EFFECT OF SUPPLY CHAIN MANAGEMENT STRATEGIES AND ORGANIZATIONAL COMPTENCE ON OPERATIONAL AND FINANCIAL PERFORMANCE

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ABSTRACT

In the current complex global corporate landscape, effective supply chain management (SCM) is essential in maintaining a competitive advantage. The research addresses the dearth of study about SCM strategy in the semiconductor industry. This industry is currently experiencing weaker demand, which is expected to extend in the coming years. This study aims to determine if SCM strategies consisting of vendor management inventory, enterprise replenishment planning, collaborative planning, forecasting and replenishment, warehouse management systems and outsourcing significantly affect operational and financial performance. Further, it determines if organizational competency plays a significant role between SCM strategy and operational and financial performance. Descriptive causal research design was employed utilizing a survey instrument that was distributed to 102 employees of semiconductor companies. Regression analyses reveal that SCM strategies and organizational competence significantly affect financial and operational performance. Also, organizational competence significantly mediates between SCM strategies and financial performance. This indicates that semiconductor companies require innovation, research investment, continual staff training, and supplier diversity, particularly in the face of geopolitical concerns and supply interruptions to remain competitive and reduce risks. To improve operational and financial performance, the company is encouraged to implement a training program to improve efficiency, quality, and cost reduction activities in SCM.

1. 0 INTRODUCTION

Supply Chain Management (SCM) has evolved from a logistical support function into a vital strategic component in today's global industrial environment. It enables faster material and information flow, ultimately strengthening enterprise performance (Fang & Chen, 2022; Islam et al., 2023). Scholars emphasize that SCM strategies—including vendor-managed inventory (VMI), enterprise replenishment planning (ERP), collaborative planning, forecasting and replenishment (CPFR), warehouse management systems (WMS), and outsourcing—significantly enhance organizational competencies such as R&D, technology commercialization, production, and marketing (Lee, 2021; Bonifacio, 2024). The Philippines is a major contributor to the semiconductor assembly and testing space, accounting for 62% of the nation's exports in 2020 (SEIPI, 2024). Despite this stronghold, the industry is now grappling with global chip shortages and shrinking demand, exposing its supply chain vulnerabilities (Bobek et al., 2023; Gross, 2023).The introduction should have a statement of the problem, its scope and limitations, and may incorporate the review of related work as an option.

The country's semiconductor sector, primarily clustered in CALABARZON and dubbed "Silicon Valley of the Philippines," has faced setbacks due to weak demand and the absence of a free trade agreement with the United States, resulting in estimated losses of $5–$10 million (Desiderio, 2024; San Juan, 2024; Tabile, 2024). Although numerous global studies on semiconductor SCM exist (Gurtu & Johny, 2021; Khan et al., 2021), there remains a gap in localized studies focusing specifically on the Philippine context. Regional research such as that by Wang et al. (2024) underscores the unique pressures in Southeast Asia, but more comprehensive understanding is still needed to fortify the Philippine industry's resilience and strategic footing.

This research aims to determine the impact of SCM strategies—VMI, ERP, CPFR, WMS, and outsourcing—on operational and financial performance, as well as assess the influence of organizational competencies like R&D, technology commercialization, production, and marketing capabilities (Lee, 2021; Sturm et al., 2022). Furthermore, it investigates whether these competencies mediate the relationship between SCM strategies and performance. Aligned with the United Nations Sustainable Development Goals (SDGs) 8, 9, and 12, the study seeks to promote inclusive economic growth, innovation, and responsible resource use (Kato & Manchidi, 2022). By refining SCM

practices and enhancing internal capabilities, semiconductor companies in the Philippines may not only improve efficiency and cost competitiveness but also contribute to broader national development and sustainability objectives.

2. 0 REVIEW OF RELATED WORK

2.1 Related Literature

Supply Chain Management (SCM) has become a pivotal strategy for enhancing corporate competitiveness, profitability, and operational efficiency (Kato & Manchidi, 2022; Fufa, 2024). Among the key SCM tools are:

Vendor Managed Inventory (VMI): A collaborative model where suppliers manage customer inventory, reducing costs and improving responsiveness. VMI enhances order fulfillment, minimizes the bullwhip effect, and supports dynamic demand through features like expiry alerts and multi-mode stock tracking (Smith, 2020; Beheshti et al., 2020; Fang & Chen, 2021; Lelo & Israel, 2024).

Enterprise Replenishment Planning (ERP): ERP systems facilitate just-in-time deliveries and inventory planning. Effective ERP implementation includes safety stock policies, supplier evaluations, and localized sourcing. Studies confirm ERP's positive impact on both operational and financial performance (Abobakr et al., 2023; Zhao et al., 2023; Selepe & Makinde, 2024; AlMuhayfith & Shaiti, 2020; Putra et al., 2021).

Collaborative Planning, Forecasting, and Replenishment (CPFR)*:* CPFR improves revenue and efficiency by aligning customer demand with supply chain replenishment through shared forecasting and planning. It leads to better production planning, reduced forecast errors, and higher product availability (Berezinets et al., 2020; Greene, 2021; Da Silva et al., 2024; Hemant, 2022).

Warehouse Management System (WMS)*:* WMS software automates and optimizes warehouse operations, offering real-time visibility and data-driven decision-making. It supports functions like receiving, picking, and stocktaking while balancing cost and service quality (Minashkina & Happonen, 2023; Mabotja, 2024; Istiqomah et al., 2020).

Outsourcing (OUT): Strategic outsourcing addresses resource constraints and enhances focus on core competencies. While it reduces capital expenditure, it introduces inventory control challenges. Nonetheless, outsourcing—especially in HR and procurement—has been linked to cost savings, quality improvements, and productivity gains (Alkahtani, 2022; Uygun et al., 2023; Pham et al., 2023; Samuel & Izegbua, 2023; Mbanje, 2024).

Organizational competence is an organization that has the expertise to accomplish something, i.e., the organization has the know-how that permits it to arrange activities including running actions and/or employing resources (Hammouch et al., 2021). Lee (2021) asserts that organizational competency comprises research and development capability, technology commercialization capability, production capability, and marketing capability.

Research and Development capability (RND). This entails producing patents, which represent a firm's technical knowledge base (Mishra et al., 2022). Companies having substantial R&D capabilities may then explore and create new technologies on their own, rather than relying on partners or partnerships (Kaukab, 2024). Based on the study of Aldabbas and Oberholzer, (2023) The mediating role of transformational capabilities in the relationship between learning via R&D capabilities and a firm's competitive advantage is affirmed. The financial performance will improve by resource integration and learning capacity of the company. The study of Nishimura et al. (2022). The long-term R&D capabilities of a nation are significantly impacted by science and math education in light of these linkages. Therefore, curricular standards must only be altered after satisfactorily demonstrating their impact over an extended period of time. Education has a fundamental impact on economic development. The research of Nurfarida et al. (2023) validates the importance of innovation capacity as a main component in generating competitive advantage, which finally affects SMEs business performance. According to Kaukab (2024), financial performance is highly influenced by innovation capacity; the epidemic emphasizes the part that innovation plays in producing financial results. According to Kim and Jin (2022), internal innovation capacity has a synergistic effect in improving business performance in the Smart Farm Sector of South Korea.

Technology Commercialization Capability (TCC). This is the capacity of businesses to quickly adapt ideas or technologies into goods or services that satisfy customers. Enhancing technology capability is a crucial strategy for establishing new businesses and maintaining a competitive edge. This is because emerging technologies, like advanced artificial intelligence (AI), cloud computing, virtual reality and brain-computer interfaces, create numerous opportunities for new venture creation (Shan et al., 2021). TCC is comparable to ideas related to technology transfer and technological achievement transformation (Fang & Xie, 2022). TCC has emerged as the key to creating a competitive edge and achieving multiplier

growth for high-tech businesses (Cai et al., 2021). It was revealed that a leader's passion for work significantly influences technology commercialization of new ventures, with positive emotions promoting the successful commercialization of emerging technologies like AI, Cloud Computing, and Virtual Reality (Shan et al., 2021). Kim et al. (2020) defines technology commercialization capabilities as all actions and processes that generate added value via the transfer, exchange, dissemination, and use of produced technology. This involves the pace of commercialization, market range, and technical scope of the product (good).

Production Capability (PC). To effectively manage industrial innovation, it's important to integrate financial, organizational, and technical potential for both immediate and long-term goals. Having optimal production capacity is critical in order to create a desirable offer to the customer (Larsson & Romero, 2023).

Marketing Capability (MC). This is the primary form of a company's ability to provide adequate consumer value, which can result in positive cash flows. Marketing capability enables businesses to uncover new client potential as well as competitive market opportunities. New client groups produce more cash flow and increase the value of ownership. Marketing capabilities are defined as marketing-related techniques that enable businesses to improve their open knowledge and acquire a competitive advantage (Mousavi & Mousavi, 2024).

This study is anchored in the 2021 study of Lee with the title, "The Effect of Supply Chain Management Strategy on Operational and Financial Performance." The framework shows that financial and operational performance is determined by SCM strategy and organizational competence. This is illustrated in figure 1.

It was also discovered that increasing organization competence, which consists of research and development (RND) capability, technology commercialization capability (TCC), production capability (PC), and marketing capability (MC) improves operational performance (OP) and financial performance (FP) among SMEs. As a result, combining SCM strategies with organizational competencies will improve operational and financial performance. Since SCM strategy changes in manufacturing companies have not been extended to the global market, the researcher suggested further research in different nations and sectors.

2.2 Research Frameworks

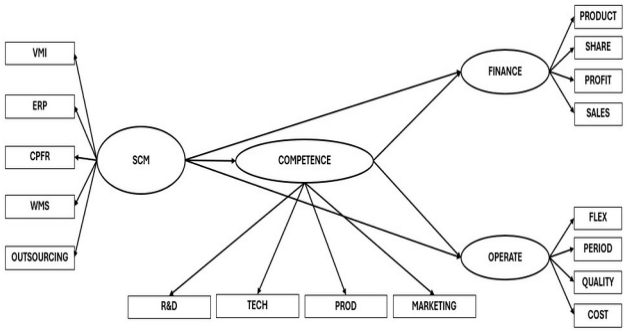

Figure 1. Conceptual Framework

Source: The Effect of Supply Chain Management Strategy on Operational and Financial Performance (Lee, 2021)

While the study of Lee (2021) focused on the small and medium manufacturing enterprises (SMEs) in Korea, this research centered on the semiconductor industry in the Philippines. The same variables for SCM strategies consisting of vendor-managed inventory, enterprise replenishment planning, collaborative planning, forecasting, and replenishment, warehouse management system, and outsourcing, and same variables for organizational competence consisting of research and development capability, technology commercialization capability, production capability, and marketing capability study.

This study focused on the improvement of operational and financial performance through SCM strategies and organizational competence. The operational framework for this research is shown in Figure 2.

First, this study determined the effect of SCM strategies in terms of vendor-managed inventory (VMI), enterprise replenishment planning (ERP), collaborative planning, forecasting, and replenishment (CPFR), warehouse management system (WMS), and outsourcing (OUT) on operational and financial performance. Second, this study determined the effects of organizational competence in terms of research and development capability (RND), technology commercialization capability (TCC), production capability (PC), and marketing capability (MC) on operational and financial performance. The goal was to identify priority SCM strategy and organization competence to improve operational and financial performance. Third, this research determined the mediating role of organizational competence between SCM strategy & operational and SCM strategy & financial performance.

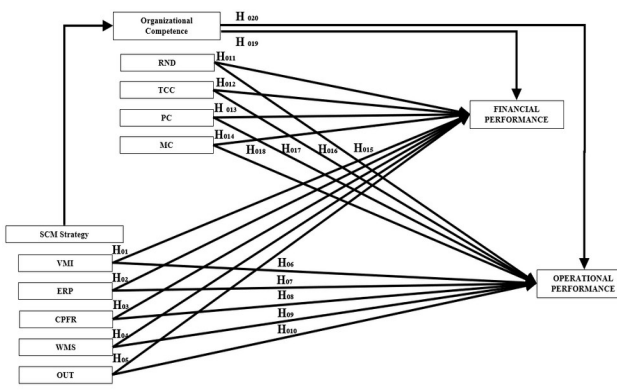

Figure 2. Operational Framework

2.3 Objectives of the Study

In general, this study is focused on improving the operational and financial performance of semiconductors industries. Specifically, it intended to:
describe the respondents' perception on effectiveness of

1. SCM strategies, the level of organizational competence, the level operational and financial performance of semiconductors;
2. determine if SCM strategies in terms of VMI, ERP, CPFR, WMS, and OUT significantly affect financial performance;
3. determine if SCM strategy in terms of VMI, ERP, CPFR, WMS, and OUT significantly affect operational performance;
4. determine if organizational competence in terms of RND, TCC, PC, and MC significantly affect the financial performance;
5. determine if organizational competence in terms of RND, TCC, PC, and MC significantly affect the operational performance;
6. determine if organizational competence plays a significant mediating role in the relationship between SCM strategy and financial performance;
7. determine if organizational competence plays a significant mediating role in the relationship between SCM strategy and operational performance; and
8. to develop a new project that will improve operational and financial performance.

2.4 Hypotheses

The following hypotheses were tested in this study:

H_{o1}: Vendor management inventory has no significant effect on financial performance.

H_{o2}: Enterprise replenishment planning has no significant effect on financial performance.

H_{o3}: Collaborative planning, forecasting, and replenishment have no significant effect on financial performance.

H_{o4}: Warehouse management system has no significant effect on financial performance.

H_{o5}: Outsourcing has no significant effect on financial performance.

H_{o6}: Vendor management inventory has no significant effect on operational performance.

H_{o7}: Enterprise replenishment planning has no significant effect on operational performance.

H_{o8}: Collaborative planning, forecasting, and replenishment have no significant effect on operational performance.

H_{o9}: Warehouse management system has no significant effect on operational performance.

H_{o10}: Outsourcing has no significant effect on operational performance.

H_{o11}: Research and Development capability has no significant effect on financial performance.

H_{o12}: Technology commercialization capability has no significant effect on financial performance.

H_{o13}: Production capability has no significant effect on financial performance.

H_{o14}: Marketing capability has no significant effect on financial performance.

H_{o15}: Research and Development capability has no significant effect on operational performance.

H_{o16}: Technology commercialization capability has no significant effect on operational performance.

H_{o17}: Production capability has no significant effect on operational performance.

H_{o18}: Marketing capability has no significant effect on operational performance.

H_{o19}: Organizational competence does not significantly mediate the relationship between SCM strategy & financial performance.

H_{o20}: Organizational competence does not significantly mediate the relationship between SCM strategy & operational performance.

3.0 METHODOLOGY

3.1 Research Design

This research used descriptive causal research design to determine the effects of supply chain management strategies (independent variables) and organizational competence (mediator) on operational and financial performance (dependent variable) of the semiconductor industry. Descriptive research is designed to provide a precise and systematic account of a population, situation, or phenomenon. A descriptive research approach may probe one or more variables using a broad range of research approaches (McCombes, 2019). This was used to describe the effectiveness of SCM strategies, organizational competence and operational and financial performance.

Furthermore, causal research also known as explanatory research is used to establish the link between a cause and an effect (Bhashin, 2023). This was used to determine if SCM strategies, organizational competence significantly affect operational and financial performance and to determine if organizational competence plays a significant mediating role in the relationship between SCM strategy and the operational and financial performance.

3.2 Locale of the Study

The survey was conducted within the semiconductor companies situated in Laguna Industrial Science Park 1 (LISP1) at Cabuyao, Laguna. LISP I was the original privately held industrial estate designated as a Special Export Processing Zone by the Philippine Economic Zone Authority (Sciencepark, 2024).

3.3 Respondents of the Study

The respondents of the study included 102 employees who are knowledgeable about the current status of operational and financial performance of their company. Based on the G-power application, with 5 predictors, statistical power of 0.85 and with 0.15 effect size in the model, there are 102 sample size. The conventional power factor is 0.80 (Statistical Solution, 2024).

3.4 Sampling Design

The researcher used a purposive sampling. Purposive sampling is a strategic, non-randomized method used in research to select units based on specific criteria, allowing researchers to explore specific characteristics of the sample, despite its potential limitations (Bisht, 2024). The respondents were regular and held a management position in the company.

3.5 Research Tools and Instruments

The survey tool in this research is a well-structured questionnaire adapted from the study of Lee (2021). The questionnaire consists of two parts. The first part included profile items like position and employment status, which will serve as the qualifier questions. The second part included 20 items on SCM strategies, 12 items on organizational competence, and 8 items on operational and financial performance. A five – point Likert scale ranging from 1 - Strongly Disagree (SD) to 5 - Strongly Agree (SA) was used to help the respondents assess their level of agreement or disagreement. The survey instrument passed reliability tests on SCM strategy namely, VMI, ERP, CPFR, WMS, OUT, and overall SCM Strategies with 0.951, 0.960, 0.957, 0.976, 0.971 and 0.927 respectively. In terms of the results of organizational competence specifically, RND, TCC, PC, MC, and overall organizational competence with 0.935, 0.971, 0.948, 0.925, and 0.918 respectively. Furthermore, 0.967, 0.782, and 0.900 are the results for operational performance, financial performance and overall business performance respectively. Cronbach's alpha values of 0.70 or higher are generally considered good, 0.80 or higher are considered better, and 0.90 or above are considered excellent (Statistics Solutions, 2023).

Data collection consisted of sending out an online questionnaire to participants via email and other digital channels and then gathering their replies for statistical analysis.

3.6 Data analysis and Interpretation

This research used the mean and standard deviation to describe the effectiveness of SCM strategies, the level of organizational competence, and the level of operational and financial performance of semiconductors.

Multiple regression analysis was used to determine if SCM strategies in terms of VMI, ERP, CPFR, WMS, and OUT, and if organizational competence in terms of RND, TCC, PC, and MC significantly affect the operational and financial performance. A *p-value* of less than 0.05 indicates significant effect. The *standardized beta coefficients* were the basis to identify which SCM strategies and organizational competence has the greatest contribution to operational and financial performance.

On the other hand, to determine if organizational competence plays a mediating role in the relationship between SCM strategy and operational and financial performance, a combination simple and regression multiple employing Baron and Kenny method was used. A *p-value* of less than 0.05 indicates a significant mediating effect. According to Sidhu et al. (2021), no mediation occurs when the indirect impact is not substantial, implying that M does not mediate the relationship between variables X and Y. However, should there be mediation, it may be classified as full or partial. Full mediation occurs when direct effect equals zero and mediator variable M is present while partial mediation occurs when both direct and indirect effects are present, implying that mediation is accompanied by the direct impact. M does not mediate part of X's influence on the Y variable.

4.0 RESULTS AND DISCUSSION

4.1 Descriptive Statistics

A total of 102 respondents participated in the study. Most respondents have served the company for 8 to 10 years (35.92%) followed by over 10 years (31.37%) indicating their substantial experience and in-depth organizational knowledge. According to Tavoq

(2025), employee tenure, which refers to the duration of an employee's service inside a certain firm, significantly influences several facets of corporate performance.

Table 1. Descriptive Statistics of SCM strategy (SCMs)

Item	Std. Deviation	Mean	Interpretation
VMI	0.92	3.77	Effective
ERP	0.74	4.10	Effective
CPFR	0.69	3.92	Effective
WMS	0.75	4.19	Effective
OUT	0.70	3.99	Effective
SCMs	0.56	3.99	Effective

Table 1 indicates the descriptive statistics of SCM Strategy. The VMI, ERP, CPRFR, WMS, and OUT were evaluated using means and standard deviation. WMS has the highest *mean*,

The dimensions of organizational competence resulted in *mean* between 4.03 and 4.22 revealing a high to a very high level of competence as shown in Table 2.

The data reveals that Research and Development (RND), and Production Capability (PC) are identified as key strengths within the company. The high level of competence for organizational competence could indicate that these areas are the primary focus of the organization or are perceived to have a particularly strong effect. Overall organizational competence is perceived as moderately high with a *mean* of 4.15.

Table 2. Descriptive Statistics of Organizational Competence

Item	Std. Deviation	Mean	Interpretation
RND	0.73	4.22	Very High
TCC	0.66	4.03	High
PC	0.68	4.21	Very High
MC	0.68	4.13	High
OC	0.60	4.15	High

There are two dimensions of business performance, namely financial performance and operational performance which revealed good (M = 3.40) and very good (M = 4.08) perception respectively as shown in table 3. The business performance has been perceived to be very good in the last three years. While this is closely high, the results indicate that there are areas for improvement to ensure long-term sustainability.

Table 3. Descriptive Statistics of Business Performance and its Dimensions

Item	Std. Deviation	Mean	Interpretation
FP	0.70	3.40	Good
OP	0.62	4.08	Very Good
BP	0.56	3.74	Very Good

4.2 Regression Analyses

Effect of SCM strategies on Financial Performance

Table 4 shows the results of regression analysis evaluating the effect of various SCM strategies on financial performance.

Table 4. Effect of SCM strategy on Financial Performance

Model		Unstandardized	Standard Error	Standardized	t	p
H_1	(Intercept)	0.925	0.407		2.273	0.025
	VMI	0.346	0.067	0.454	5.147	< .001*
	ERP	-0.115	0.107	-0.121	-1.070	0.287
	CPFR	0.281	0.113	0.277	2.483	0.015*
	WMS	0.039	0.103	0.041	0.378	0.707
	OUT	0.094	0.098	0.093	0.962	0.338

a. Dependent Variable: Financial Performance; R = 0.625; R^2 = 0.39; F-value = 12.284; p-value = < .001
b. *Significant at 0.05

VMI and CPFR are significant predictors of financial performance *(p-values* < 0.05) with the VMI having the greatest contribution to financial performance (*Beta* = 0.454). While the ERP, WMS and OUT do not significantly affect financial performance. Overall, an R^2 = 0.39 indicates that the change in VMI, ERP, CPFR, WMS, and OUT contributes 39% in the financial performance.

Effect of Organizational Competence on Financial Performance

The results in Table 5 indicate that TCC is the only dimension of organizational competence that significantly affects financial performance (p-value < 0.05). This suggests that the company must focus on TCC to improve its financial performance. Results further show that 28.8% of the financial performance can be attributed to change in RND, TCC, PC, and MC.

Table 5. Effect of Organizational Competence on Financial Performance

Model		Unstandardized	Standard Error	Standardized	t	p
H_1	(Intercept)	0.906	0.427		2.125	0.036
	RND	-0.115	0.131	-0.119	-0.872	0.386
	TCC	0.449	0.127	0.422	3.543	< .001*
	PC	0.081	0.154	0.079	0.523	0.602
	MC	0.201	0.155	0.195	1.299	0.197

a. Dependent Variable: Financial Performance; R = 0.537; R^2 = 0.288.261; F-value = 9.818; p-value = < .001
b. * Significant at 0.05

Effect of SCM strategies on Operational Performance

Table 6 emphasizes that CPFR and WMS have significant effects on operational performance (p-values < 0.05) with WMS having the greatest contribution (*Beta* = 0.463). This means that CFPR and WMS play critical roles in efficiency and productivity. Overall, 43.8% of the operational performance can be attributed to change in VMI, ERP, CPFP, WMS, and OUT (R^2 = 0.438).

Table 6. Effect of SCM strategy on Operational Performance

Model		Unstandardized	Standard Error	Standardized	t	p
H_1	(Intercept)	1.422	0.342		4.162	< .00
	VMI	0.046	0.056	0.07	0.823	0.41
	ERP	-0.062	0.09	-0.075	-0.695	0.48
	CPFR	0.22	0.095	0.248	2.31	0.02
	WMS	0.38	0.087	0.463	4.385	< .00
	OUT	0.071	0.082	0.08	0.86	0.39

a. Dependent Variable: Operational Performance; R = 0.662; R^2 = 0.438; F-value = 14.947; p-value = < .001
b. * Significant at 0.05

Effect of Organizational Competence on Operational Performance

Production Capability and Marketing Capability have a *p*-values of less than 0.05 as shown. This indicates that production capability has a significant effect on operational performance such as improving production efficiency, cost reduction activities and improving the quality of the products. Likewise, marketing capabilities significantly affect operational performance. This means that marketing has a crucial role in enhancing the market position, customer engagement and increasing sales performance. In summary, 61% of operational performance can be attributed to change in RND, TCC, PC and MC (R^2 = .61).

Table 7. Effect of Organizational Competence on Operational Performance

Model		Unstandardized	Standard Error	Standardized	t	p
H_1	(Intercept)	0.756	0.276		2.738	0.00
	RND	0.167	0.085	0.197	1.957	0.05
	TCC	0.162	0.082	0.174	1.974	0.05
	PC	0.264	0.1	0.294	2.646	0.01
	MC	0.206	0.1	0.229	2.062	0.04

a. Dependent Variable: Operational Performance; R = 0.781; R^2 = 0.61; F-value = 37.893; p-value = < .001
b. * Significant at 0.05

Mediating Effect of Organizational Competence between SCM Strategies and Financial Performance

Figure 3 shows the results of mediation analysis. Model 1 exhibits that SCM strategy significantly affects financial performance (B = 0.518, p = .001), indicating that an effective SCM strategy will yield to better financial performance. Model 2 shows that SCM strategy significantly affects organizational competence (B = 0.696, p = .001), meaning that a well-designed and implemented SCM strategy tends to enhance the company's organizational competence. Model 3 indicates that organizational competence has a significant effect on financial performance (B = 0.481, p = .001), suggesting that improvements in organizational competence contribute to better financial performance. These results support the study of Lee (2021), Sajja (2021), Jamaludin et al. (2022), and Sen & Karia (2024) which discovered that SCM strategy and organizational competence both had significant effects on financial performance. This means that effective SCM strategy and high level of organization competence plays a vital role in improving performance.

Since the three preliminary tests proved to be significant, the mediation as shown in Model 4 was tested. The mediation analysis explains a partial mediation effect. Specifically, when both SCM strategy and organizational competence were considered in model 4, the effect of SCM strategy on financial performance remains significant (B = 0.355, p = .003) with the organizational competence p value (B = 0.234, p = .049).

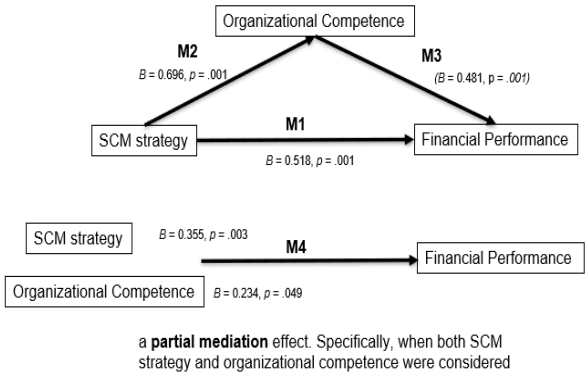

Figure 3. Mediating Effect of Organizational Competence between SCM Strategies and Financial Performance

Mediating Effect of Organizational Competence between SCM and Operational Performance

Table shows the test of mediation of organizational competence between SCM strategy and operational performance. These results of Model 1 indicate that the SCM strategy significantly affects operational performance (B =0.604, p = .001). Model 2 shows that SCM strategy significantly affects organizational competence (B = 0.696, p = .001), meaning that a well-designed and implemented SCM strategy tends to enhance the company's organizational competence. In Model 3, organizational competence has a significant effect on operational performance (B = 0.779, p = .001), this suggests improving organizational performance contributes to better operational performance. With all these prerequisite results to be significant, the researcher proceeded to test mediation. Finally, Model 4, SCM strategy and organizational competence were tested as predictors of operational performance. It reveals that organizational competence has a significant effect on operational performance (B = 0.120, p = .001) while the SCM strategy lost its significant effect on operational performance (B = 0.695, p = .171). This shows that organizational competency fully mediates the relationship between SCM strategy and operational performance, while supply chain management strategy is necessary to improve organizational competency, this emphasizes the

crucial need of improving organizational competency to improve operational performance.

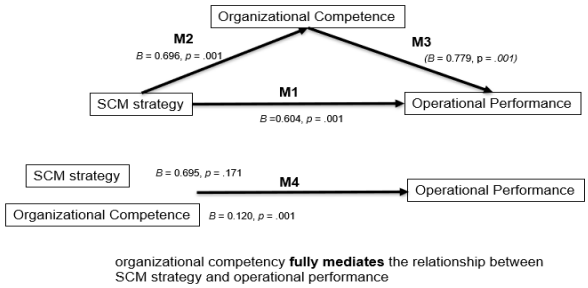

Figure 4. Mediating Effect of Organizational Competence between SCM and Operational Performance

5.0 CONCLUSION

The overall SCM strategy and overall organizational competence were revealed in this study to be effective and high respectively. Having the SCMs with a *mean* of 3.99 shows that work efficiency and an increase in productivity can still be improved. While organizational competence with a *mean* of 4.15 can be sustained or leveled up through strong collaboration between RND, production, and marketing, by acquiring technologies and implement in the company, by upscaling the training of employees to develop new technologies, and by identifying the threats and opportunities in the market.

This study determined that SCM strategies in terms of VMI and CPFR significantly affect financial performance. Therefore, the study rejects H_{o1} and H_{o3}. The use of data, encouraging teamwork, and making technological investments are key components of both approaches. It is also critical to customize these strategies to the organization and its objectives. While ERP, WMS and OUT are not significant in predicting financial performance. Thus, the study failed to reject H_{o2}, H_{o3} and H_{o5}.

In terms of operational performance, this study determined that SCM strategy, specifically the CPFR and WMS significantly affect the operational performance; hence, the study rejects H_{o8} and H_{o9}. This suggests that although WMS improves warehouse operations efficiency via real-time tracking, faster workflows, and correct order fulfillment, CPFR encourages deeper cooperation across supply chain partners, enhancing demand forecasting and inventory management. However, the study failed to reject H_{o6}, H_{o7}, and H_{o10} because VMI, ERP and OUT dimensions do not significantly affect the operational performance.

This study also determined the effects of organizational competence. Only TCC has a significant effect on financial performance. Therefore, the study rejects H_{o12}. This implies that a company's financial performance is directly and quantifiably affected by its capacity to effectively convert creative concepts or technology into marketable goods or services. While RND, PC and MC do not have significant effects on financial performance, Hence, the study failed to reject H_{o11}, H_{o13} and H_{o14}.

Furthermore, this study determined that organizational competence, particularly PC and MC have significant effects on operational performance. Therefore, the study rejects H_{o17} and H_{o18}. These skills may help to allocate resources better, streamline procedures, and increase customer satisfaction, which enhance general operational performance. While RND and TCC do not significantly affect the operational performance. Therefore, this study failed to reject H_{o15} and H_{o16}.

Lastly, the study uncovered the mediating role of organizational competence between SCM strategies and operational performance and SCM strategies and financial performance. The study reveals that organizational competence partially mediates between SCM strategy and financial performance. Thus, the study rejects H_{o19}. This implies that businesses using strong SCM strategy may maximize the allocation of resources and operational procedures, therefore improving their organizational competency. Better financial performance follows from this enhanced competency, which emphasizes the need of building organizational capacities and SCM strategy to achieve financial success. Further, organizational competence fully mediates the relationship between SCM strategy and operational performance. Therefore, the study rejects H_{o20}. Enhancing organizational competence, such as PC and MC, amplifies their ability to improve operational performance.

6.0 RECOMMENDATIONS

SCM strategies and organizational competence are crucial for augmenting financial and operational performance of semiconductor industries. Overall, it indicates that improving SCM strategy in terms of VMI and CPFR, and organizational competence in terms of TCC will improve financial performance. Furthermore, improving SCM strategy in terms of CPFR and WMS, and organizational competence in terms of PC and MC will improve the operational performance.

Companies are recommended to implement extensive SCM strategies, along with a strong organizational competence foundation, and the company will help to achieve a sturdy competitive advantage to improve financial performance and operational performance.

In terms of financial performance, it is recommended to provide extensive training to improve efficiency and productivity for VMI and CPFR. These supply chain strategies help to align with suppliers to look for favorable material prices, increase demand forecasting accuracy, shorten lead times, and optimize inventory levels to decrease working capital needs.

It is recommended that the semiconductor industry foster innovation by increasing the investment in technology. Additionally, to enhance TCC, semiconductor companies are encouraged to invest in market research, strengthen collaboration, optimize resource management, adopt agile practices, develop a clear strategy, build IP capacity, and invest in training and development. These initiatives ensure innovative technologies align with market demand, optimize resource allocation, reduce time-to-market, protect intellectual property, and maintain a competitive advantage.

Furthermore, for operational performance in terms of CPFR and WMS. The semiconductor companies are encouraged to use continuous training initiatives to ensure the employees are knowledgeable about the always changing technology. Using the learnings, this will help to streamline the process by reducing waiting time for the approval, locating up to issuance of materials. This will also reduce obsolescence and scraping unused raw materials.

In addition, to improve operational performance in terms of PC, it is recommended to adopt high-level technologies such as automation, smart manufacturing systems, and data analytics. This will help to streamline production and maximize machine utilization. Investing in personnel training and upskilling is therefore absolutely crucial if one fully appreciates these advantages. Providing employees with the expertise and tools to properly run and control new technologies guarantees seamless implementation, optimizes system efficiency, and promotes a culture of continual improvement.

In order to boost operational performance in terms of MC. Semiconductor companies may concentrate on funding training initiatives that advance the abilities and expertise of their marketing teams. This investment makes it possible to allocate human resources effectively, guaranteeing that team members are assigned to positions that play to their strengths and the marketing goals of the company.

Limitation

There are certain limits to this study that future research might handle. Research done is limited to a certain geographical area within Laguna. The research is also focused on LISP1 semiconductors; the findings could not apply to other sectors or nations. Future studies might look at how other industrial parks, other nations, and sectors operate.

Declaration

The author used ChatGPT and Copilot to locate related literature to support the findings of the study. Further, QuillBot was used to paraphrase some discussions. After using the tool, the author reviewed and edited the context to ensure it fits the context of research.

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9.0 ABOUT THE AUTHORS

A seasoned professional with more than 25 years of expertise in the semiconductor industry, with a strong focus on production, engineering, project management, factory scheduling, and supply chain management. Known for being highly driven and results-oriented, with a deep passion for achieving operational excellence and delivering top-quality products. Holds a degree in Electronics and Communications Engineering from Adamson University and a Master of Business Administration from De La Salle Lipa.

10.0 APPENDIX

10.1 Appendix A – Survey Questionnaire

		1	2	3	4	5
SCM strategy		**SD**	**D**	**N**	**A**	**SA**
Vendor Management Inventory (VMI)	1. Our company has built a VMI system infrastructure.					
	2. Our company is actively using the VMI system after persuading business parties and stakeholders of its importance.					
	3. Our company has improved work efficiency by using the VMI system.					
	4. Our company has increased productivity by using the VMI system.					
Enterprise Replenishment Planning (ERP)	5. Our company has built an ERP system infrastructure.					
	6. Our company is actively using the ERP system after persuading business parties and stakeholders of its importance.					
	7. Our company has improved work efficiency by using the ERP system.					
	8. Our company has increased productivity by using the ERP system.					
Collaborative Planning, Forecasting, and Replenishment (CPFR)	9. Our company has built a CPFR system infrastructure.					
	10. Our company is actively using the CPFR system after persuading business parties and stakeholders of its importance.					
	11. Our company has improved work efficiency by using the CPFR system.					
	12. Our company has increased productivity by using the CPFR system.					
Warehouse Management System (WMS)	13. Our company has built a WMS system infrastructure.					
	14. Our company is actively using the WMS system after persuading business parties and stakeholders of its importance.					
	15. Our company has improved work efficiency by using the WMS system.					
	16. Our company has increased productivity by using the WMS system.					
OUTSOURCING (OUT)	17. Our company has built outsourcing infrastructure.					
	18. Our company is actively using outsourcing after persuading business parties and stakeholders of its importance.					
	19. Our company has improved work efficiency by using outsourcing.					
	20. Our company has increased productivity by using outsourcing.					

		1	2	3	4	5
Intra-firm organizational competences		**SD**	**D**	**N**	**A**	**SA**
Research and Development Capability (RND)	1. Our company has a standardized process for new product (service) development.					
	2. Our company integrates and links internal resources closely.					
	3. Our company integrates RND, production, and marketing capabilities.					
Technology Commercialization Capability (TCC)	4. Our company works closely with external specialized agencies in connection with technology commercialization.					
	5. Our company learns quickly about external technologies.					
	6. Our company has an excellent learning capability of technologies acquired from the outside.					
Production Capability (PC)	7. Our company is generally superior in product (service) production to other firms in the same industry.					
	8. Our company has a generally high level of technology.					
	9. Our company has skilled personnel who develop technologies.					
Marketing Capability (MC)	10. Our company analyzes the target market for the developed products to establish systematic marketing strategies such as pricing and sales forecast.					
	11. Our company allocates the effective role of human resources in its organization to support their work.					
	12. Our company cooperates internally on the opportunities and threats identified in the market to look for alternatives.					

		1	2	3	4	5
Business performance		**SD**	**D**	**N**	**A**	**SA**
Operation	1. Our company has generally reduced manufacturing costs per unit.					
	2. Our company has decreased the defect rate of products.					
	3. Our company has generally shortened the lead time and new product development cycle.					
	4. Our company has improved flexibility in product design changes and production fluctuations.					
Financial	1. Our company has increased its sales over the last 3 years.					
	2. Our company has increased its operating profit rate over the last 3 years.					
	3. Our company has increased its return on investment over the last 3 years.					
	4. Our company has reduced its production and logistics costs over the last 3 years.					

Adapted: Lee (2021) "The Effect of Supply Chain Management Strategy on Operational and Financial Performance".

10.2 Appendix B – Cronbach's α

VMI Reliability

Estimate	Cronbach's α
Point estimate	0.951

ERP Reliability

Estimate	Cronbach's α
Point estimate	0.960

CPFR Reliability

Estimate	Cronbach's α
Point estimate	0.957

WMS Reliability

Estimate	Cronbach's α
Point estimate	0.976

OUT Reliability

Estimate	Cronbach's α
Point estimate	0.971

RND Reliability

Estimate	Cronbach's α
Point estimate	0.935

TCC Reliability

Estimate	Cronbach's α
Point estimate	0.971

PC Reliability

Estimate	Cronbach's α
Point estimate	0.948

MC Reliability

Estimate	Cronbach's α
Point estimate	0.925

OC Reliability

Estimate	Cronbach's α
Point estimate	0.918

SCMs Reliability

Estimate	Cronbach's α
Point estimate	0.927

FP Reliability

Estimate	Cronbach's α
Point estimate	0.967

OP Reliability

Estimate	Cronbach's α
Point estimate	0.782

BP Reliability

Estimate	Cronbach's α
Point estimate	0.900

Descriptive Statistics of Organizational Competence

Item	Mean	Std. Deviation	Interpretation
RND1	4.284	0.788	Very High
RND2	4.206	0.722	Very High
RND3	4.176	0.789	High
RND	**4.222**	**0.729**	**Very High**
TCC1	4.000	0.783	High
TCC2	4.059	0.687	High
TCC3	4.029	0.682	High
TCC	**4.029**	**0.662**	**High**
PC1	4.216	0.726	Very High
PC2	4.186	0.714	High
PC3	4.225	0.757	Very High
PC	**4.209**	**0.684**	**Very High**
MC1	4.167	0.705	High
MC2	4.088	0.746	High
MC3	4.137	0.718	High
MC	**4.131**	**0.683**	**High**

Legend: 1.00-1.80 No Level; 1.81-2.60 Low level; 2.61-3.40 Average Level; 3.41-4.20 Moderately High Level; 4.21-5.00 High Level

Descriptive Statistics of Business Performance

Item	Mean	Std. Deviation	Interpretation
FP1	3.27	0.81	Good
FP2	3.32	0.83	Good
FP3	3.39	0.80	Good
FP4	3.62	0.69	Very Good
FP	**3.40**	**0.70**	**Good**
OP1	4.00	0.75	Very Good
OP2	4.17	0.66	Very Good
OP3	4.09	0.73	Very Good
OP4	4.05	0.67	Very Good
OP	**4.08**	**0.62**	**Very Good**

Legend: 1.00-1.80 Poor; 1.81-2.60 Fair; 2.61-3.40 Good; 3.41-4.20 Very Good; 4.21-5.00 Excellent

10.3 Appendix C – Descriptive Statistics

Descriptive Statistics of SCM strategy

Item	Mean	Std. Deviation	Interpretation
VMI1	3.78	0.97	Effective
VMI2	3.78	0.95	Effective
VMI3	3.78	0.93	Effective
VMI4	3.72	0.98	Effective
VMI	**3.77**	**0.92**	**Effective**
ERP1	4.21	0.81	Very Effective
ERP2	4.13	0.82	Effective
ERP3	4.06	0.74	Effective
ERP4	4.02	0.78	Effective
ERP	**4.10**	**0.74**	**Effective**
CPFR1	3.98	0.73	Effective
CPFR2	3.93	0.72	Effective
CPFR3	3.89	0.76	Effective
CPFR4	3.87	0.77	Effective
CPFR	**3.92**	**0.69**	**Effective**
WMS1	4.21	0.80	Very Effective
WMS2	4.20	0.78	Effective
WMS3	4.18	0.78	Effective
WMS4	4.18	0.78	Effective
WMS	**4.19**	**0.75**	**Effective**
OUT1	4.09	0.73	Effective
OUT2	4.04	0.70	Effective
OUT3	3.90	0.76	Effective
OUT4	3.92	0.75	Effective
OUT	**3.99**	**0.70**	**Effective**

Legend: 1.00-1.80 Very Ineffective; 1.81-2.60 Ineffective; 2.61-3.40 Neutral; 3.41-4.20 Effective; 4.21-5.00 Very Effective

10.4 Appendix D – Regression Analyses

Mediating Effect of Organizational Competence between SCM strategies and Financial Performance

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R^2 change	Sig. F change
		B	Std. Error	Beta				
1	(Constant)	2.581	0.238		10.842	.001	0.268	< .001*
	Supply Chain Management Strategies	0.415	0.069	0.518	6.055	.001*		
	Dependent Variable: Financial Performance							
2	(Constant)	1.268	0.284		4.467	.001	0.485	< .001*
	Supply Chain Management Strategies	0.657	0.068	0.696	9.698	.001*		
	Dependent Variable: Organizational Competence							
3	(Constant)	2.758	0.259		10.668	.001	0.231	< .001*
	Organizational Competence	0.409	0.074	0.481	5.488	.001*		
	Dependent Variable: Financial Performance							
4	(Constant)	0.489	0.455		1.075	.285	0.296	< .001*
	Supply Chain Management Strategies	0.443	0.146	0.355	3.024	.003*		
	Organizational Competence	0.275	0.138	0.234	1.992	.049*		
	Dependent Variable: Financial Performance							

* Significant at 0.05

Mediating Effect of Organizational Competence between SCM Strategies and Operational Performance

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R^2 change	Sig. F chang
		B	Std. Error	Beta				
1	(Constant)	1.735	0.301		5.756	.001	0.365	< .001
	Supply Chain Management Strategies	0.554	0.073	0.604	7.577	.001*		
	Dependent Variable: Operational Performance							
2	(Constant)	1.268	0.284		4.467	.001	0.485	< .001
	Supply Chain Management Strategies	0.657	0.068	0.696	9.698	.001*		
	Dependent Variable: Organizational Competence							
3	(Constant)	1.062	0.251		4.225	.001	0.606	< .001
	Organizational Competence	0.757	0.061	0.779	12.413	.001*		
	Dependent Variable: Operational Performance							
4	(Constant)	0.588	0.295		1.993	.049	0.693	< .001
	Supply Chain Management Strategies	0.131	0.095	0.120	1.378	.171		
	Organizational Competence	0.715	0.089	0.695	7.992	.001*		
	Dependent Variable: Operational Performance							

* Significant at 0.05