short-term ones (Uzzi, 1996; Dyer & Singh, 1998).

As demonstrated by Blonska et al. (2013), the duration of a relationship has a linear positive correlation with buyer performance. Sustaining longer partnerships with suppliers signifies a buyer's commitment to the relationship. In return, the buyer derives advantages from the enduring partnership. This results in beneficial resource allocation for the supplier (Li et al., 2022). Long-term relationships typically lead to more favourable resource allocations as they build trust and mutual understanding over time, offering stability, especially in uncertain markets. Market uncertainty drives suppliers to adopt flexible strategies and reinforce existing relationships to mitigate risks, influencing resource allocation.

The nature of buyer-supplier relationships, whether long-term or short-term, influences how organisations respond to and manage market uncertainty (Li & Debo, 2009). The difference between long-term and short-term relationships reflects a strategic approach to mitigating the challenges of an uncertain market environment. For example, amid market uncertainty, long-term partnerships prove to be advantageous. Establishing long-term connections is often more favourable as they provide stability in the face of volatile demand. Conversely, engaging in short-term relationships may lead to elevated levels of capacity investment, mainly when the associated switching costs are high (Li & Debo, 2009). Therefore, market conditions can become a critical factor in determining the effectiveness of the buyer-supplier relationship. It is known that high supplier dependency often results in suppliers prioritising resources for their key buyers to secure and stabilise these relationships. However, excessive dependency may limit a supplier's ability to adapt and innovate. It needs to be clarified how the mechanisms through which supplier dependency and market uncertainty interact affect resource allocation decisions.

2.4 Resource Allocation

Resource allocation in supply chain management, as studied by Pulles, Veldman, Schiele, and Sierksma (2014), involves the distribution of resources by suppliers to different purchasing firms. This allocation is crucial in a competitive environment where multiple firms source from the same suppliers. It has been established that the allocation of resources can be influenced by the buying firm's Power-based and Trust-based strategies (Pulles et al., 2014). Research indicates that suppliers often prioritise resource allocation to certain buyers based on specific investments and dependence levels, suggesting a nuanced decision-making process behind allocating key resources such as production capacity and innovation efforts (Pulles et al., 2022). Hunt and Davis (2008) have highlighted the strategic importance of resource allocation in achieving competitive advantages in supplier relationships. The structural characteristics of a relationship, namely the frequency and intensity of interactions, play a pivotal role in dictating the extent and quantity of resources allocated in a buyer-supplier relationship (Kim & Choi, 2015). Ingenbleek and Krampe (2023) found that in response to uncertainty regarding sustainable issues, suppliers allocate more resources towards a buyer when there is no market uncertainty. Also, supply chain interdependency impacts a supplier´s resource allocation decisions in this context—factors such as institutional environment, pressure on B2C downstream companies, and competition influence resource allocation. (Ingenbleek and Krampe, 2023). According to Patrucco et al., (2023), market uncertainties significantly affect purchasing strategies. It highlights how suppliers' decisions on resource allocation are influenced by the need to respond to market uncertainties and maintain or enhance their dependence status through strategic investments in capabilities and relationships.

3. Hypothesis

Howard's (2016) findings that market-specific uncertainty was associated with broadening network partners through alliances and Beckman et al.'s (2004) original study proposed a positive relationship between market uncertainty and network-broadening actions. It is plausible to expect that market uncertainty would negatively influence suppliers to allocate resources towards one specific buying firm. As highlighted by Pavlou, Liang, and Xue (2007) and Kim and Zhu (2018), the asymmetry in knowledge between buyers and suppliers supports the idea that suppliers allocate resources strategically in the face of market uncertainty to minimise risks and maintain operational stability. The potential risks of supply interruptions provide a strong incentive for suppliers to allocate superior resources in favour of the buying firm.

As highlighted by Wang et al. (2014), uncertainties challenge suppliers to adapt their resource allocation strategies to mitigate risks and maintain operational stability. In response to these challenges, suppliers may prioritise resource allocation towards key buyers, such as preferred buyers or those with whom they share strong interdependencies, to secure and stabilise relationships (Pulles et al., 2023). Nevertheless, decreasing the allocated resources to less important suppliers is also expected. This effect occurs to remain adaptive as a supplier to face uncertainties from the market.

Alongside market uncertainty on suppliers' resource allocation decisions. Supplier dependence significantly influences allocating resources (Elking et al., 2017). Patrucco et al. (2023) findings indicate that increased market uncertainty pushes companies toward adopting more relationship-focused strategies. Suggesting that in conditions of high market uncertainty, suppliers might prioritise resource allocation towards strategic activities that foster stronger relationships with key customers, thereby securing their position in the supply chain. Simultaneously the study proved that companies facing lower levels of uncertainty decide to use other strategies to ensure efficiency and control of purchasing activities (Patrucco et al., 2023). Therefore, suppliers possessing insights into upstream supply markets are likely to respond proactively to uncertainties arising from dependence on key customers.

When suppliers depend highly on certain buyers, they are motivated to allocate resources to secure these relationships and minimise the risk of losing critical business. Dependence on key buyers makes suppliers more inclined to allocate resources towards these relationships, as the stability a dependable buyer provides helps protect against market uncertainty. By strategically allocating resources towards buyers, dependent suppliers can minimise supply interruption risks and ensure operations continuity, safeguarding their relationships with key buyers. When both market uncertainty and supplier dependence are high, suppliers are expected to allocate more resources than non-dependent suppliers. Leading to:

Hypothesis 1: Market uncertainty negatively affects suppliers' resource allocation, while supplier dependence has a positive effect

Buyers typically understand downstream demand markets better, while suppliers have more insights into their products and associated upstream supply markets (Pavlouet al., 2007). Suppliers relying heavily on major customers face additional uncertainty. Caused by the risk of losing future sales and reduced cash flows due to market uncertainty (Kim & Zhu, 2018). This uncertainty is particularly pronounced when there is an inequality in bargaining power, which can lead to disadvantageous consequences in a supply chain. This influences a supplier firm's motivation to contribute to take risks and invest in innovation. Suppliers will reorganise their resource dependencies to minimise uncertainty, recognising the risks associated with depending solely on one supplier (Pfeffer & Salancik, 1978; Villena et al., 2016). The additional uncertainty arising from dependence on key customers can thus impact a supplier's strategic decisions. This includes their resource allocation strategy. The supplier might seek to enhance its position by allocating superior resources. This decreases the probability of the buyer diverting its purchases from alternative suppliers or terminating the relationship altogether. Therefore, the supplier is more inclined to allocate resources to a buyer who purchases high quantities. This is motivated by the idea of ensuring the continuity of the relationship instead of allocating towards a buyer with lower volumes that can be more easily replaced. Suppliers seek to enhance stability by assigning resources to minimise this uncertainty, benefitting the buyer (Elking et al., 2017).

The relationship between market uncertainty and supplier dependence affects resource allocation strategy. According to Xiao et al. (2019), the interplay between dependence and uncertainty impacts supply chain management strategies. Suppliers who rely on specific buyers and face uncertainties allocate resources strategically to overcome complications. Within the supply chain, resource allocation related to sustainability issues is significantly influenced by interdependence (Ingenbleek & Krampe, 2023). Xiao et al. (2019) identified a negative correlation between supplier dependence and a supplying firm's research and development investment. Firms heavily reliant on key buyers tend to invest less in R&D. Consequently, there is a positive moderation effect, as suppliers engage in resource allocation strategies to address challenges from market uncertainty and dependence on key buyers.

Therefore, it is proposed that supplier dependence moderates market uncertainty and suppliers' resource allocation decisions. When suppliers heavily rely on key customers, they face increased uncertainty. This uncertainty influences suppliers' strategic decisions regarding resource allocation. To mitigate the risk of losing key buyers, suppliers may allocate superior resources to ensure the continuity of the relationship, especially when dealing with high-volume buyers. Suppliers strategically allocate resources to address challenges posed by market uncertainty and dependence on key buyers. The effect of market uncertainty on resource allocation depends on the level of supplier dependence; when supplier dependence is high, the effect is stronger. Hence, the following hypothesis is formulated:

Hypothesis 2: Supplier dependence positively moderates the relationship between market uncertainty and suppliers' resource allocation.

Uncertainty is further intensified in situations characterised by a substantial imbalance in information availability (Kim & Choi, 2015). Firms with well-established relationships are more willing to allocate resources towards a buying firm (Kotabe et al., 2002). Indications point to suppliers relying on buyers may offer limited value when buyers encounter challenges related to technological uncertainty (Xiao, 2019). Howard's (2016) emphasis on temporal considerations in understanding inter-organizational relationships and Beckman et al.'s (2004) original study suggest that the impact of market uncertainty on network ties could evolve. Therefore, a positive interaction between the duration of the buyer-supplier relationship and the influence of market uncertainty on suppliers' resource allocation towards investing in their network is expected.

Li et al. (2022) emphasise the benefits of such long-term collaborations, suggesting that they foster supplier dependence. The positive interaction between relationship duration and the relationship between market uncertainty and resource allocation is grounded in the expectation that enduring partnerships provide a stable foundation for relying on the buyer. Trust, as identified by Villena et al. (2016), further supports the idea that longer relationships positively contribute to resource allocation in uncertain environments. This positive moderation effect between the duration of a buyer-supplier relationship and market uncertainty on suppliers' resource allocation is expected to be discovered. Specifically, as the duration of the buyer-supplier relationship increases, it is likely that market uncertainty will impact suppliers' decisions to allocate more resources for the betterment of the buyer. Long-term relationships between buyers and suppliers indicate commitment and mutual understanding. Hypothesis three proposes a positive moderation effect between relationship duration and market uncertainty.

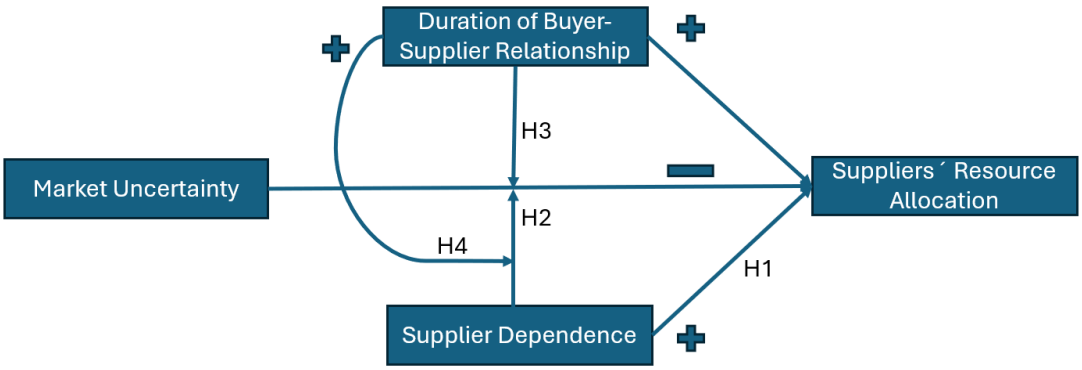
Hypothesis 3: The duration of a buyer-supplier relationship positively moderates the relationship between market uncertainty and resource allocation.

Establishing a lasting partnership with a supplier shows the buyer's commitment to effective supplier relationship management. The buyer derives benefits from this long-term collaboration through the development of supplier dependence (Li et al., 2022). Trust is a construct that takes time to build up. Villena et al. (2016) showed that trust's positive impact on performance is more pronounced in situations of low market uncertainty. Therefore, it can be explained that a longer-lasting relationship will lead to increased resource allocation in favour of the buying firm. The uncertain market and supplier dependence cause this. Commitments in long-term relationships intensify resource allocation and overcome market uncertainty.

Pulles et al. (2022) proved that supplier-specific investments and dependence function as substitutes, laying the groundwork for the expectation that the moderation effect is stronger in long-term relationships. Long-term relationships provide a context for more complex and nuanced resource allocation strategies. In case of heightened market uncertainty, buyers tend to favour short-term relationships over long-term ones. This suggests that, in the presence of increased market uncertainty, buyers find long-term relationships more advantageous (Li & Debo, 2009). Therefore, it can be expected that market uncertainty and supplier dependence will have a stronger impact on resource allocation towards building on their current network when a supplier is in a long-term relationship. This implies that when faced with market uncertainty, suppliers adjust their resource allocation towards their most significant buyers in a way that significantly influences the dependence on a buyer. In long-term relationships, dependent suppliers are expected to prioritise these buyers even more. This ensures that suppliers allocate more resources to support the continued success and stability of the partnership.

Hypothesis 4: The moderation effect between market uncertainty and supplier dependence on resource allocation is stronger when the buyer-supplier relationship is long-term.

Conceptual model



4. Methods and Data

This study employed a mixed-method approach to test the hypotheses and address the research question. This includes the policy capturing method alongside semi-structured in-depth interviews. In supply chain decision-making, interpersonal and institutional interactions are interdependent. This offers opportunities for multimethod research (Fawcett & Waller, 2011). This combination of a qualitative and quantitative method allowed the researcher to demonstrate if the hypothesis is supported by empirical evidence (Golicic & Davis, 2012). Simultaneously, the interviews enabled the researcher to understand why certain decisions were made in specific scenarios, capturing broader insights and perspectives and adding a layer of nuance (Connelly et al., 2011). The addition of the qualitative method enabled triangulating findings, strengthening the validity and reliability of the results.

Policy capturing was used to quantify the influence of distinct factors on decision-making, providing empirical evidence to support or refute hypotheses. In policy-capturing studies, the objective is to observe causal impacts by modifying scenarios. Eckerd (2016) recently advocated increased use of vignette-based experiments to gain a deeper insight into purchasing and supply management. Policy capturing originated from the ideas of Brunswick (1955) and was later formalised as a distinct methodology through the work of Bottenberg and Christal (1968); policy capturing is specifically designed for analysing decisions where crucial elements vary across different scenarios (Connelly et al., 2011). Policy capturing is a quantitative technique used to understand decision-making processes by systematically varying the attributes of hypothetical scenarios and measuring participants' responses. This enables uncovering strategic decisions in a fictional but realistic scenario (Zedeck, 1977). Executing an experiment is valuable as it allows significant control and efficiency to be conducted and can be replicated (Siemsen, 2011). Additionally, integrating demographic and firm-specific data with policy-capturing outcomes enables researchers to research contextual factors influencing managerial decisions. (Connelly & Miller, 2011; Reuer et al., 2013).

Qualitative interviews provided an opportunity to delve into the underlying reasons and motivations behind decisions. The actual dynamics behind a relationship often remain unexplored (Fawcett & Waller, 2011). Through interviews, researchers can uncover nuances and contextual factors that quantitative data alone may not reveal. Semi-structured interviews provided an opportunity to delve into the underlying reasons and motivations behind decisions to understand better the subjective experiences, attitudes, and perceptions of individuals involved in the decision-making process (Darby et al., 2019). This design is applied when the researcher foresees the necessity to interpret or verify outcomes from the principal study (Golicic & Davis, 2012).

4.1 Procedure

Decision makers were presented with eight scenarios using different versions of a prescribed vignette to present scripted details about a scenario. Scenarios are defined as thoroughly structured descriptions of a situation, representing a deliberate combination of factors (Atzmüller & Steiner, 2010). These factors described distinct levels known as cues. Decision makers then evaluated these scenarios. The aim was to determine the cause-and-effect relationships by altering the treatments. Compared to using existing data or traditional surveys, policy capturing offers benefits. They allow for tightly controlled decision-making environments, enhancing measurements' precision and reliability (Rungtusanatham et al., 2011).

The responses were analysed through regression analysis. This setup enables a thorough investigation of both primary effects and the interaction between variables. The results allowed for the investigation of variability among decision-makers. Thus, policy capturing identifies individual differences in decision-making strategies and facilitates the grouping or clustering of individuals with similar policies. Policy capturing employs a repeated measures experimental design. All participants respond to a part of the scenarios. By observing the variance in their responses, insights into the interrelationships among the variables are gained.

Semi-structured interviews are used to interpret or verify outcomes from our principal study (Darby et al., 2019; Golicic & Davis, 2012). According to Golicic & Davis (2012), this design is effective when researchers foresee the need for a nuanced interpretation of their findings, particularly when they emerge from complex decision-making processes. A comprehensive interview guide, including open-ended questions, was designed to obtain detailed responses about the participants' decision-making considerations. The interview was designed to be finished in approximately 30 minutes. This guide served as a flexible framework for the interviews, allowing for spontaneous follow-up questions that can lead to deeper insights. Data collection will be conducted in stages. Each interview was recorded with participant consent and transcribed verbatim to ensure accuracy in data analysis. The results highlight the key insights from the interviews, using direct quotes to illustrate the nuanced understandings of decision-making processes uncovered through the research. This approach will accurately present the participants' subjective perceptions and contribute valuable qualitative insights (Darby et al., 2019).

4.2 Sample

The quantitative data was gathered from four different companies and sectors. The researcher was responsible for collecting data within a well-established family-owned multinational in the agrifood industry headquartered in the Netherlands. In the past decades, the company has become a significant player in the sector. With the use of acquisitions, the company has diverse subsidiary companies that collectively manage the entire production and supply chain. They continuously seek ways to improve their chain and products. This company actively searches for new markets where their products can add value. The company employs more than 4250 employees. The researchers' quantitative data respondents include a combination of sales and account managers and commercial directors. The data gathered by other researchers from three companies are from various industries with different firm sizes. This helps to improve the generalisability of this research across different sectors.

The data consists of 256 observations generated by thirty-two respondents, of which this research company brought in 10. This sample captures variability in decision-making processes within the targeted population, allowing for statistical analysis. Potential participants were provided with information about the study objectives, procedures, and their rights as participants. Potential participants underwent the first screening with the firms' contact person to ensure they met the criteria before being invited to participate in the study. Fifteen employees working in one of the groups' firms were invited. Three persons did not respond to any of the messages, and one refused to participate because he said it was not suitable for his position as a commodity trader in the company. This person said that priority and benefits are given to suppliers who pay well and promptly. Thus, he does not have to make considerations as proposed in this research. Nevertheless, this person was deliberately invited because the scenario is fictional, and this person would have been able to imagine himself in the scenario.

Following the vignette phase, the study progressed to semi-structured interviews with half the participating managers, amounting to five individuals. When inviting the fifteen employees for the experiment, the researcher asked them to write to ask if they would help with the interview. Five respondents reacted to this call and were scheduled for an online interview. This voluntary response sampling was chosen due to the limited time required for most research. This might have resulted in respondents having stronger opinions or a greater interest in the topic than the general population. This self-selection bias limits the generalizability of findings as a limitation. Fortunately, this study's interviews are a supplementary validation of quantitative findings and, therefore, a minor issue. The researcher was cautious when interpreting the results of the interviews. The participants were allowed to contribute to the experiment and the interview, although this is not required. The interviewees have all worked at the research company for at least 25 years, with most having experience in both sales and purchasing. The five interviewees have three different nationalities: three Dutch, one Belgian and one Italian. The managers oversee different product categories. Products for human consumption or utilisation and others for animal consumption. They have function titles such as commercial manager, area manager, account manager and purchasing manager. One trades commodities, and the other sells very sophisticated, personalised products for its customers. Their customer portfolios vary, with one managing accounts for several small customers and others managing a few large customers within an area. The interviewees' areas of responsibility include sales in North Africa, South Korea, and Italy. One purchasing director is responsible for raw materials for the group's factories in various countries.

4.3 Measurements & Treatments

The quantitative study is an experimental approach in combination with an incomplete block design (Mellewigt et al., 2017). In this framework, the complete set of scenarios is segmented into equally sized blocks, with each respondent addressing only one block of scenarios. Using all blocks—and therefore all scenarios—this design necessitates fewer scenarios for each participant than full factorial designs without compromising the validity of the outcomes (Graham & Cable, 2001). Since presenting thirty-two scenarios would influence the reliability caused by the possible loss of concentration, each respondent must only finish eight scenarios allocated by fractional design. This is grounded in an experimental plan, allowing for the intentional confounding of selection with primary and interaction effects. Using random selection instead creates a complicated structure of random confounding (Atzmüller & Steiner, 2010)

After reading each vignette, participants will be asked to indicate their preferred level of resource allocation relevant to the proposed scenario. Capturing the participant's policy or rule for allocating resources under varying conditions. To systematically vary the conditions under which decisions were made, the vignettes were manipulated along three dimensions: dependence on buyer (high vs. low) and market uncertainty (high vs. low). These manipulations allowed for examining how perceived supplier dependence, market uncertainty, and relationship duration (high vs. low) influence resource allocation. Supplier dependence, market uncertainty, and relationship length are dichotomous variables, where 0 means low, and 1 represents high. At the same time, resource allocation is measured on a Likert scale from 1 (strongly disagree) to 7 (strongly agree).

To ensure the reliability of the vignette manipulations, realism checks will be conducted immediately following the decision-making task. Participants were asked to assess the realism of the described scenario and to what degree it would be possible to imagine themselves in the situation to evaluate how seriously the participants embraced their role (Rungtusanatham et al., 2011). Most respondents

agreed with the statement that the scenarios were realistic. Therefore, respondents were asked if it was difficult to imagine being a decision-maker. Again, the large majority said not to have difficulties. Four respondents said they faced difficulties with the statements. These respondents were deliberately included since their responses and insights are valuable for this research, and they meet the population's criteria. Demographic information and professional background were also collected to control for individual differences that might influence the decisions. This will include data on age, work experience, gender, education level, and the industry sector of the participants.

Usual surveys face the risk of retrospective bias and common method bias. In contrast, the policy-capturing addresses these concerns by design (Carnes et al., 2017). Specifically, it keeps the decision criteria consistent across all scenarios. As a result, respondents only need to provide the dependent variable on a Likert scale. This reduces the potential for common method bias between independent and dependent variables. Additionally, retrospective bias is avoided since respondents assess hypothetical scenarios instead of recalling current or past experiences. Nonetheless, the policy-capturing method demands significant mental and cognitive effort from respondents. Comprehensive instructions and a list defining the variables were provided to aid managers in completing the vignette.

Resource allocation is measured in the experiment on two distinct levels: innovation and physical resources. This was captured with two statements in the experiment to improve reliability and allow for another research. For this research, a reliability analysis using Cronbach's alpha was used to assess the reliability of combining innovation resource allocation and physical resource allocation into a single composite measure. The overall Cronbach's alpha for the combined scale was 0.922, which indicates excellent internal consistency. This value suggests that the items are measuring the same underlying construct. Additionally, the individual item reliability statistics provide further support for the internal consistency of the combined scale. Each item's Cronbach's alpha, if dropped, remains above 0.88, confirming the scale's coherence. Thus, combining the innovation and physical resource allocation items into a single resource allocation measure is appropriate based on the reliability analysis.

In analysing the qualitative study, summaries of the transcribed interviews were used as the primary method for deducting the qualitative data. A detailed coding process was considered excessive, given the small number of interviewees. Instead, summarising each interview allowed for a clearer, more straightforward presentation of the insights gathered. This approach ensured that participant's unique perspectives and experiences were highlighted effectively. Summaries enabled the brief capture of the essence of each interview while maintaining the depth of the qualitative analysis. This method allowed easier comparison of common themes and patterns across the interviews.

4.4 Control variables

Previous research showed that risk aversion has a significant impact on decision-making. A negative and significant correlation between risk aversion and resource allocation is present. This suggests that managers' attitudes towards risk determine whether and how much a allocates resources (Sauner-Leroy, 2004). Risk aversion was measured using a set of six statements, such as ‘’I do not feel comfortable about taking chances, ‘’each designed to capture participants' attitudes toward risk. Participants responded to these statements on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). One of the measures was found to be inconsistent, so it was excluded from the final analysis to enhance the scale's reliability. The average risk aversion score was then calculated from the responses to the remaining five statements. This composite score aimed to provide a robust indicator of each participant's risk aversion. To assess the internal consistency of this revised risk

aversion scale, Cronbach's alpha was calculated, yielding a value of 0.600. While this value indicates a moderate level of reliability, it was deemed sufficient for this study. Age was included as a continuous control variable in the analysis. Because it is a crucial demographic factor that influences behavioural and psychological traits. The age and amount of work experience of managers influence their strategic decision-making models (Hitt & Tyler, 1991). Age and work experience are unsurprisingly strongly correlated and measured almost the same results, both in their research and this research, with $r > 0.9$. Participants were also asked to indicate their nationality. Chang et al. (2016) provided empirical evidence that national culture influences managerial decisions regarding resource allocation. This can be explained by the fact that several factors, such as risk aversion, vary across diverse cultures. For this study, a binary variable was created to distinguish between Dutch and non-Dutch participants. This control variable was included to account for potential cultural differences affecting participants' decisions. This can be controlled so that cultural factors do not bias the results.

5 Results

5.1 Quantitative results

The dataset comprises 256 decisions in 32 scenarios filled in by 32 respondents working in four distinctive companies. Table 1 reports descriptive information for all variables and correlations among the dependent and independent variables. The correlations reveal that dependence and relationship length are positively related to resource allocation, aligning with the research expectations. Not being Dutch demonstrates a significant positive correlation with resource allocation, indicating that non-Dutch participants allocate more resources than their Dutch counterparts. Other variables do not show significant correlations with Resource Allocation. Suggesting that these factors do not have a notable impact on resource allocation within the context of this study.

Table 1

Descriptive statistics and correlation of DV and IVs

Variable	Mean	Std. Deviation	Resource Allocation
Resource allocation	4,081	1,640	1,000
Market Uncertainty	0,500	0,501	-0,033
Dependence	0,500	0,501	0,476**
Relationship length	0,500	0,501	0,166**
Risk Aversion	3,563	0,945	0,122
Age	44,630	11,942	-0,053
Experience_	20,970	11,946	0,005
Nationality (Not dutch)	0,280	0,450	0,148*
Gender (Male)	0,910	0,292	0,016
Firm			
Firm A	0,160	0,364	-0,069
Firm B	0,250	0,434	0,090
Firm C	0,280	0,450	-0,032
Firm D	0,310	0,464	0,068
Blocks			
Block 1	0,340	0,476	-0,076
Block 2	0,220	0,414	0,109
Block 3	0,280	0,450	-0,022
Block 4	0,160	0,364	-0,015

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

5.1.1 Regression models

Table 2

OLS Regression Analysis for Supplier Resource Allocation Study

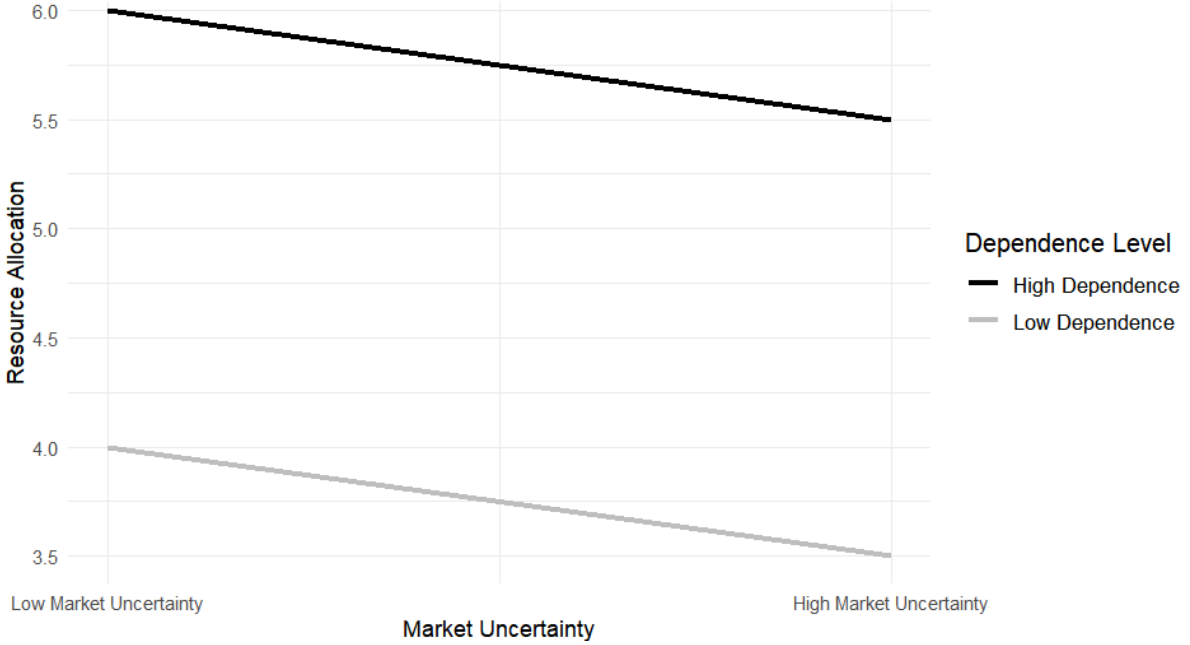
	Model 1			Model 2		
	B	SE	p-value	B	SE	p-value
Intercept	4.190	0.107	< .001	4.190	0.107	< .001
H_0	2.853	0.432	< .001	2.754	0.455	< .001
H_1: Market Uncertainty (1)	-0.474	0.171	0.006	-0.379	0.344	0.272
H_1: Dependence (1)	1.810	0.171	< .001	2.031	0.344	< .001
H_3: Relationship Length (1)	0.495	0.168	0.004	0.617	0.310	0.048
H_2: Market Uncertainty (1) ✻ Dependence (1)				-0.113	0.487	0.817
H_3: Market Uncertainty (1) ✻ Relationship Length (1)				0.121	0.485	0.803
Dependence (1) ✻ Relationship Length (1)				-0.129	0.485	0.791
H_4: Market Uncertainty (1) ✻ Dependence (1) ✻ Relationship Length (1)				-0.399	0.686	0.562
Risk Aversion	0.170	0.093	0.068	0.161	0.094	0.087
Age	-0.008	0.007	0.236	-0.008	0.007	0.244
Nationality (Not Dutch) (1)	0.627	0.187	< .001	0.638	0.188	< .001
R^2	0.401			0.407		
Adjusted R^2	0.384			0.378		
F-statistic	23.292			14.082		

Table 2 presents the ordinary least squares (OLS) analysis. Model 1 is tested without interaction, showing its direct effects on resource allocation for Hypotheses 1. A multiple linear regression analysis examined the influence of market uncertainty, relationship length, and dependence on resource allocation. The results indicated that the model explained approximately 40.1% of the variance in resource allocation. Interaction terms were included in Model 2 to test the hypotheses for H2, H3 and H4. The interaction terms considered were Dependence * Market Uncertainty, Relationship Length * Market Uncertainty, and Dependence * Market Uncertainty * Relationship Length. The extended model explained 40.7% of the variance in resource allocation. The results indicate that control variables age and risk aversion were not significant predictors in either model; nationality (being non-Dutch) had a significant positive impact on the allocation of resources.

Market uncertainty and supplier dependence are found to influence suppliers' resource allocation decisions, supporting hypotheses 1. Both market uncertainty and supplier dependence significantly influence resource allocation. The coefficient for supplier dependence was positive and significant ($B = 1.810$, $p < 0.001$), indicating that higher supplier dependence leads to greater resource allocation. Additionally, the coefficient for market uncertainty was negative and significant ($B = -0.474$, $p = 0.006$), indicating that higher market uncertainty leads to lower resource allocation. Figure 1 shows the model without interaction terms and displays that resource allocation is higher for high dependence than low dependence. The lines are somewhat flat but lower, indicating that market uncertainty alone does impact but slightly decreases resource allocation.

Figure 1

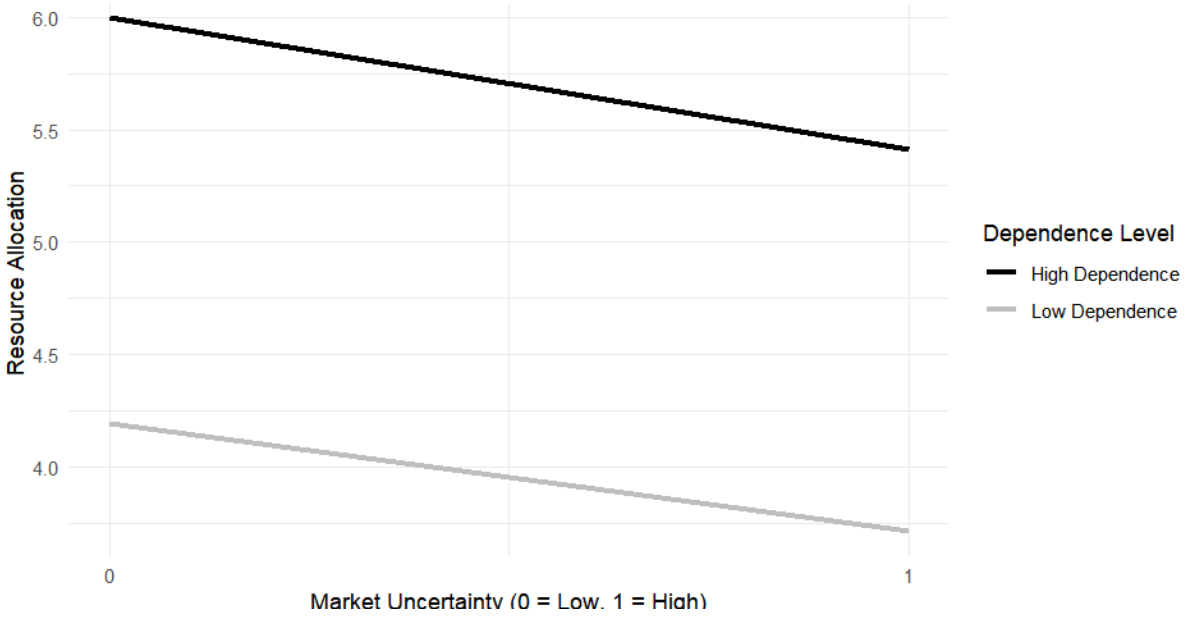
Plot model 1 direct effect of market uncertainty and dependence on resource allocation



Supplier dependence does not moderate the relationship between market uncertainty and suppliers' resource allocation decisions, resulting in no support for hypothesis 2. The interaction term between market uncertainty and supplier dependence is insignificant (B = -0.113, p = 0.817), suggesting that supplier dependence does not significantly influence the impact of market uncertainty on resource allocation. Figure 2 illustrates the effect of this interaction between supplier dependence and market uncertainty on resource allocation. Although resource allocation decreases as market uncertainty increases for both dependence levels, the high dependence line exhibits a steeper decline. This shows the exacerbating effect of high dependence on the negative impact of market uncertainty. While the difference is slight but observable, it is not statistically significant. The similarity between Figures 1 and 2 demonstrates that the interaction term does not strongly alter the results.

Figure 2

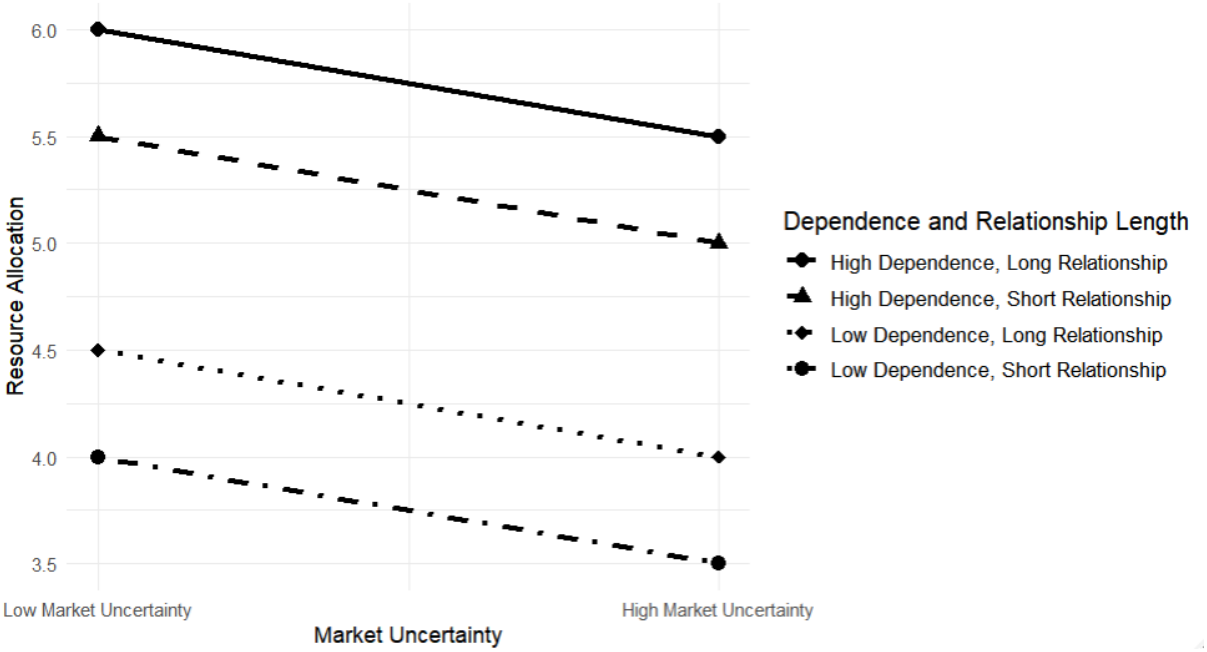
Plot model 2 moderation effect of market uncertainty and dependence on resource allocation



Hypothesis 3 is partly supported; relationship length influences resource allocation positively, but its interaction with market uncertainty is insignificant. The duration of a buyer-supplier relationship does not positively moderate the relationship between market uncertainty and resource allocation. The coefficient for relationship length is positive and significant in both models. In the model without interaction terms, the coefficient for relationship length was (B = 0.495, p = 0.004). The model, including the interaction terms coefficient for relationship length, remained significant (B = 0.617, p = 0.048). However, the interaction between market uncertainty and relationship length is insignificant (B = 0.121, p = 0.803). The lines in Figure 3 indicate that longer relationships are associated with higher resource allocation than shorter relationships. This effect is observed for both low and high market uncertainty. The B values are low. This indicates that market uncertainty alone does not strongly impact resource allocation. Although the interaction terms were not statistically significant, the visual representation suggests that there might be variations in how resource allocation responds to market uncertainty under different dependence and relationship length conditions. Longer relationship length tends to mitigate the decline in resource allocation when market uncertainty is high. This is seen in both dependence scenarios. With low dependence, a longer relationship increases resource allocation slightly with increasing market uncertainty,

Figure 3

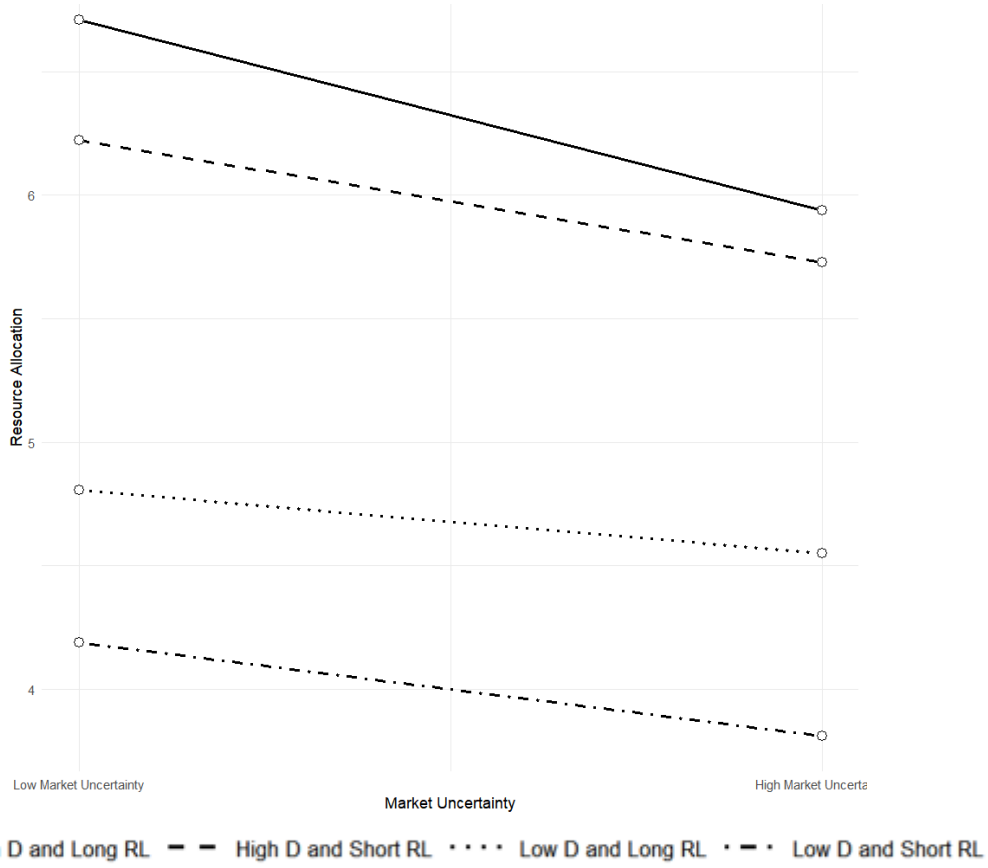
Plot model 1 Direct effect of relationship length, market uncertainty and dependence affecting resource allocation.



The moderation effect between market uncertainty and supplier dependence on resource allocation is found not to be stronger when the buyer-supplier relationship is long-term, resulting in no support for hypothesis 4. The three-way interaction term (Market Uncertainty * Dependence * Relationship Length) was insignificant (B = -0.399, p = 0.562), indicating that the moderation effect of market uncertainty and supplier dependence on resource allocation does not vary significantly for long-term relationships. Also, the moderation effect of market uncertainty and supplier dependence on resource allocation does not appear to be significantly stronger when the buyer-supplier relationship is long-term.

Figure 4

Plot model 2 moderation effect of relationship length on market uncertainty and dependence affecting resource allocation.



5.2 Qualitative results:

The interviewees have different expertise and experience. Nevertheless, they all commonly emphasise the importance of solid and long-term relationships with suppliers, customers, or within their markets. Additionally, they all individually highlighted the importance of reliable information and strategic decision-making in overcoming market uncertainties and ensuring the company's success. The interviewees considered market uncertainty to be always present and will also be present. A commercial director said: "There will always be macroeconomic or political uncertainties, but we focus on maintaining relationships and are prepared to pivot to other markets if necessary." The interviewees answered questions that gave insight into their decision-making and thinking when giving priorities to different buyers, allowing qualitative comparison of the hypotheses' results.

5.2.1 Market uncertainty and dependence both influence resource allocation.

Respondents mentioned that market uncertainty, such as climate effects, directly influences supplies in the agri-food business. This uncertainty caused by, for example, draught or rain affects decisions by prioritising customers needing the most support. Another respondent discussed the role of market uncertainty influenced by geopolitical factors and fluctuating legislation. *"Market uncertainty, such as import tariffs and legislative changes, influences our strategic decisions. However, Customer X in Country X has become so important over the years that we do whatever it takes to meet new regulations. The focus remains on maintaining customer relationships. We always play close to the ball,*

staying updated and focusing on retaining relationships despite uncertainties." With this, the degree of dependence influences the limited effect of market uncertainty on resource allocation. A procurement manager said: *"The relationship with highly dependent suppliers is often closer and more confidential, with daily communication and joint planning. This differs from less dependent suppliers, where the relationship might be less intensive."* Together, market uncertainty is mitigated by sharing information and collaborating more intensively. The interviewees emphasised strengthening existing relationships, seeking new customers to spread risks, and prioritising customers on whom they depend in resource allocation.

5.2.2. Dependence on buyers positively influences resource allocation during market uncertainty, whereas in stable markets, the role of dependence is less important.

Supplier dependence moderates the relationship between market uncertainty and suppliers' resource allocation decisions. While dependence on customers influences resource allocation, there is a general goal of equal treatment for all customers. Meanwhile, all respondents indicated that dependence on specific buyers influences the prioritisation of resources during market uncertainty. One respondent mentioned that dependence on intermediaries influences the customer relationship, but there is no explicit prioritisation based on customer size, representing dependence on a buyer. An Interviewee said: *"I do not differentiate in the resources I allocate to large or small customers. All customers receive the same level of care and involvement."* Just like "*I approach all customers in the same way, regardless of our dependence on them. A small customer might pay 2-3% more than a bigger, more dependent customer, but I manage them similarly*." One indicated that important customers are prioritised in resource allocation, especially during market uncertainty. A different respondent noted that additional measures are taken during market uncertainty to strengthen relationships with key customers, indicating a moderating role of dependence. The account manager responsible for Korea said: *"The size of the customer does not matter; both large and small customers receive resources. If there is a problem, we respond quickly, regardless of the customer's size."* The respondent strengthens existing relationships and actively seeks new customers to mitigate risks. Market uncertainty can lead to revising contracts and conditions with all customers, with dependence not playing a vital role and focusing on maintaining stable relationships. For example, an account manager said*, "Company X is a major customer, with an annual volume of 4,500-5,000 tons of milk powder. We invested in an expensive analysis device to meet their quality requirements, making us unique compared to competitors unwilling to make such investments."* A procurement manager said*: "When dealing with highly dependent suppliers, we work more closely to oversee uncertainties, ensuring continuity despite market fluctuations. This collaboration helps both parties mitigate risks."* Another director said, *"Important customers sometimes get sharper conditions and more volume. Innovations like artificial intelligence are used to meet the high-quality standards."*

5.2.3 Long-term buyer-supplier relationships positively influence resource allocation.

The duration of a buyer-supplier relationship positively moderates the relationship between market uncertainty and resource allocation. Continuous attention and investment in long-term relationships are emphasised, especially during market uncertainty. At the same time, the quality of the relationship is more important than its duration in high market uncertainty. Long-term relationships are valued in strategic decisions and resource allocation. Companies have new personnel every few years, putting new cards on the table. One said: *"Our approach is to build long-term relationships. The routine must not lead to neglect, even with customers we have known for decades."* A respondent highlights the loyalty of Korean customers and the critical nature of maintaining high-quality standards and strong

customer relationships. The dynamic geopolitical landscape and shifting regulations in South Korea present ongoing challenges that necessitate flexible and strategic resource allocation. One said: *"We always aim for long-term relationships. Whether a customer has been with us for 30 years or three years, we put the same amount of time and effort into maintaining and growing that relationship*." The procurement manager mentioned: *"Suppliers allocate their resources to us because of our long and reliable relationships. We get priority with suppliers who understand our needs and value the reliability we provide in return."* A director describing relationships in an uncertain market mentioned: *"A long-term relationship makes collaboration easier because you understand each other well. New relationships require more time to satisfy and bind the customer. In a relationship that has lasted 30 years, you only need half a word. You understand each other and know exactly what they mean and what they are looking for*.

5.2.4 Long-term buyer-supplier relationships create mutual trust. This increases the moderating effect of dependence on resource allocation during market uncertainty.

Lastly, the moderation effect between market uncertainty and supplier dependence on resource allocation seems more substantial when the buyer-supplier relationship is long-term. Long-term relationships enhance the moderating effect of dependence and market uncertainty on resource allocation. One respondent indicated that long-term relationships receive more attention during market uncertainty, strengthening the moderating role of dependence. One said*, "While we are not directly dependent on a single customer, we have major accounts that are significant to our revenue. These relationships are built on mutual trust and long-term cooperation."* The procurement manager said: *"Long-term relationships build mutual trust and often lead to priority treatment from suppliers. Good relationships are important, regardless of whether the supplier depends on us."* Interviewees mentioned that a longstanding relationship and supplier dependence are desired, but quality and price remain the most crucial factors that affect resource allocation towards a buyer. The five respondents considered market uncertainty to always be present in their industry and will always be.

6. Discussion

6.1 Discussion Findings

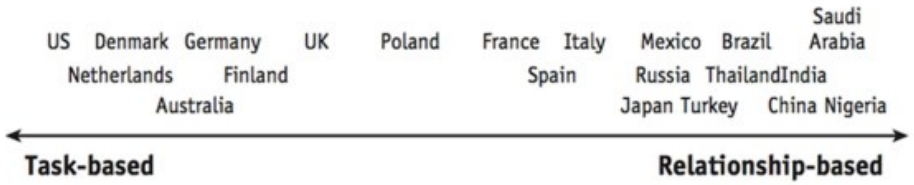
The study was designed to understand how market uncertainty and supplier dependence affect suppliers' resource allocation decisions. According to the results, suppliers allocate more resources to buyers on whom they are highly dependent. This indicates a strategic motivation for buyers to foster a supplier's dependency. High market uncertainty causes suppliers to reduce resource allocation to avoid potential losses. Long-term buyer-supplier relationships positively influence resource allocation. This indicates that suppliers assume stability and trust are built over time, leading to higher benefits. The interaction effects between market uncertainty, supplier dependence, and relationship duration were not statistically significant. This suggests that these factors operate more independently than previously thought.

The control variable of nationality, expressed as non-Dutch, exhibits a significant positive relationship in both models, suggesting that nationality other than Dutch strongly predicts suppliers' resource allocation. This implies cultural differences. During the interviews, area managers pointed out differences in treating buyers worldwide. For example, it was mentioned that Koreans are considered loyal, and North Africans highly value relationships. The Interviewees said they highly value these considerations in their daily decisions regarding resource allocation.

Dutch culture is among the highest task-based cultures, as seen in Figure 5 (Meyer, 2016). In the Netherlands, trust is established through collaboration. A buyer is perceived as dependable and trusted if the partnership works well. In most other countries, which focus more on relationships, trust is gained if both parties invest in a buyer-supplier relationship. This investment is not only in terms of financial terms but also in time by improving the personal relationship between individuals. Therefore, non-Dutch sales managers might be more inclined to allocate resources to suppliers to create strong connections, leading to more valuable partnerships. Their Dutch counterparts prefer efficiency and clear agreements with buyers. This potentially results in conservatively allocating resources to suppliers. Future research could investigate the why behind this finding and identify more country or culture-specific results.

Figure 5

Trusting: Task versus relationship orientation



Interviews with professionals provided additional context and supported the quantitative findings. Respondents highlighted the importance of maintaining strong, long-term relationships with suppliers and customers to overcome market uncertainties. While market uncertainty and supplier dependence were noted as influencing factors in resource allocation, the difference in resource allocation tends to be limited because of market uncertainty. Supplier dependence influenced resource allocation, but responses were mixed on whether it moderated the relationship between market uncertainty and resource allocation. Relationship length is crucial during market uncertainty in relationships with highly or less dependent customers, as it provides certainty from the past and is based on trust, and there is often mutual dependence.

Buying firms might consider strategies to become indispensable to their suppliers. Segmenting suppliers based on dependence and relationship length allows firms to identify key suppliers more likely to allocate resources favourably. Suppliers prioritise resources for the buyers on which they are most dependent. Finding suppliers in more stable markets or industries could reduce the risk of decreased resource allocation. Buying firms in a long relationship with suppliers can leverage the duration and success of past collaborations and convince suppliers to allocate more resources to the buying firm. Buyers should encourage and maintain long-term relationships with key suppliers for beneficial resource allocation.

6.2 Implications Literature

The findings contribute to existing literature that suggests suppliers tend to allocate more resources to buyers they rely on to secure relationships in the first place (Kim & Zhu, 2018; Casciaro & Piskorski, 2005). This confirms the importance of strategically managing dependence in supplier-buyer relationships to benefit from suppliers' resource allocation. Under any circumstance measured in the experiment, the analysis suggests that suppliers allocate more resources towards a buyer on which they are highly dependent compared to buyers on whom they have low dependence. In market

uncertainty, a decline in Figures 1 and 2 implies that market uncertainty always lowers a supplier's allocated resources. Results indicate that this decline is more pronounced when a supplier depends on a buyer. This makes a buyer more vulnerable to the effects of market uncertainty. Though the effect size is stronger for dependent suppliers, the overall benefits for a buyer of supplier resource allocation remain lower.

Second, the negative impact of market uncertainty on resource allocation aligns with the expectations (Howard et al., 2016). Concretely, higher market uncertainty leads to broadening network ties instead of investing in a specific buyer to create mutual dependence. Beckman et al. (2004) proved that uncertainty dominates corporate decision-making. This is supported by Villena et al. (2016), emphasising its crucial impact on supply chain dynamics. However, the current study suggests that factors such as supplier dependence and relationship duration significantly influence resource allocation decisions more than market uncertainty. This finding is consistent with Wang et al. (2014), who suggest that the effects of market uncertainty are more complex and less direct. High supplier dependence and long-term relationships lead to higher resource allocation under varying levels of market uncertainty. This interaction highlights that while market uncertainty alone may not significantly alter resource allocation, its impact may be mediated by the level of supplier dependence and the duration of relationships. A supplier will likely allocate more resources to maintain a buyer on which the supplier depends to maintain a stable supply chain. Simultaneously, a supplier is more inclined to continue allocating resources to a buyer in an uncertain market to benefit long-term. Both these strategies help to overcome market uncertainty. Without market uncertainty, this inclination for resource allocation towards the buyer is absent.

Thirdly, the study suggests long-term relationships lead to more favourable resource allocations (Uzzi, 1996; Dyer & Singh, 1998). Investing in longer relationships with suppliers can benefit the returns of supplier resource allocation. This aligns with relational theories in supply chain management emphasised by Blonska et al. (2013) and Li et al. (2022), who noted the benefits of increased trust and mutual understanding of long-term partnerships. This finding contrasts with theoretical expectations that these factors would interact to influence resource decisions (Patrucco et al., 2023). The qualitative results provide a nuanced view; interviewees emphasise the importance of long-term relationships in mitigating the effects of market uncertainty. This aligns with the literature highlighting the stabilising role of such relationships (Heide & Miner, 1992; Uzzi, 1996). Suppliers prioritise resource allocation to maintain stability and trust in long-term and highly dependent relationships, aligning with Gulati (1995) and Patrucco et al. (2023). Figures 3 and 4 highlight that a long-term relationship results in higher resource allocation than a more short-term relationship. The insignificant interaction shows a long relationship that aids against the negative impacts of market uncertainty. Thus, allocated resources still decrease in a situation of high market uncertainty. The impact would have been less harmful had the relationship been short-term. Long-term relationships can secure buyers from the negative impacts of market uncertainty and contribute to mitigating risks.

6.3 limitations

Scenario-based methods like policy capturing do not fully replicate real-world decision-making complexities. Hypothetical responses might differ from actual behaviour. Despite comprehensive instructions and clearly defined variables, this may impact response quality and reliability. This affects the study's external validity.

Although the theory suggested that the dependent variables were expected to interact and influence resource allocation decisions, the quantitative findings did not support these expectations. Several factors could explain this discrepancy. The direct effect of market uncertainty was significant but expected to be stronger. In this study, market uncertainty was not a strong resource allocation predictor. This study's operationalisation of market uncertainty may not have captured the full complexity; the measurement potentially oversimplified the construct. When hypothesising, market uncertainties were expected to affect the resource allocation decisions strongly. However, during the interviews, market uncertainty was considered self-evident. Thereby, the sample size or the high diversity of the respondents could have influenced the results, resulting in a lack of statistical power to detect significant interaction effects. Furthermore, the small sample size of qualitative interviews (five participants) limits the scope of insights.

Demographic and firm-specific data address factors, but contextual influences on decision-making may still be inadequately captured. Factors such as the company culture, market conditions, and the characteristics of decision-makers may play significant roles that are not fully considered. For example, interviewees often referred to the dominant position in the market of the supplying company as a factor influencing a supplier's resource allocation. Also, the control variable representing nationality being significant indicates the importance of considering cultural differences. The analysis lacks variables impacting supplier resource allocation, such as growth potential and the buying firm's reputation and trust.

This research defined dependence based on the share of supplier turnover. However, the ease of replacing a buyer needs to be considered. A high share of supplier turnover does not always indicate that it is difficult to replace a buyer and is dependent on the buyer. In some markets, highly dependent suppliers in terms of turnover on a buyer can easily switch to another buyer due to the nature of the product. This limits the results' generalizability towards simpler products and commodities since the experiment's product was more advanced.

6.4 future research

Despite the contributions, gaps and opportunities for further research remain. The insignificance of the interaction terms raised questions about the suitability of market uncertainty as a predictor in this context. Future research should consider alternative predictors or refine the operationalisation of market uncertainty to understand its role better and identify other potential moderating factors. Tracking changes over an extended period allows researchers to understand better the temporal aspects of resource allocation decisions and the long-term impact of different strategies. Investigating quantitative indicators that provide objective resource allocation measures could be tracked and analysed. These indicators can be derived from financial statements and operational data.

Secondly, this study's sample includes four companies operating in four sectors. Future research should focus on specific industries and geographic locations to enhance the generalizability and applicability of the results. Studies across diverse sectors can help identify industry-specific factors influencing resource allocation.

Thirdly, Understanding the behavioural, psychological, and cultural factors influencing decision-makers can provide a more nuanced view of resource allocation decisions. Future studies should explore how cognitive biases, decision-making, and management styles affect suppliers' strategies, as derived from the interviews. The interviewees highlighted multiple differing strategies based on the local sales

market. The significant positive correlation between being non-Dutch and higher resource allocation suggests cultural or regional differences in how suppliers approach resource distribution. Understanding these differences can help multinational companies adapt their supply chain strategies to diverse cultural contexts. For example, trust, a significant factor in buyer-supplier relationships, has been researched in cultural buyer-supplier relationships. Managers from collectivist cultures representing non-Dutch countries value trust when building long-term relationships. In contrast, managers from individualist cultures like the Netherlands value firm performance more highly in their long-term relationships, which affects resource allocation (Cannon et al., 2010). Comparable research is proposed on how specific cultural dimensions affect resource allocation strategies.

Lastly, Interviewees mentioned that longer relationships lead to higher trust; however, this is not always the case. The quality of the relationship and the level of trust between buyers and suppliers play crucial roles in resource allocation but are not captured in the construct of relationship length. It was mentioned that positions shift in some companies very often, affecting the appreciation of the length of the relationship between a buyer and a supplier. Future research should explore how these elements affect resource allocation decisions in times of market uncertainty.

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