Universität Bremen

Global Facility Location Decision making: an in-depth investigation into multilevel information alignment- relationships, structuring and boundaries

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List of Abbreviations

GFLDs	Global facility location decisions
IP	Intellectual property
OR	Operations Research
MS	Management Sciences
POM	Productions and Operations Management
MNEs	Multinational Enterprises
OSCM	Operations and Supply Chain Management
IB & GS	International Business and General strategy
GFLD	Global facility location decision making
TCE	Transaction-cost economics perspective
RBV	Resource-Based View
OLI	Ownership, Location, and Internalization
AHP	Analytical Hierarchy Process
GFLD	Global Facility Location Decision
ILR	Integrative literature review
MADA	Multi-Attribute Decision Analysis
SODA	Strategic options development and analysis
IPAs	Investment Promotion Agencies
SMEs	Small and medium-sized companies

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Abstract

Global facility location decisions (GFLDs) play a pivotal role in shaping the operational strategies of organizations. It encompasses choices related to the locations of manufacturing facilities, warehouses, and distribution centers. This study addresses the complex nature of GFLDs as it acknowledges the multilevel location attribute information alignment: aligning micro-level attributes such as firm priorities, movements, strategies or capabilities and organizational characteristics such as firm and managerial traits and capabilities with macro-level capabilities at the location such as various institutional-infrastructural-technological capabilities such as labor, energy, land logistics availability, government incentives (trade and tariff barriers and benefit), transportation infrastructure, etc and socio-institutional collaborative advantages offered by potential locations.

In the context of evolving challenges, such as the impact of the COVID-19 pandemic, firms are shifting trends towards undertaking nearshoring or reshoring movements. Firms are re-evaluating their total cost and benefits on their current global network and are becoming aware of hidden information costs that relate to the different non-economic macro attributes at the location such as government incentives, environmental regulations, or intellectual property (IP) protection, etc. Considering that relevant managers only have to make such decisions once or twice in their lifetime, they face the challenge of efficiently aligning the multilevel location attribute information. This is a significant challenge for managers within Small and Medium-Sized Businesses (SMEs) as well as Multinational Enterprises (MNEs). Multinational enterprises (MNEs) encounter elevated risks as a result of their extensive worldwide reach. Functioning across multiple nations with disparate marketplaces distinguished by distinct laws, cultural subtleties, and ever-changing market dynamics. Thus, obtaining precise and current information in these diverse locations becomes very important but equally challenging and time-consuming. On the other hand, SMEs face difficulties because of their financial constraint and resource availability, which makes it challenging for them to get the assistance they need. As per the principles of multilevel theory, it is evident that multilevel misalignments can lead to inaccuracies in the specification of location constructs or attributes: acquiring comprehensive location attribute information and their representation for subsequent analysis: structuring of the problem decision-making process. Therefore, this complex multilevel information alignment dilemma reflects itself in multiple ways: a) Knowledge gap on multilevel relationships for the different location movements such as offshoring or reshoring,

b) Lack of a structured approach during the decision-making process, c) Difficulty in acquiring precise location attribute information that could effectively enhance managerial satisfaction.

All four papers included within the thesis, relate to reflected dilemmas a), b), and c). First a) which is integrated within the first phase of the thesis, involves an integrative literature review. It establishes dominant multilevel determinants and their respective relationships and routes between the location determinants influencing GFLDs. This is connected to the first paper for the thesis. The subsequent decision-making process phase b), related to the second and third papers, explores challenges faced by managers during problem structuring. It considers the accuracy of decision representation. This is explored with the extent of multi-method research design: exploratory experiments with student subjects and managerial interviews from multiple industry cases. Finally, study for c) relates to the final paper. It investigates location attribute information boundaries for GFLD processes by investigating the impact of information volume and variety on subjective managerial decision outcomes. This again is investigated through laboratory simulation-based experiments with relevant managers experienced in facility location decision-making. This approach involved collecting not only quantitative data but also qualitative verbal protocols as part of the decision-making experiments.

The findings of a) identified dominant relationships between multilevel determinants- macro capabilities, such as production capability, institutional or technological adoption factors and micro-level firm priorities, such as the cost implications of offshoring decisions. On the other hand, the intricate interplay between micro-level firm capabilities, including collaboration and technology adoption, and firm priorities at the micro level, with a particular focus on quality were identified for repositioning movements. Based on the dominant routes identified between macro capabilities and micro firm priorities, the thesis further incorporates the sub-attributes in relevance to these two determinants and moves to the next phase towards designing different manipulation checks: location attribute information volume levels for the experiments on the hierarchies development and information boundaries. The results of b) from the experiments shed light on the various challenges participants encountered during hierarchy development. Furthermore, they highlighted how managers' perceptions of judgment conditions, such as completeness, operationality, and minimum size, could be influenced by the volume of information provided about the attributes. Preliminary indicative notions on the apt volume of location attribute information were taken forward to the next phase. The study exploring c) mainly indicated a standardized location attribute information volume for global facility location decisions, (location attributes ranging between 4 micro firm priorities & 17 macro

capabilities factors and 6 micro firm priorities & 28 macro capabilities factors). The study highlighted that more information isn't necessarily better and that there exists a point at which managerial decision satisfaction could be maximized for GFLD.

The thesis offers a significant addition to the body of knowledge regarding GFLD and multi-attribute decision analysis (MADA). The research highlights the critical relevance of multilevel paradigms for both the offshoring and reshoring trends as it introduces novel viewpoints on location determinants. It challenges accepted economic assumptions found in earlier research, determinants such as firm internal capabilities, personal preferences, and managerial heuristics are all included in the study. There are also practical implications for different stakeholders. For example, firms considering reshoring projects stand to benefit from taking a broader, more nationalistic perspective. They might consider the possible effects on society and the economy. In addition, policymakers can gain knowledge on creating collaborative innovation ecosystems to attract investment in reshoring.

Moreover, Papers 2 and 3's examination of problem structuring in MADA adds a distinct empirical perspective to the body of research. It explores the intricacies of decision-makers' behavior and information needs. In the context of GFLD, it clarifies both industry-specific variations and generic challenges. Paper 4 also makes a substantial contribution to the GFLD literature by emphasizing how crucial location-attribute information is for making decisions. For decision-makers who are struggling with information overload, the establishment of standardized location attribute information boundaries and the determination of ideal information volumes provide helpful direction.

Paper 4's discussion of behavioral dynamics in the context of choice overload offers perceptual counterarguments to conventional beliefs. It illustrates how information-seeking and choice deferral increase with increased information volume. This complex knowledge offers insightful information about decision-making procrastination and how information can be further presented while making important judgments. Although, the thesis enhances the knowledge of the dynamic interplay between decision-making, information processing and structuring, and location choices in the global business landscape, it acknowledges limitations related to some of the findings based on lack of empirical validation, student observations, and some of the time constraints within the experiments.

1. Introduction

1.1 Background and Motivation

Global facility location decisions (GFLDs) are operations strategy decisions that incorporate firm and network-level location selections for manufacturing facilities, which can be warehouses, manufacturing plants, or even distribution centers (Badri, 1999; Bhutta, 2004; L. Chen et al., 2014; Chopra & Meindl, 2007; Schniederjans, 2000). Today, firms may locate anywhere in the globe because of greater globalization and investments in technological infrastructure, quicker transportation, stronger communications, and open markets (Wisner et al., 2021). However, it should be critically considered that selecting a global facility location is a crucial strategic decision-making process that influences supply chain efficiency, customer service quality, and a company's competitive edge (Wisner et al., 2021). It is typically a long-term decision and it is extremely costly to relocate or close a plant once a decision has been made. For eg., Amazon.com has demonstrated that by strategically situating its logistics facilities and optimizing operations, the corporation can deliver speedier worldwide service. They built a vast warehouse and distribution network, with 175 fulfillment centers worldwide, and 25 sortation centers in North America (Bauer, 2021).

Because of their multi-attribute, multilayer, and multi-objective nature (Bhutta, 2004; Hoffman & Schniederjans, 2000; Ishizaka & Labib, 2011; Kinra & Kotzab, 2008b, 2008a; Zhang et al., 2013), GFLDs are often exceedingly complex, including several associated location attribute information at various levels. Thus, this research area becomes an interesting reference point for this thesis. Typically, these decisions involve making choices and aligning the location of the facility, defining its strategic role, and identifying markets to be served by the facility (Chopra & Meindl, 2007; Wisner et al., 2021). When making such decisions, companies need to match up their multilevel determinants: micro-level firm priorities, capabilities, strategies and traits with the macro capabilities offered by foreign locations such as infrastructure, technology, institutional capabilities such as labor, energy, land logistics availability, government incentives (trade and tariff barriers and benefit), transportation infrastructure, etc at the location level (Akhtar et al., 2020; Contractor et al., 2019 Nielsen, B., Asmussen, C., & Goerzen, 2018). For example, consider the FedEx Corporation, which prioritizes fast delivery. They employ capabilities such as a hub-and-spoke system in the location. Another noteworthy illustration is Honda's global location strategy, where they establish cost-effective manufacturing facilities in areas that align with the preferences and needs of local customers,

a strategy that has proven highly successful (Wisner et al., 2021). Hence, to effectively navigate the multilevel intricacies inherent in country selection decisions, especially within the context of global facility location choices, it is imperative to establish a harmonious alignment of multilevel location attribute information. Here, multilevel location “Determinants” refer to the factors that motivate firms to (re) locate their manufacturing activities (Ancarani et al., 2020; Johansson & Olhager, 2018). Location determinants are interchangeably termed "location attributes" in the rest of the thesis because as per decision-making literature (Goodwin & Wright, 2014a), attributes can be considered both as factors and performance measures/indices/goals/priorities/determinants. Location determinant is used as a backdrop towards the pre-decision-making process stage and location attribute is termed for the decision-making process - perspective from the decision-making literature.

Guided by the principles of multilevel theory (Aguinis et al., 2011; Contractor et al., 2019; Goerzen et al., 2013; Klein, 2014; Molina-Azorín, Pereira-Moliner, López-Gamero, Pertusa-Ortega, & Tarí, 2020; Peterson et al., 2012), it is evident that misalignments can lead to inaccuracies in the specification of constructs or attributes, their measurement, and their representation for subsequent analysis (Aguinis et al., 2011; Molina-Azorín, Pereira-Moliner, López-Gamero, Pertusa-Ortega, & José Tarí, 2020). Thus, in this context, “inaccuracies in the specification of constructs or attributes” is closely associated with the failure to acquire comprehensive location attribute information (Campbell, 1988; Eppler & Mengis, 2008; Phelps & Wood, 2018; Roetzel, 2019), encompassing boundaries on both the information volume (number of location attributes) and the information variety dimension (the diversity within the location attributes) seamlessly integrated across different levels of analysis. Thereafter, “representation for analysis” can be understood as the multilevel structuring of the problem (Belton, 1999; Scheubrein & Zionts, 2006)- hierarchy or mind map development based on information on the location attributes. Thus, this multilevel information alignment processes in GFLDs is associated with developing decision hierarchies, making attribute choices in a structured and methodical manner, and acquiring the appropriate volume and variety of location attribute information. Relevant managers at the top level responsible for such strategic decisions rely on site selection intermediaries such as investment promotion agencies or private consultants to help them with the whole process (Kinra, 2015; Kinra et al., 2020a; Phelps & Wood, 2018).

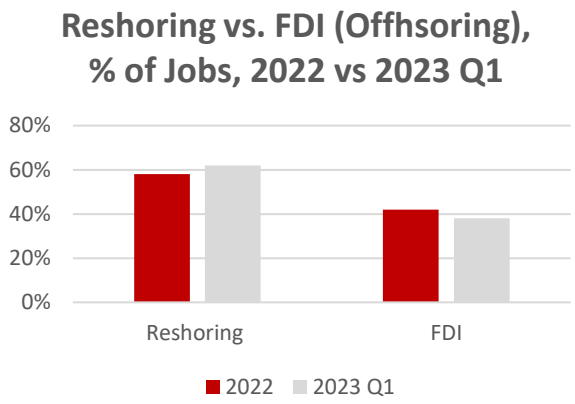


Figure 1 Difference between Reshoring and FDI initiatives taken by US between 2022 and 2023 first Quarter

However, this process in GFLD comes with its share of challenges, especially in the current situation. Firms making global facility location decisions are now in a dynamic state. They are restructuring their evaluation and analysis of the total cost and benefits of their current global network and are becoming aware of hidden information costs (Dixit, 2016; Knizek, 2022; Reshoring Manufacturing - Coming Home, 2013) that relate to the different non-economic macro attributes at the location such as Government incentives, environmental regulations, intellectual property (IP) protection, etc. The COVID-19 epidemic caused havoc on global supply networks, disrupting transportation, logistics, and industrial operations (Raza et al., 2021). As a result, numerous firms have reconsidered their facility location decisions and supply chain strategy to reduce risks and increase resilience (Knizek, 2022). Figure 1 shows the difference between Reshoring and FDI initiatives taken by the US between 2022 and 2023 first Quarter. There is an increase in the reshoring or nearshoring initiatives and a decrease in the FDI within the same time frame. Typical examples of plausible global facility repositioning can be provided with Apple, the tech giant, slowly shifting some of its manufacturing operations back to the United States and some of the other lucrative regions such as Vietnam or India from China (Jie & Tilley, 2022; Mickle, 2022). Also, Ford Motor Company decided to reshore portions of its manufacturing operations to the United States, investing in electric vehicle production. This move aimed to enhance supply chain resilience and support the growth of electric vehicle production domestically (Ficosa North America, 2022).

Considering these new events, the overall process has become significantly more complex. The problem remains in the fact that managers struggle to align the location attribute information. Considering that relevant managers only have to make such decisions once or twice in their lifetime, they face the challenge of efficiently aligning the multilevel location attribute

information. This is a significant challenge for managers within small and medium-sized businesses (SMEs) as well as multinational enterprises (MNEs). Multinational enterprises (MNEs) encounter elevated risks as a result of their extensive worldwide reach. Functioning across multiple nations with disparate marketplaces distinguished by distinct laws, cultural subtleties, and ever-changing market dynamics. Thus, obtaining precise and current information in these diverse locations becomes very important but equally challenging and time-consuming (Chen, 2023; Dang et al., 2020; Oetzel & Miklian, 2017). On the other hand, SMEs face difficulties as a result of their financial constraint and resource availability, which makes it challenging for them to get the assistance they need (Amoa-Gyarteng, 2023; Bakhtiari et al., 2020; Wang, 2016). The intricate challenge of aligning multilevel location attribute information manifests itself in three distinct but subsequent phases, which will serve as the foundational pillars of this thesis. A comprehensive discussion of these phases will follow in the next section as the section offers a detailed exploration of the entire GFLD process and how managers may navigate it in practice.

1.2 Global facility location decision making - process steps and dilemmas

Global facility location decision making (GFLD) is the process of identifying the most strategic positions for factories, warehouses, and distribution centers to optimize the efficiency and effectiveness of a company's supply chain network (Chopra & Meindl, 2007; Schniederjans, 2000; Wisner et al., 2021). It involves making decisions about where to locate facilities, how to allocate resources, and how to manage risks associated with global operations. Deciding where globally to build a new manufacturing plant or warehouse is a huge strategic move for companies looking to expand internationally (Wisner et al., 2021). This process is crucial for companies aiming to expand their operations beyond their home country. When it comes to mapping out this whole facility location decision process, there's no master playbook or one-size-fits-all process. Things shape up differently based on the specific company, industry, and contextual situation. Drawing insights from previous literature (Chopra & Meindl, 2007; MacCarthy & Atthirawong, 2003; Phelps & Wood, 2018; Schniederjans, 2000; Wisner et al., 2021) and experiences shared by site intermediaries from various firms[1] of different sizes, the key steps (also refer to Figure 4) involved in this decision-making process are outlined:

[1] Häbler, S (2022, April 13). Lexzau, Scharbau GmbH & Co. KG. Personal interview.
Bastian, C(2021, August 31). BremenInvest. Personal interview.

Step 1: The Go/No go decision

First up, companies face the challenge of deciding whether they even want to set up a facility outside their home country. This critical decision sets the foundation for the subsequent steps.

Step 2: Multilevel location attribute information alignment- Identification, relationship, representation

Firms and managers collaborate with investment promotion agencies or other consultancy services based on their financial and resource outreach. They acquire relevant location attribute information. They identify country and firm-specific factors or attributes that are crucial for making an informed decision. They employ visualization tools to represent these attributes. This aids managers and the firms in developing a comprehensive understanding of the influencing attributes.

Step 3: Quantification of attributes and alternatives

CEOs and senior operations managers scan for information related to the identified attributes. They do this in collaboration with external agencies. Managers then proceed to quantify their subjective estimations of the attributes. This provides a basis for a more objective analysis.

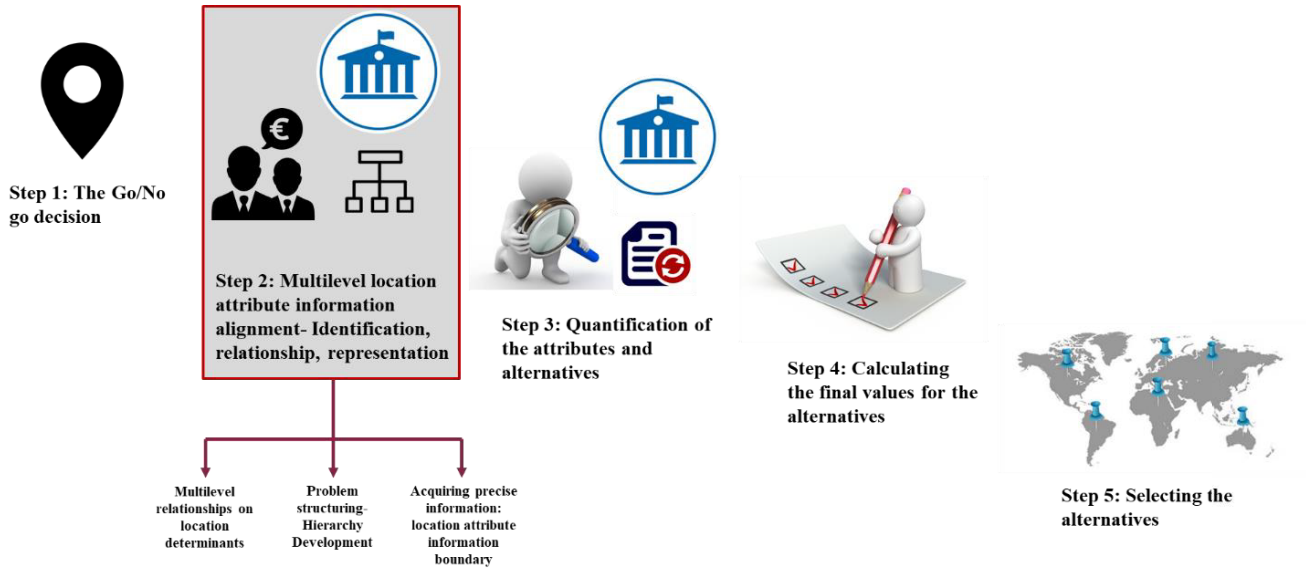


Figure 2 Process steps for Global facility location decision making

Step 4: Calculating the final values for the alternatives

This critical step in the process involves the assessment of final values for alternative countries based on the established attributes. This quantitative analysis enables a systematic comparison.

Step 5: Selecting the alternatives

In the final step, a country is selected as the optimal location for the new facility. The decision-makers consider the calculated values, considering the overall alignment with the company's strategic firm priorities and operational requirements.

In this thesis, the distinctly zoomed in on the location attributes that are crucial in shaping facility decision-making. The study focuses on Step 2 since that's the cornerstone - where managers acquire critical information on the location attributes. These location attributes provide the bedrock for the overall decision. They include identification, relationships and representation of macro and micro level location determinants. Their substantial influence extends to the ultimate decision on the global placement of the facility, thereby defining the intricate challenge known as the multilevel location attribute information alignment problem.

Therefore, in extension to the introduction section and the three phases encompassed within Step 2 - Multilevel relationships on location determinants, Problem structuring-Hierarchy Development, and Acquiring precise information: location attribute information boundary (refer to Figure 2) - pertaining to multilevel location attribute information alignment, three distinct problem statements emerge in the current context of GFLD:

a) Knowledge gap on **multilevel relationships on location determinants for the different location movements:** While offshoring movements have become well-established and are generally familiar to organizations, the challenges become significantly more pronounced when firms transition towards facility repositioning movements, including nearshoring, reshoring, and backshoring (Shih, 2022). For instance, when firms engage in offshoring movements, they often prioritize cost-efficiency at the micro-level by seeking locations with low-cost production and operation at the macro level. However, these multilevel relationships may become less certain or known when firms consider reversing their strategy. There remains a significant gap within the GFLD research perspective, which will be explained in the next section. **b)** Lack of **problem structuring approach during the decision-making process**: Managers especially within SMEs, often struggle to handle complexity and structure their decisions effectively (Kinra & Kotzab, 2008b; Reich et al., 2020; Schmidt et al., 2017). And now with this re-evaluation situation, developing a clear mind map or decision hierarchy, which involves attaining a complete set of attributes or attaining clear categorization of attributes or

even attaining measurable attributes becomes tough for them. **c)** Challenging task of **acquiring precise location attribute information that could effectively enhance managerial satisfaction:** The difficulty in acquiring information is compounded by the intricate network of attributes that must be examined, ranging from logistical and infrastructural aspects to socio-institutional and economic dynamics (Berg, 2014; Phelps & Wood, 2018; Townroe, 1972). Organizations are at a crossroads, needing to consider the benefits and cost analysis of various locations and nations while remaining dedicated to their strategic priorities (Berg, 2014). Although managers show rationality in the early stages of gathering location attribute information and discussing viable location alternatives, when it comes to arriving at final decisions, the process becomes difficult to balance (Phelps & Wood, 2018). Because location attribute data is complex and vast, it might be difficult for managers to acquire information. The abundance of information makes it challenging to assess numerous location attributes, balance firm priorities among a plethora of location attributes, and weigh the advantages and disadvantages of various locations/countries[2]. Amid this complex decision-making landscape, the relentless pace of change in the business world presents an additional layer of difficulty in acquiring all the relevant hidden attributes, thus exploring and regulating information boundaries in terms of volume and variety becomes crucial (Dixit, 2016; *Reshoring Manufacturing - Coming Home*, 2013). As companies continuously re-evaluate their global facility locations to stay competitive and responsive to shifting market demands, they need to navigate an evolving terrain of strategic challenges, making it crucial to strike the right balance between information volume, variety, managerial subjective complexity about the decision and managerial decision satisfaction.

Thus, exploring and expanding these dilemmas in relevance to multilevel location attribute information alignment will surely provide some guidelines to deal with complexity relevant to GFLD in practice for both relevant managers involved in such decisions such as Senior Fulfilment and Logistics Manager, After-Sales manager, Solution owner- Warehouse & Distribution or even managers at the top of the chain such as Director or Chief executive officer, etc and site selection intermediaries. It will also set a profound knowledge for the research in Global facility decision-making, studies that deal with the decision making process-how facility location decisions are taken and also studies that investigate the relevant and

[2] Singh, T (2022, March 5). Pininfarina. Personal interview.
Bechtle, C (2023, July 27). HBPO. Personal interview.
Lima Alencar, L (2022, April 1). Hastag You. Personal interview.

dominant location attributes affecting such decisions. This will be discussed further in detail in the next segment as the research gaps are presented in relevance to the three dilemmas identified in this section and will be further associated with the broader objectives of the study.

1.3 Research Gap and Research Objectives

In coordination to the three main problems or dilemmas for this **a), b), c)**, the research gaps are formulated. a) Despite the extensive body of knowledge in Global facility decision-making, particularly within Operations Research (OR), Management Sciences (MS), and Production and Operations Management (POM) literature, research is still lagging in terms of the aforementioned multilevel knowledge in GFLD. As for multilevel relationships, for the different location movements such as offshoring, and reshoring, literature has examined factors that influence these choices (Ancarani et al., 2015; L. Chen et al., 2014; Ellram et al., 2013; Johansson & Olhager, 2018; Kinkel, 2012; Tate et al., 2014). However, it lacks a comprehensive understanding of the intricate relationships and complexities involved at various levels. Some of this recent research has primarily focused on firm motivations and priorities. Additionally, prior GFLD research within OSCM (e.g. Bhutta, 2003; Huchzermeier & Cohen, 2017; Hammam, 2014) has mainly used deterministic optimization models to aggregate location determinants, resulting in the loss of causal links and bias. The emphasis on cost-related aspects without clear categorization of location determinants has limited decision-making (Kinra et al., 2020b). The research has overlooked vital factors like managerial characteristics, organizational attributes, and regional policies.

Table 1 Research Gaps based on different contexts of the thesis

Research Dilemmas	References	Topics that have been covered	Gap
*a) Knowledge gap on **multilevel relationships on location determinants** for the different location movements*	Ancarani et al., 2015; Badri, 1999; Chen et al., 2014; Ellram et al., 2013; Goh et al., 2007; Gutierrez & Kouvelis, 1995; Hammami & Frein, 2014; Huchzermeier & Cohen, 2017; Johansson & Olhager, 2018; Kinkel & Maloca, 2009; Kogut & Kulatilaka, 1994; Reich et al., 2020; Tate et al., 2014; Vila et al., 2006	1. Identification of bundles of macro and micro level determinants/drivers for the different location strategies 2. Mostly based on the Optimization and gravity model rules 3. Few research in the context of individual firm and managerial level analysis 4. Assessment based on a bundle of firm and location-related qualitative and quantitative factors	1. Matching multilevel factors: What factors are matched for different location strategies Individual firm and managerial attributes not understood 2. Lack of differentiation between different location strategies 3. Limited studies based on competitive or location priorities at the micro level

*b) Lack of **problem structuring approach** during the decision-making process:*	Christodoulou P, Fleet D, Hanson P, Phaal R, Probert D, 2007; De Meirleir, 2012; Johanson & Vahlne, n.d.; Kinra & Kotzab, 2008b; MacCarthy & Atthirawong, 2003; Windmark & Andersson, 2016; Yang & Lee, 1997	1. Recommendation of structured generic global facility location framework based on previous research assessment and practice 2. Recommendation of structured location attribute-based framework based on previous research and survey 3. Assessment of Location decision evaluation model based on analytical hierarchy process (AHP) and other related multi-criteria decision analysis technique 4. Cost model for location decisions	1. Doesn´t explore the development process of a structured framework from a real-time managerial decision making process perspective 2. Doesn´t explore the different challenges that occur during a structured framework development process during a decision making process 3. No relation of the information-acquiring process to the hierarchy development
*C) Challenging task of **acquiring precise location attribute information** that could effectively enhance managerial satisfaction: **Information boundary***	Berg, 2014; Kinra, 2015; Kinra & Kotzab, 2008b; Min & Melachrinoudis, 1999; Phelps & Wood, 2018; Reich et al., 2020; Westphal & Sohal, 2016	1. Discussion on MNEs collecting diverse data on potential locations and information volume and variety that hinder decision-making performance 2. Discussion on the importance of setting information boundary-Number of location attributes 3. Different sets of location factors considered for the decision 4. Location attribute information variety moderates the relation between information volume decision performance 5. Comprehensive information (volume, variety) in terms of location attributes navigates decision complexity effectively and affects location decision-making	1. Standardized Boundary not recommended on both number (Volume of information) and context of choices set 2. Different location attribute information varieties that can affect the decision making unknown 3. Different location attribute information varieties that can affect the decision making unknown 4. Correlation based on Mediation effects of subjective decision complexity

b) The literature on problem structuring in global facility location decisions reveals a growing emphasis on structured decision making frameworks and models. These include recommendations on generic and location attribute-related frameworks based on prior research and practical application, attribute-based models tailored to specific operational needs, evaluation models using techniques like AHP, and cost models for economic analysis (Christodoulou et al., 2012; Kinra & Kotzab, 2008b; MacCarthy & Atthirawong, 2003; Yang & Lee, 1997). However, critical gaps in the literature remain. There's a lack of research on the real-time managerial decision-making process during framework development, particularly in dynamic, uncertain contexts. Challenges encountered during framework development have received limited attention. Additionally, the connection between information acquisition and hierarchy development remains underexplored.

c) The literature on the boundary of location attribute information in global facility location decisions explores various aspects of multinational enterprises (MNEs) making choices about where to establish their facilities. Previous literature underscores the significance of

establishing information boundaries, specifically concerning the number of location attributes considered during the decision making process. It acknowledges that different sets of location factors, encompassing economic, social, and environmental aspects, contribute to the complexity of these decisions (Min & Melachrinoudis, 1999; Phelps & Wood, 2018; Reich et al., 2020). Furthermore, researchers have recognized the moderating role of information variety in influencing the relationship between information volume and decision performance, revealing the importance of managing diverse types of information effectively (Kinra, 2015). Comprehensive location attribute information, addressing both the volume and variety of location attributes, is seen as a vital tool in navigating the complexity of global facility location decisions (Kinra, 2015; Min & Melachrinoudis, 1999; Phelps & Wood, 2018). However, the literature specifically doesn´t reveal certain gaps. It lacks standardized recommendations for information boundaries, particularly regarding the volume of information and contextual choices. Moreover, the exploration of different varieties of location attribute information on decision making remains understudied, leaving a potential area for future research. Additionally, the mediation effects of subjective decision complexity in the context of global facility location decisions are not well-explored, offering a nuanced aspect that warrants further investigation. Addressing these gaps will contribute to a more comprehensive understanding of how MNEs can make well-informed and adaptive global facility location decisions, optimizing the use of diverse data.

Thus, relating each of the research dilemmas and the respective phases within Step 2: Multilevel location attribute information alignment- Identification, relationship, representation in GFLD process, research objectives are formulated which would further extrapolate into the research question in the next section (See Figure 3).

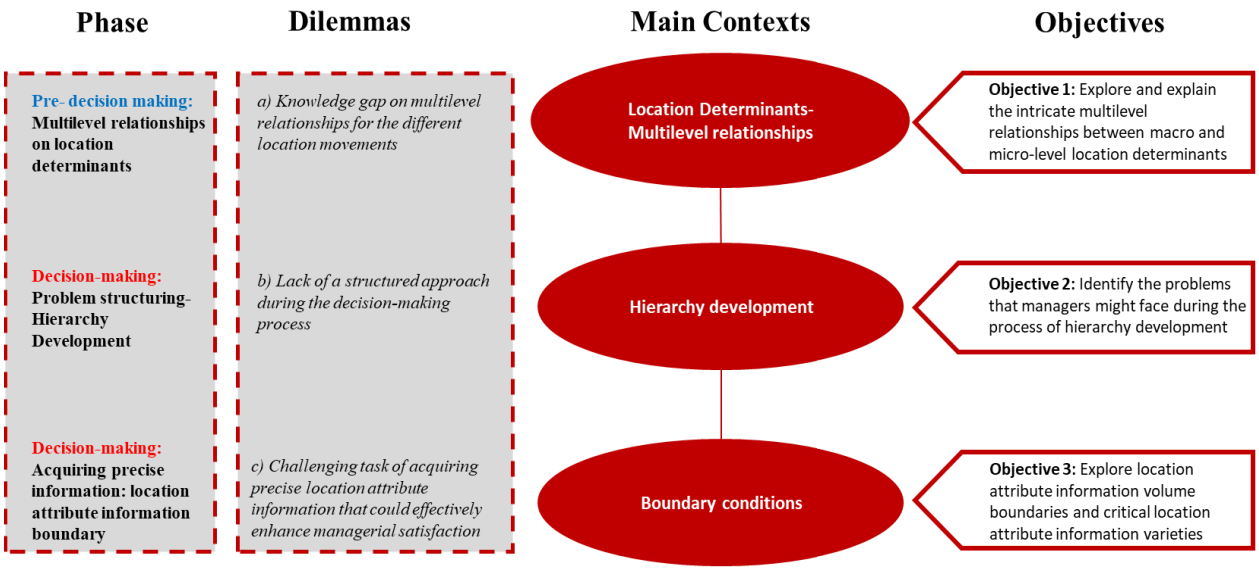


Figure 3 Research Objectives based on the decision phases, dilemmas and the main contexts

The initial phase encompasses pre-decision making, specifically focused on location attribute identification and interaction. In this phase, various multilevel location determinants and their relationships are identified and examined. Specifically, different relationships are explored between macro and micro level determinants for the different location movements by integrating the domains of the Operations and Supply chain management (OSCM) and International Business and General strategy (IB &GS) research domains. These are specifically explored within these two domains because these are the most relevant research domains in the GFLD research field and provide complementary knowledge on location decision-making.

Subsequently, the study moves to the decision-making process phase, which comprises two critical components: problem structuring and input-output effects. Thus, the second objective specifically takes an exploratory approach, focusing on the identification of challenges and problems that managers may encounter while structuring the decision-making process, particularly in the context of hierarchy development. Lastly, the third research objective again pertains to the decision-making process phase and explores the boundaries of input conditions, such as information volume and variety, which may impact the manager's output state, including their satisfaction or the complexity they experience throughout the decision-making process.

1.4 Thesis Structure and Research Questions

In line with the study's three primary objectives, three respective main research questions have been methodically crafted (follow the thesis structure Figure 3). As already indicated in the previous chapter, this thesis is structured into three sequential phases as per Step 2: PHASE I Pre-Decision-making: Multilevel relationships on location determinants, PHASE II Decision-making process: Problem structuring- Hierarchy Development, PHASE III Decision-making process: Acquiring precise information: location attribute information boundary. The first phase is dedicated to addressing the first objective of the research. It serves as a preparatory phase, augmenting the conceptual foundation of the study. Within this phase, the focus primarily centers on identifying and clarifying various elements, effectively setting the stage for a profound understanding of the practical, real-world realm of managerial global facility location decision making. This phase primarily engages with "what" and "whether" inquiries, laying the essential groundwork for the subsequent exploration.

The second phase delves deeper into the actual decision-making landscape based on empirical investigations. Here, the dominant strands from the first phase are considered as input framework and thus an exploratory stance is adopted seeking to empirically comprehend the intricacies of the two pivotal stages in global facility location decision making. This phase is characterized by an emphasis on elucidating the "how" question, shedding light on the dynamic processes that underlie global facility location decisions. This pertain to hierarchy development, involving the evaluation of decision making problem structuring. It is titled problem structuring and decision representation. The findings from this first part of the investigation further inform the final phase of the decision-making process phase. Hence, the second phase is considered a pre-design empirical investigation. The third phase revolves around information acquisition during this decision-making journey.

The first research question, in reference to the first paper of this thesis and the first phase, presents an innovative approach to conducting an integrative literature review, aiming to bridge two critical and relevant domains within GFLD: OSCM and IB&GS. This approach involves establishing a multitude of intricate relationships across various levels of analysis, forming the foundation for the key investigation within the second phase. Among these relationships, the research identified dominant connections between macro-level capabilities, such as production capacity factors, and micro-level firm priorities, such as the cost implications of offshoring decisions. Additionally, the researchers explored the intricate interplay between micro-level

firm capabilities, including collaboration and technology adoption, and firm priorities, with a particular focus on quality for repositioning movements.

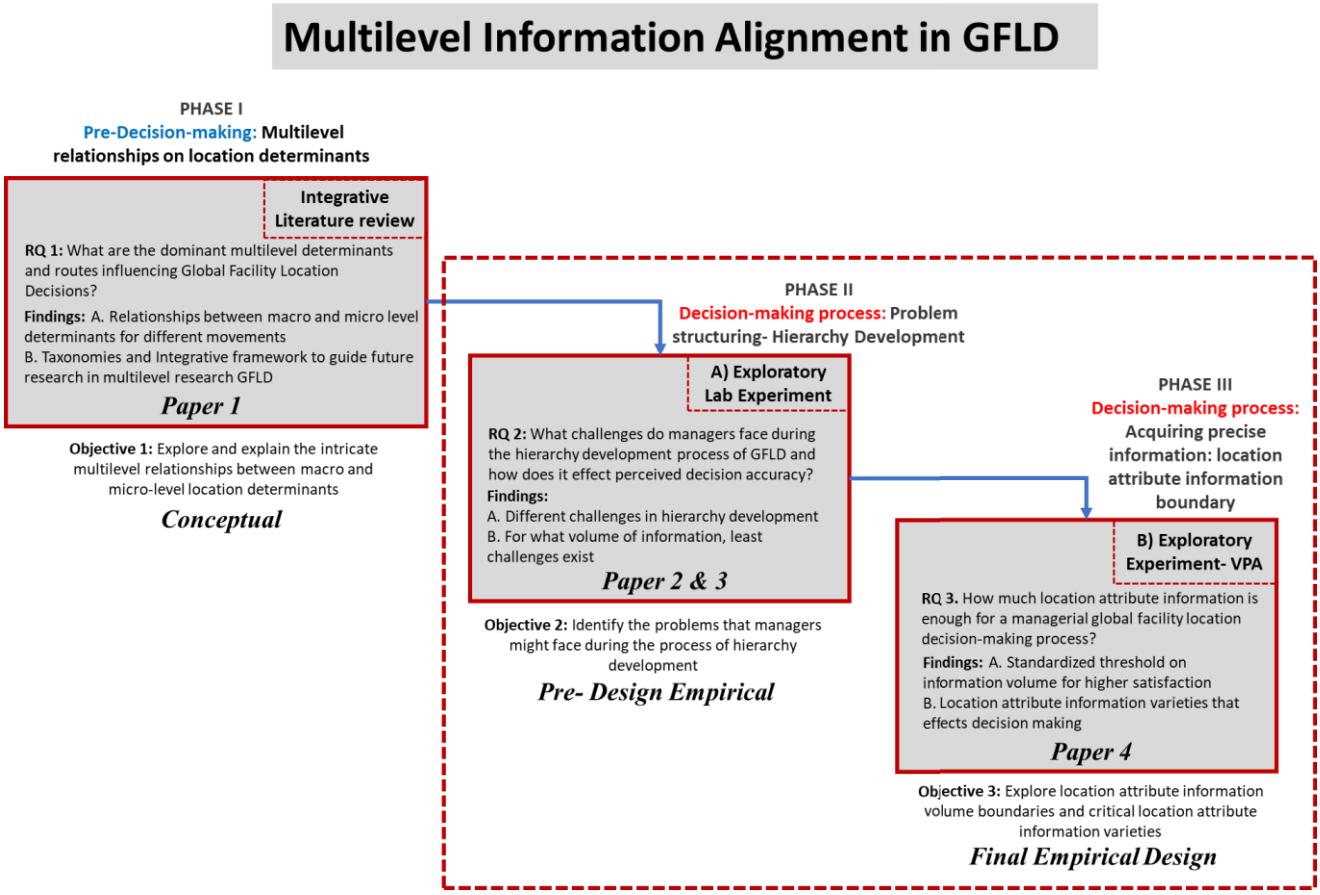


Figure 4 Thesis structure- Relevant Papers and their respective research questions

Furthermore, the study uncovered several other noteworthy managerial perception-based relationships that pertain to the determinants at the micro level. The researchers recommend these areas for further exploration in future research, ultimately leading to the formulation of a comprehensive integrative framework. This framework will serve as a valuable resource for guiding and supporting future research endeavors in the dynamic field of GFLD.

In summary, the following research question was formulated:

RQ1: What are the dominant multilevel determinants and routes influencing Global Facility Location Decisions?

RQ1.1 What are the dominant matching relationships for different firm location movements? What are the nuanced firm and managerial traits and capabilities or even socio-institutional outcomes in the country that directly affect the location choice?

RQ1.2 What are the dominant matching location motivations for different firm location movements, and how are these nuanced by firm and managerial characteristics?

RQ1.3 Which are the most dominant multilevel routes for location decisions in the literature? What are the plausible reasons and where is future multilevel research in GFLD mandated and why?

Based on dominant multilevel factors identified within Paper 1, the exploratory empirical experiments were developed in the next phase. For the pre-design phase, involving Paper 2 and Paper 3, the focus remained on the problem structuring of the decision making process, which was explored based on the investigation of the accuracy of the representation of the dominant multilevel attributes borrowed from the first phase. AHP hierarchy development for GFLD was investigated in an experiment format with student subjects. It was based on laboratory simulation-based experiments, where a different number of attributes were provided to the student subjects. Based on this the students developed decision hierarchies. Their various challenges were accounted for during the process based on their subjective assessment of accuracy judgment properties for hierarchy development. It specifically addressed decision accuracy challenges associated with AHP hierarchies for country selection decisions, focusing on judgment conditions of accurate hierarchy representation such as completeness, operationality, decomposability, redundancy, and minimum size. The results of these experiments shed light on the various challenges participants encountered during hierarchy development. Furthermore, they highlighted how decision-makers perceptions of judgment conditions, such as completeness, operationality, and minimum size, could be influenced by the amount of information provided about the attributes.

Thus, this part of the decision making phase, answers the following research question within papers 2 and 3 of the thesis:

RQ2: What challenges do managers face during the problem structuring of GFLD and how does it affect perceived decision accuracy?

RQ2.1 What are the challenges managers might face in problem structuring, specifically the hierarchy construction process, in global facility location country selection decisions?

RQ2.2 What role could the volume of attribute information play in the problem structuring accuracy of the decision?

The last phase of the decision-making process, involving Paper 1, looks at how the information going in affects the eventual decision outcome. Specifically, it was framed to observe how the volume and variety of location attribute information impact the outcome, which is the performance of the decision. On the input side, there's the volume of information (how much information on location attributes) as well as the variety (different types and categories). Then on the outcome side, there's both the complexity felt by the decision maker during the process, as well as their overall subjective satisfaction. Thus, there's a human experience element as well as an evaluation of the decision itself. The study mainly identifies the standardized information volume for global facility location decisions, falling within the range of 4 micro firm priorities and 17 macro capabilities factors to 6 micro firm priorities and 28 macro capabilities factors. The study highlights that more information isn't necessarily better and that there exists a point at which managerial decision satisfaction is maximized. The knowledge might empower organizations to make more informed and satisfying location decisions.

Thus, the following research question is formulated for the final paper:

RQ 3 How much location attribute information is enough for a managerial global facility location decision-making process?

RQ 3.1 What volume of location-attribute information is enough to develop a satisfied managerial global facility location decision-making process?

RQ 3.2 What are the dominant location attribute information varieties that moderate managerial decision satisfaction in Global facility location decisions?

RQ 3.3 Whether and how subjective complexity mediates the effect of the information volume on decision satisfaction in Global facility location decision making?

The thesis develops in an organized way. A thorough examination of the theoretical perspectives supporting the larger issue follows this. The following section delves into an in-depth examination of literature related to the three fundamental phases underpinning the research. Additionally, it expands on this foundation by incorporating conceptual motivations and the model employed for data collection and analysis, effectively addressing the research questions associated with each phase. From then, the thesis clarifies the many methodological components included in the research. The research design is explained in detail, including particular insights into the methods used at each phase as well as the pertinent background data that informs individual procedures within these techniques. The thesis then carefully outlines

its results in a logical order that corresponds with each phase of the investigation. The results of each phase are presented. The thesis concludes with a section that summarizes if and how the research questions are addressed. The theoretical and practical contributions resulting from the study's critical outcomes are also examined within the same section.

2. Theoretical Perspectives on global facility location decision making

GFLD is a complex process that requires consideration and alignment of various multilevel attributes, stakeholder interests, and adaptability to changing circumstances (Kinra, 2015). Figure 5 provides the theoretical explanation of multilevel alignment for GFLD. GFLD is attributed to firms attaining both competitive and comparative advantage that in turn leads to sustained performance (Grant, 2017; Huang & Cantwell, 2017; Porter & Porter, 1994; Rumelt, 1997). The primary objective of GFLD is to bolster the competitiveness of firms and this is achieved by aligning the determinants of the location at both the managerial and firm-micro level and the broader location or country-macro level. At macro level, these elements include macro capabilities that result from the location. A few examples of these capabilities include information exchanged across R&D networks, institutional laws and regulations, government support and incentives, technology and infrastructure capabilities, and market size and stability. On the other hand, determinants at the micro level involve firm priorities, which are important policy variables that influence operational strategies, internal operational capabilities that improve the reputation of a facility, particular firm characteristics such as size, industry, or even personal preferences and characteristics of managerial leadership (Akhtar et al., 2020a; Contractor et al., 2019; Foss, 1996; Nielsen, B., Asmussen, C., & Goerzen, 2018; Schotter & Beamish, 2013). The efficacy of the choice outcome will be improved if firms and managers can align and match macro-level capabilities with competitive priorities when choosing a location (Huang & Cantwell, 2017). This will also imply that the decision-makers will be better equipped to manage their facility's capacity, technology, workforce difficulties, and quality-control systems based on complementing strengths it has gained from the host nation or location. As explicated by Foss, (1996); Grant, (2017); Porter & Porter, (1994), higher-order advanced macro resources and capabilities, unlike factors whose supply is reliant on external 'endowment,' are the product of an individual, corporate, and government investment and are outcomes of change in the capabilities.

The complexities inherent in firms seeking this competitive and comparative advantage have been well established within location research and have been inextricably linked to the broader schemes of transaction-cost economics perspective, resource-based theory and Dunning's paradigm or 'OLI' framework in a huge body of work. Transaction-cost economics perspective (TCE; Williamson, 1981) has been widely used to explain this macro-micro link within the internalization phenomenon. TCE explains overseas governance mode decisions and optimal disaggregation-level decisions, particularly in the context of non-core outsourced processes to save cost.

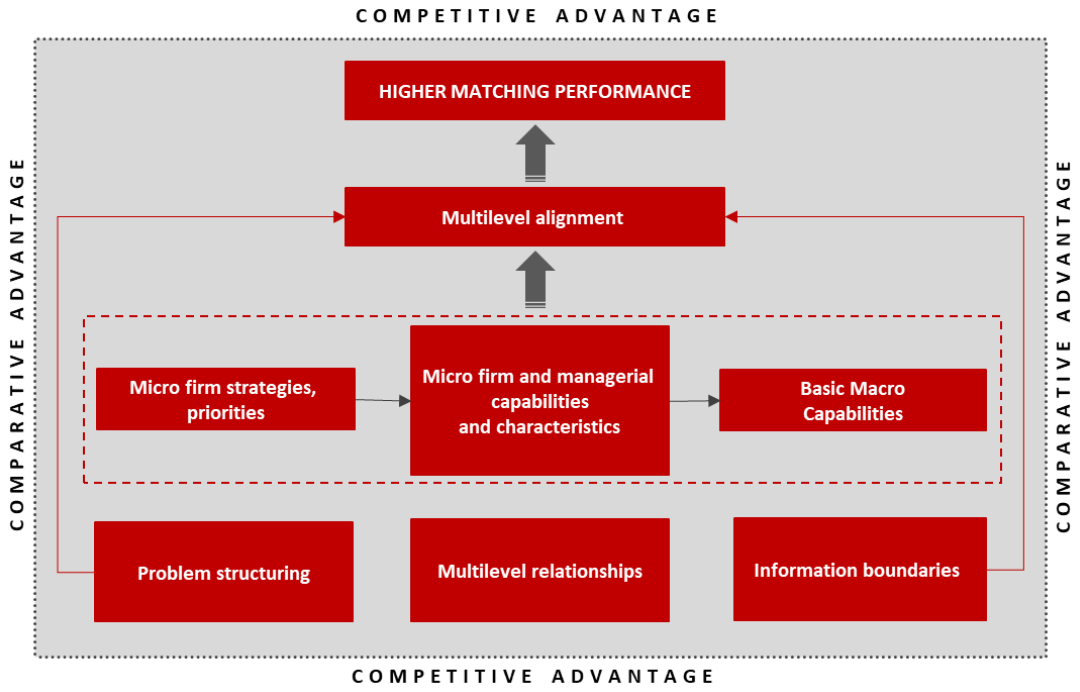


Figure 5 Theoretical explanation on the multilevel alignment for GFLD

However, TCE is unable to adequately describe the difficulties of international operations, notably in terms of its internal resources, capacity, and location capabilities, especially at the process level, where there is a tremendous degree of complexity (Rodgers et al., 2019). This has prompted researchers to delve beyond this idea, exploring the Resource-Based View (RBV) paradigm (Barney, 1991) by examining the location capabilities and resources required for effective overseas operations (Bunyaratavejet al., 2011). Competitive and comparative advantage is attained in terms of the selection of strategies that match a firm's strengths to the requirements, resources and capabilities of the environment (Grant, 2017; Porter & Porter, 1994). However, RBV is limited in circumstances with larger degrees of disaggregation, which may result in a decline in firm-specific resources and capabilities (Baldwin & Clark, 2006; Huang & Cantwell, 2017). Similarly, the relevance of location choice for a firm's

internationalization initiatives has been investigated using Dunning's paradigm or 'OLI' framework (Dunning, 1980) within international business literature. Ownership, Location, and Internalization ('OLI') are three potential sources of competitive advantage that might influence a company's choice to internationalize its operations. The insights and gaps in these different perspectives have been elaborated in detail in Table 2.

Table 2 Insights and Gaps on different theoretical perspectives that relate to GFLD

Theory	***Theory Originator***	***Originating Discipline***	***Organizational Dimension***	***Insights on Studies in the Context of Global Facility Location Decision***	***Theoretical Gap***
Transaction-Cost Economics (TCE)	Oliver Williamson (1981)	Economics	Macro-Micro Link, Internalization Phenomenon	Explains overseas governance mode decisions and optimal disaggregation-level decisions, especially in the context of non-core outsourced processes to save cost.	The TCE framework falls short in adequately describing the challenges of international operations, particularly regarding internal resources, capacity, and location capabilities at a more granular process level.
Resource-Based View (RBV)	Jay Barney (1991)	Management	Location Capabilities, Resources for Overseas Operations	Investigates location capabilities and resources essential for effective overseas operations. Attainment of competitive advantage through strategy selection aligning the firm's strengths with environmental requirements, resources, and capabilities..	The RBV framework has limitations in contexts with a higher degree of disaggregation, potentially resulting in a decline in firm-specific resources and capabilities.
'OLI' Framework (Dunning)	John Dunning (1980)	International Business	Ownership, Location, Internalization ('OLI')	Examines the relevance of location choice in a firm's internationalization initiatives. Identifies ownership, location, and internalization as potential sources of competitive advantage influencing a company's decision to internationalize operations.	The 'OLI' framework provides insights into the relevance of location choice but may require further refinement to address emerging complexities and changing dynamics in the global facility location decision landscape.

In the pursuit of firms achieving and sustaining competitive advantage, it is imperative to align multi-level determinants. This alignment between macro and micro determinants elucidates why a company's location or host nation significantly influences its global performance, providing both comparative and competitive advantages. The process through which firms can

delineate a unique set of value creation strategies, investing in and adopting advanced macro resources within a location compared to other businesses, defines a firm's competitive advantage.

3. Integrating Literature and supporting Theoretical Advancement

In this section, the thesis delves deeper into each of the phases (Step 2) in GFLD, such that it extends the existing literature on the respective related dilemmas and offers a comprehensive exploration of its insights and limitations. Following this, these literature synthesis are connected with the prevailing theoretical motivations from other disciplines. These theoretical motivations are presented and then further moulded into the research frameworks with which the three main research questions are explored and undertaken.

3.1 PHASE I Pre-Decision-making: Multilevel relationships on location determinants

3.1.1 Existing literature

In the early days of location theory, the focus of GFLD was primarily on the spatial and economic factors at the macro level, with less attention given to firm-level factors at the micro level (Lampón et al., 2015; Sun, Tong, & Yu, 2002). It is only for the past two decades, with the extent of growth of globalization and advances in technology and information systems, many studies have also identified firm-level attributes such as strategic objectives, resource availability, and organizational capabilities as equally critical. In recent years even traits at the human or managerial level have also gained the attention of scholars.

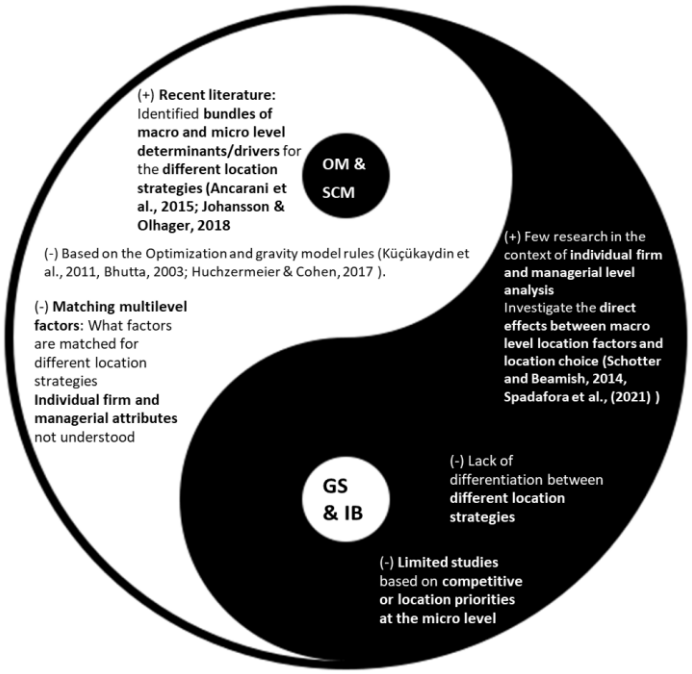


Figure 6 Complementary knowledge gap on multilevel relationship on location determinants for GFLD

Overall, in relevance to such multilevel extrapolation, the knowledge has been mixed. As elucidated in Figure 6, there have been complementary gaps in relevance to the two relevant domains in GFLD: OSCM and IB& GS. The traditional focus of extensive research in OSCM has been on developing optimization models by consolidating location determinants (e.g., Badri, 1999; Bhutta, 2004). Recent literature acknowledges ex-post firm drivers and broader location determinants for various movements (Ancarani et al., 2020; Gray et al., 2017; Johansson & Olhager, 2018). This approach, seen in studies like Bhutta (2003) and Huchzermeier & Cohen, (2017), lacks causal inferences and introduces aggregation bias, risking information loss. Alternative methods like Multi-Criteria Decision Making or AHP, still struggle to account for the complexity of location selection. The reliance on fixed cost-oriented factors without clear linkage or categorization of determinants, as noted by Kinra et al., (2020), limits decision-making by overlooking critical elements such as managerial traits, organizational characteristics, and regional policies, contributing to firm-level heterogeneity. However, limitations persist in grasping the micro-foundations of location choice, as the literature neglects interactions between micro and macro-level determinants and variations based on organizational and managerial attributes. On the other hand, GS & IB research (Dunning, 1998; Leiblein et al., 2022) is emerging with individual firm and managerial-level analyses (Schotter & Beamish, 2013; Spadafora et al., 2022) . Some studies delve into the direct effects of macro-level factors on location choice (Coeurderoy & Murray, 2014; Lamin &

Livanis, 2013). However, these studies often overlook firm-level competitive location priorities like innovation, reliability, resilience, or security. Furthermore, there's an inadequate understanding of various location movements or strategies employed by firms, such as offshoring, outsourcing, reshoring, or backshoring.

Hence, although there is some shared knowledge in both domains and substantial information on aggregated location factors (Johansson et al., 2019) and overall location choices (Buckley et al., 2007), the present comprehension of GFLD at a multilevel scale remains incomplete. The existing knowledge generally presupposes organizational homogeneity in location choices, offering limited insight into the interplay of multilevel location determinants. The challenge lies in the fact that, in reality, firms demonstrate considerable heterogeneity in their motivations and considerations for various location movements (Ye et al., 2019). Yet, in practice, firms not only showcase diversity in their choices but also the alignment and matching of multilevel location determinants (Ye et al., 2019). Thus, it became important to fill these knowledge gaps by taking into account the literature from the two domains. Azorín et al. (2020) explicate the multilevel research paradigm in management research, which adds significant value to the comprehension of GFLDs by illuminating the multilevel location determinants alignment for firms. Thus, the next section introduces and explains the motivation behind exploring this aspect.

3.1.2 Theoretical motivation: multilevel research paradigm

The multi-level research paradigm (Aguinis et al., 2011; Klein, 2014; Molina-Azorín, Pereira-Moliner, López-Gamero, Pertusa-Ortega, & José Tarí, 2020; Peterson et al., 2012) is concerned with the consideration of matters, linkages, and operations through several levels in an organization. They include the individual, team, departmental, organizational, industrial, and societal levels (Contractor et al., 2019). Researchers in multilevel study what influences take place at each level and how these influences affect and intermingle with each other. They attempt to get a complete picture of complex organizational situations or decision processes by considering all dimensions at different levels (Molina-Azorín, 2014). Accordingly, it acknowledges that variables exist between various levels of analysis and that studying such relations yields useful information on complicated phenomena in management. For instance, personality traits and motivational factors influence performance at the individual level while team cohesion and communication are critical at the group level. Culture, management style and other organizational-level variables may also contribute (Klein, 2014; Peterson et al.,

2012). Researchers often analyze different variables at several levels to understand how each contributes towards an individual's performance.

Researching at multi-levels is, however, not very easy since it necessitates collecting and analyzing many sets of data. It could include the application of multiple research methods including teamwork for inter-disciplinary researchers. Although the findings obtained from multilayer analysis are not always very precise, they make it possible to better understand diverse aspects of social life (Contractor et al., 2019). From the outset, multilevel research focused on individual-level factors, before incorporating higher-level ones like teams and organizations. Lately, studies that combine multi-level analyses into a single research study are being carried out by researchers because they now understand that it is important to examine how factors at different levels influence one another. This has led to the development of more sophisticated multilevel theories and methods (Aguinis et al., 2011; Molina-Azorín, Pereira-Moliner, López-Gamero, Pertusa-Ortega, & Tarí, 2020).

In most cases, the "boat diagram" by Coleman is used to explain the foundations of multilevel research as well as micro foundational ideas (Contractor et al., 2019; Felin & Foss, 2015). This diagram (see Figure 7), regarded as a cornerstone in general management research (Contractor et al., 2019), symbolizes two distinct levels: there is an individual level (the micro level) and an integrated aspect (the macro level). The diagram portrays critical relationships such as macro-macro via arrow 4, macro-micro via arrow 8, micro-micro via arrow 6; and micro-macro via arrow 7. Its innermost part places the explanandum or outcome on the northeastern node. Several other nodes and arrows circle around the main node forming parts of the explanans explanatory factors surrounding this central point. These are perceived causal means of this complexity, which show different aspects of the complex relationship that makes up such a phenomenon. Macro factors like formal and informal institution shape individual preferences in the north-western node. It is noteworthy that different institutional arrangements across countries/organizations lead to unique outcomes depending on a particular setting or institution. According to the Arrow 2 culmination, it is through the conditions surrounding an individual that their life chances are determined. Consequently, the complex and dynamic interaction between these factors greatly determines what the person is going to do further as the endpoint of arrow 2.

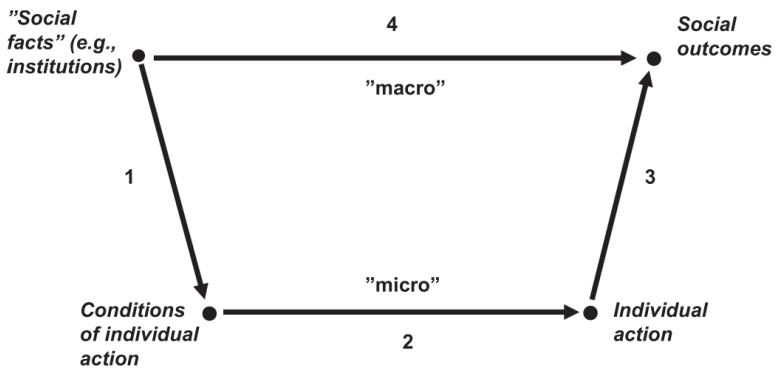


Figure 7 Multilevel Coleman Boat Diagram Source: Contractor et al. (2019)

There are multiple benefits of an argument made by Contractor et al. (2019) in terms of global facility location decision-making using a multilevel approach and relationship point of view. Multilevel analysis helps develop a wider insight into the factors determining global location decisions, which have become more intricate. Analysis of interaction between factors at different levels helps decision makers find out if there may exist synergy or conflict thus providing a deeper evaluation of alternatives and trade-offs associated with different location options. As such, this contributes a lot to making sound decisions based on available information, thus leading to better locations selected. However, the influences on global facility location decisions vary in space and time, therefore, multilevel research proves extremely helpful. Such variations can be identified by decision makers using this approach to adjust their decision criteria, strategies, and approaches. It is important to note that this adaptability improves the general flexibility of the decision making process according to Nielsen & Nielsen, (2011) and Peterson et al., (2012). Thus, in the next section, taking multilevel research paradigm into obligation, the input model for conducting the integrative literature review for Paper 1 and answering RQ1 is presented.

3.1.3 Theoretical multilevel explanation for GFLD (Input model for Paper 1)

The Coleman boat diagram named after James Coleman, a sociologist who was one of the pioneers of microfoundations and multilevel research (Coleman, 1994; Contractor et al., 2019; Gibbs & Coleman, 1990; Ylikoski, 2016). The use of this diagram towards adapting the multilevel input model for Paper 1 is an important aspect in exploring multilevel relationships within the context of GFLD process (Contractor et al., 2019; Felin & Foss, 2015). This model operates on two distinct levels - macro and micro - with 1. Macro capabilities and 4. Socio-institutional collaborative advantages at the macro level and 2. Organisational characteristics

and 3. Location movements at the micro level. Integrating the relationships for the sub-level categories of these determinants, the multilevel location motivation taxonomies were developed. Location motivations are broader reasons why a firm chooses to locate its manufacturing facilities in a particular country or region (Ancarani et al., 2020; Da Silveira, 2014). For eg., Access to markets, resources, government incentives, etc. The model outlines four multilevel directions: Macro to micro (1), micro to Micro (2) , Micro to macro (3), and Macro to macro (4).

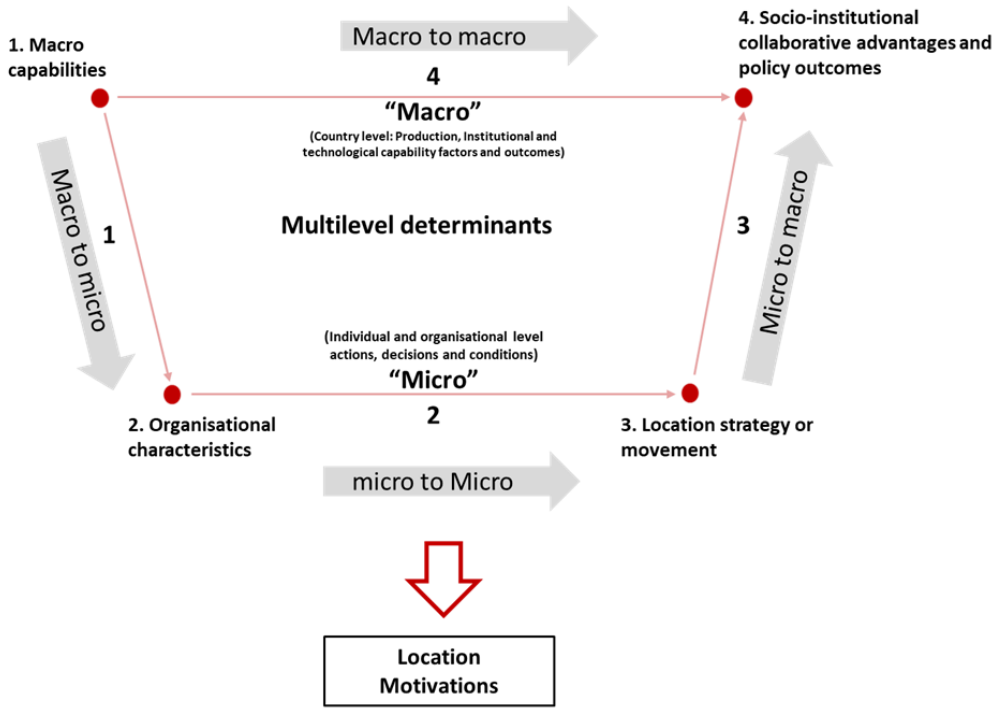


Figure 8 Multilevel Input Theoretical Model for Paper 1

In the research, multilevel factors are delineated as follows:

1. Macro capabilities (Macro Level): Tangible and intangible assets derived from external institutional, infrastructural, and technological systems within the location - region or country (Foss, 1996; Kinra et al., 2020).

2. Organizational or firm Characteristics (Micro Level): Factors that are influenced by the context of the decision within the firm, including both managerial perceptions, traits, competencies and the firm's characteristics and capabilities such as structure and resources and their defined competitive priorities such as cost, quality, responsiveness, sustainability, etc (Foss, 1996; Teece et al., 2009).

3. Firm's movement or strategy (Micro Level): The firm´s location movement or the strategy of manufacturing activities refers to the relocation of production processes from one country to another. Offloading movement is defined as a company intentionally shifting its business functions to external entities or locations, which can involve offshoring or outsourcing. Repositioning, on the other hand, is a strategic move by a company to change its foreign physical location for specific goals and bring it back. Movements like reshoring, backshoring, or nearshoring fall under repositioning (Ancarani et al., 2020; Gray et al., 2017; Johansson & Olhager, 2018).

4. Socio-institutional collaborative advantages and policy Outcomes (Macro Level): Synergistic benefits of effective collaboration and leveraging of institutional resources, social capital, government contracts, and decision-making autonomy in facility location decisions (Hoffman & Schniederjans, 1996; Fu et al., 2020).

3.2 PHASE II Decision-making process: problem structuring - hierarchy Development

3.2.1 Existing literature

Problem structuring refers to the process of identifying and organizing the key elements of a decision problem, such as the objectives, criteria, and alternatives, in a way that is meaningful and useful for decision-making. This process is important because decision problems are rarely well-structured and require careful consideration and analysis to ensure that all relevant attributes are taken into account (Belton & Stewart, 2010). The literature on problem structuring (Brugha, 2004; Corner et al., 2001; Marttunen et al., 2019; Scheubrein & Zionts, 2006) related to the context of multi-attribute decision analysis has focused on methods for eliciting and structuring criteria and alternatives, such as multi-attribute value/utility theory and outranking methods, as well as on the importance of developing a good representation of the problem that is complete, operational, and facilitates effective sensitivity analysis (Goodwin & Wright, 2014b; Kidd et al., 1977).

Various authors have undertaken diverse approaches to present problem structuring in the context of global facility location decision-making. They are comprehensively detailed in Table 3. Among these, Kinra & Kotzab, (2008b); Min & Melachrinoudis, (1999); Yang & Lee, (1997b) advocate for a location decision model utilizing the AHP. Kinra & Kotzab, (2008b) emphasize the importance of understanding macro-institutional complexities in logistics

systems environments. Yang & Lee, (1997b) introduced an AHP decision model for facility location selection, addressing complex locational problems. Min & Melachrinoudis, (1999) presented a real-world case study on the relocation of a manufacturing/distribution facility, offering a practical model for decision-making in a supply chain perspective. Together, these papers provide insights into diverse aspects of problem structuring, from macro-institutional complexities to decision models and real-world applications in relocation strategies.

Table 3 Previous studies on problem structuring

References	Modes of Problem Structuring
Min & Melachrinoudis, 1999; Kinra & Kotzab (2008); Yang & Lee (1997)	Location decision models - Analytical Hierarchy Process (AHP)
De Meirleir m (2008); Maccarthy & Atthirawong (2003)	Factor frameworks
Christodoulou et al., (2007); Johanson & Vahlne (1977)	Internationalization visualization models
Windmark & Andersson (2016)	Location decisions Cost models

De Meirleir, 2012 and MacCarthy & Atthirawong, 2003) introduced factor framework, while Christodoulou et al., (2007) and Johanson & Vahlne, (1997) present an internationalization visualization model. Johanson and Vahlne (1977) focus on developing a model for the internationalization process of firms. Emphasizing the acquisition and integration of knowledge about foreign markets, the paper underscores the incremental decision-making process and aims to identify common elements in firms' internationalization journeys. On the other hand, Christodoulou et al. (2007) highlights the strategic significance of components or processes, proposing a framework for understanding and guiding strategic development in reconfiguring global manufacturing networks. Windmark & Andersson, (2016) contribute a location decisions cost model to this array, each offering unique insights into the complexities of global facility location decisions. The focus lay on introducing a methodology for cost estimation as part of decision support for production location challenges.

Despite these diverse approaches, a critical examination of the literature reveals several generic limitations shared among these problem-structuring modes. Firstly, there is a commonality in the failure to explore the development process of a structured framework from the real-time perspective of managerial decision-making. Secondly, a significant gap exists in addressing the various challenges encountered during the development of a structured framework within the decision-making process. Finally, the literature lacks a comprehensive examination of the relationship between the information acquisition process and the hierarchy development. Drawing inspiration from the decision-making literature, the assessment of hierarchy

construction accuracy serves as a constructive approach to address the aforementioned limitations within the research on problem structuring in Global Facility Location Decisions (GFLD). The subsequent section offers a comprehensive overview of hierarchy construction.

3.2.2 Hierarchy construction

A basic procedure behind decision analysis involves the construction of a hierarchy of objectives in order to put a pattern on a messy field (Goodwin & Wright, 2014a). The section focuses on the process of constructing the hierarchy that must be organized systematically to convert numerous and incompatible lists of objectives and attributes into a significant hierarchy (Goodwin & Wright, 2014a). According to Kidd et al., (1977), objectives are directional indicators that guide the decision making process. The phrases ‘minimize’, ‘maximize’, and others serve to specify desired patterns of change when formulating objectives. For example, they might have something like reduced pollution levels or a high market share. Attributes are characteristics that act in addition to objectives and help measure and assess performances on objectives (Goodwin & Wright, 2014a).

Means-end analysis (the concept) is applied during the construction of a hierarchy for each of the objectives in a list. This is known as specification, where an objective gets divided into more specific goals, thus adding detail to an objective to clear any ambiguity resulting. The lower-level objectives are viewed as medium to high-level objectives. Iteratively, it constructs a hierarchy with overall objectives getting progressively more particular/specific (Carlson et al., 2010; Keeney, 1996).

A broad goal encompassing everything that the lower-level objectives represent is usually the result of its upward movement through the hierarchy. However, this is not true down in the divisions where there is no explicit endpoint for specifying objectives. However, what is important here is that the judgment of the decision maker determines the necessary level of detail since an excessively detailed hierarchy would be impractical (Kidd et al., 1977). These considerations include identifying specific attributes applicable to each goal, the ratio of qualitative to quantitative elements, and subjective or objective measures. However, care should be taken so that the hierarchy does not extend over in lateral directions and leaves out important parts of the upper goal. Building on insights gained from this section, the subsequent subsection in the thesis introduces key accuracy judgment properties for hierarchy representation, drawn from established decision-making literature employing MADA. The

experiments on hierarchy construction processes, as related to Papers 2 and 3, utilize these properties to collect and analyze data and thus answers RQ 2.

3.2.3 Accurate hierarchy representation properties for GFLD (Input variables for Paper 2 & 3)

For any decision problem, the set of attributes should have distinct features to improve efficiency in any decision making process (Bond et al., 2010; Kidd et al., 1977). Making sure that the set covers all relevant points of the issue, without leaving any important aspect unfilled. This ensures useful interpretation and practical deployment of the analytic process (Bond et al., 2010; Carlson et al., 2010). Presented with a format that allows division of individual assessments into manageable pieces, hence, the entire process is straightforward (Goodwin & Wright, 2014a; Kidd et al., 1977).

Table 4 Accurate hierarchy representation properties and various related managerial challenges

Accurate Hierarchy representation-Judgement conditions	**Challenges during hierarchy construction**
Completeness	Incomplete set due to lack of assistance
	Time availability
	Resource Availability
Operationality	Unmeasurable Attributes
Decomposability	Interdependency between attributes
	Flawed comparison of attributes
Absence of redundancy	Disproportionate weightage Elicitation
	Flawed comparison of attributes
Minimum Size	Time taking process
	Meaningless analysis

Thus, the evaluation of attribute sets and accuracy of the hierarchy representation in GFLD is guided by five key properties or conditions (Goodwin & Wright, 2014b; Kidd et al., 1977): **Completeness, Operability, Decomposability, Non-redundancy, and Minimal size**, as depicted in Table 4. The table also shows the various related managerial challenges that can be attached to the non-fulfillment of the respective properties. An overview of the different properties is shown below:

Completeness: Full set of attributes should be considered as per decision maker´s concern. The attributes considered should sufficiently show the extent that the overall objective has been achieved.

Operationality: Thus, attributes must be operational which means that they should be meaningful in making decisions. The lowest level objectives should fully cover the concerns

and the individual characteristics for those objectives must be comprehensive.

Decomposability: Decomposability is meant to imply that Decision analysts can break down their assessment tasks into small pieces. This is critical in solving high dimensional problems making the analysis more practicable and understandable.

Non-redundancy: It is important to prevent unnecessary repetitions within attribute definitions. This is to ensure that there is no duplication of consequences when defining attributes. The distinction between means and ends objectives plays a role in preventing redundancies.

Minimum Size: Maintaining a manageable hierarchy is essential for meaningful analysis. Attributes should not be decomposed beyond a level where evaluation becomes impractical. Reducing the hierarchy is achievable by eliminating attributes that do not effectively differentiate between options.

3.3 PHASE III Decision-making process: Acquiring precise information: location attribute information boundary

3.3.1 Existing literature

The complexity of GFLD processes stems from the imperative to comprehensively examine and appraise an extensive volume of location attribute information across a multitude of interconnected factors. To navigate this complexity, they enlist the support of site selection intermediaries, who play a pivotal role in gathering and scrutinizing relevant information (Kinra, 2015; Phelps & Wood, 2018). These intermediaries contribute by collecting and synthesizing pertinent information, conducting feasibility studies, and evaluating the trade-offs associated with various location options. The association with these experts empowers decision-makers to deepen their understanding of location-specific attributes, facilitating the making of well-informed choices (Berg, 2014; Phelps & Wood, 2018).

Predominant empirical GFLD research (Badri, 1999; Hua et al., 2009; Lanza & Moser, 2014; Reich et al., 2019) has been based on optimization models with an exhaustive search for location choices and as many location attributes as possible. Optimization models can be operative for some larger organizations. But firms are heterogeneous in nature (Alcácer et al., 2015; Duanmu, 2012) and managers generally choose to follow a satisficing approach as they struggle with information overload. Managers may use a variety of conceivable choice-making, matching, and assessment strategies without knowing when to stop looking for more

information on attributes (Berg, 2014; Phelps & Wood, 2018; Townroe, 1972). This may be primarily because of the overwhelming complexity (volume and variety) of the location attribute information to process and their inexperience (Kinra, 2015), lack of knowledge and extreme urgency (Buckley et al., 2007; Phelps & Wood, 2018). These decisions are generally once-in-a-lifetime decisions (Berg, 2014; Phelps & Wood, 2018). Hence, delving into the intricacies of GFLD processes, it becomes imperative to thoroughly examine the information boundaries. This exploration is particularly crucial in understanding how the complexity of location attribute information, encompassing both its volume and variety (Campbell, 1988; Wood et al., 1987), directly influences not only managerial satisfaction but also the holistic decision-making process. The multifaceted challenge lies in discerning how the sheer volume and varied nature of location attribute information contribute to the subjective complexity assessment levels of managers on the decision process and subsequently impact the efficacy of the overall decision-making journey. Exploring these intricacies will provide valuable insights into optimizing information utilization, enhancing managerial contentment, and ultimately refining the decision-making process in the context of GFLD.

While there is an acknowledgment of the importance of location-attribute information in the realm of GFLD, specifically within Operations Research (OR), Management Sciences (MS), and Production and Operations Management (POM) literature, as well as in the behavioral operations literature, the investigation into information boundaries concerning information overload, based on the current state of knowledge in this field, remains incomplete. Following this, the thesis extends the understanding of choice overload concept, which mainly originates from the domain of Behavioural Economics and has been applied to various disciplines such as Marketing and Organisational behaviour towards exploring boundaries on choices. This conceptual angle is further used to develop the conceptual model for the final set of experiments relating to Paper 4 and answering RQ3.

3.3.2 Choice overload

Choice overload refers to a scenario in which the complexity of the decision problem faced by an individual exceeds the individual's cognitive resources, caused at least partially by the (large) number of available decision alternatives (Chernev et al., 2012; Song et al., 2019). Information overload and choice overload are related concepts that can both have negative consequences for individuals and organizations (Roetzel, 2019). Specifically, information overload can lead to choice overload by presenting individuals with too much information to

process and too many options to choose from. When individuals are faced with a large amount of information, they may have difficulty identifying the most relevant or important information, which can make it harder to make a decision. Additionally, when individuals are presented with a large number of options, they may become overwhelmed and have difficulty making a choice, which can lead to decision paralysis or dissatisfaction with their final decision (Chernev et al., 2012; Eppler & Mengis, 2008; Roetzel, 2019; Song et al., 2019).

The concept of choice overload has evolved, with early research focusing on the negative effects of too many options on decision-making (Chernev et al., 2012), while more recent research has explored the conditions under which large assortments can benefit choice. Higher levels of decision task difficulty, such as time constraints, decision accountability, the number of attributes describing each option, and the complexity of the presentation format, can lead to greater choice overload (Chernev et al., 2012; Haynes, 2009; Scheibehenne et al., 2010; Song et al., 2019). For example, when the presentation format is complex, such as when options are presented visually rather than verbally, increasing the number of options may lead to overload because it requires more systematic processing. Overall, the relevant conditions under which choice overload occurs are related to task difficulty and complexity (Song et al., 2019). Despite the voluminous evidence that large assortments can lead to choice overload, the question of whether and when large assortments and choice sets are detrimental to choice remains open. Chernev et al., (2012) identifies four key factors—choice set complexity, decision task difficulty, preference uncertainty, and decision goal—that moderate the impact of assortment size on choice overload. The paper further shows that each of these four factors has a reliable and significant impact on choice overload, whereby higher levels of decision task difficulty, greater choice set complexity, higher preference uncertainty, and a more prominent, effort-minimizing goal facilitate choice overload.

Choice overload is a construct describing the mental state of the decision maker, directly relates to the subjective satisfaction of decision maker. It cannot be directly observed but is reflected in a series of indicators (Chernev et al., 2012; Song et al., 2019). Two types of indicators of choice overload can be identified: process-based indicators describing the subjective state of the decision maker and outcome-based indicators reflecting the decision maker's observable behavior. Process-based indicators include measures such as self-reported feelings of being overwhelmed or confused, while outcome-based indicators include measures such as the number of options considered, or the time spent making a decision.

In the forthcoming sub-section of this paper, the researchers seamlessly fuse the conceptual underpinnings of choice overload and develop the conceptual model.

3.3.3 Choice overload-based information boundary conceptual model for GFLD (Input model for Paper 4)

Choice overload – a phenomenon studied both in marketing and psychology (Chernev et al., 2012) can have an adverse effect on GFLD's decision-maker resulting in low satisfaction of those exposed to too much information. Decision satisfaction is heavily influenced by the volume of information, and the amount of information at a given time. This is evident in consumer behavior studies where an abundance of choices decreases confidence, satisfaction, and utility (Reutskaja & Hogarth, 2009)

Studies across disciplines, including accounting, information systems, economics, and organizational science (Greifeneder et al., 2010; Haynes, 2009; Hu & Krishen, 2019; Murayama et al., 2016; Pennington & Kelton, 2016; Reutskaja & Hogarth, 2009; Scheibehenne et al., 2010; Sethi Iyengar & Lepper, 2001) have explored the impact of information volume on decision-maker perception and satisfaction and explored choice boundaries. However, the precise limits or boundaries with regard to information volume in the context of GFLD making process, have not been much explored. Berg (2014) observes that executives involved in location decisions are satisfiers since time limit and imperfect information forces them to settle for good enough solutions rather than the optimal solution. There is little understanding of the threshold or boundary concerning the volume of location attribute information that has negative impact on subjective outcomes or decision satisfaction. Scholars (Min & Melachrinoudis, 1999; Reich et al., 2020) have further emphasized the need for a more in-depth examination of information boundaries, advocating for a concise list of attributes for consistent comparisons and country assessments.

Consequently, considering geographical constraint as the only constraining variable within the study, the investigation in Paper 3 targets the information volume boundary influencing managerial decision satisfaction in GFLD. In reference to RQ 3.1, the conceptual model presented in Figure 12 shows the first link between Information Volume and Decision Satisfaction within this investigation.

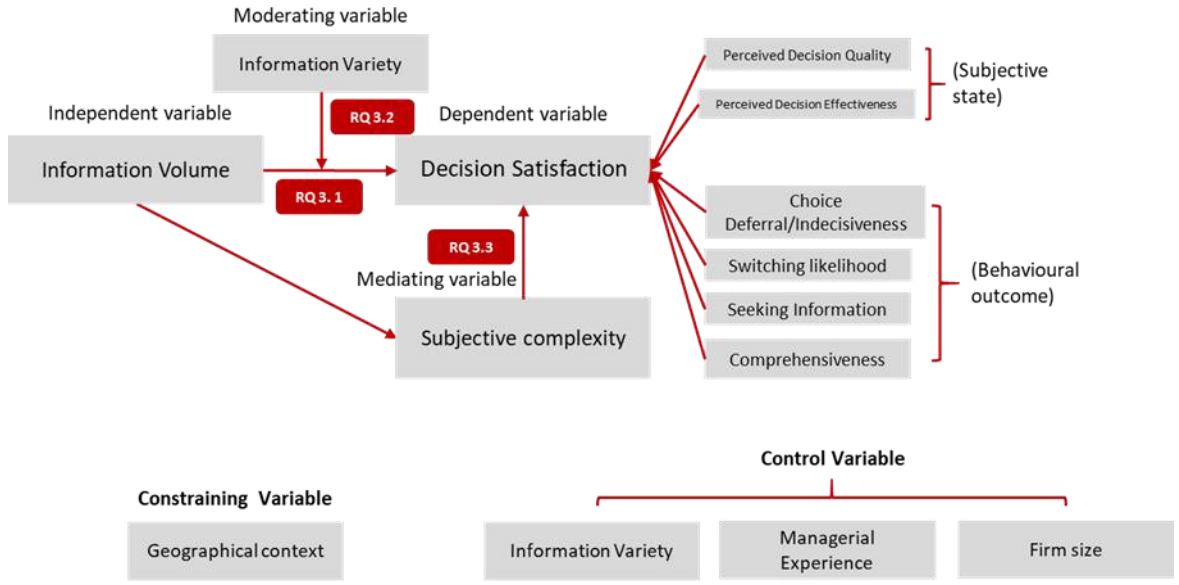


Figure 9 Conceptual Model for Paper 4

Chernev et al. (2012), inspired by choice overload literature, specify the complex nature of interactions between assortment size and decision satisfaction, including choice set complexity, decision task difficulty, preference uncertainty, and decision goal as the moderating variables. In this study, the reseachers focus exclusively on information variety, which is an alternative expression of choice set complexity and is used throughout this thesis. Choice or information variety is an important moderator that links the number of choices or the information volume and decision satisfaction.

This implies that in the context of GFLD, the variety of location attribute information affects the relation between information volume and GFLD outcome as pointed out by Kinra, (2015), multiple measures are often employed to convey information about the same aspect, and this variety manifests in various information types. Notwithstanding, it is difficult to pinpoint exactly which variety of location attributes impact decision satisfaction in GFLD. This brings us back to RQ 3.2 which stresses the need to identify a variety of location attributes that have an impact on GFLD. The conceptual model (Figure 12) indicates this significant stage where the Information Variety acts as a moderator between Information Volume and Decision Satisfaction.

Task difficulty (Campbell, 1988; Wood et al., 1987), specifically the subjective complexity of the decision maker serves as another link between Information Volume and Decision Satisfaction. GFLD processes are generically complex decisions and thus subjective complexity of the decision makers mediates within the process, and the connection between

the number of location attributes and the decision satisfaction of managers. Choice overload is often heightened when various problems of higher decision tasks are involved like time restrictions, accountability, or high presentation complexities (Song et al., 2019). Subjective complexity is a mediating factor that shapes the connection between information volume and influences decision satisfaction. Accordingly, task complexity is mediated through its subjectivity. It depends on the perception of the decision-maker. Unlike objective task complexity which has been observed to result in poor performance, subjective complexity in comparison has an enormous potential to have varying affecting on performance far and beyond the actual cognitive capacities of the decision-maker (Li et al., 2011; Maynard & Hakel, 1997). The problem is that strategic decisions such as GFLD are not very common and therefore cognitive factors might have a much larger role. Thus, as indicated in the conceptual model in Figure 12, the RQ 3.3 seeks to establish the extent of mediation for subjective complexity within GFLD.

4. Research Design

4.1 Data collection

The present study explores the analysis of three consecutive phases of the research as demonstrated in thesis structure (Figure 3): PHASE I Pre-Decision-making: Multilevel relationships on location determinants, PHASE II Decision-making process: Problem structuring- Hierarchy Development, PHASE III Decision-making process: Acquiring precise information: location attribute information boundary. The first one, is about filling the knowledge gap in the specific research are: identifying multilevel locational determinants and their relationships. This is followed by the evaluating managerial relevance for problems' structuring strategy and information boundaries exploration, where issues of crucial information input-output effects are examined.

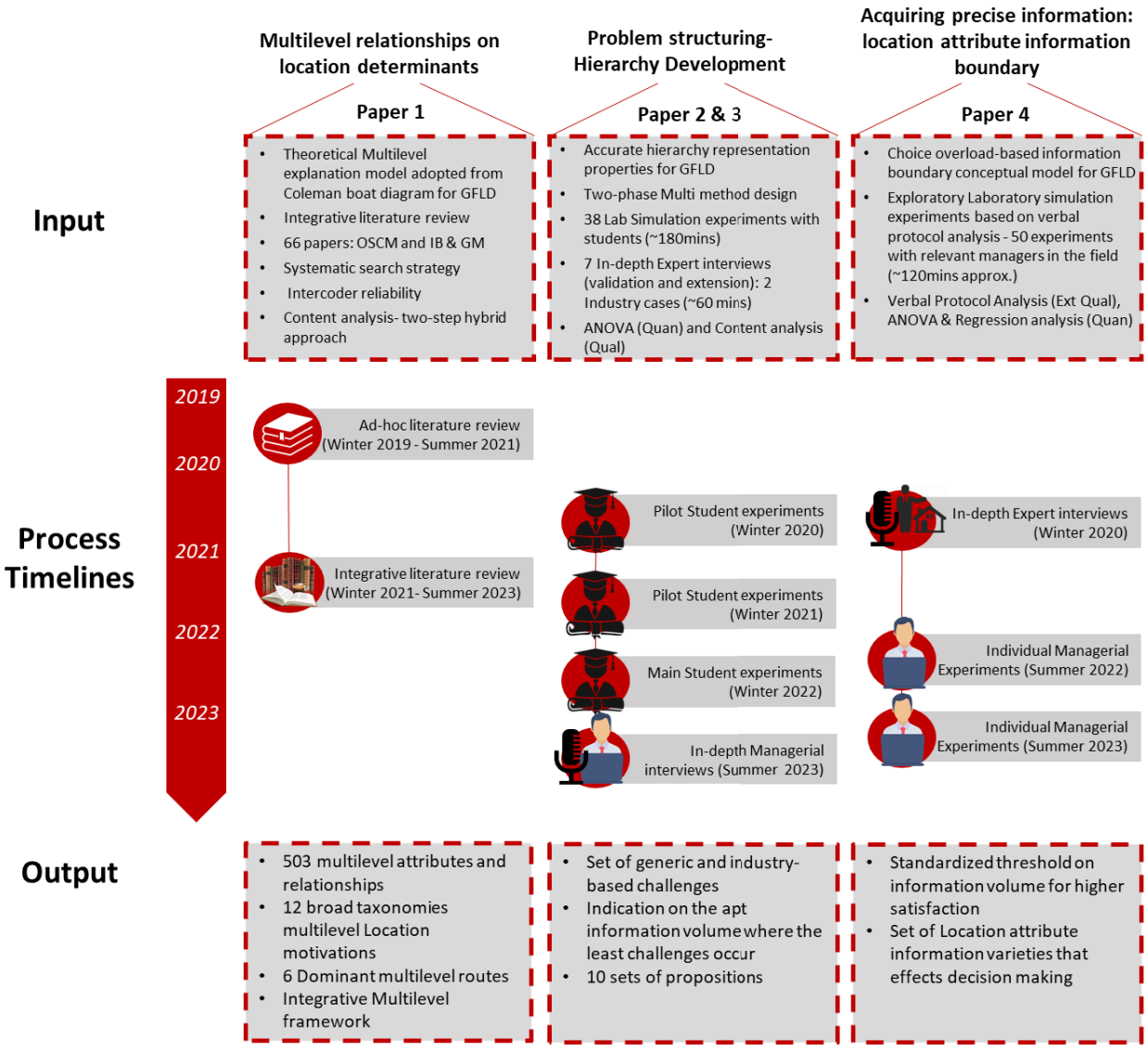


Figure 10 Procedure and Time frame for the research work

To underpin the findings, a rich dataset was compiled using a multi-method research design. The first-hand evidence was derived from an extensive and iterative exploration of the literature. It provided a comprehensive overview of empirical research conducted in the past, laying the foundation for the initial strategy. Subsequently, data collection involved active participation from three key entities: a) Promotion Agencies (BremenInvest and Site Selection Group), b) Trained experienced Master students engaged in courses related to the Professorship for Global supply chain Management, and c) Relevant managers with a wealth of experience in facility location decision-making. To ensure the robustness of the findings, The reseachers adopted a combination of qualitative methods, including in-depth expert interviews and verbal protocols, and quantitative research methods such as laboratory simulation-based virtual experiments (refer to Figure 10 for details). This methodological blend was chosen to align

with the explorative nature of the research objectives. Figure 10 provides a comprehensive overview of the empirical work undertaken throughout the four-year research course, offering a visual representation of the different research endeavors.

4.2 Overview of the methodologies for the different sub-phases

4.2.1 Integrative literature review (Paper 1)

The multilevel knowledge for GFLD is provided through the Integrative literature review (ILR) approach following Cronin & George, (2020) and Snyder, (2019). The ILR integrates the OSCM and IB & GS research domain literature towards recognizing and integrating the complementary knowledge gaps. It aims to bridge the gaps between the two domains and provide a comprehensive understanding of the development of multilevel relationships. Unlike traditional meta-analyses, the ILR approach examines the conceptualization and exploration of a combination of variables and evaluates the strength and moderation of multilevel relationships related to the subject area. The operationalization of exemplary categories is guided by the research questions stated and also the theoretical conceptual multilevel framework based on the Coleman Boat diagram (Figure 11). Specifically, it allowed for the identification and setting up of macro and micro-level determinants and their relationships. Three researchers worked together simultaneously in this shared pursuit.

Table 5 Literature search results for paper 1

Themes	Keywords (divided by "and")	Total no. of papers	Year: 1990-2022	Refined by journals	Refined by OM & SCM journals	Final data (after exclusion)	Final results in om (after exclusion)
1. Facility location	("Location decision*" OR "Location choice*" OR "spatial distribution" OR "country selection" OR "sub*region selection" OR "site selection" OR "location problem" OR "service facilit*" OR "locat* facilit*" OR "facilit* location" OR "warehous* location" OR "manufacturing location" OR "production location" OR "identif* market" OR "market identif*" OR "offshoring" OR "outsourcing" OR "reshoring")	**11,37**	**11,347**	**182**	**108**	**30**	**36**
2. Global	("Internationalis*" OR "global*" OR "multinational enterprise*" OR "international" OR "entry*" OR "MNE*" OR "foreign")						

3. Multilevel determinants	("determinant*" OR "factor*" OR"capabilit*" OR "resources" OR "competenc*" OR "knowledge transfer" OR "competitive advantage*" OR "strategic role*" OR "objective*" OR "goal*" OR "characteristics" OR "competitive priorit*" OR "strategic priorit*" or "macro*" or "micro*")						

The sole information source for acquiring data was the ISI Web of Science citation database. The selection of this sole source was due to its quality, comprehensive taxonomy, and cross-disciplinary approach. Following the Costa et al., (2018); Haslam et al., (2017), a systematic search strategy based on relevant themes was adopted for this review. The focus was on three key themes: Facility location, global and multilevel determinants. This is demonstrated in Table 5. Robust empirical evidence was ensured through inclusion criteria involving top journals in General Management & Strategy, International Business, and Operations Research and Management Science from 1990 to 2022. The strategic choice was in line with established review practices leading to a total of 66 relevant papers compiled for analysis. A very strict screening and exclusion criteria were utilized during an evaluation program. Further stages in the method comprise of data collection, code reliability checks and a two-step hybrid content analysis procedure. This analysis of the various multilevel relationships and location motivations in different categories revealed the dominant themes. For an extensive overview on the exclusion and inclusion checks and also the overall analysis process please refer to Paper 1 towards the end of thesis.

4.2.2 Two-phase multi method design: pre-design exploratory experiments and in-depth expert interviews (Papers 2 & 3)

In this research, the researchers adopt a two-phase multi-method design approach to comprehensively investigate the complexities inherent in country selection decision-making for global facility locations. The first phase involved exploratory experiments as per Kreye et al., (2012). Specifically, the experiments employed a laboratory simulation format to construct Analytic Hierarchy Process (AHP) hierarchies, simulating a hypothetical country selection decision-making scenario. This phase aimed to analyze challenges faced by decision-makers during AHP hierarchy construction. It also identifies frequently chosen macro and micro attributes and understands the role of attribute information in the decision-making process. In parallel, the second phase incorporates a set of seven in-depth semi-structured expert

interviews, aligning with the approach outlined by Phelps & Wood, (2018). These interviews delve into the challenges managers encounter when going through a structured assessment of the location attributes towards attaining a comprehensive country selection approach. The interviews employed a multi-case-based study design as it was conducted for two industry cases (eCommerce and Logistics Services). It aimed to extend and validate the experimental findings by incorporating real-world managerial perspectives.

The participants in the first phase, acting as decision-makers in the study, consisted of 38 second-year supply chain master's students. Although experience has been emphasized as beneficial in location decisions, students are considered a highly qualified sample comparable to professionals due to the rarity of such decisions in a manager's career. The second phase involved interviews with managers actively involved in location decision-making processes in the eCommerce and logistics services industries. The selected industries play pivotal roles in global logistics operations and making effective facility location decisions critical for optimizing supply chains. The combination of experimental data from students and in-depth interviews with managers provides a comprehensive understanding of the hierarchy development context in country selection decisions for global facility locations. For the analysis of the quantitative data with the experiments, specifically ANOVA analysis was applied based on the ratings accumulated on the different accuracy judgment properties and for the qualitative data with both the interviews and experiments, an inductive approach was applied to code the different challenges. Again, a detailed overview on the methodology can be observed from the Paper 2 and Paper 3.

4.2.3 Exploratory laboratory simulation experiments based on verbal protocol analysis (Paper 4)

The researchers conducted exploratory experiments in a laboratory setting to study how managers make decisions about when they are put into a global facility location decision making scenario. This was again inspired by past research like (Cui et al., 2014; Gavirneni & Isen, 2010; Kreye et al., 2012). The researchers used a virtual laboratory setting instead of a real-world setting because they wanted to control the conditions and see how changing certain things affects the decision process. Since these facility location choices don't happen too often and are quite complex, a laboratory simulation was the best way to go. Like in studies by Cui et al. (2013) and Gavirneni & Isen (2010), The researchers had the managers think aloud as they made decisions so they could get quantitative data on their perceptions plus qualitative insights into their thought processes.

The process started by interviewing two after-sales logistics managers and an expert from one of the local Investment promotion agencies, BremenInvest towards designing the task and figure out how to best manipulate the volume of location attribute information for the managers.

The managers went through the task where they had to choose location attributes for deciding which country to locate their facility in. The think-aloud part was key to seeing how the managers' thinking and behavior worked during the task. For main variables involved were Information Volume, Information Variety, Decision Satisfaction, and Subjective Complexity for managers. For Information Volume, the researchers designed a three-level factor (low information volume- two firm priority and twelve macro capability factors, medium information volume-four firm priority and seventeen macro capability factors, and high information volume- six firm priority and twenty-eight macro capability factors) for between-subjects experimental setup. Decision satisfaction was measured in two main ways - the manager's subjective state and their behavioral outcome during the task. For the subjective state, the researchers assessed their Perceived Decision Effectiveness and Decision Quality. They used single rating scales at the end to measure these. For behavioral outcomes, measures such as Choice Deferral- whether they deferred making a choice, Switching Likelihood- how likely they were to switch choices, Information seeking- how much and what they sought more information, and Decision Comprehensiveness- how comprehensive their decision process was. To measure these, the researchers analyzed the statements they made while thinking aloud during the experiments. The researchers also measured how complex they thought the task was using a simple rating scale. They went with single-item rating scales for these subjective measures because the variables are pretty straightforward and narrow, so a single scale can capture them well. The researcher also considered constraining variables like geographical context and made them go through the task considering two different scenarios: Unknown countries scenario and known countries scenario. The study also involved other control variables such as manager experience, industry, company size and asked for background information like their experience level. For analysis process, ANOVA and regression analysis were applied. The verbal protocol analysis based on a deduced content analysis of qualitative verbal protocols were was applied. Again, the details of the analysis process are further provided in Paper 4 attached at the end of the paper.

5. Findings

The thesis demonstrates the findings in line with the three-part phases that are employed within the research design: Location attribute identification and interaction, problem structuring and Decision representation, information boundary Input- Decision outcome) Effect and the respective research questions.

5.1 Multilevel relationships on location determinants - Paper 1

In this investigation of multilevel relationships within various location movements, The researchers meticulously analyzed 66 papers, resulting in 503 specific one-to-one relationships. These relationships were organized into macro and micro-level categories based on the theoretical framework (Figure 11). Examining the frequency of relationships across offloading, repositioning, and a combination of both movements, significant distinctions emerged ($p<0.05$). Offloading movements, which involve both offshoring and outsourcing overwhelmingly dominated, constituting 84% of the relationships, while repositioning movements, involving reshoring, backshoring and nearshoring accounted for only 12%. The remaining 4% involved a combined effect of both Offshoring and Reshoring.

5.1.1 Dominant multilevel relationships influencing offloading and repositioning movements

Based on the converged literature assessment of the two domains: OSCM and GS & IB, macro capabilities significantly shape offloading location choices, with production capabilities such as labor, land, energy, and skilled workforce playing pivotal roles. Also, institutional support and incentive factors related to taxation, competition laws, and political stability in both the host and home countries, network-based technological and transportation infrastructure, as well as spatial accessibility, are prioritized as firms emphasize optimizing cost performance (5-9% of total relationships), often undervaluing other performance challenges, as a part of their firm priority. At the micro-level, managerial traits (2-4%), including heuristics and experience, directly impact their cost priorities. Firms may also prioritize their personal preference based on attractive locations over financial gains, which ultimately also influences firm performance. Managerial inconveniences, such as bad weather and more distance, discourage engagement. International experience, influenced by factors like board turnover, age, and equity ownership, moderates location choices. Larger firms navigate challenges better, leveraging proprietary resources. Small firms focus on competence exploration, while large firms prioritize exploitation. Various other control variables (3-6%), including industry and ownership

structure, have an impact on the offshoring location choices and thus influence cost priority. And, thus these determinants reflect the nuanced multilevel dynamics of offshoring choices.

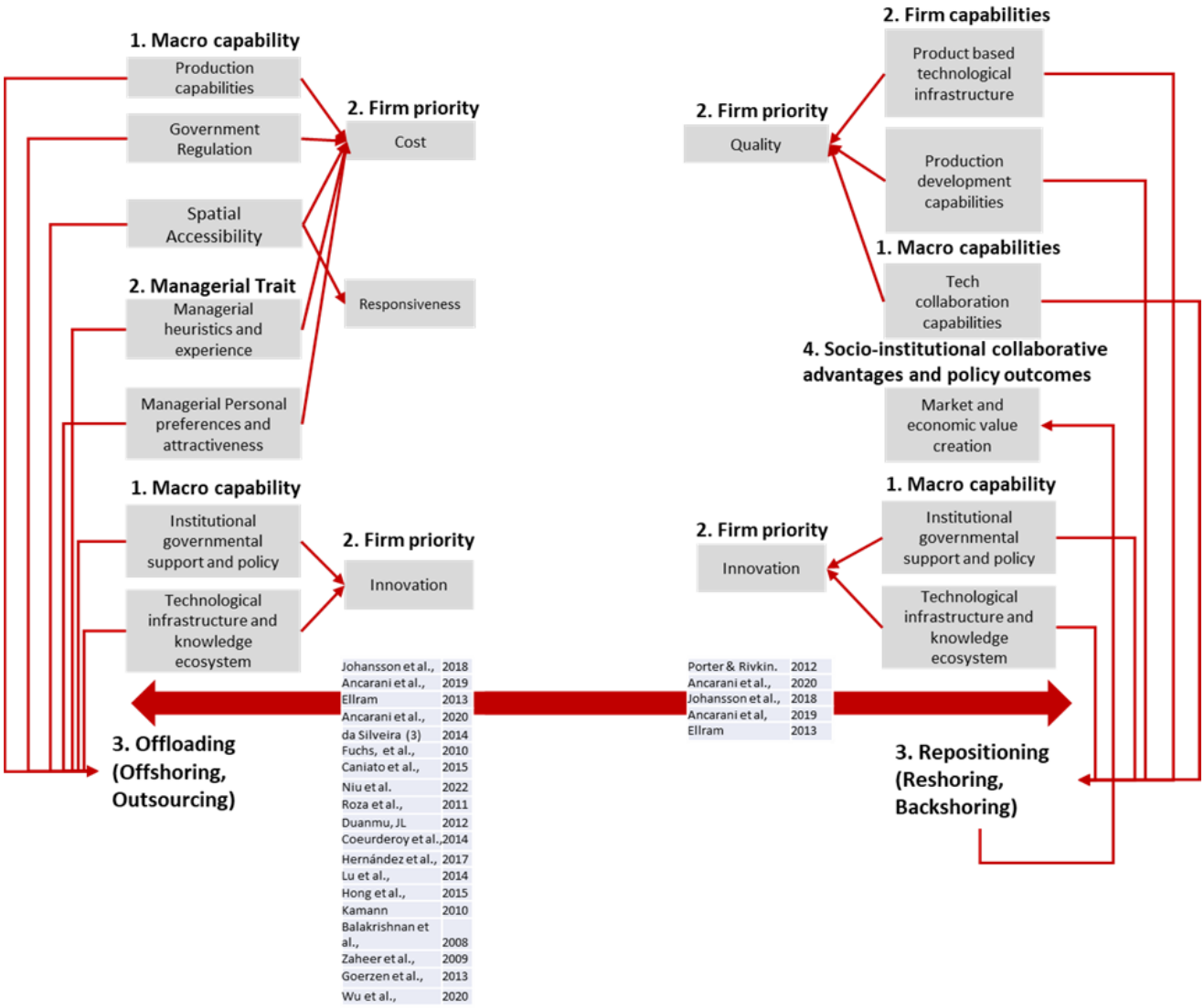


Figure 11 Comparing the dominant multilevel relationships for Offloading and Repositioning strategies

The findings underscore that reshoring choices are less influenced by external factors, emphasizing internal firm capabilities. Internal capabilities, compensating for reduced economies of scale, direct reshoring decisions. Production and product development capabilities within the firm which have a direct link to quality considerations play crucial roles (4-5% of total relationships). Sweden, for example, provides manufacturing backshoring to obtain quality benefits by utilizing development infrastructure and knowledge competencies. This is despite the fact that Sweden is a highly industrialized, high-cost nation. Strategic knowledge access, coupled with technological collaboration as the macro capability, was found to be a dominant relationship as well (4%). Macro-level socio-institutional advantages and

policy outcomes such as market, job and economic value creation contribute significantly, reducing risks associated with reshoring movements (5%). Reshoring correlates with positive stock returns, indicating favorable impacts on shareholder wealth and broader economic development. Across both offloading and repositioning movements, innovation emerged as a shared priority. Firms were observed balancing long-term innovation benefits with short-term gains in cost reduction and efficiency. This finding underscores the complex interplay between innovation, cost considerations, and supply chain resilience in firms' location decisions.

5.1.2 Taxonomies for multilevel location motivations

11 multilevel motivation taxonomies were developed based on the different relationships between sub categories of the multilevel determinants: Innovation-Economical Motivation at the Firm Level, Purely Economical Motivation at the Firm Level, Geographical Contextual Motivation at the Firm Level, Economic-Institutional Motivation at the Firm Level, Economic-Institutional Motivation at the Managerial Level, Geographical Contextual Motivation at the Managerial Level, Strategic Asset Seeking Motivation Based on Change of Time at the Firm Level, Innovation-Economic-Institutional Motivation at the Firm Level, Economics-Sustainability Related Motivation at the Firm Level, Innovation-Economic-Social Motivation at the Firm Level, Economics-Operations Related Motivation at the Firm Level and Resilience-Sustainability Related Motivation at the Firm Level. For detailed overview on the taxonomies with the related studies, definition and exemplary relationships, Paper 1 at the end of thesis can be referred.

For offloading movements, predominant motivation was found to be Innovation and economic motivation at the firm level, economic and institutional considerations at the firm level, and geographical contextual elements at the firm level. Additionally, a set of nuanced motivations, labeled as "geographical contextual motivation at the managerial level" and "geographical contextual motivation at the firm level" emerged, stemming from individual managerial preferences, such as education, local transportation quality, or even higher medical standards.

However, the landscape shifts for repositioning movements. Given the limited number of studies, a mixed pattern emerges. Noteworthy motivations in this domain encompass strategic asset-seeking motivation at the firm level, where firms strategically align location choices with evolving market conditions. Additionally, innovation and economic motivations at the firm level play a pivotal role, considering technological advancements, production efficiency, R&D intensity, and innovation while factoring in costs. It's crucial to highlight that studies exploring

motivations based on personal managerial perceptions and traits are notably scarce in the context of repositioning movements.

Table 6 Dominant multilevel motivations for the two movements

Offloading Movement/Strategies	Repositioning Movement/Strategies
Innovation and economic motivation at the firm level	Strategic asset seeking at the firm level
Economic and institutional motivation at the firm level	Innovation and economic motivation at the firm level
Geographical contextual motivation at the firm level	
Geographical contextual motivation at the managerial level	

5.1.3 Dominant multilevel routes identified towards integrated multilevel framework

Taking the multilevel conceptual model into perspective, dominance, measured by the frequency of studies, is pronounced in the relationship between 3. Location movements and 2. Organizational characteristics, totalling 73 instances. Among the multilevel routes analyzed, the micro-level firm priorities within 2. Organizational characteristics and 3. Location movements reveal significant interconnections followed by the relationships between 1. Macro capabilities and 2. Organizational characteristics as well as 3. Location movement and 1. Macro capabilities. Within the studies relating to 1. Macro capabilities and 2. Organizational characteristics, the study identify only the prevalent route between the 1. Macro capabilities such as production capabilities, host & home institutional support and incentives, and micro level 2. Firm priorities as the former affects the later. The subsequent routes identified are the cross-sectional relationships between micro-level firm priorities and organizational capabilities. The researchers demonstrate an integrated multilevel framework (see Figure 14), which is demonstrated as the main output of Paper 1. The thickness of the arrows signifies the strength of the routes, with the thickest link between micro 2. Organisational characteristics and 3. Location movement and micro-level firm priorities, as well as the connection between 1. Macro capabilities and 3. Location movements. These links that are well-explored already in the literature are marked in red, while those marked in blue indicate underexplored areas, such as the relationship between 2. Managerial trait or 2. Firm traits and 2. Firm priorities or even the routes between 3. Location movement and 4. Socio-institutional and policy outcomes. Future research should delve into these relationships, particularly the underexplored influence of managerial traits on facility location choices. Studies directly examining "4. Socio-institutional policy outcomes" are scarce, both at micro and macro levels, highlighting a critical

research gap. Investigating how offshoring or reshoring movements impact countries with favorable socio-institutional policy outcomes can contribute to understanding the factors enhancing a country's competitiveness.

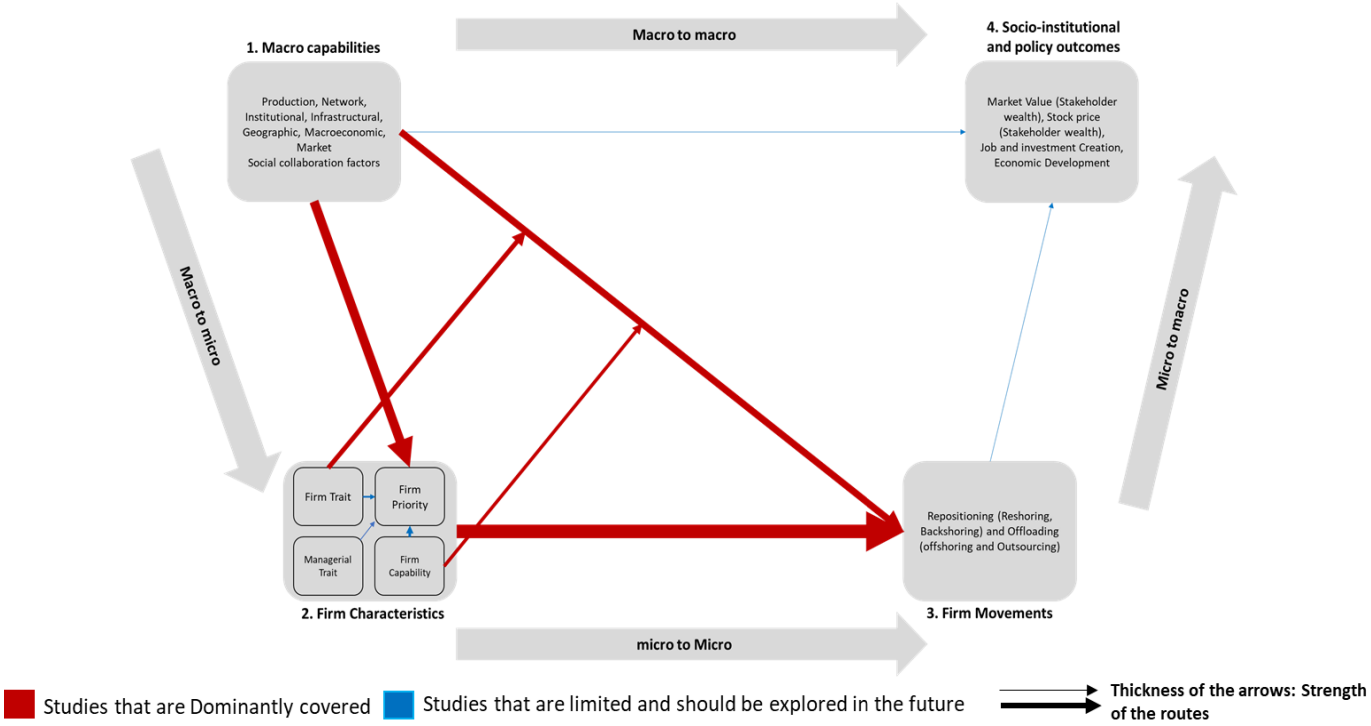


Figure 12 Integrative multilevel mapping

While existing studies often focus on trade-offs between innovation and cost in firm priorities, the framework here reveals a gap in understanding micro-level factors, particularly firm characteristics and managerial traits. These have been treated as control variables rather than investigated as direct independent factors. Recognizing firm characteristics as potential direct independent factors can deepen the understanding of the intricate relationships between macro-level location capabilities and micro-level firm priorities. This gap underscores the importance of considering these factors as primary effectors rather than static demographic characteristics.

2. Firm Priorities

Cost	Responsivness	Reliability	Quality	Sustainability	Resilience

1. Macro capabilities

Availability of competitor/alternative suppliers	Availability of public warehousing	Availability of Land	Environmental regulations flexibility
Robustness of government angencies	Quality and reliability of road, sea, rail and air	Labor Availability	Stability of market conditions
Proximity to suppliers	Telecom and Post usage	Avaialbility of Energy	Availability of Hub and Spoke system
Proximity to market, raw materials	Computer usage and penetration	Customs Procedure Flexibility	Compensation and insurance laws flexibility
Support and incentives on economic policies	Availability of intermodal	Logisitcs SCM HR flexibility	Labor Education level, skill level
Foreign investment Stability	Flexibility of financial instiutions	Availability of road, sea, rail air	Size of market
Quality and reliability of telecommunication	Availability of suppliers	Political stability and business legislation	Adoption of EDI usage in business

Figure 13 Dominant location attributes taken into the next phase

Based on the dominant routes identified – 1. Macro capabilities and 2. Firm priorities – the thesis incorporates all sub-attributes in relevance to these two determinants and moves to the next phase towards designing different information volume levels for the experiments on the development of hierarchies and exploring location attribute information boundaries. The sub-attributes are demonstrated in Figure 15. Only these determinants were targeted because they apply directly to the decision process of global facility locations, regardless of the context. The macro capabilities that a location can offer are crucial to the decision process. How well they match up with the firm priorities has a huge impact on efficiency, competitiveness, and achieving the strategic goals of the firm. This matchup helps make sure the company sets up operations in the best global spots to maximize performance, lower costs, and meet key objectives. On the other hand, other dominant determinants found, like location movements, firm traits, and managerial traits are more about the context of the decision. For example, an offshoring movement or company size differences introduce contextual nuances that don't necessarily apply across the managerial decision making task for a facility location decision.

5.2 Problem structuring and decision representation – Paper 2 & 3

5.2.1 Challenges during hierarchy construction

Generic challenges were found when the subjects developed their decision-making hierarchies for country selection:

a) Hierarchies became extremely large with many macro capability attributes.
b) Longer time.
c) There was an imbalance between the consideration of macro and micro-level attributes.
d) Many macro capability attributes were hard to measure.

Overall, time was a significant constraint. It contradicted the traditional expectation in task complexity literature that more information would reduce processing time. Further, Decision-makers struggled with attribute choices. This resulted in a larger set of macro attributes, especially for the participants who were provided with fewer attributes initially.

Managerial case data:

Different challenges come up for the e-commerce vs logistics managers. These are related to the generic challenges a), b), c) and d) that were identified within the experiments:

- The e-commerce managers mentioned that a) large mind maps in the sense that they larger number of macro attributes while going through the decision making are major pain points for them. They also mentioned that they faced trouble in c) balancing location and firm-specific attributes and dealing with information uncertainty during their decision making process. The e-commerce managers faced complexity in making choices on the macro capability attributes and as a result, they had to make a lot of assumptions.
- The logistics managers mentioned that they generally took a structured approach but b) struggled to coordinate timing and get stakeholders aligned. And d) unmeasurable macro attributes were more relevant in their case. The logistics service facilitating managers saw higher complexity with the different variety of location attribute because the logistics industry is very constrained in nature and they have specific attributes which is difficult to objectify. Table 8 clearly points out these challenges.

Table 7 Challenges faced by the managers from the two case industries

	Case 1 :	Case 2
Real-world complexity with the hierarchy development	**A: Information uncertainty-** Changing world- customer demand and supply logistics disruptions **B: Balance and tradeoff towards developing mindmap-** Having a balanced number of firm-specific targets and location-specific factors and right C: **A lot of external consultancy support**	**A: Time:** The process takes several months several weeks and months **B: Managing a large number of stakeholders:** A lot of stakeholders are involved **C: Communication infrastructure:** Regulated communication **D: Documentation:** Regulated Documentation
Based on the Conversational Attribute Selection	One manager encountered challenges when provided with a large extent of attribute information during the interviews. The abundance of information led to increased complexity and	The manager who was provided lower attribute information perceived comparatively higher complexity due to the industrial context as logistics services are very constrained in which the location attributes are considered.

	necessitated the making of assumptions.	

5.2.2 Impact of location attribute information volume on problem structuring accuracy of the decision

Completeness and Lack of Redundancy:

The medium volume information group indicated the highest completeness (5.6vs7.42vs7.46) on hierarchy development as they faced the least number of challenges and the low volume information participants indicated the lowest completeness towards developing the hierarchy with limited information. This shows it was tough to build the hierarchy with limited information volume. On the other hand, high information participants who were exposed to similar location attributes found it simpler to create a complete hierarchy. They rated it quite high with ratings being high between 7 to 10 on average. The ANOVA one-way analysis showed the difference between the three information volume participants was statistically significant with a p-value smaller than 0.10.

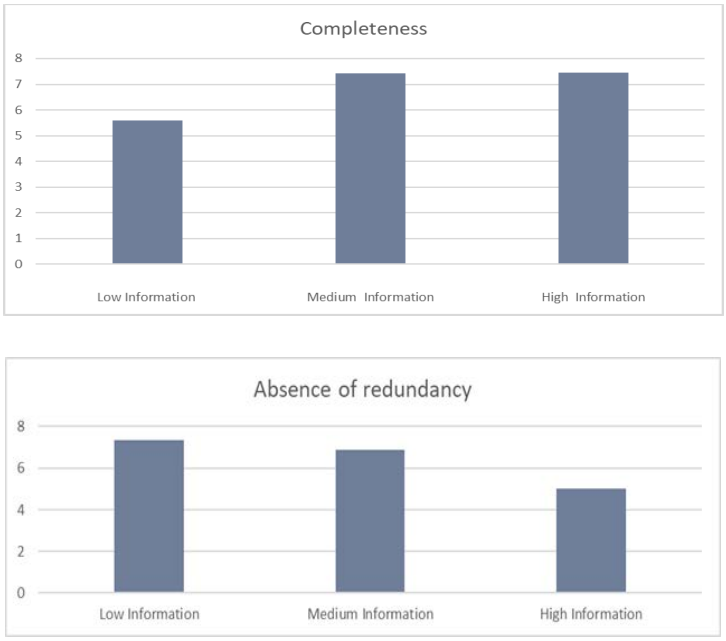


Figure 14 Ratings from the participants on completeness and Absence of redundancy

The low and medium volume information participants felt they needed more time to make fully complete hierarchies since they were struggling with limited attributes. The low information

volume participants wanted more time, although they finished faster than the high volume information participants. Also, the difference in rating completeness between low and medium participants was bigger than between medium and high. This indicates that as managers get more attributes, their choices get more complete, up until a point. Beyond that threshold, the difference in completeness between medium and high participants levels off and stays about the same. A similar pattern was observed with lack of redundancy - as info increased, redundancy decreased (statistically significant, p-value≈0.07). Challenges distinguishing between provided and self-assessed attributes contributed here. The assumption remains here that more information volume participants perceived higher complexity and thus came up with higher redundant or duplicate attributes.

Minimum size and operationality:

A similar pattern was observed with the minimum hierarchy size, just flipped from the completeness findings. The difference between participants was again statistically significant, the p-value was found to be 0.09.

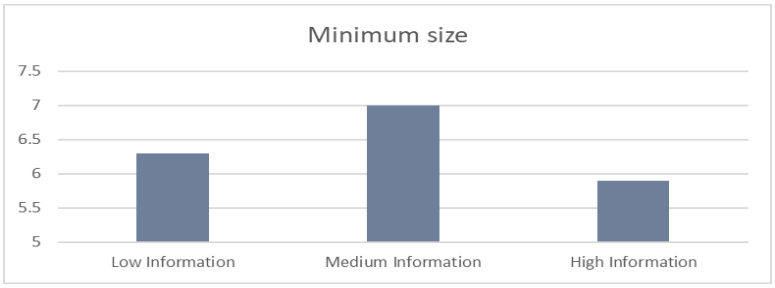


Figure 15 Ratings from the groups on Minimum Size

The high information volume participants, dealing with a high volume of location attribute information, rated the minimum size lowest - they wanted to focus on the most important macro factors. The medium info group found their hierarchy size ideal. With limited knowledge, the low information volume participants had trouble figuring out the right minimum size. Operationality, or how measurable the attributes were, followed a similar trend with information level. As information volume increased, participants came up with more measurable attributes, but only to a certain point. However, the difference in operationality between groups wasn't statistically significant.

To sum up, more information volume led to views of smaller ideal hierarchy size and more measurable attributes being identified. But those effects leveled off after a medium level of

information volume - high information volume participants didn't keep increasing ideal size/operationality. The groups differed significantly on ideal size but not operationality.

Sweet spot with location attribute information - accuracy of problem structuring:

The experiments showed that completeness increased as the participants were given more information volume, but only up to a certain point. The completeness went up from low to medium information volume (4 firm priorities and 17 macro capability attributes). After that, with even more information volume, the increase in completeness leveled off. This indicated that the medium information volume might be a sweet spot for making complete hierarchies for facility location decisions. The pattern for the property minimum size was however opposite – it decreased as the information volume increased. But again, the sweet spot was medium. Information volume. The findings thus indicate that there must be a balance or trade-off towards how decision makers want to achieve accuracy with the problem structuring – either a completely structured problem or a structure that has an optimal size and involves fewer time constraints.

Figure 16 Trade-off between Completeness and Minimum Size

The interviews supported this too. People preferred medium attribute information volume with 4 firm priorities and 17 location-specific macro capability attributes. But in logistics, even though they picked medium, they showed a tendency to have even more macro attributes - usually between 18 to 20. So, both the experiments and interviews indicated that medium information volume could be enough to make accurate hierarchies without overload and overall attribute consideration. But this volume can be extended for the logistics service-providing industry. Thus, the second phase indicates the apt location information for one of the aspects of the decision making process, problem structuring within GFLD. This notion has been taken forward for the next phase of the thesis towards exploring boundaries on information as to whether it holds within the broader aspect of the overall GFLD making process. The intricacies

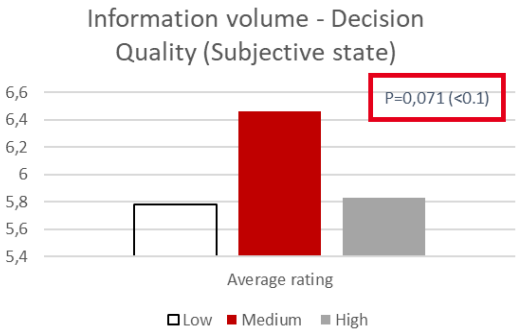
of location attribute information such as the information variety are also taken into consideration within the overall decision-making process. Unlike the previous phase, which rather stands as the pre-design, this phase forms the main study and here the phenomenon is explored with relevant managers from different industries, who have been part of facility location decisions either directly or indirectly in terms of support. Thus this becomes a huge leap forward in uncovering the complexity of this issue.

5.3 Exploration of Information boundaries in GFLD - Paper 4

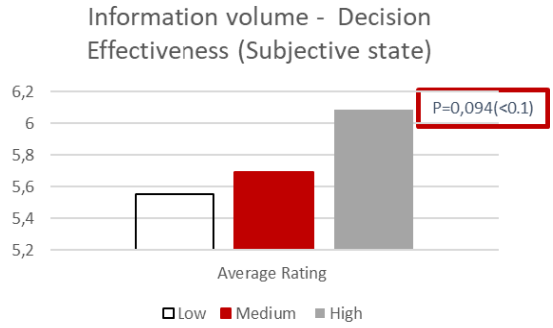
5.3.1 Information volume enough for managerial decision satisfaction in the decision making process

The thesis´s exploration into the sufficiency of location attribute information volume for managers to be satisfied within the global facility decision-making process gave us some key insights:

A) **Managerial subjective state:** Participants reported higher satisfaction when they were given a medium volume of location attribute information (4 micro firm priorities, 17 macro location capability factors). The statistical analysis showed some differences of



ANOVA analysis shows that there is **some significant difference (as p<0.1 but not <0.05, 0.01)** between the three information groups in terms of **Decision Quality** and **Medium information participants** have the highest average rating (higher satisfaction)



ANOVA analysis shows that there is very marginal **significant difference (as p<0.1 but not <0.05, 0.01)** between the three information groups in terms of **Decision Effectiveness** and **High information participants** have the highest average rating (higher satisfaction)

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics: Tolerance
1	Information Volume-Medium	.395[c]	2,432	0,021	0,395	1,000
	Information Volume-High	-.208[c]	-1,200	0,239	-0,208	1,000
	Information Volume-Low	-.210[c]	-1,216	0,233	-0,210	1,000

a. Dependent Variable: Decision Satisfaction- Quality
b. Predictors in the Model: (Constant), Information Volume-Low , Information Volume-High
c. Predictor: (constant)

Multiple linear regression analysis show that out of all the information volume groups (High, medium and low), **significant (as p<0.1,0.05 but not <0.01), moderate (as correlation is between 0.3 and 0.7) and rather positive correlation** between only **medium-volume information** and **perceived decision satisfaction- quality. However, no significant correlation between information volume and decision satisfaction- Effectiveness**

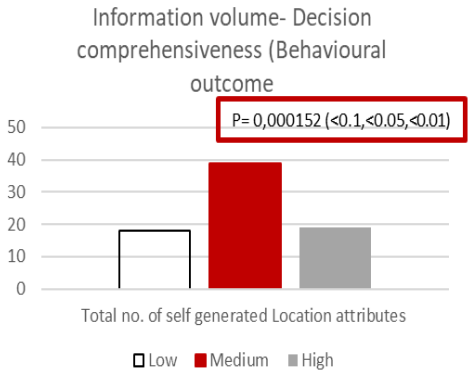
low significance (as p<0.1 but not <0.05, 0.01) - the medium volume participants

perceived higher decision quality. The correlation analysis confirmed a high positive correlation between medium information volume and decision quality (as $p<0.05$).

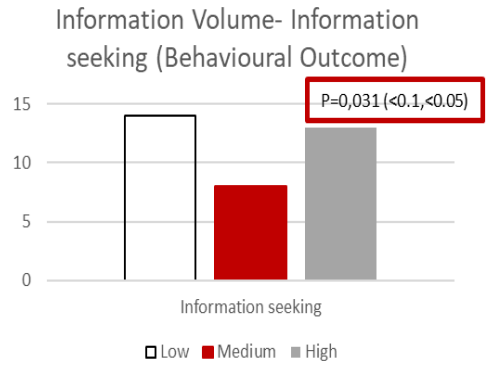
Figure 17 The relation between Information volume and Decision Satisfaction- Subjective state

However, in terms of decision satisfaction, no significant correlation with decision effectiveness for any of the information volume was observed and neither there was any significant difference between the ratings of the three information volume participants.

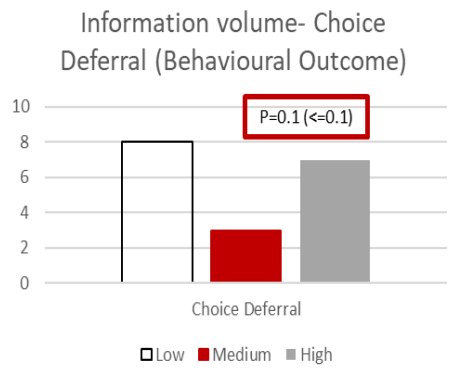
B) Behavioural Outcome: Participants showed higher satisfaction with medium information volume. The medium information volume participants expressed greater



ANOVA analysis shows that there is a **high significant difference (as p<0.1,0.05,0.01)** between the three information groups in terms of **decision comprehensiveness** and **Medium information participants** have the lowest average rating (higher satisfaction)



ANOVA analysis shows that there is a **significant difference (as p<0.1,0.05 but not <0.01)** between the three information groups in terms of **Information seeking** and **Medium information participants** have the lowest average rating (higher satisfaction)



ANOVA analysis shows that there is **high significant difference (as p<0.1,0.05,0.01)** between the three information groups in terms of **choice deferral** and **Medium information participants** have the lowest average rating (higher satisfaction)

satisfaction with decision comprehensiveness, information seeking, and choice deferral. The analysis verified this, with a highly significant difference between groups (as for all of them, $p<0.05$) - the medium volume participants rated higher satisfaction specifically for decision comprehensiveness.

Figure 18 The relation between Information volume and Decision Satisfaction- Behavioural outcome

Digging into the verbal protocols, 5 categories were identified of information seeking: a) Information on Choice of the Attribute, b) Information on Decision Context, c) Information on Weightage of Attributes, d) Information on Examples of Attributes, e) Information on Matching the Attributes. 6 categories were found around deferred choices: a) Matching the Attribute, b) Indecisiveness with Choice on Location Capability Factor, c) Matching All Possible Choices, d) Choice Kept for Later,

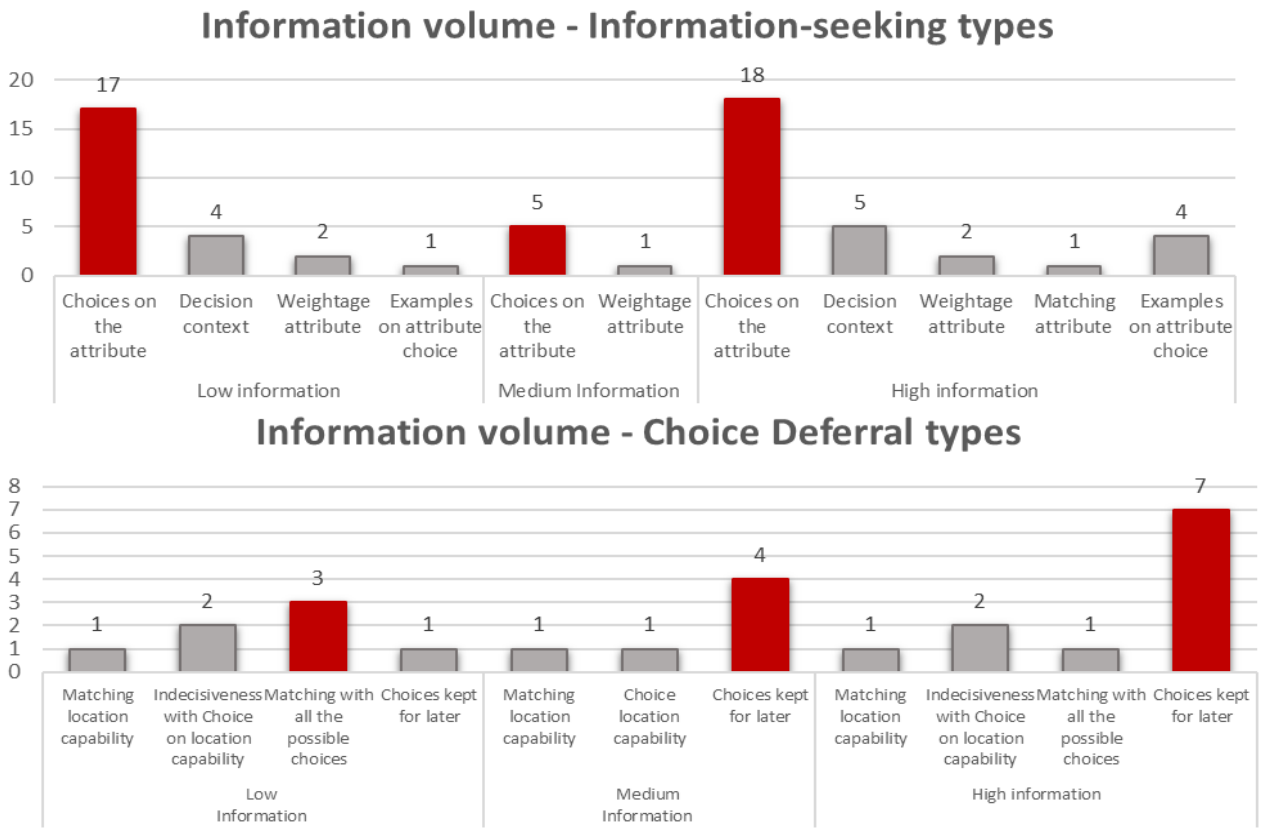


Figure 19 The relation between Information volume and Decision Satisfaction- Behavioral outcome types

e) Choices on Location Capabilities, f) Choices on Firm Priorities. Notably, one critical thing that was noticed was that the high and low information volume groups were way more into seeking a) information on the choice of the attributes. Those managers had several questions and simply weren't confident about the attributes that were given to them for the task. Thus, they showed higher information-seeking behavior overall. But for the medium information participants, this was comparatively less. They seemed clear on the choice of attributes. Another trend that was spotted was that as the managers received more and more information, they were increasingly likely to hold off or defer their final choice on the location attributes. There was a steady upward growth in choice deferral as the information volume got higher.

C) **Preferences on the volume of location attribute information:** When asked about their preferences, most participants preferred medium to high volume of location attribute information. Therefore, it could be assumed that the sweet spot lay between medium (4 micro firm priorities, 17 macro capabilities) to high volume location attribute information (6 micro firm priorities, 28 macro capabilities). This preference

stayed consistent regardless of how much location information volume was provided to them during the task. These preferences are demonstrated in Figure 22.

Moreover, for geographical context, no significant difference between known and unknown situations in terms of subjective or behavioral outcome satisfaction measures was observed. Of the control variables, only industry had a significant effect on decision quality satisfaction. Between Medium (with 4-5 micro priorities and 15-17 macro capabilities factors) and High (with 6 micro priorities and 28 macro capabilities factors) volumes, which has been found to be the sweet spot, the pattern has been mostly distributed in terms of what the managers wanted from the different industries.

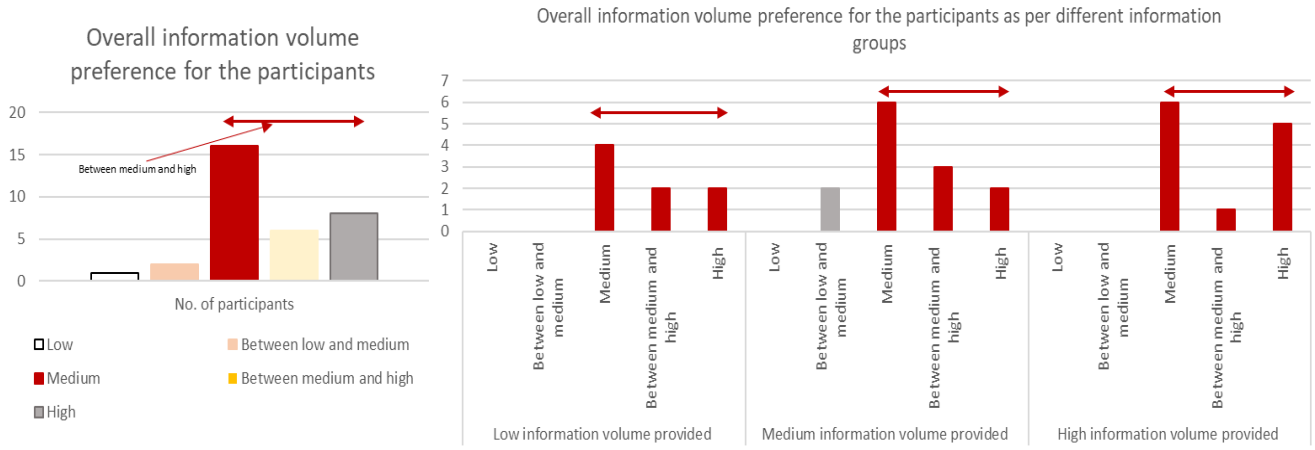


Figure 20 Pattern on the preferences for enough information volume by the participants

Notably, managers in the E-commerce industry exhibited a distinct inclination toward the left side of the spectrum, showing a preference for Medium and, to some extent, a choice between Medium and High information volumes. This is pointed out in Figure 23. It's worth mentioning that the sole manager who expressed a preference for low attribute information belonged to the E-commerce industry. However, it's important to note that this observation cannot be stated with absolute certainty as the number of observations is not very high

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5,633	0,740		7,616	0,000
	Indus	0,060	0,032	0,325	1,893	0,068
	Exp	-0,063	0,138	-0,089	-0,453	0,654
	Size of companies	0,110	0,134	0,159	0,821	0,418

a. Dependent Variable: Quality

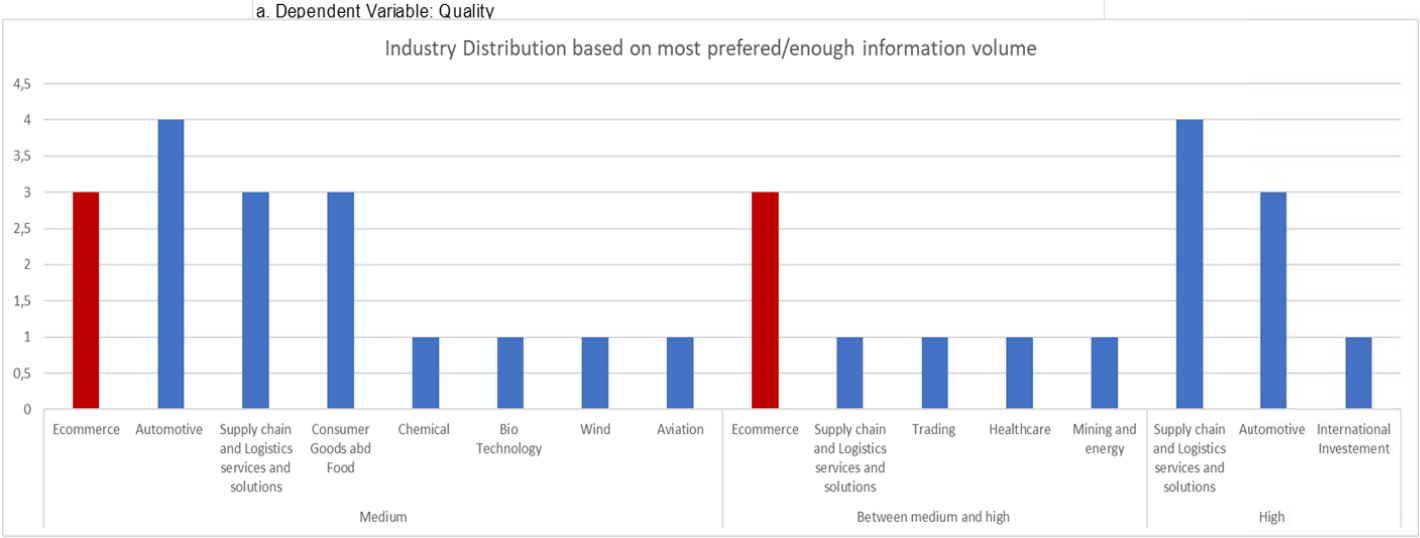


Figure 21 Pattern on the preferences for enough information volume by the participants from different industries

5.3.2 Location-attribute information variety that impacts managerial decision satisfaction in the decision making process

The study examined the dominant location-attribute information varieties that influence managerial decision satisfaction in global facility location decisions. As it can be seen from Figure 24, high attribute information volume participants leaned heavily toward 'Logistics SC/HR' and 'Robustness of Govt agencies,'. They demonstrated a strong information-seeking focus. In contrast, the medium attribute information volume participants exhibited a balanced behavioral outcome as there were specific dominant attributes that they targeted under a certain type of behavioral outcome. They emphasized 'Government Support and incentives' and 'economic policies and structures' as significant location attributes.

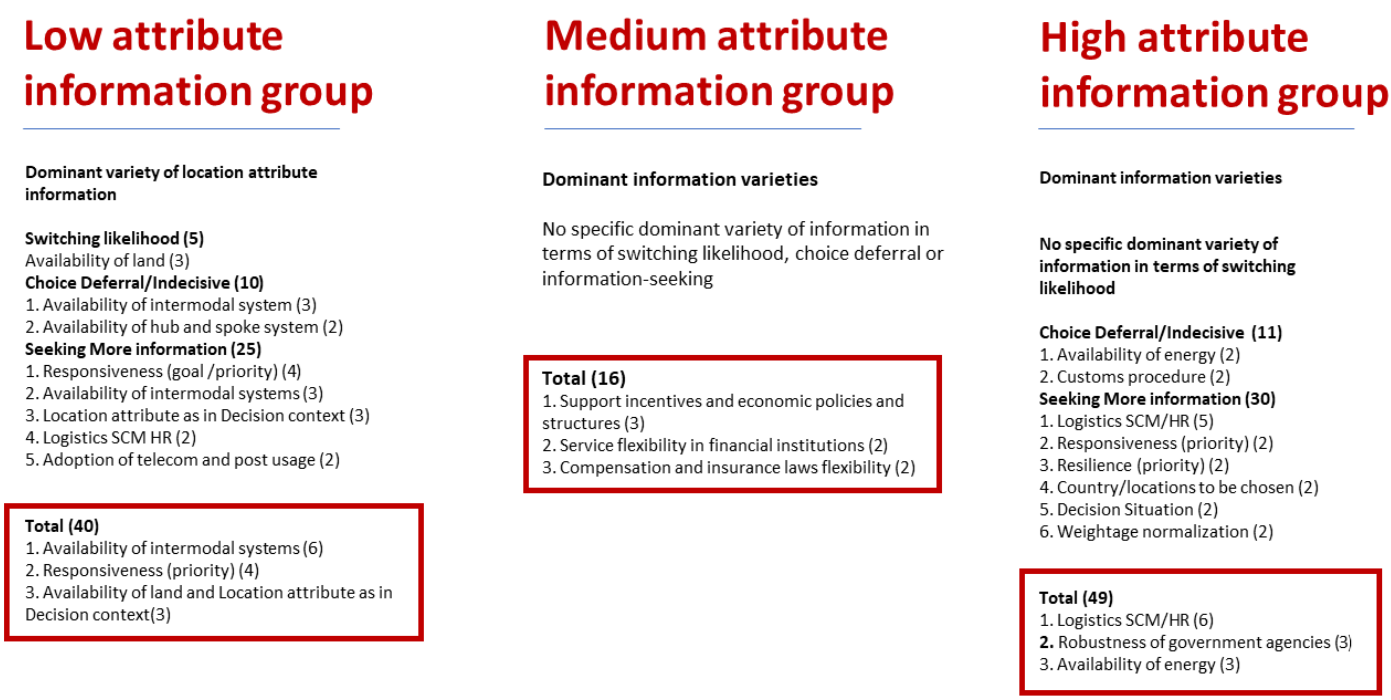


Figure 22 Dominant location-attribute information variety that impacts decision satisfaction (Behavioral Outcome: Switching Likelihood, Choice Deferral and Information-Seeking)

The low attribute information volume participants showed a preference for 'Availability of intermodal systems' and 'Responsiveness (Priority)' when seeking additional information. They also showed dominance in terms of the other two variables for Behavioural outcome- Decision Satisfaction: Switching likelihood and Choice Deferral. Figure 25 presents the dominant varieties of location attributes within the three information participant groups that signal towards the different behavioral outcomes based on decision satisfaction variables Switching Likelihood, Choice Deferral and Seeking more information. Tables 9, 10 and 11 show the different examples of how the location attributes were coded for the different behavioral outcomes based on decision satisfaction variables.

Table 8 Examples on the coded verbal protocols for location attribute information variety - Low information volume

Strategies	Type (Codings)	Exemplary verbal protocols	Information Variety
Switching likelihood	**Name switch: location capability factor**	1. let's say we are getting the location, which is quite far away from the port, we will definitely not go for it. So yeah, just consider the availability of land as a goal over (..) 2. I think instead of availability of land then you should put location, what you then thought about 3. For the responsiveness I think that what land is available (..) does not make a larger impact on that process but I think if you can say the area of the land (..) But if you say location of the land if it is like near to the sea, (..) that would have come under responsiveness	-> Availability of land
	Weight switch	4. Cost should be around 60% and responsiveness will go around 40 (..) You make cost 70. Okay, and responsiveness should be 70, even	-> Cost and responsiveness

		both are equal, 708(..) 70% should be cost and responsiveness should be 80 in fact (..)	
	Matching switch:	5. product is still the same is just that it's being customized a little bit to meet the country's customs procedures or you know custom laws (..) so it will not impact the quality and expansion (..) if overall the customs are not in your favor like the custom regulations are not in very effective (..) will impact your expansion	-> Customs procedures (not choosing under expansion to choosing under expansion)
Choice Deferral/Indecisive	**Matching location capability**	1. Actually it would just be in cost because (..) I don't think availability of land has to do anything with effectiveness. Because effectiveness has more to do in my opinion with logistics and management. Of course if there's availability of land (..) it probably might have good infrastructure as well so yeah (..) It's going to be more economical like cost wise of course. Quality, I mean availability of land doesn't really have to do anything (..) Maybe I don't know (..) from warehousing point of view if we don't have a good warehousing then the product might get that might damage or impact the quality of the product. So yeah maybe availability of land also has to do with the quality (..)	-> Availability of land (Quality)
	Indecisiveness with Choice on location capability	1. I mean it will impact your effect of your responsiveness of course if you have an intermodal system but I don't know (..) especially the company I had would actually would I actually take advantage of that or no but yes I mean definitely from ship to the trucks (..) So yes, it would impact the responsiveness (..) if I can I don't know have a cost comparison because of it. I mean you can use. Yeah, you can use planes like directly so of course it will then impact the cost as well (..) 2. proximity to market raw material resources (..) I'm just thinking (..) do we really need to consider it when it comes to the raw material or the resources (..) because that is something which really doesn't come in our industry.	-> Availability of intermodal systems -> Proximity to market
	Matching with all the possible choices	1. Next one is availability of energy (..) Yes, it will impact the cost of course (..) if there is no availability of energy then we have to look for alternative resources and that could be more pricey here (..) then of course it will impact their effective their responsiveness or effectiveness (..) If there's no energy available then your computers and all those things are not working so how would you actually run or manage your work or your business. And then of course it will impact your quality overall (..) in terms of what you're providing to your client first of all your product (..) for that you need energy and all those things (..) it will also impact the expansion. I mean, at least the expansion will be very, very slow 2. availability of road, sea rail and air transportation (..) Right. Of course if these things are present like if this if it's has an effective or good logistics it will be very good for the cost. you don't have to spend more on maybe let's just say buying your own trucks for logistics. There's already a system that's over there (..) it will also impact the responsiveness. Your responsiveness will be much better with the effective logistics. (..) Quality, yes, it will also impact the quality because if you do not have the correct transportation system, or you know they might especially correct logistics I would say like the trucks or you know the containers that needs (..) Expansion. Yeah, I mean how can you expand if you don't have good logistics. Actually (..)Everything. 3. I mean hub and spoke system will impact the cost(..) you have to pay more for the planning and everything for the logistics for the trucks and everything yeah it will also impact your responsiveness (..) Quality of the product it might impact because you will if your lead times as long are longer than yes I mean you are it will directly impact the shelf life and longer the lead times (..) then the expansion. Yes, it will definitely have to impact on the expansion. labor availability is like coming under responsiveness (..) Then I don't know about the cost and the sustainability also. So I need to put in all three basically. 4. Availability of intermodal systems? All the three () I think the preparedness as an organization that is more important. So if at all	-> Availability of intermodal energy -> Availability of road, sea rail and air transportation -> Availability of hub and spoke system -> Availability of intermodal energy -> Availability of hub and spoke system -> Availability of intermodal system

		these (), I think they would definitely give you the desired output if not exact output but close to the desired output Then proximity to market raw materials resources? (..) Size of the market (..) Yeah, I think this is the core. So it could be in cost, responsiveness and quality	
	Choices kept for later	adoption of telecom and post usage? (..) I'm really confused about this now (..) Not really, keep it for the moment.	-> Adoption of telecom and post usage
Seeking More information	**Choice attribute**	1. Availability of energy. (..) When you say energy mean electricity and all those things right. 2. Penetration or like adoption of telecom, telecommunication systems. Like electronic data interchange like how you are interchanging data. Like emails and all those things. Okay, okay like those kind of software. 3. Logistics SCM HR okay. When is the flexibility what does this mean. 4. While we´re here, responsiveness, what is it exactly? 5. Adoption of telecom and post usage. (..) But, but, and I have one more question, (..) is like for a startup kind of thing or am I in a head of someone who has already established this industry. 6. (..) availability of Hub and spoke system. (..) You briefly explained me last time but I'm not still pretty clear (..) 7. Availability of intermodal systems. Intermodal systems can you repeat one? 8. Lke the responsiveness, okay. So how do we define responsiveness (..) 9. So cost, responsiveness. Can we consider third one as a location? 10. How do we define energy over here? 11. proximity to the market, raw materials, resources? (..) What do you mean with this point? 12. Intermodal systems (..) are you talking about the rail transportation and truck transportation? 13. are you saying (..) selecting our staff for this particular warehouse, how much flexible? 14. Post, as in postal? 15. Adoption of intermodal systems? Dhar: I don't get it. What is it? 16. with the responsiveness so what exactly the goal means in under the responsiveness 17. It's just not only the labor it's like skill labor availability right.	-> Availability of energy -> Adoption of EDI usage -> Logistics SCM HR -> Responsiveness -> Adoption of telecom and post usage -> Availability of Hub and spoke system -> Availability of intermodal systems -> Responsiveness -> Location -> Availability of energy -> Proximity to the market -> Availability of intermodal systems -> Logistics SCM HR -> Adoption of telecom and post usage -> Adoption of intermodal systems -> Responsiveness -> labor Availability
	Decision context	1. adoption of telecom and post usage. (..) But, but, and I have one more question, (..) is like for a startup kind of thing or am I in a head of someone who has already established this industry. 2. I have a small question, like in these blocks is written Denmark, Finland, Norway, these are for? 3. Size of the market. So you're looking for something what resources are available for that market or if you're going to sell the product outside to the customers. (..) How big is the market. Your endpoint or the start point of it. 4. Labor availability? (..) in terms of countries or in terms of cost, responsiveness and sustainability	-> Location attribute (Adoption of telecom and post usage) -> Country/locations to be chosen -> Location attribute (Size of the market) -> Location attribute (Labor availability)
	Weightage attribute	1. responsiveness, what exactly are you expecting in responsiveness? Like (..) How quick you can do things? 2. Can you please just define for example, let's say when it is zero?	-> Responsiveness -> Weightage elicitation
	Examples	These both should be there. secondly, can you please tell me some more options? (..) Okay, something other than this?	-> Decision priorities/goals

Table 9 Examples on the codings procedure for verbal protocols for location attribute information variety - Medium information volume

Strategies	Type (Codings)	Exemplary verbal protocols	Information Variety
Switching likelihood	**Name switch: location capability factor**	1. Alternative operations, maybe? (..) let's say, alternative, even that would be from operational point of view, but also from facilities, (..) kind of alternatives, that would be, I think that's something that we learned from COVID as well (..) how to think this out and call it a calamity, being in the natural calamity, or any (..) . Then Natural calamity would be the word, right?	-> Alternative operations and network-based capabilities to deal with disruption
	Weight switch	1. I look at this map (..) it becomes clearer that quality is more important than sustainability in this map (..) quality brings sustainability to my business. I can say the in in this scenario I can say quality is 100 and sustainability is like 80 (..)	-> Quality over Sustainability
	Matching switch	1. This support and incentives on economic policies can go to costs that would fit better actually from sustainability to cost (..) 2. The language flexibility can go to reliability. Reliability not quality, it doesn't fit there in my eyes (…)	-> Support and incentives on economic policies (Cost over sustainability -> Language flexibility (Quality over reliability)
Choice Deferral/Indecisive	**Matching location capability**	1. Then availability of public warehousing (..) This is tough for me. I don't know. I wouldn't put it in any of the.... the best where it could probably go is sustainability, but at this point in time, I wouldn't categorize (..)	-> Availability of public warehousing
	Choice location capability	1. Then availability of computer or alternative suppliers? (..) Not so decisive, but...	-> Availability of computer or alternative suppliers
	Choices kept for later	1. Then support incentives and economic policies and structures? (..) I would come back to it maybe if I want. 2. Quality and reliability of telecommunication system (..) for my industry because we already have the required telecommunications (..) I would come back to it maybe if I want. 4. Then service flexibility in financial institutions? (..) I would come back to it later. 5. Compensation and insurance laws flexibility? (..) this is a stable market, right? (..) No, I would come back to it later if I want to.	-> Support incentives and economic policies and structures -> Quality and reliability of telecommunication system -> Service flexibility in financial institutions -> Compensation and insurance laws flexibility
Seeking More information	**Choice attribute**	1. Service flexibility in financial institutions. like how flexible are they? 2. Support and incentive on economic policies and structures. Can you give me a brief as what does it mean? 3. Compensation and insurance law flexibility? Is that rather towards the customer or towards the supplier or what is exactly meant with that? 4. Logistics SCM HR flexibility (..) HR is for human resources? (..) SCM HR means to hire skilled people working in supply chain or is it something else? 5. What do you mean by the resilience?	-> Service flexibility in financial institutions -> Support and incentive on economic policies and structures -> Compensation and insurance law flexibility -> Logistics SCM HR flexibility -> resilience

	Weightage attribute	1. I think I'm not able to get that part because I am okay this reliability important when it comes to any point any point of location so I didn't understand that question	-> Weightage of second order attributes

Table 10 Examples on the codings procedure for verbal protocols for location attribute information variety - High information volume

Strategies	**Type (Codings)**	**Exemplary verbal protocols**	**Information Variety**
Switching likelihood	**Name switch: location factor**	1: put the availability of logistics providers in general. In the end, not necessarily you need hub and spoke system (…) 2: So I would change robustness of government agencies to government support (..) 3: And government legislation and support. Can you change that name? Government. 4: Can we remove can we club availability of land and labor availability as indirect and direct factors (..) 5: Can we change it from political stability (..) political stability sounds (..) It's more like country stability maybe let's put it in economic warfare on more warfare	-> Availability of hub and spoke system -> Robustness of government agencies -> Business legislation and support -> Availability of land -> Labor availability -> Political stability
	Name switch: firm priority	1. Rather change for some, maybe IT reliability, so really technical reliability rather (..) 1. quality is also very vague. I would maybe change to operational excellence (..)	-> Reliability -> Quality
Choice Deferral/ Indecisive	**Matching location capability**	1. Then next one is customs (..) I´m debating this one. It could, I don't know, its either resilience or reliability. So thinking about. Thinking about things like politics and policies, evolving over time. You know, you can't necessarily plan for what's going to happen in the future	-> Customs procedure – matched with resilience or reliability
	Indecisiveness with Choice on location capability	1. Foreign investment stability? (..) Nope (..) Investment stability. Maybe. I'm just thinking (..) what could it not mean for me (..) Yeah, well, on the other hand, it's it's some no sorry I changed my I changed my decision 2. Can I just remove the raw materials one and then just put it for this one because since ours is like not exactly a, like a product, I wouldn't want to put raw material, because it's like a supply, we have a lot of suppliers, right (..) that is more makes more sense to the market.	-> Foreign investment stability -> Proximity to market, raw materials/resources (geographic location
	Matching with all the possible choices	1. Labor education level skill level impacting productivity (..) Yeah, everything,	-> Labor education level skill level
	Choices kept for later	1. Adoption of computer usage and penetration (..) Maybe, okay, wait, can we keep this one minute we'll come back to it later (..) and put it on the quality if I see we can (..) 2. let's skip this. We'll come back to the adoption of telecom and post usage because that will come under logistics itself. I think for me. 3. Availability of energy (..) Yeah. This is also important, but shouldn't it come under. Can you highlight this and keep it? 4. Customs, procedure, flexibility. Just highlighted in yellow 5. Robustness of government agencies, this is, this was quite a deciding factor in our case study because automotive rules, laws and so on. But let's check this again later. 6. No, I don't think so. It's fine. SCM HR flexibility all that. No, let's come back to that. 7. Availability of energy (..) Would come under anything to do with the Availability of energy (..) Let's come back to this also	-> Adoption of computer usage and penetration -> Adoption of telecom and post usage -> Availability of energy -> Customs procedure flexibility -> Robustness of government agencies -> SCM HR flexibility -> Availability of energy

Seeking More information	**Choice attribute**	1. There is something called EDI, right what's EDI? 2. what exactly is the cost here (..) is it the running cost of different locations or is it like the entire cost of operation all summed up together? 3. Resilience can you..? (..) So if there's a crisis, how you 4. then robustness of government agencies? (..) This is a tricky one. So if the government agency is quite robust, can you explain like robust exactly what comes here. 5. And then availability of intermodal systems (..) What is intermodal systems. 6. Foreign Investment stability(..) So does it mean like (..) are investors really interested to invest in that region. 7. Availability of hub and spoke system (..) What is hub and spoke I remember 8. Can you elaborate on responsiveness? 9. Reliability. Again, can you explain this one 10. Logistics SCM HR flexibility (..) Towards? 11. Availability of energy is this like to run the location you mean or (..) 12. Okay. Then service flexibility in financial institutions? Um, can you elaborate on this one? 13. You mean a worker's compensation? So personnel costs or what do you mean with compensation? 14. Logistics SCM HR flexibility. (..) What is meant with this one? 15. Availability of public warehousing? (..) What's what you consider public warehousing. 16. logistics SCM HR flexibility. (..) Can you remind me what exactly means 17. And what do you exactly term responsiveness and resilience, what are the ones on top that come under this resilience? 18. This one. Logistics, SCM, HR, flexibility. What do you mean by flexibility?	-> Adoption of EDI -> Cost (priority) -> Resilience (priority) -> robustness of government agencies -> Availability of intermodal systems -> Availability of hub and spoke system -> Responsiveness -> Reliability -> Logistics SCM HR flexibility -> Availability of energy -> Service flexibility in financial institutions -> Compensation and insurance laws flexibility -> Logistics SCM HR flexibility -> Availability of public warehousing -> Logistics SCM HR flexibility -> Responsiveness -> Resilience (priority) -> Logistics SCM HR flexibility
	Decision context	1. One question about all the goals here (..) So you have cost, responsiveness, reliability. So, does it mean that if, if I set up a plant in a certain location, the cost, cost should increase our costs should reduce? 2. So, this is only in these countries right that you mentioned below? so I can just consider known markets and think like if this is a related factor (..) 3. For me, it's just a bit unclear how do you want me to decide these criteria without a real situation, right? (..) it depends a little bit what the scenario(..) 5. Size of the market in this case would be like, how, how much demand for tech, is there in that location (..) 6. From a plant location decision point of view. And the four countries. (..) what is this plant for? Is there any question (..) any baseline for this	-> Decision priorities/goals -> Country/locations to be chosen -> Decision Situation -> Country/locations to be chosen -> Decision Situation
	Weightage attribute	1. So weightage as in all four should add up to 100 or (..) 2. What I understood is you're doing a weighted average method where out of 90 if I give direct indirect something it will be out of the 90 it is 100 (..)	-> Weightage normalization -> Weightage normalization
	Examples on attribute choice	1. So could an example be like, I'm setting up an organization in certain location. (..) I can reduce the current employees that I have in Europe, and they take more employees (..) paying lesser salary (..) reduces the overall cost? 2. Would an example be like DHL and all those companies like 3. Computer usage and penetration. Can you can you give like an example? 4. Then logistics, SCM, HR flexibility (..) Can you give an example?	-> Cost (priority) -> Logistics SCM/HR flexibility -> Adoption of Computer usage and penetration -> logistics, SCM, HR flexibility
	Matching attribute	1. Adoption of EDI usage in business (..) That is probably responsiveness (..) Its internally Right? Or both externally internally.	-> Adoption of EDI usage in business

When it came to decision comprehensiveness, again the medium information volume participants generated the highest number of attributes which they thought of themselves. This is depicted in Table 12. Higher Self-generated attributes relate to higher decision comprehensiveness and thus higher decision satisfaction. Medium information volume participants generated way more location attributes than the other participants, pulling in location attributes such as raw material availability, labor and work visa laws, market size, and even weather. It was like this information volume that was given to them hit the sweet spot where they could make comprehensive decisions without getting overwhelmed.

5.3.3 Mediating role of managerial subjective complexity within the decision making process

For the final research question 3.3, The researcher investigated whether Subjective Complexity connects Information Volume to Decision Satisfaction for facility location choices. Turns out, in this case, subjective complexity wasn't a mediating variable between those two. The ANOVA analysis showed no significant difference in subjective complexity for the 3 information volume participants. And the regression found no correlation between information volume and subjective complexity. So unlike some other contexts, subjective complexity doesn't mediate the link between information amount and satisfaction for global facility decisions. This missing connection means information volume's impact on managerial satisfaction may not depend on how or what complexity managers perceive when making these facility calls. Their sense of complexity simply doesn't insert itself in the middle of the information-satisfaction chain here.

Table 11 Location Attribute information varieties: Three information volume groups- Decision Comprehensiveness

Firm priorities

Macro capability factors

Dominant Self-generated macro capability factors

1. Size of the market
2. Climate weather and geographic conditions
3. Cost of land
4. Disaster and Natural factors
5. Location Quality control
6. Labor and work visa laws
7. Working conditions
8. Availability of raw materials

Dominant Self-generated firm priorities

9. Sustainability
10. Growth and expansion
11. Sales and Profit

Self-Generated attributes	High Information	Medium Information	Low information
Diverse Demography	X		
Human Factors	X		
Long terms planning and forecasting			X
Political and economical stability			X
Living Standards		X	
Language		X	
Robustness within Calamity		X	
Working Conditions		X(2)	
Market Trends		X	
Availability of Bundle Warehouses		X	
Location Quality Control		X	X
Climate (Weather) and Geographical Factors		X(2)	X
Safety	X		
Size of the market	X	X(2)	
Cost of land	X	X	
Cost of energy	X		
Personal cost	X		
Inflation rate	X		
Operational maintenance cost		X	
Disaster and Natural factors	X	X	
Quality of alternative suppliers		X	
Adoption of renewable energy		X	
Environmental Regulations		X	
Labor and work visa laws		X(2)	
Availability of Raw materials		X(2)	
Government Policies			X
Local sentiments			X
Availability of local public services	X		
Education level		X	
Supplier network		X	
Availability of water and electricity			X
Taxation	X		
Coverage	X		
Risk	X		
Effectiveness		X	
Freshness		X	
Supply		X	
Location			X
Customer Satisfaction		X	
Growth and expansion		X	X
Operational excellence	X		
IT reliability	X		
Sales and Profit		X	X
Response Time		X	
Cost		X	
Sustainability		X	X(2)
Sum	**19**	**39**	**18**

6. Discussion and Conclusion

The chapter begins by elucidating the extent and manner in which the thesis has answered the different research questions. This is followed by the main contributions of the study from two distinct vantage points: bridging literature gaps and practical implications. As for first one, the main content will consist of the integration (complements or challenges) of the thesis findings

with existing bodies of literature within the relevant domains of research. The second one with practice-related implications, specifically provide managerial and policy bearings. Towards the end of this chapter, the attention is directed toward the critical limitations. Further, the future avenues for research are also identified. This involves a nuanced examination of the specific trajectories and a provision of further advancements that future research could explore.

6.1 Answering the different research questions

Across the four papers and the three phases, a bunch of important research questions were explored to uncover insights into the complex GFLD process.

Looking at the first paper's research question on exploring multilevel relationships between location determinants, the study identified, developed and explained dominant multilevel relationships and several location motivation taxonomies for two major location movements - offloading and repositioning. Offloading often comes down to cost-efficiency, shaped by macro-level production capabilities and regulations. It is also driven by micro-level extensive managerial heuristics and managerial personal preference factors. Repositioning is about quality, knowledge, and collaboration - driven more by firm-specific abilities and it also provides country-level social, economic and policy advantages like higher market and stock value, jobs and tax revenues. It provides a holistic multilevel explanation based on the development of an integrated framework of the nuanced interplay of micro and macro-level determinants on offloading and repositioning choices. This finding thus shows why looking across levels matters for clarifying choices companies make in shifting locations.

Moving to the second phase (Papers 2 and 3), generic and industry-specific managerial challenges were highlighted in problem structuring in the GFLD hierarchy construction process. The challenges generically found were a) bigger size of the hierarchy: high number of attributes b) longer time c) the imbalance between the number of macro and micro-level attributes, and d) finally many unmeasurable macro attributes. The findings also highlighted that key trade-offs are to be made towards achieving accuracy in the GFLD hierarchy construction process- completeness and minimum size of the hierarchy. Additionally, the study made hints about the possibility of achieving the highest accuracy of the decision hierarchy for the country selection choice process at the medium-level location attribute information volume: taking into account four firm priorities and seventeen macro location capability attributes.

Finally, the third study was about location attribute information volume boundary or sufficiency and varieties for the overall decision making process. Here, the findings indicated that information volumes between medium (4 firm priorities and 17 macro capabilities) and high (6 firm priorities and 28 macro capabilities) range can be sufficient to achieve managerial decision satisfaction. Additionally, intermodal systems, logistics SCM/HR, and support incentives, along with economic policies and structures, emerged as influential moderators affecting various behavioral outcomes of managers and as critical location attribute information varieties influencing the overall GFLD process. Surprisingly, there was no mediating effect of subjective complexity between information volume and decision satisfaction, contrasting traditional choice overload expectations.

Together, these findings advance multilevel location attribute-based information alignment insights to guide broader research fields as well as managers, organizations, and policymakers seeking to enhance outcomes in this multifaceted strategic decision domain. And thus within the next section the thesis ponder critically upon the distinct points of contribution both from a theory and practice perspective.

6.2 Contribution

The thesis, spanning three interconnected sequential phases, collectively makes a substantial contribution to the literature on GFLD and Multi-Attribute Decision Analysis (MADA). The synthesis of findings from these papers sheds light on various aspects of managerial decision-making processes within GFLD. It critically covers the role of multilevel location-attribute information and information boundaries in GFLD, specifically in terms of relevant location determinants/attributes, their heterogeneity and extends insights on problem structuring in MADA, considering a country selection decisions context. All in all, the research contributes to an extensive number of literature bodies. However, the section here demonstrates only the most critical ones:

a) GFLD multilevel Location determinants identification (Paper 1): The primary contribution lies in established notions regarding location determinants for both offshoring and reshoring movements within GFLD literature. The research introduce a novel perspective by emphasizing the significance of the multilevel paradigm: involving both macro and micro-level factors for both movements in location decision making. The research incorporates relationships beyond traditional economic considerations, shedding light on the importance of managerial heuristics, personal preferences, firm internal capabilities, and specific reshoring

benefits. Previous Studies (Ancarani et al., 2015; Johansson et al., 2019; Johansson & Olhager, 2018b; Stentoft et al., 2018) on offshoring have considered Low-cost operations (labor and logistics advantages) as the key determinant. Towards this the findings from the research signals that at the macro or the location level, only macroeconomic factors such as production, technological infrastructure, market size and stability are not enough. On the contrary, for offshoring location choices, managerial heuristics and expertise, personal preferences (weather, distance, local transportation, health risks, etc) are equally important to attract offshoring in addition to macroeconomic factors. For backshoring and reshoring, previous studies (Ancarani et al., 2015, 2020; Johansson et al., 2019; Johansson & Olhager, 2018; Stentoft et al., 2018) have emphasized on development competencies which involved skills, knowledge, and technology infrastructure ecosystem at a location. However, the findings in this research on reshoring has shown that firms prioritize internal capabilities towards enhancing quality and responsiveness. Robust technological collaboration extending to supplier collaboration within the firm are important. Furthermore, reshoring provides benefits at a country level including higher market and stock value, job creation, and increased tax revenues at the country level. Additionally, the findings contradict previous research assertions (Gylling et al., 2015) on the dominance of network-level capabilities in offshoring. In fact, the findings in this research have emphasized that technological collaboration infrastructure with suppliers, rather, might play a greater role in repositioning movements. The contradiction in this literature also arises from the difference in the conclusions regarding the relationship between a company's size and reshoring. A previous study (Kinkel, 2012) has been fixed on the assumption that a company's size does not correlate with backshoring. On the contrary, the findings of this research have shown that a significant connection might be present between the company's size & experience and the reshoring/backshoring movement.

b) Problem structuring in MADA (Papers 2 and 3): To this point, problem structuring involving multi-attribute decision analysis in GFLD has been solely understood from the complexity perspective that lies within the location attribute content rather than taking the process perspective, which involves the decision maker´s subjective evaluation on the extent of the accuracy in problem structuring. This study introduces an empirical dimension to the literature on MADA in the context of global facility location and country selection decisions. The study expands the understanding of problem structuring and hierarchy construction processes by exploring managerial behavioral intricacies and informational requirements. Past research on problem structuring for MADA (Belton & Stewart, 2010) has mostly focused on

recommending dynamic approaches for criteria and alternatives, like showing how these can interact and change. Corner et al., (2001) suggested integrating multiple criteria analysis with problem-structuring tools including various problem-structuring methods such as SODA (Strategic options development and analysis). But this thesis brings a different angle - adding an empirical aspect by digging into the actual behaviors of managers, their subjective evaluation and their informational needs. This can help advance accuracy when problem structuring within the process of MADA. So while existing studies offer useful process frameworks, we're expanding the scope by addressing the human and information requirements that can get overlooked but prove critical. The study´s on-the-ground investigation of how managers think and what attribute information they require fills an important gap to make problem structuring more realistic and effective.

c) GFLD Location-Attribute Information (Paper 4): The fourth paper significantly advances the GFLD literature by emphasizing the paramount importance of location-attribute information in decision-making. It introduces the idea of a standardized location-attribute information boundary and identifies nuanced information varieties based on behavioral outcomes. Interestingly, the research indicates that a medium or high volume of location attribute information works best - like between 4 micro firm priorities plus 17 macro capability attributes, up to 6 micro firm priorities and 28 macro capability attributes. This lines up with past facility location research too. Studies like Canbolat et al., (2007); Kinra, (2015); Min & Melachrinoudis, (1999); Reich et al., (2020) also analyzed around this number of attributes when looking at their specific cases. However, this notion of standardized location attributes was never explored. So while managers can sometimes feel overwhelmed by attributes to weigh, the results suggest that having between 20-35 key location attributes - covering both micro firm priorities and macro capabilities - provides enough informational breadth without going overboard. Anything spanning that medium to high volume range appears sufficient for supporting the complex decision without overloading.

d) Behavioral Dynamics in Choice Overload (Paper 4): This paper delves into the behavioral dynamics within GFLD and extends its influence to the choice overload literature (Chernev et al., 2012; Haynes, 2009; Scheibehenne et al., 2010). The research challenges the conventional notion that the provision of higher information volume reduces information-seeking and choice deferral behavior. The findings demonstrate that high information volume leads to increased information-seeking and choice deferral, contrary to expectations. The findings direct toward the notion of decision procrastination and add insights on attribute information presentation in

the context of such high-stakes decisions. The study suggests in the context of GFLD, simplifying attribute presentation, and providing location attribute information into parts could mitigate decision-making challenges.

e) Information identification and generation in Decision-Making (Paper 4): Finally, the research findings challenge conventional decision-making literature as medium information volume outperforms low information volume in terms of decision comprehensiveness. Decision comprehensiveness relates to the higher number of self-generated attributes by the decision maker. Bond et al., (2010) and Carlson et al., (2010) suggest that increased information cues lead to a smaller number of self-generated objectives or factors resulting in decreased decision comprehensiveness. However, the findings of this thesis point towards the direction that increased information cues lead to less self-generated objectives. One reason managers show such behavior might be that they tend to be risk aversive and play it safe with these high stake facility location decisions. So when facing a complex choice like where to set up a new global facility, managers probably want to tick all the boxes and think through a robust set of location attributes.

In terms of practical implications, the multifaceted investigation within the thesis elucidates key pathways for navigating the intricacies of global facility location decision-making. The implications are again provided in terms of the different papers constituted within the thesis:

Paper 1:

1. Managerial Implication: The findings might provide companies with some new directions looking to move their production back home. Before, the focus was mostly just on how reshoring would benefit the business itself - financially, and operationally. However the findings reveal the value of embracing a wider nationalistic perspective when weighing reshoring decisions. Firms may also weigh the spillover into helping lift the economy and society in their home country if they reshore such that this could kickstart more job opportunities, tax revenue for communities, support for local suppliers, etc. There may be a shared gain potential that deserves a spot on the overall decision.

2. Policy Implication: Additionally, policymakers should focus on nurturing collaborative innovation ecosystems to attract reshoring investment. From a broader institutional economics lens, policymakers should coordinate to advance unified investment promotion and economic growth strategies, rather than differentiating solely for competitive advantage. A collaborative policy approach might have a greater effect on reshoring investment. On the other hand,

differentiation strategies might still be useful in luring offshore activity. Specifically, improving regional educational, cultural, and structural resources in line with offshore desires may increase international participation even more. By modifying regional capacities to correspond with desired management incentives for compatibility, mobility, and knowledge ecosystems, places can be made more appealing, leading to a higher need for offshore. In the end, policymakers can increase foreign direct investment inflows through both reshoring and offshoring routes by striking a balance between competitive and cooperative measures across shared prosperity and offshore investor attractiveness agendas.

3. Managerial Implication: Finally, firms repositioning their offshored locations within some other low-cost countries for manufacturing activities, simply considering core economic macro capability factors such as production capabilities or institutional factors may not be enough. Complementarily, extended managerial heuristics with larger extensive analysis and personal preference determinants could add value to offshoring decisions.

Papers 2 and 3:

4. Managerial Implication: To this point, the managerial challenges in GFLD problem structuring include the difficulty of obtaining the right information and involving the right stakeholders, consideration of qualitative factors that impact the selection decision as well and the dynamic nature of location factors. The findings from this research add in this direction by presenting some of the generic challenges on problem structuring towards developing hierarchies for the country selection decision-making process: a) bigger size of the hierarchy: high number of attributes b) longer time c) multilevel imbalance between the number of macro and micro-level location attributes, and d) finally a large number of unmeasurable macro attributes. It further adds in this direction by bringing some of the industry-specific differences. In the e-commerce sector, balancing location attributes and managing information uncertainty is paramount. A strategic approach to developing a mental map and decision hierarchies becomes crucial. Conversely, the logistics service industry may benefit from a more structured approach to handling information and related location attributes. They require effective coordination among stakeholders.

5. Managerial Implication: The findings from this phase may also provide support for managers as to how to balance accuracy with structuring the GFLD process. Accuracy with developing mind maps/ decision hierarchies for GFLD can be achieved by following two approaches: managers either can develop a complete decision process or a faster decision

process resulting from an optimal-sized hierarchy. This can be also reflected from the point of view of the complexity of the decision. It can be postulated that as the location attribute information volume for a country selection decision increases, complexity reduces in terms of managers trying to develop a complete and operational hierarchy. Whereas, volume complexity will increase in terms of developing a hierarchy of optimal size.

Paper 4:

6. Managerial Implication: The findings of the research can provide direction to firms on optimizing information gathering. Organizations should recognize the challenges associated with the overwhelming complexity of location attribute information. Instead of aiming for exhaustive information, managers can focus on their point of satisfaction with the different volumes and variety of location attribute information. The identification of the standardized information volume, falling within the range of 4 micro priorities and 17 macro capabilities factors to 6 micro priorities and 28 macro capabilities factors, where the highest managerial decision satisfaction is observed, can be valuable insight for managers as to how to go about with the decision making process. Further, striking a balance between micro-level firm priorities and macro-level capabilities is crucial for effective decision-making.

7. Policy Implication: The study can extend support for regional Investment Promotion Agencies (IPAs) as to how they can provide complementary support to firms engaged in GFLD, especially small entrepreneurial firms that have limited resources. An indication of the standardization benchmark on the extent of the information volume and variety is provided which can help these agencies to guide the small firms more effectively. The findings state that simplified location attribute presentation in smaller sections offered by these agencies could help enhance managerial satisfaction within the decision making process, as choices would be made faster without any deferral and procrastination.

6.4 Limitation and Future Research

While the four papers contribute valuable insights to the field of Global facility location decisions, it is crucial to acknowledge the limitations inherent in each study.

The findings of the first paper are based on an extensive literature review. However, it lacks empirical validation for the developed multilevel relationships. The findings are primarily based on an assessment of library data. This introduces a limitation in terms of real-world applicability and validation. Furthermore, the study was based on a selective focus on top-

ranked journals to ensure a high quality. This also meant that completeness, which is one of the requirements for an integrative literature review has been somewhat compromised. The study might potentially limit the breadth of insights as it might overlook some of the critical points related to other location determinants and their relationships. The ILR approach is explorative in nature. Alternative methods like meta-analysis could have offered more assertive claims on specific multilevel relationships. Hence, although a larger extent of insights might be generated, the study's scope might not be definitive in all aspects due to this chosen approach.

The research in the problem structuring phase, which involved Papers 2 and 3, faced time constraints during data collection. Within the 3 hours time allocated for experiment sessions, some participants displayed signs of confusion and duress. It became difficult to gather comprehensive information during the observation process. This limitation may impact the depth of insights gathered. Then, the difference in sample sizes across the three student groups introduced a further potential limitation in terms of consistency. Furthermore, in the second phase of the study, the number of real industry cases explored were limited. This might affect the generalizability of the findings to a broader context. Certain portions of the generated findings, such as the trade-off on decision hierarchy accuracy, rely on student observations. This could potentially introduce subjectivity and bias.

For the final paper, the study's findings based on quantitative data involves a sample size of 50 experiments. While this provides empirical insights, it might limit the depth and generalizability of claims. A larger sample size could have offered more comprehensive insights. Time constraints, with 2 to 3 hours allocated for individual experiments have influenced participants' attention spans and impact the thoroughness of task performance. Variability across participants in terms of the time they took to cover the whole task within the experiment adds another layer of complexity. Also, the overall validity of the study's findings may be impacted by participant variances in the breadth and quality of their responses due to varying degrees of prior decision-making experience. It was in few instances difficult to curate and code the collected verbal protocols with language barrier introducing the possibility of misunderstandings and inadequate descriptions by participants, potentially influencing the accuracy and completeness of the data collected.

Future studies could therefore concentrate on objectively verifying the multilevel correlations established in the literature review, considering the limitations that have been shown. To assess

the applicability of the identified associations in real-world contexts, this could entail carrying out case studies in the real world or more experiments designed in an expanded setting. Additionally, methods for reducing time restrictions in the data-collecting process, encountered in the problem structuring phase, should be looked into. This could entail streamlining processes, improving experiment sessions, or investigating more time-efficient alternatives to data collection methods without sacrificing the quality of insights. Increasing the generalizability of findings can be the goal of future research. For the research in the problem structuring stage, the researchers can examine a wider range of actual industrial examples.

7. References

Aguinis, H., Boyd, B. K., Pierce, C. A., & Short, J. C. (2011). Walking new avenues in management research methods and theories: Bridging micro and macro domains. *Journal of Management*, *37*(2), 395–403. https://doi.org/10.1177/0149206310382456

Akhtar, P., Ullah, S., Amin, S. H., Kabra, G., & Shaw, S. (2020a). Dynamic capabilities and environmental sustainability for emerging economies' multinational enterprises. *International Studies of Management and Organization*, *50*(1), 27–42. https://doi.org/10.1080/00208825.2019.1703376

Akhtar, P., Ullah, S., Amin, S. H., Kabra, G., & Shaw, S. (2020b). Dynamic capabilities and environmental sustainability for emerging economies' multinational enterprises. *International Studies of Management and Organization*, *50*(1), 27–42. https://doi.org/10.1080/00208825.2019.1703376

Alcácer, J., Dezso, C., & Zhao, M. (2015). Location choices under strategic interactions. *Strategic Management Journal*, *36*(2), 197–215. https://doi.org/10.1002/smj.2214

America, F. N. (2022). *GM, Ford investments in US manufacturing are a boon for entire automotive innovation industry*. LinkedIN. https://www.linkedin.com/pulse/gm-ford-investments-us-manufacturing-boon-entire-/?trk=pulse-article_more-articles_related-content-card

Amoa-Gyarteng, K. (2023). *Overcoming Financial Challenges for Small and Medium Enterprises: Strategies for Entrepreneurial Success*. https://www.econstor.eu/handle/10419/270609

Ancarani, A., Di Mauro, C., Fratocchi, L., Orzes, G., & Sartor, M. (2015). Prior to reshoring:

A duration analysis of foreign manufacturing ventures. *International Journal of Production Economics*, *169*, 141–155. https://doi.org/10.1016/J.IJPE.2015.07.031

Ancarani, A., Di Mauro, C., Virtanen, Y., & You, W. (2020). From China to the West: why manufacturing locates in developed countries. *International Journal of Production Research*, *59*(5), 1435–1449. https://doi.org/10.1080/00207543.2020.1824083

Badri, M. A. (1999). Combining the analytic hierarchy process and goal programming for global facility location-allocation problem. *International Journal of Production Economics*, *62*(3), 237–248. https://doi.org/10.1016/S0925-5273(98)00249-7

Bakhtiari, S., Breunig, R., Magnani, L., & Zhang, J. (2020). Financial Constraints and Small and Medium Enterprises: A Review. *Economic Record*, *96*(315), 506-523. www.iza.org

Baldwin, C. Y., & Clark, K. B. (2006). Modularity in the Design of Complex Engineering Systems. *Understanding Complex Systems*, *2006*, 175–205. https://doi.org/10.1007/3-540-32834-3_9

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, *17*(1), 99–120. https://doi.org/10.1177/014920639101700108

Bauer, M. (2021). *How Amazon Supply Chain Works*. Teikametrics. https://www.teikametrics.com/blog/how-amazon-supply-chain-works/

Belton, V. (1999). *Multi-Criteria Problem Structuring and Analysis in a Value Theory Framework*. 335–366. https://doi.org/10.1007/978-1-4615-5025-9_12

Belton, V., & Stewart, T. (2010). Problem structuring and multiple criteria decision analysis. *International Series in Operations Research and Management Science*, *142*, 209–239. https://doi.org/10.1007/978-1-4419-5904-1_8/COVER

Berg, N. (2014). Success from satisficing and imitation: Entrepreneurs' location choice and implications of heuristics for local economic development. *Journal of Business Research*, *67*(8), 1700–1709. https://doi.org/10.1016/J.JBUSRES.2014.02.016

Bhutta, K. S. (2004). International facility location decisions: a review of the modelling literature. *International Journal of Integrated Supply Management*, *1*(1), 33–50. https://doi.org/10.1504/IJISM.2004.004596

Bond, S. D., Carlson, K. A., & Keeney, R. L. (2010). Improving the generation of decision

objectives. *Decision Analysis*, *7*(3), 238–255. https://doi.org/10.1287/deca.1100.0172

Brugha, C. M. (2004). Structure of multi-criteria decision-making. *Journal of the Operational Research Society*, *55*(11), 1156–1168. https://doi.org/10.1057/PALGRAVE.JORS.2601777

Buckley, P. J., Devinney, T. M., & Louviere, J. J. (2007). Do managers behave the way theory suggests? A choice-theoretic examination of foreign direct investment location decision-making. *Journal of International Business Studies*, *38*(7), 1069–1094. https://doi.org/10.1057/PALGRAVE.JIBS.8400311/TABLES/11

Bunyaratavej, K., Doh, J., Hahn, E. D., Lewin, A. Y., & Massini, S. (2010). Conceptual Issues in Services Offshoring Research: A Multidisciplinary Review: *Https://Doi.Org/10.1177/1059601110390996*, *36*(1), 70–102. https://doi.org/10.1177/1059601110390996

Campbell, D. J. (1988). Task Complexity: A Review and Analysis. *Academy of Management Review*, *13*(1), 40–52.

Canbolat, Y. B., Chelst, K., & Garg, N. (2007). Combining decision tree and MAUT for selecting a country for a global manufacturing facility. *Omega*, *35*(3), 312–325. https://doi.org/10.1016/j.omega.2005.07.002

Carlson, K. A., Bond, S. D., & Keeney, R. L. (2010). Improving the Generation of Decision Objectives. *Decision Analysis*, *7*(3), 238–255. https://doi.org/10.1287/deca.1100.0172

Chen, J. (2023). *Multinational Corporation: Definition, How It Works, Four Types*. Investopedia. https://www.investopedia.com/terms/m/multinationalcorporation.asp

Chen, L., Olhager, J., & Tang, O. (2014). Manufacturing facility location and sustainability: A literature review and research agenda. *International Journal of Production Economics*, *149*, 154–163. https://doi.org/10.1016/J.IJPE.2013.05.013

Chernev, A., Böckenholt, U., & Goodman, J. (2012). Choice overload: A conceptual review and meta-analysis. *Journal of Consumer Psychology*, *25*(2), 333–358. https://doi.org/10.1016/j.jcps.2014.08.002

Chopra, S., & Meindl, P. (2007). Supply Chain Management. Strategy, Planning & Operation. In *Das Summa Summarum des Management*. https://doi.org/10.1007/978-3-8349-9320-5_22

Christodoulou P, Fleet D, Hanson P, Phaal R, Probert D, S. Y. (2007). Making the right things in the right places. *University of Cambridge, Institute for Manufacturing, Cambridge*.

Coeurderoy, R., & Murray, G. (2014). Regulatory Environments and the Location Decision: Evidence from the Early Foreign Market Entries of New-Technology-based Firms. *Location of International Business Activities*, *39*, 226–260. https://doi.org/10.1057/9781137472311_8

Coleman, J. S. (1994). Foundations of Social Theory. *Harvard University Press*.

Contractor, F., Foss, N. J., Kundu, S., & Lahiri, S. (2019). Viewing global strategy through a microfoundations lens. *Global Strategy Journal*, *9*(1), 3–18. https://doi.org/10.1002/gsj.1329

Corner, J., Buchanan, J., & Henig, M. (2001). Dynamic decision problem structuring. *Journal of Multi-Criteria Decision Analysis*, *10*(3), 129–141. https://doi.org/10.1002/mcda.295

Costa, A. C., Fulmer, C. A., & Anderson, N. R. (2018). *Trust in work teams : An integrative review , multilevel model , and future directions*. *May 2017*, 169–184. https://doi.org/10.1002/job.2213

Cronin, M. A., & George, E. (2020). The Why and How of the Integrative Review. *Organizational Research Methods*, 1–25. https://doi.org/10.1177/1094428120935507

Cui, L., Meyer, K. E., & Hu, H. W. (2014). What drives firms' intent to seek strategic assets by foreign direct investment? A study of emerging economy firms. *Journal of World Business*, *49*(4), 488–501. https://doi.org/10.1016/j.jwb.2013.12.003

Da Silveira, G. J. C. (2014). An empirical analysis of manufacturing competitive factors and offshoring. *International Journal of Production Economics*, *150*, 163–173. https://doi.org/10.1016/j.ijpe.2013.12.031

Dang, Q. T., Jasovska, P., & Rammal, H. G. (2020). International business-government relations: The risk management strategies of MNEs in emerging economies. *Journal of World Business*, *55*(1), 101042. https://doi.org/10.1016/J.JWB.2019.101042

De Meirleir, M. (2012). *Location, Location, Location: A Plant Location and Site Selection Guide*. https://books.google.de/books?hl=de&lr=&id=Mxx3JGrD1YoC&oi=fnd&pg=PR1&dq=

De+Meirleir+M+(2008)+Location,+location,+location:+a+plant+location+and+site+selection+guide.+The+Haworth+Press,+Taylor+and+Francis+Group,+New+York,+USA&ots=aELaXmUW2O&sig=goRPx3wLIy

Dixit, A. (2016). *Strategic Business Location Decisions: Importance of Economic Factors and Place*. *4*(1), 73–91.

Duanmu, J. L. (2012). Firm heterogeneity and location choice of Chinese Multinational Enterprises (MNEs). *Journal of World Business*, *47*(1), 64–72. https://doi.org/10.1016/J.JWB.2010.10.021

Dunning, J. H. (1980). Toward an Eclectic Theory of International Production: Some Empirical Tests. *Journal of International Business Studies 1980 11:1*, *11*(1), 9–31. https://doi.org/10.1057/PALGRAVE.JIBS.8490593

Dunning, J. H. (1998). Location and the Multinational Enterprise: A Neglected Factor? *Journal of International Business Studies 1998 29:1*, *29*(1), 45–66. https://doi.org/10.1057/PALGRAVE.JIBS.8490024

Ellram, L. M., Tate, W. L., & Petersen, K. J. (2013). Offshoring, reshoring and the manufacturing location decision. *Journal of Supply Chain Management*, *49*(2), 3–5. https://doi.org/10.1111/JSCM.12023

Eppler, M. J., & Mengis, J. (2008). The Concept of Information Overload - A Review of Literature from Organization Science, Accounting, Marketing, MIS, and Related Disciplines (2004). *Kommunikationsmanagement Im Wandel*, 271–305. https://doi.org/10.1007/978-3-8349-9772-2_15

Felin, T., & Foss, N. J. (2015). The Microfoundations Movement in Strategy and Organization Theory. *The Academy of Management Annals*, *9*(1), 575–632. https://doi.org/10.1080/19416520.2015.1007651

Foss, N. J. (1996). Higher-order industrial capabilities and competitive advantage. *Journal of Industry Studies*, *3*(1). https://doi.org/10.1080/13662719600000001

Fu, Y., Wu, D., Wang, Y., & Wang, H. (2020). Facility location and capacity planning considering policy preference and uncertain demand under the One Belt One Road initiative. *Transportation Research Part A: Policy and Practice*, *138*(Fu, Y., Wu, D., Wang, Y., Wang, H. (2020). nd, 138, 172-186), 172–186.

https://doi.org/10.1016/j.tra.2020.05.012

Gavirneni, S., & Isen, A. M. (2010). Anatomy of a Newsvendor Decision: Observations from a Verbal Protocol Analysis. *Production and Operations Management*, *19*(4), 453–462. https://doi.org/10.1111/J.1937-5956.2009.01110.X

Gibbs, J. P., & Coleman, J. S. (1990). Foundations of Social Theory. *Social Forces*, *69*(2), 625. https://doi.org/10.2307/2579680

Goerzen, A., Asmussen, C. G., & Nielsen, B. B. (2013). Global cities and multinational enterprise location strategy. *Journal of International Business Studies 2013 44:5*, *44*(5), 427–450. https://doi.org/10.1057/JIBS.2013.11

Goh, M., Lim, J. Y. S., & Meng, F. (2007). A stochastic model for risk management in global supply chain networks. *European Journal of Operational Research*, *182*(1), 164–173. https://doi.org/10.1016/j.ejor.2006.08.028

Goodwin, P., & Wright, G. (2014a). *Decision analysis for management judgment* (5th edition). John Wiley & Sons.

Goodwin, P., & Wright, G. (2014b). *Decision Analysis for Management Judgment Front Matter 1 Introduction 2 How people make decisions involving multiple objectives 3 Decisions involving multiple objectives : SMART 4 Decisions involving multiple objectives : alternatives to SMART 5 Introduct* (Vol. 6).

Grant, R. M. (2017). *Porter ' s ' Competitive Advantage of Nations ': An Assessment Author (s): Robert M . Grant Published by : Wiley Stable URL : http://www.jstor.org/stable/2486525 NATIONS ': AN ASSESSMENT*. *12*(7), 535–548.

Gray, J. V., Esenduran, G., Rungtusanatham, M. J., & Skowronski, K. (2017). Why in the world did they reshore? Examining small to medium-sized manufacturer decisions. *Journal of Operations Management*, *49–51*, 37–51. https://doi.org/10.1016/j.jom.2017.01.001

Greifeneder, R., Scheibehenne, B., & Kleber, N. (2010). Less may be more when choosing is difficult: Choice complexity and too much choice. *Acta Psychologica*, *133*(1), 45–50. https://doi.org/10.1016/j.actpsy.2009.08.005

Gutierrez, G. J., & Kouvelis, P. (1995). A robustness approach to international sourcing. *Annals of Operations Research*, *59*, 165–193.

Gylling, M., Heikkilä, J., Jussila, K., & Saarinen, M. (2015). Making decisions on offshore outsourcing and backshoring: A case study in the bicycle industry. *International Journal of Production Economics*, *162*, 92–100. https://doi.org/10.1016/j.ijpe.2015.01.006

Hammami, R., & Frein, Y. (2014). Redesign of global supply chains with integration of transfer pricing: Mathematical modeling and managerial insights. *International Journal of Production Economics*, *158*, 267–277. https://doi.org/10.1016/j.ijpe.2014.08.005

Haslam, S. A., Cornelissen, J. P., & Werner, M. D. (2017). Metatheories and Metaphors of Organizational Identity: Integrating Social Constructionist, Social Identity, and Social Actor Perspectives within a Social Interactionist Model. *International Journal of Management Reviews*, *19*(3), 318–336. https://doi.org/10.1111/ijmr.12150

Haynes, G. A. (2009). Testing the boundaries of the choice overload phenomenon: The effect of number of options and time pressure on decision difficulty and satisfaction. *Psychology & Marketing*, *26*(3), 204–212. https://doi.org/10.1002/MAR.20269

Hoffman, J. J., & Schniederjans, M. J. (1996a). A Two-stage Model for Structuring Global Facility Site Selection Decisions The Case of the Brewing Industry. *Facilities*, *14*(4), 23–34.

Hoffman, J. J., & Schniederjans, M. J. (1996b). A two–stage model for structuring global facility site selection decisions: The case of the brewing industry. *Facilities*, *14*(4), 23–34. https://doi.org/10.1108/02632779610152180

Hu, H. fen, & Krishen, A. S. (2019). When is enough, enough? Investigating product reviews and information overload from a consumer empowerment perspective. *Journal of Business Research*, *100*(March), 27–37. https://doi.org/10.1016/j.jbusres.2019.03.011

Hua, G., Wang, S., Chan, C. K., & Hou, S. H. (2009). A fractional programming model for international facility location. *Journal of Industrial and Management Optimization*, *5*(3), 629–649. https://doi.org/10.3934/jimo.2009.5.629

Huang, S., & Cantwell, J. (2017). FDI location choice: the role of locational ambidexterity. *Multinational Business Review*, *25*(1), 28–51. https://doi.org/10.1108/MBR-04-2016-0016

Huchzermeier, A., & Cohen, M. A. (2017). *Valuing Operational Flexibility under Exchange Rate Risk Author (s): Arnd Huchzermeier and Morris A . Cohen Source : Operations*

Research , Vol . 44 , No . 1 , Special Issue on New Directions in Operations Published by : INFORMS Stable URL : http://www.j. *44*(1), 100–113.

Ishizaka, A., & Labib, A. (2011). Selection of new production facilities with the Group Analytic Hierarchy Process Ordering method. *Expert Systems with Applications*, *38*(6), 7317-7325. https://doi.org/10.1016/j.eswa.2010.12.004

Javalgi, R. G., & Todd, P. R. (2011). Entrepreneurial orientation, management commitment, and human capital: The internationalization of SMEs in India. *Journal of Business Research*, *64*(9), 1004–1010. https://doi.org/10.1016/J.JBUSRES.2010.11.024

Jie;, Y. A. T. (2022). *Apple Makes Plans to Move Production Out of China - WSJ*. The World Street Journal. https://www.wsj.com/articles/apple-china-factory-protests-foxconn-manufacturing-production-supply-chain-11670023099

Johanson, J., & Vahlne, J.-E. (n.d.). THEINTERNATIONALIZATION PROCESS OF THE FIRM-A MODELOF KNOWLEDGE DEVELOPMENT AND INCREASING FOREIGNMARKET COMMITMENTS. *In International Business*, 145–154. Retrieved November 27, 2023, from www.jstor.org

Johansson, M., & Olhager, J. (2018). Comparing offshoring and backshoring: The role of manufacturing site location factors and their impact on post-relocation performance. *International Journal of Production Economics*, *205*, 37–46. https://doi.org/10.1016/J.IJPE.2018.08.027

Johansson, M., Olhager, J., Heikkilä, J., & Stentoft, J. (2019). Offshoring versus backshoring: Empirically derived bundles of relocation drivers, and their relationship with benefits. *Journal of Purchasing and Supply Management*, *25*(3). https://doi.org/10.1016/J.PURSUP.2018.07.003

Keeney, R. L. (1996). Value-focused thinking: Identifying decision opportunities and creating alternatives. *European Journal of Operational Research*, *92*(3), 537–549. https://doi.org/10.1016/0377-2217(96)00004-5

Kidd, J., Keeney, R. L., & Raiffa, H. (1977). Decisions with Multiple Objectives -- Preferences and Value Tradeoffs. *Operational Research Quarterly*. https://doi.org/10.2307/3008969

Kinkel, S. (2012). Trends in production relocation and backshoring activities: Changing

patterns in the course of the global economic crisis. *International Journal of Operations and Production Management*, *32*(6), 696–720. https://doi.org/10.1108/01443571211230934

Kinkel, S., & Maloca, S. (2009). Drivers and antecedents of manufacturing offshoring and backshoring-A German perspective. *Journal of Purchasing and Supply Management*, *15*(3), 154–165. https://doi.org/10.1016/j.pursup.2009.05.007

Kinra, A. (2015). Environmental complexity related information for the assessment of country logistics environments: Implications for spatial transaction costs and foreign location attractiveness. *Journal of Transport Geography*, *43*, 36-47. https://doi.org/10.1016/j.jtrangeo.2014.12.005

Kinra, A., Hald, K. S., Mukkamala, R. R., & Vatrapu, R. (2020a). An unstructured big data approach for country logistics performance assessment in global supply chains. *International Journal of Operations and Production Management*, *40*(4), 439-458. https://doi.org/10.1108/IJOPM-07-2019-0544

Kinra, A., Hald, K. S., Mukkamala, R. R., & Vatrapu, R. (2020b). An unstructured big data approach for country logistics performance assessment in global supply chains. *International Journal of Operations and Production Management*. https://doi.org/10.1108/IJOPM-07-2019-0544

Kinra, A., & Kotzab, H. (2008a). A macro-institutional perspective on supply chain environmental complexity. *International Journal of Production Economics*, *115*(2), 283–295. https://doi.org/10.1016/j.ijpe.2008.05.010

Kinra, A., & Kotzab, H. (2008b). UNDERSTANDING AND MEASURING MACRO-INSTITUTIONAL COMPLEXITY OF LOGISTICS SYSTEMS ENVIRONMENT. *Journal of Business Logistics*, *29*(1), 327–346. https://doi.org/10.1002/j.2158-1592.2008.tb00082.x

Klein, K. J. (2014). *Multilevel Theory , Research , and Methods in Organizations Foundations , Extensions , and New Directions*. *24*(2), 248–253. https://doi.org/10.2307/3094811

Kogut, B., & Kulatilaka, N. (1994). Operating Flexibility, Global Manufacturing, and the Option Value of a Multinational Network. *Management Science*, *40*(1), 123–139.

https://doi.org/10.1287/mnsc.40.1.123

Kreye, M. E., Goh, Y. M., Newnes, L. B., & Goodwin, P. (2012). Approaches to displaying information to assist decisions under uncertainty. *Omega*, *40*(6), 682–692. https://doi.org/10.1016/j.omega.2011.05.010

Lamin, A., & Livanis, G. (2013). Agglomeration, catch-up and the liability of foreignness in emerging economies. *Journal of International Business Studies*, *44*, 579–606. https://doi.org/10.1057/jibs.2013.14

Lampón, J. F., Lago-Peñas, S., & González-Benito, J. (2015). International relocation and production geography in the European automobile components sector: the case of Spain. *Http://Dx.Doi.Org/10.1080/00207543.2014.942757*, *53*(5), 1409–1424. https://doi.org/10.1080/00207543.2014.942757

Lanza, G., & Moser, R. (2014). Multi-objective optimization of global manufacturing networks taking into account multi-dimensional uncertainty. *CIRP Annals*, *63*(1), 397–400. https://doi.org/10.1016/J.CIRP.2014.03.116

Leiblein, M. J., Larsen, M. M., & Pedersen, T. (2022). Are governance mode and foreign location choices independent? *Global Strategy Journal*, *12*(2), 273–307. https://doi.org/10.1002/GSJ.1420

Li, H., Gupta, A., Luo, X., & Warkentin, M. (2011). Exploring the impact of instant messaging on subjective task complexity and user satisfaction. *European Journal of Information Systems*, *20*(2), 139–155. https://doi.org/10.1057/ejis.2010.59

MacCarthy, B. L., & Atthirawong, W. (2003). Factors affecting location decisions in international operations - A Delphi study. In *International Journal of Operations and Production Management* (Vol. 23, Issues 7–8). https://doi.org/10.1108/01443570310481568

Marttunen, M., Haag, F., Belton, V., Mustajoki, J., & Lienert, J. (2019). Methods to inform the development of concise objectives hierarchies in multi-criteria decision analysis. *European Journal of Operational Research*, *277*(2), 604–620. https://doi.org/10.1016/j.ejor.2019.02.039

Maynard, D. C., & Hakel, M. D. (1997). Effects of objective and subjective task complexity on performance. *Human Performance*, *10*(4), 303–330.

https://doi.org/10.1207/s15327043hup1004_1

Mickle, D. W. T. (2022). *Tech Companies Slowly Shift Production Away From China*. The New York Times. https://www.nytimes.com/2022/09/01/business/tech-companies-china.html

Min, H., & Melachrinoudis, E. (1999). The relocation of a hybrid manufacturing/distribution facility from supply chain perspectives: A case study. *Omega*, *27*(1), 75–85. https://doi.org/10.1016/S0305-0483(98)00036-X

Molina-Azorín, J. F. (2014). Microfoundations of strategic management: Toward micro-macro research in the resource-based theory. *BRQ Business Research Quarterly*, *17*(2), 102–114. https://doi.org/10.1016/j.brq.2014.01.001

Molina-Azorín, J. F., Pereira-Moliner, J., López-Gamero, M. D., Pertusa-Ortega, E. M., & José Tarí, J. (2020). Multilevel research: Foundations and opportunities in management. *BRQ Business Research Quarterly*, *23*(4), 319–333. https://doi.org/10.1177/2340944420966970

Molina-Azorín, J. F., Pereira-Moliner, J., López-Gamero, M. D., Pertusa-Ortega, E. M., & Tarí, J. J. (2020). Multilevel research: Foundations and opportunities in management. *BRQ Business Research Quarterly*, *23*(4), 319–333. https://doi.org/10.1016/J.BRQ.2019.03.004

Murayama, K., Blake, A. B., Kerr, T., & Castel, A. D. (2016). When enough is not enough: Information overload and metacognitive decisions to stop studying information. *Journal of Experimental Psychology: Learning Memory and Cognition*, *42*(6), 914–924. https://doi.org/10.1037/xlm0000213

Nielsen, B., Asmussen, C., & Goerzen, A. (2018). Towards a synthesis of micro and macro factors that influence foreign direct investment location choice Business - Google Books. In *The Routledge Companion to the Geography of International* (pp. 190–212). https://books.google.de/books?hl=de&lr=&id=mUhaDwAAQBAJ&oi=fnd&pg=PT465&dq=macro+capabilities+location+decision&ots=lgMPSEhGK_&sig=lRL1lA2IU4p7itaEREKPmGBD6o0&redir_esc=y#v=onepage&q=macro capabilities location decision&f=false

Nielsen, B. B., & Nielsen, S. (2011). The role of top management team international

orientation in international strategic decision-making: The choice of foreign entry mode. *Journal of World Business*, *46*(2), 185–193. https://doi.org/10.1016/j.jwb.2010.05.003

Oetzel, J., & Miklian, J. (2017). Multinational enterprises, risk management, and the business and economics of peace. *Multinational Business Review*, *25*(4), 270–286. https://doi.org/10.1108/MBR-09-2017-0064/FULL/PDF

Pennington, R. R., & Kelton, A. S. (2016). How much is enough? An investigation of nonprofessional investors information search and stopping rule use. *International Journal of Accounting Information Systems*, *21*, 47–62. https://doi.org/10.1016/j.accinf.2016.04.003

Peterson, M. F., Arregle, J. L., & Martin, X. (2012). Multilevel models in international business research. *Journal of International Business Studies*, *43*(5), 451–457. https://doi.org/10.1057/JIBS.2011.59/METRICS

Phelps, N. A., & Wood, A. M. (2018). The business of location: Site selection consultants and the mobilisation of knowledge in the location decision. *Journal of Economic Geography*, *18*(5), 1023–1044. https://doi.org/10.1093/jeg/lbx016

Porter, M. E., & Porter, M. E. (1994). The Role of Location in Competition. *International Journal of the Economics of Business*, *1*(1), 35–40. https://doi.org/10.1080/758540496

Raza, W., Grumiller, J., Grohs, H., Essletzbichler, J., & Pintar, N. (2021). *Post Covid-19 value chains: options for reshoring production back to Europe in a globalised economy Policy Department for External Relations*. https://doi.org/10.2861/118324

Reich, J., Kinra, A., & Kotzab, H. (2019). Strategic decision-making in global supply chain network design - How a decision support system combining MILP and AHP on a Pareto front can alleviate decision-making. *IFAC-PapersOnLine*. https://doi.org/10.1016/j.ifacol.2019.11.546

Reich, J., Kinra, A., Kotzab, H., & Brusset, X. (2020). Strategic global supply chain network design–how decision analysis combining MILP and AHP on a Pareto front can improve decision-making. *International Journal of Production Research*, *59*(5), 1557–1572. https://doi.org/10.1080/00207543.2020.1847341

Reshoring manufacturing - Coming home. (2013). The Economist. https://archive.ph/UdJ6u

Reutskaja, E., & Hogarth, R. M. (2009). Satisfaction in choice as a function of the number of

alternatives: When “goods satiate.” *Psychology & Marketing*, *26*(3), 197–203. https://doi.org/10.1002/MAR.20268

Rodgers, P., Khan, Z., Tarba, S., Nurgabdeshov, A., & Ahammad, M. F. (2019). Exploring the determinants of location choice decisions of offshored R&D projects. *Journal of Business Research*, *103*, 472–483. https://doi.org/10.1016/J.JBUSRES.2017.11.009

Roetzel, P. G. (2019). Information overload in the information age: a review of the literature from business administration, business psychology, and related disciplines with a bibliometric approach and framework development. *Business Research*, *12*, 479–522. https://doi.org/10.1007/s40685-018-0069-z

Rumelt, R. P. (1997). Towards a Strategic Theory of the Firm. In *Resources, Firms, and Strategies: A Reader in the Resource-based Perspective*.

Scheibehenne, B., Greifeneder, R., & Todd, P. M. (2010). Can there ever be too many options? A meta-analytic review of choice overload. *Journal of Consumer Research*, *37*(3), 409–425. https://doi.org/10.1086/651235

Scheubrein, R., & Zionts, S. (2006). A problem structuring front end for a multiple criteria decision support system. *Computers & Operations Research*, *33*(1), 18–31. https://doi.org/10.1016/J.COR.2004.05.014

Schmidt, A. S. T., Touray, E., & Hansen, Z. N. L. (2017). A framework for international location decisions for manufacturing firms. *Production Engineering*, *11*(6), 703–713. https://doi.org/10.1007/s11740-017-0770-3

Schniederjans, M. J. (2000). GLOBAL FACILITY LOCATION ANALYSIS. *Encyclopedia of Production and Manufacturing Management*, 249–249. https://doi.org/10.1007/1-4020-0612-8_381

Schotter, A., & Beamish, P. W. (2013). The hassle factor: An explanation for managerial location shunning. *Journal of International Business Studies*, *44*(5), 521–544. https://doi.org/10.1057/jibs.2013.7

Schotter, A., & Beamish, P. W. (2014). The Hassle Factor: An Explanation for Managerial Locational Shunning. *Location of International Business Activities*, *44*, 181–225. https://doi.org/10.1057/9781137472311_7

Sethi Iyengar, S., & Lepper, M. (2001). When Choice is Demotivating: Can One Desire Too

Much of a Good Thing? *Article in Journal of Personality and Social Psychology*, *79*(6), 995. https://doi.org/10.1037/0022-3514.79.6.995

Shih, W. C. (2022). *Why Global Supply Chains May Never Be the Same*. WSJ Documentary - YouTube. https://www.youtube.com/watch?v=1KtTAb9Tl6E

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, *104*(March), 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Song, M., Lee, W. S., & Moon, J. (2019). Exploring effective price presentation format to reduce decision difficulty and increase decision satisfaction. *Tourism Management Perspectives*, *32*, 100572. https://doi.org/10.1016/j.tmp.2019.100572

Spadafora, E., Giachetti, C., Kumodzie-Dussey, M. K., & Elango, B. (2022). International experience and imitation of location choices: The role of experience interpretation and assessment and its board-level microfoundations. *Global Strategy Journal*, *13*(1), 111–146. https://doi.org/10.1002/GSJ.1428

Stentoft, J., Mikkelsen, O. S., Jensen, J. K., & Rajkumar, C. (2018). Performance outcomes of offshoring, backshoring and staying at home manufacturing. *International Journal of Production Economics*, *199*(March), 199–208. https://doi.org/10.1016/j.ijpe.2018.03.009

Sun, Q., Tong, W., & Yu, Q. (2002). Determinants of foreign direct investment across China. *Journal of International Money and Finance*, *21*(1), 79–113. https://doi.org/10.1016/S0261-5606(01)00032-8

Tate, W. L., Ellram, L. M., Schoenherr, T., & Petersen, K. J. (2014). Global competitive conditions driving the manufacturing location decision. *Business Horizons*, *57*(3), 381–390. https://doi.org/10.1016/J.BUSHOR.2013.12.010

Teece, D. J., Pisano, G., & Shuen, A. (2009). Dynamic capabilities and strategic management. In *Knowledge and Strategy*. https://doi.org/10.1142/9789812796929_0004

Townroe, P. M. (1972). Some Behavioural Considerations in the Industrial Location Decision. *Regional Studies*, *6*(3), 261–272. https://doi.org/10.1080/09595237200185221

Vila, D., Martel, A., & Beauregard, R. (2006). Designing logistics networks in divergent process industries: A methodology and its application to the lumber industry.

International Journal of Production Economics, *102*(2), 358–378. https://doi.org/10.1016/J.IJPE.2005.03.011

Wang, Y. (2016). What are the biggest obstacles to growth of SMEs in developing countries? – An empirical evidence from an enterprise survey. *Borsa Istanbul Review*, *16*(3), 167–176. https://doi.org/10.1016/J.BIR.2016.06.001

Westphal, P., & Sohal, A. (2016). Outsourcing decision-making: does the process matter? *Production Planning & Control*, *27*(11), 894–908. https://doi.org/10.1080/09537287.2016.1159350

Williamson, O. E. (1981). The Economics of Organization: The Transaction Cost Approach. *Source: American Journal of Sociology*, *87*(3), 548–577. https://about.jstor.org/terms

Windmark, C., & Andersson, C. (2016). Cost modelling as decision support when locating manufacturing facilities. *International Journal of Production Management and Engineering*, *4*(1), 15–27. https://doi.org/10.4995/IJPME.2016.4177

Wisner, J. D., Tan, K.-C., & Leong, G. K. (2021). *Principles of supply chain management : a balanced approach*. 553. https://books.google.com/books/about/Principles_of_Supply_Chain_Management_A.html?hl=de&id=yTN-BAAAQBAJ

Wood, R. E., Mento, A. J., & Locke, E. A. (1987). Task Complexity as a Moderator of Goal Effects: A Meta-Analysis. *Journal of Applied Psychology*, *72*(3), 416–425. https://doi.org/10.1037/0021-9010.72.3.416

Yang, J., & Lee, H. (1997a). An AHP decision model for facility location selection. *Facilities*. https://doi.org/10.1108/02632779710178785

Yang, J., & Lee, H. (1997b). An AHP decision model for facility location selection. *Facilities*, *15*(9–10), 241–254. https://doi.org/10.1108/02632779710178785

Ye, Y., Wu, K., Xie, Y., Huang, G., Wang, C., & Chen, J. (2019). How firm heterogeneity affects foreign direct investment location choice: Micro-evidence from new foreign manufacturing firms in the Pearl River Delta. *Applied Geography*, *106*(March), 11–21. https://doi.org/10.1016/j.apgeog.2019.03.005

Ylikoski, P. (2016). *Thinking with the Coleman boat*. https://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-132711

Zhang, A., Luo, H., & Huang, G. Q. (2013). A bi-objective model for supply chain design of dispersed manufacturing in China. *International Journal of Production Economics*, *146*(1), 48–58. https://doi.org/10.1016/j.ijpe.2012.12.008

Annex

A. List of Papers for Cumulative Dissertation

The cumulative dissertation comprises four ready-to-be-published papers. In Table 1, I provide a summary of these papers, including their titles, the respective journals or conferences, authors, their current status and the quality assessments of the different journal outlets.

Paper P1: This paper has undergone a rigorous review process at the European Operations Management Association: EurOMA conference, 2023 and Decision Sciences Institute: DSI conference, 2023 where it was presented and well-received. Subsequently, P1 has been adapted and submitted to the prestigious International Journal of Production Economics, a leading journal in the field of production and operations management. P1 has been accepted for review and currently awaiting an editor's decision for the double peer review process.

Paper P2 and P3: P2 was submitted to the World Conference on Transport Research Society: WCTR 2023, where it received the esteemed Prestige Grant award. Furthermore, the paper has been accepted for publication in the WCTR conference proceedings and is currently in the process of being published. P2 has also been further adapted into P3 and presented at the European Decision Sciences Institute: EDSI conference 2023. P4 will now be submitted to the Journal of Multi-Criteria Decision Analysis.

Paper P4: This paper was presented at the DSI conference, 2022 and 2023 Institute for Operations Research and the Management Sciences: INFORMS Annual Meeting and received positive feedback. Following the presentation, it is now ready to be submitted to the Journal of Operations Management, one of the top-ranked journals in the field of operations management.

Papers	Title	Journal (J) / conference (C)	Indexed	Authors	Status	Journal /Conference Quality
P1	Developing multilevel explanations for global facility location decisions: Identifying relationships between Micro and macro-level location determinants	International Journal of Production Economics Publisher: Elsevier	✓	Bhardwaj, Kinra, Kotzab	Publishable stage i.e. Submitted and accepted for review	**ABS** 2021 ranking: 4
P2	How do managers develop hierarchies for Global facility location country selection decisions?	WCTR 2023 - Transportation(C) Research Procedia Publisher: Elsevier	✓	Bhardwaj	Accepted	An international network of transport academics and practitioners (16th Conference) **ERA** ranking: A
P3	Managerial Challenges in Problem Structuring for Country Selection Decisions: Developing Decision Hierarchy for Global Facility Location	Journal of Multi-Criteria Decision Analysis (J) Publisher: Wiley Online Library	✓	Bhardwaj	Publishable stage i.e. Ready to be Submitted	**ABS** 2021 ranking: 1
P4	Exploring managerial choice making and information boundaries in global facility location decision-making Process	Journal of Operations Management (J) Publisher: Wiley Online Library	✓	Bhardwaj, Kinra	Publishable stage i.e. Ready to be Submitted	**ABS** 2021 ranking: 4* Included in the **FT** 50 list 2016

Table 1: List of considered papers (Source: Author)

- **ABS** - Association of Business Schools Academic Journal Quality Guide: 4*(highest)- 1 (lowest)
- **FT**– Financial Times Survey of Top Business Schools 2010/2016
- **ERA** - Excellence in Research in Australia: A (=best) to C (=worst)

B. Declaration

I hereby certify that I have prepared the dissertation entitled " Global Facility Location Decision making: an in-depth investigation into multilevel information alignment- relationships, structuring and boundaries " without any unauthorized help. I have not used any sources or aids other than the ones I have stated identified as such.

A check of the dissertation using qualified software as part of the investigation of plagiarism allegations is permitted.

Debarshee Bhardwaj