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Revisiting the Role of Supply Chain Managerial Competence in Firm Logistics Performance: Do Experience and Education Matter?

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Abstract: This study aims to assess, through individual performance, the influence of supply chain managerial competency of logistics managers on company logistics performance, taking into account the moderating effects of education and work experience. Using an empirical survey of Vietnamese developing nation logistics companies, this study applied the PLS-SEM approach for data analysis including assessments of mediation and moderation. The sample comprised 272 valid replies from a structured survey aimed at managerial personnel. The findings demonstrate that the competencies of logistics managers substantially improve individual performance, hence mediating the favorable correlation between management competencies and organizational logistics performance. The results indicate that both education and experience enhance these linkages at both individual and organizational levels. This study advances the application of RBV theory by highlighting human capital as an essential, distinctive resource that, when augmented by education and experience, enhances organizational performance. Nevertheless, this study's shortcomings encompass a concentration on the Vietnamese logistics sector, indicating the need for future research across various businesses and geographical settings. These observations highlight the necessity for specialized education and training programs to develop managerial competencies for enduring organizational effectiveness.

Keywords: logistics managers; supply chain managerial competence; individual performance; firm logistics performance; Vietnam

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1. Introduction

In the aftermath of the COVID-19 pandemic, which caused tremendous negative impacts on global trade, as well as social and economic stability in many countries, the role of logistics and supply chain as an essential industry has been ever emphasized and highlighted. Apart from important physical infrastructure such as transport vehicles, warehouses, distribution centers, freight terminals, etc., and digital infrastructure, which is critical for the digital transformation of businesses given "the New Normal", other aspects of the superstructure such as processes and, especially, human capital, are also vital to the effective performance of firms in the industry.

It is on this premise that an important question should be asked: will human capital still play an important role in the organizational success? If so, how should employees and managers be equipped to perform well and contribute to the organizations where they belong? Given the rapid evolution of Industry 4.0 technologies such as generative AI (artificial intelligence) and the aftermath of the COVID-19 pandemic, these are important questions to be addressed, especially when it has been claimed that "AI will create a future where no job is needed" [1]. This aligns with the question about "The Theory of the

Business" that Drucker [2] advocated nearly 30 years ago, which is still vivid and valid today given its intriguing nature. Leveraging on analysis of the failure of several "big names" such as GM and IBM, the first and most important specification of this theory is that "the assumptions about environment, mission, and core competencies must fit reality".

Considering this connection, this paper aims to address the aforementioned questions in the context of the logistics industry in Vietnam, specifically whether the contemporary supply chain managerial competency profile of logistics managers contributes to their individual performance, and then the logistics performance of their firms, and whether their levels of education and work experience matter in these relationships. The remainder of this paper is structured as follows: First, the next section reviews the extant literature, which lays the foundation for the conceptual framework and hypotheses to be developed. This is followed by an explanation of the research context of the logistics industry in Vietnam. The research methodology is elaborated next, with the data analysis following suit. The discussion of results is presented next, followed by a summary of findings, an evaluation of academic and managerial implications and suggestions for future research.

The COVID-19 pandemic has underscored the critical role of the logistics and supply chain industry in maintaining economic stability and facilitating global trade. While infrastructure—both physical and digital—is universally acknowledged to be critical, the relevance of human capital, particularly in managerial roles, continues to evolve. The existing literature outlines the competencies required for logistics professionals, yet empirical research connecting these competencies directly to firm-level performance through individual managerial performance is limited. Despite various competency frameworks developed over decades (e.g., [3,4]), a distinct research gap exists in the specific context of how logistics managers' competencies translate into improved firm logistics performance, especially when moderated by educational background and work experience.

This research gap becomes more pronounced in developing countries like Vietnam, where logistics firms operate in a dynamic and often unpredictable environment. Although research has examined competency models and their impact on work performance in general, limited studies have investigated the intricate links between logistics management competence, individual performance, and organizational results. Furthermore, the possible mediating and moderating effects of experience and education in these interactions have not been well investigated.

The competitive nature of the logistics sector necessitates a comprehensive grasp of the impact of management abilities on firm performance. Nonetheless, there is a lack of empirical information about the relationship between human competences and organizational logistics performance, as mediated by individual performance and impacted by experience and educational attainment. This research aims to examine whether the supply chain abilities of logistics managers significantly influence their personal and organizational performance, and how education and work experience attenuate these effects.

2. Literature Review

2.1. Supply Chain Managerial Competence of Logistics Managers

In the extant literature, research on the competency profile of logistics professionals, both at the entry and managerial levels, has been evolving. There have been various frameworks, models, and guidelines developed by not only academics but also industry professional bodies relating to what competencies that logistics and supply chain professionals should possess to perform their jobs effectively. In this connection, early works such as those by La Londe [3] and Williams and Currey [5] placed the foundation for later studies in the field. Subsequently, the BLM (Business, Logistics, Management) framework was developed by Murphy and Poist [4] and used extensively in their later studies [6–10], as well as being modified and employed in various others (for example, see [11–15]), including specialized contexts such as container shipping [16] and port [17]. Apart from this, scholars also advocated other approaches to competency categorizations such as interpersonal/managerial basic skills, quantitative/technological skills, and SCM (supply chain

management) core skills [18]; social, decision-making, problem solving, and time management skills [19]; general and logistics/SCM-specific and key competencies/skills [20]; emotional and social skills [21,22]; generic skills, functional skills, SCM qualifications and leadership, SCM expertise, and industry-specific and senior management skills [23]; business managerial, generic, and behavioral competencies [24]; or SCM knowledge, analytical, problem-solving, and general management skills [25]. Meanwhile, professional bodies also contribute to building industry standards relating to the required competencies of logistics and supply chain professionals, notably APICS [26] with foundational, profession-related and occupation-related groups; Supply Chain Canada [27] with foundational, core, and technical groups; or CILT [28] with core generic and specialist key knowledge areas.

In the past decades, the logistics and supply chain management industry has been undergoing significant changes, characterized by key drivers such as the application of Industry (i.e., industrial revolution) 4.0 technologies and required adaptations in the aftermath of the COVID-19 pandemic. Specifically, the application of Industry 4.0 technologies in logistics has transformed the industry and given rise to "Smart logistics or Logistics 4.0", which in turn demands firms to upgrade their logistics and supply chain managers' competence with technological and environmental capabilities [29,30]. Further, emphasis has also been placed on computational and analytical skills, as well as other ICT capabilities [31]. Meanwhile, not only technological but also risk and resilience management capabilities have become the focus in relation to logistics managers' supply chain managerial competence, given that the COVID-19 pandemic has demanded the acceleration of the digital transformation process [32] and also unearthed various sudden changes in the VUCA (volatility, uncertainty, complexity, and ambiguity) business environment. As a result, logistics managers would need to be reskilled and/or upskilled so that their competence would match with new work requirements.

Logistics managers' supply chain competence is a multi-dimensional construct attributed by various dimensions of the logistics managers' knowledge, skills, and attitudes or abilities. This is evident not only in various competency models and frameworks advocated by professional bodies but also in the synthesis work from the extant literature related to this research theme. For instance, a systematic literature review conducted by [33] revealed that competencies required for logistics and supply chain professionals are often classified into components, i.e., business–logistics–management, T-shaped, expertise level, SCM skills, or by hard and soft skills. Another observation is that the competency profile of logistics professionals seems to evolve with the addition of contemporary competencies derived from the emerging economic, social, and technological environments. Leveraged on this foundation, the profile of logistics managers' supply chain managerial competence is synthesized as summarized in Table 1, comprising four groups of foundation, core, specialist, and technology–IT, as well as 38 competencies.

Table 1. Supply chain managerial competency profile of logistics managers.

Code	Foundational Competencies	Indicative References
FC1	Adaptability	[4,6,9,10,13–15,27,28,34,35]
FC2	Leadership and emotional intelligence	[4,6,8–10,14,15,24,26–28,32,36]
FC3	Creative thinking and innovation	[13,15,26–28]
FC4	Collaboration and synergy	[4,6,8–10,14,15,26,27]
FC5	Communications	[4,6,8–10,14,15,26,27,37]
FC6	Customer centricity	[4,6,8–10,14,15,26–28]
FC7	Environmental sustainability mindset	[4,6,8–10,14,15,24,26–28,33]
FC8	Outcome-driven	[4,6,8–10,14,15,26–28]
FC9	Systems thinking	[27,28,33]
FC10	Ethical behavior	[4,6,8–10,14,15,24,26–28]
FC11	Digital mindset	[24,27,33,37]

Table 1. *Cont.*

Code	Foundational Competencies	Indicative References
FC12	Resilient mindset	[28,37–39]
FC13	Judgement and decision-making	[4,6,8–10,14,15,24,26–28]
FC14	Teamwork mindset	[4,6,8–10,14,15,26]
FC15	Growth mindset	[18,40]
Code	**Core Competencies**	
CC1	Supply chain orientation	[26,28,40]
CC2	Supply chain strategy	[26–28]
CC3	Supply chain design	[26–28]
CC4	Supply chain and logistics analytics	[26–28,41]
CC5	Supply chain dynamics	[26–28,41]
CC6	Supply chain resilience	[38,42–44]
CC7	Logistics–transport regulations	[4,6,8–10,14,15,24,28,33]
CC8	Reverse supply chain	[4,6,8–10,14,15,24,28,33]
Code	**Specialist Competencies**	
SC1	Transportation and distribution	[4,6,8–10,14,15,18,24,26–28,33]
SC2	Warehousing and facilities management	[4,6,8–10,14,15,18,24,26–28,33]
SC3	Forecasting and inventory management	[4,6,8–10,14,15,18,24,26–28,33]
SC4	Operations planning and execution	[4,6,8–10,14,15,18,24,26–28,33]
SC5	Procurement strategy and management	[4,6,8–10,14,15,18,24,26–28,33]
SC6	Order management and customer service	[4,6,8–10,14,15,18,24,26,28,33]
SC7	Packaging management	[4,6,8–10,14,15,18,24,26,28,33]
SC8	Returns management	[4,6,8–10,14,15,18,24,26,28,33]
Code	**Technology–IT Competencies**	
TC1	Digital awareness and orientation	[24,38,45,46]
TC2	Data analytics/data processing	[24,41,47–51]
TC3	Optimization and simulation ability	[24,50,52,53]
TC4	Computational competency	[24,41,47–51]
TC5	Understanding AI and machine learning applications	[50,54–56]
TC6	Understanding autonomous robotics applications	[50,54–56]
TC7	Understanding Internet of Things applications	[50,54–56]

2.2. Logistics Managers' Individual Work Performance

In the realm of human resource management literature, the work performance of individuals in organizations is an important research issue that has been comprehensively studied. Job performance relates to the act of doing a job, a means to reach a goal or set of goals within a job, role, or organization [57], but not the actual consequences of the acts performed within a job. Job performance is also defined as what an employee is expected to do in relation to the demands of their job when they are hired and covers only those actions or behaviors that are relevant to the organization's goals and measurable in terms of each individual's proficiency [58]. According to Campbell [57], job performance is not a single action but rather a "complex activity" (p. 704). This means that job performance as a construct can be defined in different ways due to the different stages and complexities of a job [59]. Therefore, job performance is analyzed based on behavioral factors as well as the abilities and knowledge of the person who carries out the job. As a result, the nature and complexity at different stages of the job can affect the overall performance of employees.

The concept of individual work performance has therefore been measured by various dimensions and indicators in the extant literature. To this end, Koopmans et al. [60] conducted a systematic review of the relevant studies through 17 generic and 18 job-specific frameworks and derived the dimensions that are frequently used to describe individual work performance, namely, task performance, contextual performance, counterproductive work behavior, and adaptive performance. This framework of individual work perfor-

mance has since been used quite extensively in other studies, for instance, Abun et al. [61], Zeglat and Janbeik [62], and Henttonen et al. [63], to name just a few. In this study, the three most frequently used dimensions of task performance, contextual performance, and adaptive performance were adopted to measure the individual work performance of logistics managers, given that counterproductive work behavior is often treated as an antecedent of work or job performance [64,65].

2.3. Firm Logistics Performance

Performance measurement plays a paramount role in the success of any organization, given that the management of performance cannot be without its control, which in turn relies on its measurement. It can be defined as the process of quantifying the efficiency and effectiveness of action [66], which is essential for organizations to verify whether the results of their strategy implementation align with what they are planned to be. Indeed, the importance of performance measurement has long been emphasized in the extant literature in various contexts [67–69]. In this connection, multiple aspects of organizational performance, e.g., financial performance, and operational performance, are often measured using widely recognized tools such as the Balanced Scorecard [70]. Given the important role of logistics functions within any organization, it is also vital to comprehend how a firm's logistics performance can be enhanced, thus contributing to overall firm performance.

The performance of a firm's logistics operations has been measured quite consistently in the extant literature and is closely related to the popularly used Supply Chain Operations Reference (SCOR) model [71], which measures logistics supply chain performance in terms of reliability, responsiveness, agility, cost, and asset management efficiency. These performance measures of the SCOR model have been used in various industries, such as construction [72], footwear [73], oil and gas [74], or shipping [75]. These are aligned with the logistics supply chain performance categories of time, cost, quality, and other/supporting synthesized by Langley Jnr et al. [76]. These categories of logistics performance have been used intensively in the literature, sometimes with some additions. For example, Irfani et al. [77] developed a logistics performance measurement framework for companies with multiple roles, incorporating key measures of reliability, responsiveness, flexibility, asset management, cost, and safety. Meanwhile, Luu [78] adapted the earlier work of Stank et al. [79] and Bobbitt [80] in measuring logistics performance in terms of time, cost, reliability, flexibility, and meeting customer expectations. Leveraged on the above, firm logistics performance in this study is measured by responsiveness, cost, quality (reliability and consistency), safety, flexibility, and ability to meet customer expectations.

2.4. Conceptual Framework and Hypothesis Development

To reiterate, this research aims to examine the relationships between logistics managers' supply chain managerial competence and firm logistics performance through their individual work performance, in view of their qualifications and work experience. To this end, the overarching theory that underpins the relationship between managers' competence and firm performance is the Resource-based View (RBV), which explains that firm-specific resources that are unique and costly for others to imitate and substitute can help the firm to perform better than its competitors [81]. In this respect, the employees' competence—human capital—makes up part of the firm's intangible resources, apart from tangible resources, which may include knowledge, information and capabilities [82], value-adding activities [83,84], as well as organizational culture [81,85]. The interconnection between a firm's resources as well as capabilities and performance has been intensively researched (for example, see [82,86–93], to name just a few).

In addition, employee's competence as an organizational intangible resource has been found to have effects on firm performance (for example, see [94,95]). Meanwhile, it is envisaged that managerial competence plays a pivotal role in organizational effectiveness [96], and some research has also been conducted to examine the relationship between managerial competence and firm performance. In this connection, it has been argued that

management performance is inextricably linked to organizational effectiveness [97,98], and certain managerial competencies are essential to the success and growth of the firm [99]. However, less empirical evidence is found in relation to this direct relationship [100–102], although it remains an important issue [99,103], mainly because there are many dimensions of organizational performance, while it is not easy to connect individual competence to organizational performance [104,105]. Additionally, despite its importance, the specific link between logistics managers' supply chain managerial competence and firm logistics performance has not yet been fully explored. Hence, the following hypothesis is put forward:

H1: *There is a positive relationship between logistics managers' supply chain managerial competence and their firm logistics performance.*

In the last few decades, employee competence has been found to affect individual performance; it is often used for performance appraisal [106]. The relationship between employee competence and their performance is underpinned by the expectancy theories covered comprehensively in the seminal work of Vroom [107] and Porter and Lawler [108]. It has long been argued that managers' performance (output competencies) is influenced by their attributes, including task-related knowledge and experience (input competencies), and personality characteristics (process competencies) [109]. Furthermore, it is emphasized that an employee with the needed competence is important since their performance, as well as the whole business' success, depends upon it [110]. In this connection, the assessment of employees' competencies can provide an effective method for predicting job performance [100,102,111]. There have been many empirical studies that found a positive relationship between employee competence and job performance (for example, [112–116]). Some specific competencies were also found to affect individual job performance, such as team-building, communication, coordination, execution, and continual learning [117]; HRM [118]; and leadership [119,120]. Nevertheless, there has been scarce research specifically on how logistics managers' supply chain managerial competence affects their individual performance. Hence, the following hypothesis is postulated:

H2: *Logistics managers' supply chain managerial competence positively affects their individual performance.*

From the RBV perspective, the performance of employees in any organization can be considered their organizational resource. Indeed, as employees are involved in all the steps of transforming inputs to outputs through operational processes, their individual performance, collectively, would be essential to enhancing the overall performance of their organizations. This relationship, either directly or indirectly, has been slightly touched upon in the extant literature. For example, Sadikoglu and Zehir [121] found that employee performance partially mediates the relationship between TQM practices and firm performance, whereas Vosloban [122] affirmed that employee's performance influences company's growth, and this positive relationship was also confirmed in a recent study [123]. Top managers, for example, are generally considered to be important in determining firm performance, as evidenced by many studies [124,125]. This impact is based on the expectation that the cognitive and personality of the powerful executives in a firm have an influence over strategies and outcomes, and so would ultimately explain performance of the firms they lead. Despite this, research on how employee performance may affect a firm's logistics performance is scarce, and none has been found in relation to logistics managers. Thus, the following hypothesis is proposed:

H3: *Logistics managers' individual performance has a positive relationship with their firms' logistics performance.*

While it has been hypothesized that there might be a relationship between logistics managers' supply chain managerial competence and firm logistics performance, findings

from earlier studies on the relationships between employee competence and their individual performance, as well as between their individual performance and firm performance, also suggest that the relationship between logistics managers' supply chain managerial competence and firm logistics performance might be mediated by their individual performance. Only a few studies touched upon this potential mediated relationship, but only in the context of organizational performance [126,127]. Therefore, the following hypothesis is put forward:

H4: *Logistics managers' individual performance mediates the relationship between their supply chain managerial competence and firm logistics performance.*

Meanwhile, while it is generally hypothesized that employees with the required competency profile would expect higher level of individual work performance and contribute more effectively to their firms' logistics performance, these relationships might be moderated by employees' related factors, such as their work experience. This is based on the premise that there is a high correlation between employee competence, their job performance, and firm performance through job performance, as reflected in the extant literature [128]. In this connection, work experience, which is often operationalized as the length of service in an occupation [129], is frequently employed as a criterion to assess job applicants [130]. Hence, in the context of this research, it is also paramount to explore whether the relationships between logistics managers' supply chain managerial competence and their work performance and firm logistics performance would be moderated by their work experience. Logically, when an employee has accumulated more years at the workplace, they will be more experienced in leveraging their competence in producing the outputs. Thus, the following hypotheses are proposed:

H5a: *The relationship between logistics managers' supply chain managerial competence and their individual performance is positively moderated by their work experience.*

H5b: *The relationship between logistics managers' supply chain managerial competence and their firm logistics performance is positively moderated by their work experience.*

In a similar manner, the relationships between employee competence and their individual performance as well as their firm performance might be affected by various factors, including the educational level of employees. There is a close link between educational qualification and competence, and the former is often seen as a key determinant of the latter, although it is imperfect [131–133]. It may be argued that employees with higher level of education may be more "learned" in transforming their knowledge, skills, and abilities into concrete outputs. However, in the context of logistics and supply chain management, this potential interaction has not yet been comprehensively explored. This leads to the following proposed hypotheses:

H6a: *The relationship between logistics managers' supply chain managerial competence and their individual performance is positively moderated by their level of education.*

H6b: *The relationship between logistics managers' supply chain managerial competence and their firm logistics performance is positively moderated by their level of education.*

Figure 1 illustrates the conceptual framework and hypotheses to be empirically tested in this research.

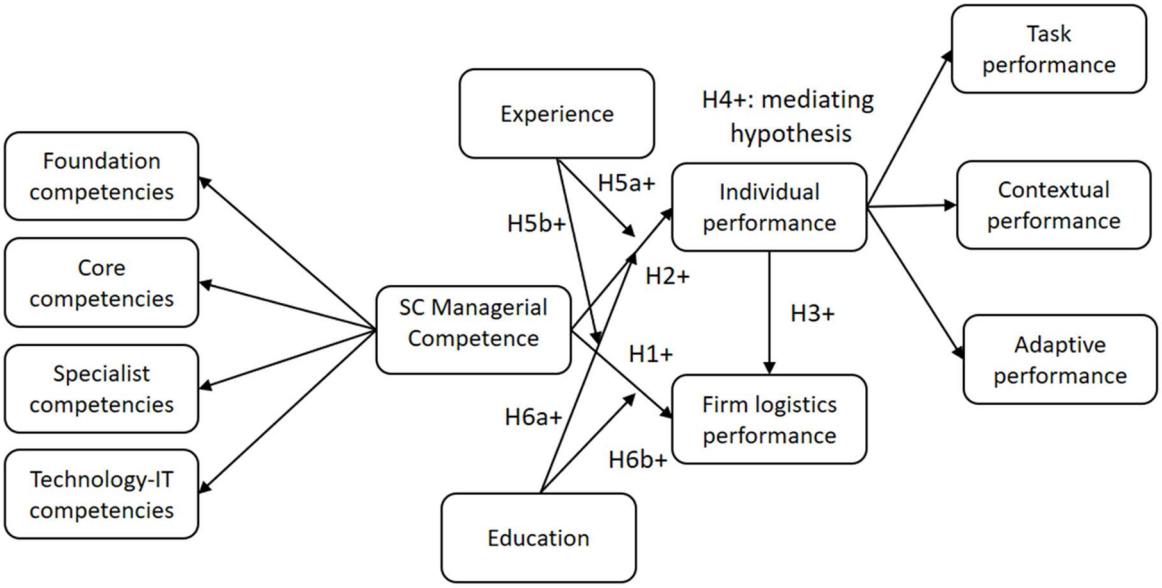

Figure 1. Conceptual framework and proposed hypotheses.

2.5. The Context of Vietnam

Vietnam, a transition economy that is listed among the top five in the ASEAN area, is chosen as the context of this study. Despite the challenging global outlook caused by the COVID-19 pandemic, Vietnam has exhibited an average economic growth rate of 8.02%, a figure which brings it in line with other prominent Asian nations such as China and Japan [134,135]. Furthermore, Vietnam's logistics sector has experienced rapid growth, 14–16% annually in 2022 [136], making it an important area of focus for this study. Despite the aforementioned strengths, the stability of its LPI (Logistics Performance Index) and logistics competence rankings is comparatively less consistent when compared to other countries in the region, such as Singapore and the Philippines, whose rankings have regularly shown improvement [137]. With a considerable number of logistics firms exceeding 30,000 in the nation, it is worth noting that over 97% of these entities fall under the category of micro-, small-, and medium-sized enterprises, together contributing to only 30% of the market share [138]. This context highlights the importance of developing the appropriate capability for logistics professionals in the country and is thus an appropriate setting for investigating the interrelationships between their current profile of competence and individual performance, as well as the logistics performance of their firms.

2.6. Dynamic Capabilities Theory (DCT)

While this study successfully applies the Resource-Based View (RBV) to establish that logistics managers' competencies are valuable, rare, and difficult to imitate, the theoretical grounding could be expanded to include Dynamic Capabilities Theory (DCT). This theory emphasizes the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. By matching with DCT, this study could make the case that the competences of logistics managers not only provide important resources but also adaptive capabilities that help companies to properly react to market volatility and disturbances, like as presented by the COVID-19 epidemic. Including Human Capital Theory can also help one to better appreciate how experience and education increase organizational and personal success. This would underline how important human capital is in maintaining competitive advantage when created by constant learning and experience, therefore complementing the stationary character of resources stressed by RBV.

Dynamic Capabilities Theory (DCT) underscores the firm's capacity to integrate, build, and reconfigure internal and external resources to address rapidly evolving environments. Applying DCT to this research enriches the theoretical foundation by emphasizing that the

competencies of logistics managers are not just static assets but are adaptable capabilities that enable organizations to respond proactively to changes in the market and technological landscape. The logistics industry is characterized by fast-paced technological advancements and unpredictable disruptions such as the COVID-19 pandemic. By incorporating DCT, this research can assert that logistics managers' competencies—particularly those related to technology–IT, strategic thinking, and resilience—equip firms to adapt swiftly to such changes. For example, a manager's ability to leverage advanced IT tools, optimize operations under pressure, or reconfigure logistics strategies contributes to the firm's agility and resilience. Moreover, DCT suggests that competitive advantage stems not only from possessing valuable resources but from the ability to renew and adapt these resources. This research could highlight that logistics managers who engage in continuous learning and upskilling demonstrate dynamic capabilities that support sustained performance. Competencies such as adaptability, systems thinking, and creative problem-solving allow for these managers to identify opportunities and mitigate risks, enhancing the firm's response to complex and volatile conditions. In addition, managers with robust supply chain and managerial competencies often integrate and reconfigure tangible and intangible resources effectively. For example, logistics managers with strong strategic foresight and leadership capabilities can realign team efforts, optimize workflows, and implement digital solutions, aligning with DCT's focus on resource orchestration for strategic change [139–142].

2.7. Human Capital Theory

Human Capital Theory posits that the knowledge, skills, experience, and abilities of employees are essential assets that contribute significantly to an organization's productivity and performance. This theory is particularly relevant for explaining how educational background and work experience enhance individual and organizational performance. This research shows that logistics managers' competencies, amplified by their education and experience, positively impact their individual and organizational performance. By applying Human Capital Theory, this research can underscore that education provides managers with the foundational knowledge and strategic insights needed for effective decision-making. Experience enhances this by developing situational awareness and useful abilities that are vital in hectic operating situations. These components taken together provide a strong basis of human capital that improves organizational performance. Further stressed by Human Capital Theory is the fact that more production results from training and development investments. This research can illustrate how firms that invest in targeted educational programs for logistics managers—such as courses on advanced supply chain analytics, leadership training, and digital tool mastery—are essentially enhancing their human capital. This translates into improved task performance, adaptive behaviors, and overall firm logistics performance, as demonstrated in the empirical results. Moreover, a major inclusion of Human Capital Theory into this research clarifies how human capital serves as a constant competitive advantage. Particularly when these talents are constantly improved by lifelong learning and actual experience, business managers with a mix of fundamental, core, and technological–IT competencies are more difficult for competitors to copy. This supports the results of research showing that experienced and highly educated managers make more of a contribution to the success of the company, in line with Human Capital Theory's claim that these kinds of resources are absolutely essential for long-term strategic orientation [143–146].

2.8. Potential Boundary Conditions

Technological improvements and an organization's digital maturity are crucial factors. Companies that have adopted sophisticated technologies such as AI and big data analytics may enhance the influence of management abilities on performance results, since these talents are more effectively used with a strong technological framework. In contrast, in organizations with lower technological maturity, the same competences may fail to provide substantial performance enhancements owing to constraints in digital capabilities and

worker digital literacy [147–149]. Furthermore, industry-specific traits serve as crucial boundary criteria. In sectors with rigorous regulatory frameworks, such as healthcare or aerospace logistics, expertise in compliance and regulatory understanding is essential and may greatly impact performance. The complexity of supply chain operations across various sectors might influence the efficacy of management abilities. Though smaller businesses may not be equally impacted, complex sectors like electronics or automotive require improved skills for optimum operation. Moreover, important elements are the size of the company and the state of the economic surroundings. Smaller enterprises, which often depend more on individual contributions, may receive more advantages from management abilities than bigger organizations, where a single manager's impact might be diminished inside expansive frameworks. Moreover, the national culture and economic stability of the operational environment might influence the use of these competences. In economically unstable regions or cultures that prioritize teamwork and collectivism, competencies such as resilience and collaboration may be more essential, thereby affecting the competency–performance relationship [150–152].

2.9. Non-Linear Relationships

When exploring the relationships between logistics managerial competencies and performance outcomes, considering potential non-linear relationships is essential to fully capture the complexities of these interactions. Non-linear dynamics may reveal more nuanced insights that linear models often overlook, such as diminishing returns or threshold effects that could fundamentally alter strategic interpretations and practical applications of findings. One significant non-linear relationship that should be explored is the possibility of diminishing returns. Initially, as logistics managers' competencies increase, performance improvements at both the individual and firm levels may be substantial. However, beyond a certain point, additional increases in competencies may result in smaller performance gains or even stagnation. This points to a concave connection wherein the advantages decrease as the ideal level of competence [153,154] is reached. For instance, while modest increases in technological competency could significantly enhance performance, mastery of every complex detail of advanced logistics systems may not yield proportional returns depending on the technological capacity of the company or declining marginal value of knowledge application. Furthermore, another important non-linear pattern to take into account is the existence of threshold effects, wherein competences would have to reach a certain level before significant performance gains are seen. Under this level, the effect on performance might be very small or nonexistent. For instance, basic competency in digital tools may not significantly impact a logistics manager's contribution to firm performance; however, once a certain level of proficiency is reached, the relationship could become substantially positive and more pronounced. This suggests a step function or sigmoidal relationship where performance accelerates only after surpassing a critical competency threshold, indicating that investments in competency development may need to reach certain benchmarks to yield meaningful results

3. Materials and Methods

3.1. Research Design and Sampling Procedure

This research guaranteed participant anonymity and secrecy to minimize the possibility of common method bias by thus lowering response biases and social desirability effects. The carefully crafted survey questions were meant to emphasize the need for honest responses. The test indicated that common method bias was not a substantial concern as a single component could not explain most of the variations. In addition, because of the snapshot character of the data collecting, the use of a cross-sectional design in this research naturally limits the ability to establish causation. This architecture limits the capacity to infer time-sequenced causation even if it is efficient for first relationship investigation. The cross-sectional character calls for careful interpretation of the data as associations rather than causal relationships.

The association between supply chain competences of logistics managers, their individual performance, and company logistics performance was investigated using a cross-sectional survey approach. This design's decision fits past logistics and supply chain management research requiring empirical confirmation of theoretical frameworks (e.g., [24,30]). When gathering information from a large audience, particularly when looking at management level factors across companies, surveys are efficient.

3.1.1. Sampling Type

This study utilized a stratified purposive sampling approach to capture a representative subset of logistics managers from different sub-sectors within Vietnam's logistics industry. To reflect the variety of jobs and experiences in the sector, stratified sampling guaranteed that participants were chosen from many sub-sectors—land, transportation, water, air, warehouse, postal, and courier activities—randomly [155]. Target managers in strategic decision-making roles using deliberate selection to guarantee that the information gathered was pertinent and perceptive.

3.1.2. Selection Procedure

The sample came from the InfoQ database kept by independent, credible research firm GMO, which boasts a network of around 800,000 validated experts. This source gave qualified logistics managers current records of their jobs and experience access. The criteria for selection comprised the following: current employment within the logistics sector as defined by Section H of the Vietnamese economic sector classification; managerial positions at senior or middle levels to ensure familiarity with firm operations and performance metrics; full-time employment to guarantee that respondents had adequate involvement in their organizations' strategic and operational processes.

This procedure allowed for a targeted selection of participants who could provide expert insights into the constructs under investigation.

3.1.3. Sample Size and Justification

Based on the "10-times rule", advised by Hair et al. [156], the minimum sample size was calculated to be ten times the largest number of structural routes pointed at any latent construct in the model. Six routes were the most complicated model used in this study and called for at least 60 subjects. But this study sought a larger sample size in order to improve generalizability and statistical strength.

Reliable PLS-SEM analysis (e.g., [157,158]) has shown in past research on management and logistics that a sample size of 200 or more is sufficient. When examining mediation and moderation effects especially, this threshold enables strong path estimates and valid hypothesis testing. As such, 481 possible responders received the first invitation and responded 345 times. After data cleansing and elimination of incomplete or invalid replies, 272 valid responses were kept for analysis, much beyond the minimum need.

The selected sample size guarantees dependable results and enough statistical power for the suggested moderated mediation model, therefore supporting the analytical goals of this study and being in line with highest standards.

3.1.4. Data Collection Process

The survey was administered online to facilitate accessibility and timely responses. Participants were requested to use validated measures from past research (e.g., [26,60]) to evaluate their competences, performance, and firm logistics results together with demographic information. Screening questions verified eligibility, therefore guaranteeing that only individuals satisfying the selection criteria provided data.

3.2. Measurement of Constructs

Table 2 contains all measures of this study. Well-established scales from the literature to measure the main constructs were adopted, as elaborated in Section 2. Specifically, supply

chain managerial competencies were assessed by a second-order construct comprising four types of competencies: foundational competencies, core competencies, specialist competencies, and technology–IT competencies. This construct was developed through a rigorous process of comprehensive literature review, summarization, and thematic synthesis. A total of 38 individual items were derived from this process. Another second-order construct, individual performance, was evaluated using three dimensions: task performance (five items), contextual performance (eight items), and adaptive performance (six items). Meanwhile, firm logistics performance (the dependent variable) was assessed using eight items reflecting various aspects of logistics performance, i.e., responsiveness, cost, quality (reliability, consistency), safety, flexibility, and meeting customer expectations.

Table 2. Scale items and evaluation.

	Outer Loading	t-Value
Foundation competencies (AVE = 0.53; CR = 0.94)		
FC1—Adaptability	0.824	32.28
FC2—Leadership and emotional intelligence	0.697	18.46
FC3—Creative thinking and innovation	0.706	17.43
FC4—Collaboration and synergy	0.849	34.37
FC5—Communications	0.776	23.35
FC6—Customer centricity	0.715	17.48
FC7—Environmental sustainability mindset	0.660	12.31
FC8—Outcome-driven	0.828	37.56
FC9—Systems thinking	0.717	18.95
FC10—Ethical behavior	0.720	20.33
FC11—Digital mindset	0.652	15.05
FC12—Resilient mindset	0.738	21.74
FC13—Judgement and decision-making	0.657	14.13
FC14—Teamwork mindset	0.683	14.81
FC15—Growth mindset	0.699	17.22
Core competencies (AVE = 0.57; CR = 0.91)		
CC1—Supply chain orientation	0.792	25.00
CC2—Supply chain strategy	0.812	23.87
CC3—Supply chain design	0.785	18.14
CC4—Supply chain and logistics analytics	0.651	9.99
CC5—Supply chain dynamics	0.742	12.63
CC6—Supply chain resilience	0.789	17.54
CC7—Logistics–transport regulations	0.785	27.21
CC8—Reverse supply chain	0.643	7.67
Specialist competencies (AVE = 0.56; CR = 0.91)		
SC1—Transportation and distribution	0.813	18.28
SC2—Warehousing and facilities management	0.728	11.74
SC3—Forecasting and inventory management	0.767	14.00
SC4—Operations planning and execution	0.737	10.27
SC5—Procurement strategy and management	0.732	12.13
SC6—Order management and customer service	0.767	13.64
SC7—Packaging management	0.743	9.65
SC8—Returns management	0.680	6.74
Technology IT competencies (AVE = 0.77; CR = 0.96)		
TC1—Digital awareness and orientation	0.825	33.20
TC2—Data analytics/data processing	0.956	117.99
TC3—Optimization and simulation ability	0.872	51.86
TC4—Computational competency	0.921	48.54
TC5—AI and machine learning	0.864	58.61
TC6—Ability with autonomous robots	0.840	42.41
TC7—Ability with Internet of Things	0.840	38.52

Table 2. *Cont.*

	Outer Loading	t-Value
Task performance (AVE = 0.54; CR = 0.86)		
TP1—I consider my overall work quality of high level	0.685	17.58
TP2—I always plan and organize my work well	0.678	21.95
TP3—I am always result-oriented in my work	0.783	25.85
TP4—I always know how to prioritize the tasks of my work	0.794	34.34
TP5—I consider my work efficiency of high level	0.742	23.88
Contextual performance (AVE = 0.56; CR = 0.87)		
CP1—I always take initiative in my work	0.546	11.47
CP2—I always accept and learn from feedback	0.641	13.67
CP3—I always cooperate with others in my work	0.694	16.90
CP4—I always communicate effectively with others in my work	0.633	14.44
CP5—I always show responsibility in my work	0.649	14.46
CP6—I am always customer-oriented in my work	0.779	25.57
CP7—I always show creativity in my work	0.793	27.88
CP8—I always do not hesitate to take on challenging work tasks	0.627	14.78
Adaptive performance (AVE = 0.53; CR = 0.87)		
AP1—I always cope well with stress, difficult situations, and adversities in my work	0.753	21.92
AP2—I always come up with creative solutions to difficult problems in my work	0.733	22.27
AP3—I always keep my job knowledge up to date	0.741	20.76
AP4—I always keep my job skills up to date	0.681	17.87
AP5—I always handle uncertain and unpredictable work situations well	0.780	24.18
AP6—I always adjust work goals when necessary, depending on the work situation	0.688	19.10
Firm logistics performance (AVE = 0.53; CR = 0.90)		
FLP1—In general, our firm responds quickly to customer needs and requirements	0.712	21.52
FLP2—In general, our firm fulfils customer orders as promised	0.717	23.51
FLP3—In general, our firm maintains low total logistics costs	0.754	28.52
FLP4—In general, our firm fulfils customer orders accurately	0.770	30.62
FLP5—In general, our firm has low service disruption frequency	0.736	24.95
FLP6—In general, our firm fulfils customer orders without any damage or loss	0.677	18.29
FLP7—In general, our firm is flexible in handling different customer requirements	0.724	20.82
FLP8—In general, our firm's logistics performance matches customer expectations	0.720	20.54

Notes: CR: composite reliability; AVE: average variance extracted.

3.3. Design and Administration of Research Instrument

Following the approach of Brislin [159], the survey questionnaire was initially composed in English. Subsequently, the forward and backward translation technique was employed to translate the survey into a Vietnamese version and vice versa. A comparison was conducted between the revised English version and the original English version to identify any syntactical differences or errors. After ensuring that both English versions were consistent, the Vietnamese version of the questionnaire was distributed to the participants. Prior to answering the main questions, screening questions were asked to identify and exclude those who did not work in the field of logistics as a manager. The main

section comprises four parts: The first part is designed to collect demographic information from respondents, such as the type of firm, the business sector, firm size, etc., for the purpose of classification. The three remaining parts of the questionnaire relate to research constructs, i.e., current possession of supply chain managerial competencies, individual performance, and firm logistics performance. Participants were asked to evaluate their opinions using a Likert scale that ranges from 1 (strongly disagree) to 5 (strongly agree), except for the construct of supply chain managerial competencies, which is from very low to very high. Finally, respondent's education and experience were employed as the moderating variables whereas firm size (in terms of full-time equivalent employees) was utilized as control variable to assess the firm's performance. All participants provided informed consent, and their responses were maintained in a fully anonymous manner. The filter questions for screening were employed in order to exclude respondents who did not satisfy the selection requirements, such as those employed in non-logistics industries or holding non-managerial employment positions.

3.4. Data Analysis Method

In this study, PLS-SEM was applied as the main data analysis method to empirically test the proposed model and hypotheses. With higher-order constructs (managerial competencies and individual performance) and complex moderated mediation hypotheses (H_{5a}, H_{5b}, H_{6a}, and H_{6b}), this study was appropriate for using PLS-SEM [160]. Furthermore, in the logistics context, it was better to use the SEM methodological tool due to the significance of validity tests in rigorous theoretical research [157].

4. Results

4.1. Demographic Information

Table 3 displays the participants' demographic characteristics and the respective organizations they represent. It can be seen that majority of the participants are mid- and low-level managers, accounting 56.25% of the sample. The remaining 43.75% of the respondents are senior managers. A significant proportion of participants possessed a bachelor's degree (69.11%) and a master's degree (30.15%), while PhD and vocational college diploma holders made up 0.37% each. Most respondents have a minimum of two years of work experience, accounting for 99.26% of the sample. In terms of firm ownership types, majority of participating firms are limited liability and stock holding, accounting for 55.88% and 40.44%, respectively. A total of 3.68% of the remaining firms are classified under various ownership categories, including state-owned, private, joint ventures, foreign-owned, and other classifications. A total of 46.69% of the participants are employed in firms with 51–100 employees, whereas small businesses with 11–50 workers constitute 28.31% of the sample. The remaining 25% of respondents are affiliated with larger companies. From this demographic profile, it can be concluded that participants in this study are eligible to provide their expert assessment relating to constructs in this research.

Table 3. Profile of respondents (n = 272).

Demographics	*n*	%	Demographics	*n*	%
Managing position			*Firm ownership*		
Senior manager	119	43.75	Limited liability	152	55.88
Sale manager	69	25.37	State-owned	3	1.10
Account manager	84	30.88	Stock-holding	110	40.44
Educational qualification			Private	3	1.10
Vocational college diploma	1	0.37	Joint venture	1	0.37
Bachelor's degree	188	69.11	Foreign-owned	2	0.74
Master's degree	82	30.15	Others	1	0.37
PhD degree	1	0.37			

Table 3. *Cont.*

Demographics	*n*	%	Demographics	*n*	%
Experience (years)			*Firm size (Number of Employees)*		
≤1 years	2	0.74	<10	0	-
2–5 years	82	30.15	11–50	77	28.31
6–10 years	108	39.71	≤51–100	127	46.69
11–20 years	79	29.04	≥100	68	25.00
≥20 years	1	0.37			

4.2. Measurement Model

The reliability and validity of all scale items were assessed using Smart-PLS software. Regarding the reliability results, Table 2 demonstrates that most of the outer loadings ranged from 0.546 to 0.956, surpassing the threshold of 0.50 as recommended by Hulland [161]. Additionally, their corresponding t-bootstrap values (falling within the range of 6.74 and 117.99) are much greater than 1.96. Furthermore, all of the average variance extracted (AVE) and composite reliability (CR) values satisfy the criteria that AVE values should exceed the threshold of 0.05 and CR values should be higher than the cut-off value of 0.70 [158]. The results demonstrate that all the scales exhibited a satisfactory level of reliability.

The discriminant validity analysis method suggested by Fornell and Larcker [162] was employed. The square roots of AVE, as indicated in Table 4, range from 0.73 to 0.88, all of which are greater than the equivalent correlation coefficients ranging from 0.01 to 0.63. These coefficients likewise satisfy the acceptance threshold of 0.70 and do not show any correlations above the CR values. In addition to Fornell and Larcker's approach, the Heterotrait–Monotrait (HTMT) test [163] provided confirmation of the constructs' discriminant validity. All HTMT values ranged from 0.13 to 0.77, which is below the threshold of 0.90 [164].

Table 4. Goodness of measurement scales.

	1	2	3	4	5	6	7	8
1. Foundation competencies	**0.73**							
2. Core competencies	0.42 **	**0.75**						
	0.47							
3. Specialist competencies	0.43 **	0.47 **	**0.75**					
	0.47	*0.54*						
4.Technology IT competencies	0.65 **	0.38 **	0.37 **	**0.88**				
	0.45	*0.41*	*0.40*					
5. Task performance	0.31 **	0.24 **	0.19 **	0.37 **	**0.74**			
	0.36	*0.28*	*0.24*	*0.36*				
6. Contextual performance	0.25 **	0.32 **	0.19 **	0.19 **	0.60 **	**0.75**		
	0.29	*0.37*	*0.25*	*0.29*	*0.73*			
7. Adaptive performance	0.26 **	0.17 **	0.13 *	0.19 **	0.63 **	0.60 **	**0.73**	
	0.30	*0.20*	*0.20*	*0.28*	*0.72*	*0.72*		
8. Firm logistics performance	0.21 **	0.10	0.01	0.13 *	0.43 **	0.46 **	0.45 **	**0.73**
	0.23	*0.14*	*0.13*	*0.22*	*0.53*	*0.54*	*0.52*	

Notes: bold diagonal number: square root of AVE; 1st value = bootstrapped correlation between variables (off-diagonal); 2nd value (italic) = Heterotrait–Monotrait ratio; *, **: correlations significant at 5% and 1% levels, respectively (two-tailed *t*-test).

4.3. Structural Model

Five hierarchical models were developed to test the corresponding hypotheses. Model 1 examined the direct effect of supply chain managerial competencies (or managerial competencies, MCs) on firm logistics performance (FLP). Model 2 expanded on Model 1 by including individual performance (IP) as a mediating variable. Models 3 and 4 further expanded on Model 2 by introducing experience and education as separate moderating vari-

ables in the relationship between MCs, IP, and FLP. Lastly, Model 5 was the proposed model that incorporated all the indirect effect and accumulated moderators. PLS-SEM analysis was performed with 5000 bootstrapped runs to estimate all the required parameters.

The results presented in Table 5 indicate that the adjusted R^2 values for the dependent variables (i.e., IP and FLP) ranged from 0.12 to 0.44. These values surpass the threshold of 0.10 and are therefore considered acceptable according to Hair et al. [158]. All hypotheses are significantly supported with a confidence level of 95%. MCs statistically affect IP, which in turn has a positive impact on the FLP. It confirms the mediation effect of individual performance in the relationship between managerial competencies and logistic performance of the firm. Furthermore, the manager's experience and educational background play the role as moderators in the competencies–performance relationship, both at the individual and organizational level. The model also confirms the positive impact of firm size as a control variable.

Table 5. Hypothesis testing results.

		Model 1	Model 2 (With IP as the Mediating Variable)		Model 3 (With IP as the Mediating Variable and Experience as the Moderating Variable)		Model 4 (With IP as the Mediating Variable and Education as the Moderating Variable)		Model 5 (With IP as the Mediating Variable and Experience and Education as the Moderating Variable)	
Dependent Variable		**FLP**	**IP**	**FLP**	**IP**	**FLP**	**IP**	**FLP**	**IP**	**FLP**
	Independent variable									
H1, H2	MCs	0.18 (2.54)b	0.35 (5.51)c	−0.002 (0.03)	0.48 (6.86)c	0.07 (1.04)	0.38 (7.20)c	0.04 (0.60)		0.10 (1.63)
H3	IP			0.52 (9.88)c		0.48 (7.77)c		0.46 (9.04)c		0.40 (6.14)c
H5	Experience				0.41 (8.99)c	0.02 (0.36)			0.41 (9.20)c	0.05 (1.03)
H6	Education						0.06 (1.12)	0.09 (1.61)	0.09 (1.79)a	0.10 (1.71)a
H5a, H5b	Experience × MCs				0.39 (4.15)c	0.12 (1.96)b			0.33 (4.69)c	0.11 (2.08)b
H6a, H6b	Education × MCs						0.32 (4.43)c	0.16 (2.44)b	0.26 (4.62)c	0.15 (2.43)b
	Control variable									
	Firm size	0.31 (5.47)c		0.31 (6.21)c		0.30 (5.98)c		0.32 (6.79)c		0.32 (6.48)c
Adjusted R^2		0.13	0.12	0.36	0.37	0.37	0.22	0.39	0.44	0.39
Indirect effect				Estimate		LLCI		ULCI		
H4	MC → IP → FLP			0.19 (4.33)c		0.13		0.27		

Notes: MCs: managerial competencies; IP: individual performance; FLP: firm logistic performance; numbers in brackets: *t*-values; a, b, c denotes significance at 10%, 5%, and 1%, respectively (two-tailed *t*-test); LLCI: lower level of the 95% confidence interval; ULCI: upper level of the 95% confidence interval.

In more detail, H_1 was supported by the positive relationship between MCs and FLP (Model 1: β = 0.18, t-value = 2.54). H_2, stating that MCs positively affect IP, was confirmed, as the relationship was positive and significant (Models 2, 3, 4, and 5; β from 0.35 to 0.48 and t-values higher than 1.96). The positive impact of IP on FLP as predicted in H_3 was

confirmed (Models 2, 3, 4, and 5 with β ranging from 0.40 to 0.52 and t-value from 6.14 to 9.88). To examine H_5 and H_6 for moderators' effects, two interacted variables between managerial competencies and two moderators (experience and education) were created to avoid multicollinearity issues [165]. The positive and significant results of Model 3 and Model 4 (β > 0 and t-value > 1.96) were confirmed, therefore supporting H_5 and H_6, respectively, proposing that the impact of MCs on IP and FLP is higher at the higher level of experience and education.

Additionally, the indirect effect of MCs on FLP via IP was investigated with positive and significant results (β = 0.19; t-value = 4.33), thus supporting H_4. The confidence interval of the effect does not contain zero at 95% and has LLCI = 0.13 and ULCI = 0.27. The direct effect of MCs on FLP was insignificant and decreased from 0.18 (Model 1) to 0.10 (Model 5) when IP was added as a mediator (Model 5; β = 0.10, t-value = 1.63), suggesting that IP fully mediates the MC–FLP relationship. Meanwhile, the effect of firm size as the control variable was supported in all models (β > 0, t-value > 1.96), which suggests that larger firms tend to achieve better performance outcomes compared to smaller-sized firms.

Figure 2 presents the bootstrapped testing results for Model 5 of this research.

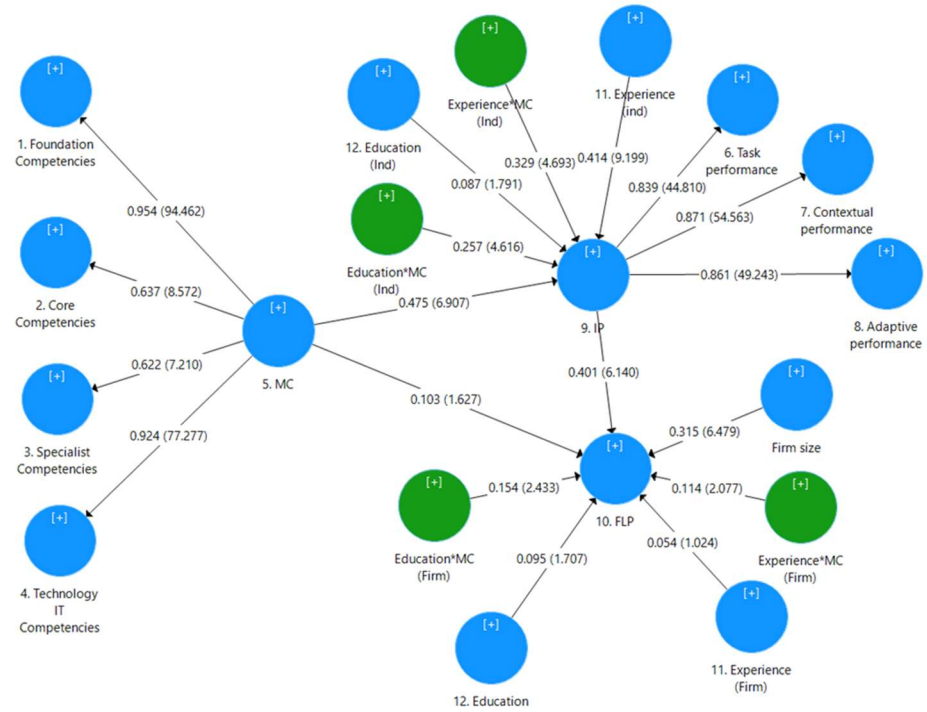

Figure 2. Bootstrapped testing results for Model 5.

5. Discussion

Results from this research lead to some interesting and significant findings and insights. First, it is reflected in this research that the supply chain managerial competency profile of logistics managers should be all-rounded and consist of foundation, core, specialist, and technology–IT competencies, encompassing not only the breadth but also the depth of the competency spectrum. The composition of this profile, including both generic and specific, "soft" and "hard", and contemporary competencies corresponding to socioeconomic, environmental, and technological drivers highlights an important tenet that the development of such a profile should be contingent and evolving.

Secondly, results from this study provide additional empirical evidence to the relationships between competencies and performance, which was claimed to be lacking empirical support and clarity [100,102]. Specifically, it was confirmed that those employees in general, and logistics managers in particular, with required profile of competence tend to perform well in their individual performance both in terms of task, contextual and adaptive

performance, and through that positively contributing to the logistics performance of their firms. These results reenforce two significant aspects of organizational management. On the one hand, human capital, i.e., the competence and performance of employees and managers, is recognized as invaluable intangible asset that is closely associated with and contributes significantly to firm performance. On the other, the development and continual maintenance of the required competencies for employees and managers are crucial for the sustainable performance of the firms.

Meanwhile, the positive and significant moderating effects of experience and education put a perfect finishing touch to the comprehension of the role of competence in organizational development. While basic academic curriculum and industry standards are developed to equip employees and managers with the required competencies, the performance of their own and their firms would be amplified by the strengthening of education and work experience levels. This is considered an interesting finding that highlights the significance of lifelong learning, both formal (in institutions) and informal (at the workplace), and its effects on performance both at the individual and organizational levels.

Although this study mostly addresses Vietnam's logistics industry, the results have implications outside the national setting. The logistics managers in other developing nations must also be equipped with flexibility, leadership skills, and knowledge of technology. Countries with comparable economic phases—including Indonesia, Nigeria, and Brazil—often struggle with infrastructure, limited access to creative logistics technology, and workers with insufficient current skill levels. Knowing how supply chain management techniques influence organizational and human success in Vietnam would enable other developing countries to make parallels to strengthen their own logistics strategies. The positive effects of knowledge and experience on performance might direct training programs and policy decisions in these nations thus that their logistics sectors follow international norms.

This study's results have considerable significance for other developing economies where logistics effectiveness is crucial for economic advancement. Developing nations often encounter obstacles like resource limitations, unstable markets, and the need for rapid adaptation to technological progress. The findings indicate that the capabilities of logistics managers may mitigate performance deficiencies, highlighting the significance of specialized education and hands-on experience. Policymakers in other developing economies can take similar steps to increase their workforce's capabilities, leveraging insights from Vietnam's logistics advances to boost resilience and competitiveness.

The logistics business in wealthy countries such as the United States, Germany, and Japan benefits from advanced infrastructure, established supply networks, and extensive automation. In these markets, management capabilities emphasize strategic innovation and leadership in technology adoption. In Vietnam and other emerging nations, the focus is mostly on essential qualities like as flexibility and basic IT skills. This distinction underscores the disparate strategies required: industrialized economies enhance efficiency via advanced technologies, whilst emerging markets must concentrate on establishing fundamental competences and promoting experience development. Grasping this difference facilitates the creation of customized competence development programs that address the disparities between the requirements of emerging and established markets, establishing a basis for future improvements in global logistics performance.

Although earlier studies have mostly investigated the skills needed for logistics professionals and their impact on job performance (e.g., [18,24]), few studies have especially looked at how these competencies translate into firm-level logistics performance by means of individual performance as a mediator. This study closes that gap by empirically confirming, mediated by human performance and experience, the whole pathway from management abilities to firm performance, controlled by education and background. Moreover, whereas previous studies have mostly addressed the effect of managerial competencies on job performance generally, this study especially positions itself by looking at the complex interactions between these competencies and firm logistics performance in the frame-

work of the Vietnamese logistics industry, thus bringing region-specific knowledge to the worldwide debate.

This study makes mostly theoretical contributions in terms of extension and contextual application of the Resource-Based View (RBV). This study validates that, represented in the abilities of logistics managers, human capital is a unique, precious, and distinctive resource for company performance. This study offers empirical evidence for the claim that intangible assets have to be actively maintained to provide organizational advantages by demonstrating that individual performance moderates the link between competences and corporate performance. Furthermore, the inclusion of educational and experience moderators adds another level of complexity by implying that these elements may magnify the value of competences, therefore strengthening RBV theory with understanding of the circumstances in which human capital has maximum impact.

From a practical standpoint, the findings underscore the critical need for targeted education and training programs that focus on developing comprehensive managerial competencies. According to this research, logistics companies should support the capabilities of their management team by investing in both official education and chances for experience learning. The shown favorable impact of experience and education on performance results suggests the need of strategic human resource strategies targeted at ongoing professional development and lifelong learning. Furthermore, this study emphasizes the requirement of top management in logistics companies understanding individual performance as a major mediator in reaching goals at the level of the company. Knowing this link helps one to use performance management techniques using the current skills of logistics managers, therefore guaranteeing that these capabilities really convert into organizational success.

6. Conclusions

In this research, the interrelationships between logistics managers' supply chain managerial competence and their individual performance as well as their firms' logistics performance, in light of their educational and work experience levels, in the context of Vietnam, were examined. It was confirmed that the individual performance of logistics managers is positively and significantly associated with their supply chain managerial competencies, and it also fully mediates the contribution of their competencies to the firm logistics performance where they belong. Additionally, the important role of education and work experience levels as accelerators for those relationships was also confirmed. These significant empirical findings highlight some important academic and managerial implications of this research.

In terms of academic contribution, this research expands and strengthens the application of the RBV theory in the context of human resource development in the logistics industry. Specifically, findings from this research confirm that human capital can be valuable, rare, and difficult to imitate, especially when boosted by education and experience, and thus significantly and positively contribute to enhancing firm performance in the logistics and supply chain domain. However, to maintain this differentiated advantage, the competence of this human capital must be nurtured and sustained on a lifelong basis through continual education and training, in order to fit the contemporary "reality" advocated in the "Theory of The Business".

For senior management in the logistics industry, this study sheds light on important aspects of human resource management for policy development and implementation. With the understanding of the confirmed interrelationships in this study, the senior management of logistics firms should design, develop, and implement corresponding education and training programs, both internally, i.e., on-the-job, and externally, i.e., at institutions, for their employees and managers, in order to build, grow, and sustain their required competencies. Additionally, corresponding policies and strategies for the recruitment and retention of employees and managers with required competencies are essential to the sustained performance and competitive advantage of these firms.

While the empirical evidence in this research is mainly from the logistics industry in Vietnam, further similar studies in other industries and in other research contexts in the future should be conducted to enhance the reliability and validity of this important research.

7. Limitations and Future Directions

Notwithstanding the significant contributions of this research, certain limitations warrant acknowledgement. This study's scope was confined to Vietnam's logistics industry, perhaps limiting the applicability of the findings to other nations or industries with distinct economic and operational characteristics. Subsequent research may repeat this study in diverse geographical locations or sectors to corroborate and enhance these findings.

Secondly, the cross-sectional, single moment data gathering approach of this study limits the ability to deduce causality. Longitudinal studies are said to investigate temporal changes and provide a more complete understanding of the development of managerial skills and their long-term consequences on corporate success.

Thirdly, although this study took work experience and education into consideration as moderators, other possible influencing elements including organizational culture, technology adaption, or leadership style were not taken into account. Future studies could investigate these factors to ascertain their mediating or moderating influence on the link between competences and performance.

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