CHAPTER FOUR

ANALYSIS OF DATA AND PRESENTATION OF RESULTS

4.1 Introduction

This chapter focused on the analysis and discussion of primary data obtained from closed-ended questionnaires administered on the topic of “Information Technology Adoption and Supply Chain Performance. The Role of Leadership Commitment" The engagement of leadership commitment within the field and the resulting dataset played a pivotal role in achieving the study's objectives. For data entry and processing during the assessment, IBM SPSS version 22 and Microsoft Excel 2019 were used. Particularly, IBM SPSS 22 facilitated data analysis, while Microsoft Excel 2019 facilitated data visualization in the form of tables. The statistical tools included one-sample t-tests, mean, standard deviation, and p-value tests, as well as descriptive statistics, particularly frequencies and comparing means. By incorporating tables, the discussion of the results was enhanced. Furthermore, a reliability test, particularly Cronbach Alpha's reliability test, was performed to improve the rigor of the study.

4.2 Response Rate

A total of three hundred and seventy-two (372) questionnaires were administered to respondents over Google Forms, which served as an online avenue for collecting data. Out of 372, all of them were usable, as all questions on the form were set to "required." This led to a success rate of 100 percent (100%).

4.3 Demographic Characteristics

Gender Distribution: An analysis of the gender distribution reveals a notable pattern among the respondents. Specifically, 216 individuals (58.1%) identify as male, while 156 individuals (41.9%) identify as female.

Age Distribution: Examining the age distribution, the dataset reflects a diverse range of age demographics. The largest segment fell within the 30- to 35-year-old category, constituting 109 respondents (29.3%). The age bracket of 36 to 40 years closely follows, encompassing 102 respondents (27.4%). Additionally, the distribution includes 89 respondents (23.9%) aged 24 to 29 years, 60 respondents (16.1%) aged 41 years and above, and 12 respondents (3.2%) aged 23 years and below.

Educational Background: Delving into educational qualifications, the dataset showcased a diverse array of educational backgrounds. Specifically, 189 respondents (50.8%) hold a bachelor's degree, while 132 respondents (35.5%) possess a master's degree. Additionally, 33 respondents (8.9%) held a PhD or doctorate degree, and 18 respondents (4.8%) have a secondary education background.

Department Affiliation: A comprehensive look at departmental affiliations underscores the professional diversity of the participants. The logistics department stands out, constituting 100 respondents (26.9%). The management department and the IT department closely follow, with 61 respondents (16.4%) and 86 respondents (23.1%), respectively. The broader distribution also encompasses contributions from departments such as procurement, operations, finance, and others, collectively forming the overall representation. In a firm's operational years ("Information technology adoption and supply chain performance: the role of leadership commitment"), a diverse range of operational experiences becomes evident. Notably, 131 respondents (35.2%) indicate that their firms have been operational for 16 to 20 years, followed by 82 respondents (22.0%) with 11 to 15 years of operational history. Additionally, 80 respondents (21.5%) indicate they are 21 years and older, while

37 respondents (9.9%) have an operational history of 6 to 10 years. 32 respondents (8.6%) and 10 respondents (2.7%) represent firms with 1 to 5 years and less than 1 year of operational experience, respectively.

Ownership Type: Within the sphere of "Information Technology Adoption and Supply Chain Performance, "the role of leadership commitment" and the ownership type of participating firms emerge as defining characteristics. 299 respondents (80.4%) indicate that their firms were totally owned locally, while 61 respondents (16.4%) represent firms that were partly Ghanaian and partly internationally owned. A smaller subset of firms, 12 respondents (3.2%), specified that they were totally owned internationally.

Industry Firm Belongs to: Analyzing the industries to which the participating firms belong, a diverse landscape of industry representation came to light. Notably, the logistics industry constitutes a significant portion, encompassing 191 respondents (51.3%). The technology industry followed with 73 respondents (19.6%), and the finance industry contributed 36 respondents (9.7%). Other industries, including manufacturing, the food processing industry, and more, collectively formed the remaining distribution, showcasing the multi-sectoral scope of the study.

Number of Employees: Within the context of the study's exploration, a detailed analysis of the number of employees within the participating firms revealed noteworthy insights. Specifically, 238 respondents (63.9%) indicate that their firms employed more than 50 employees, underscoring the diverse size range of firms. Furthermore, 82 respondents (22.0%) represent firms with 30 to 50 employees, while 34 respondents (9.1%) and 14 respondents (3.8%) represent firms with 10 to 29 employees and 6 to 9 employees, respectively. A smaller subset, 4 respondents (1.1%), indicate that their firms had less than 6 employees.

Annual Revenue: Lastly, delving into the financial aspect, the annual revenue of participating firms underscores their economic scope. Specifically, 249 respondents (67.0%) reported exceeding $1,000,000 in annual revenue. Moreover, 102 respondents (27.4%) represent firms with annual revenues between 500,000 and 1,000,000, while 21 respondents (5.6%) indicated less than 500,000 in annual revenue.

Below is **Table 4.1** showing the various demographics of the responses from the questionnaire.

Gender		
	Frequency	**Percentage (%)**
Male	216	58.1
Female	156	41.9
Total	372	100.0

Age		
	Frequency	**Percentage (%)**
23 years and below	12	3.2
24-29 years	89	23.9
30-35 years	109	29.3
36-40 years	102	27.4
41 years and above	60	16.1
Total	372	100.0

Educational Background		
	Frequency	**Percentage (%)**
Secondary	18	4.8
Bachelor's Degree	189	50.8
Master's Degree	132	35.5
PhD/Doctorate	33	8.9
Total	372	100.0

Belonging Department		
	Frequency	**Percentage (%)**
Logistics	100	26.9
Management	61	16.4
Procurement	26	7.0
IT	86	23.1
Operations	25	6.7

	Finance	48	12.9
	Other	26	7.0
	Total	372	100.0

Position In Firm

	Frequency	Percentage (%)		Frequency	Percentage (%)
Operations Manager	8	2.2	Internal Audit Consultant	1	0.3
Logistics Assistant	6	1.6	Sales Executive	2	0.5
Senior Manager	2	0.5	Head of Tech	1	0.3
Shippers Authority	1	0.3	Head of Purchasing	1	0.3
Procurement Officer	7	1.9	MCA	1	0.3
Warehouse Manager	14	3.8	Head of Logistics	4	1.1
Logistics & Clearing	1	0.3	Inventory Officer	1	0.3
Procurement Manager	6	1.6	Executive Assistant	4	1.1
Chief Security	1	0.3	Account Executive	1	0.3
Chief Executive Officer	15	4.0	Finance Officer	3	0.8
IT Assistant	3	0.8	Sales Analyst	1	0.3
Chief Accountant	1	0.3	Decision Support Specialist	1	0.3
Supervisor	4	1.1	Research Assistant	1	0.3
Developer	1	0.3	Accounts Officer	1	0.3
Assistant Director	1	0.3	Head of Procurement	3	0.8
Secretary	11	3.0	Assistant Manager	1	0.3

Senior Software Developer	1	0.3
Transport Officer	13	3.5
Software Engineer	7	1.9
Frontend Engineer	1	0.3
Administrative Assistant	4	1.1
IT Manager	3	0.8
Driver	5	1.3
Operations Assistant	1	0.3
Accountant	19	5.1
IT Operator	2	0.5
Personal Assistant	2	0.5
Managing Director	3	0.8
Chief Procurement Officer	1	0.3
Organizer	3	0.8
Tech Assistant	1	0.3
Project Manager	3	0.8
Treasurer	1	0.3
Loan Officer	4	1.1
Credit Manager	1	0.3
Auditor	4	1.1
Business Developer	1	0.3

Operations Manager	1	0.3
Senior Developer	1	0.3
Support Analyst	1	0.3
IT Technician	3	0.8
Inventory Manager	3	0.8
Web Developer	1	0.3
Quality Assurance Specialist	2	0.5
IT Coordinator	1	0.3
Warehouse Clerk	4	1.1
Computer Scientist	8	2.2
Procurement Coordinator	1	0.3
Business Planner	1	0.3
Operations Coordinator	2	0.5
Warehouse Supervisor	1	0.3
Senior Manager	2	0.5
Human Resource Manager	2	0.5
Chief Operating Officer	1	0.3
Senior Developer	1	0.3
Director	3	0.8
Administrative Coordinator	2	0.5
Inventory Coordinator	2	0.5

Controller	1	0.3
IT Specialist	4	1.1
Account Manager	2	0.5
Software Engineer	3	0.8
Manager	3	0.8
Data Analyst	9	2.4
Secretary	1	0.3
Developer	2	0.5
IT Analyst	1	0.3
Credit Controller	4	1.1
Finance Controller	2	0.5
Business Analyst	3	0.8
Logistics Specialist	3	0.8
Credit Officer	2	0.5
Procurement Assistant	2	0.5
Administrator	2	0.5
Dispatch Rider	8	2.2
Logistics Officer	4	1.1
National Service Personnel	2	0.5
Purchasing Officer	1	0.3
Operations Analyst	2	0.5
Sales Assistant	1	0.3
Finance Assistant	2	0.5

Accounting Assistant	1	0.3
Project Officer	2	0.5
Office Manager	1	0.3
Public Relations Officer	1	0.3
Scheduler	1	0.3
Foreman	2	0.5
Sales Consultant	1	0.3
Teacher	1	0.3
Marketing Director	1	0.3
Senior Developer	1	0.3
Geologist	1	0.3
Product Manager	1	0.3
Head of Operations	1	0.3
Office Assistant	1	0.3
Credit Clerk	1	0.3
Network Engineer	4	1.1
Systems Engineer	1	0.3
Software Developer	4	1.1
Supply Chain Lead	1	0.3
Data Scientist	6	1.6
Field Officer	1	0.3
Programme Manager	1	0.3
Data Engineer	1	0.3

Personal Assistant	3	0.8
Shipping Officer	1	0.3
Facilities Manager	3	0.8
Head of Claims	1	0.3
Cyber Security Analyst	5	1.3
Logistics Manager	1	0.3
Business Specialist	1	0.3
Research Assistant	1	0.3
Cashier	1	0.3
Branch Manager	4	1.1
Assistant Pharmacist	1	0.3
Delivery Coordinator	1	0.3
Systema Analyst	1	0.3
Consultant	5	1.3
Quantity Surveyor	1	0.3
Head of Sales	1	0.3
Security Officer	1	0.3
IT Support	2	0.6
Customer Service	4	1.1
Storehouse Clerk	1	0.3
Support Specialist	1	0.3
Total	372	100

Firm's Operational Years		
	Frequency	**Percentage (%)**
Less than 1 year	10	2.7

Number Of Employees		
	Frequency	**Percentage (%)**
Less than 6 employees	4	1.1
6-9 employees	14	3.8

1-5 years	32	8.6
6-10 years	37	9.9
11-15 years	82	22.0
16-20 yeas	131	35.2
21 years & above	80	21.5
Total	372	100.0

10-29 employees	34	9.1
30-50 employees	82	22.0
More than 50 employees	238	63.9
Total	372	100.0

Ownership Type		
	Frequency	**Percentage (%)**
Totally owned locally	299	80.4
Totally owned internationally	12	3.2
Partly Ghanaian & Partly Internationally owned	61	16.4
Total	372	100.0

Annual Revenue		
	Frequency	**Percentage (%)**
Less than 500,000	21	5.6
500,000 - 1,000,000	102	27.4
Above 1,000,000	249	67.0
Total	372	100.0

Industry Firm Belongs To		
	Frequency	**Percentage (%)**
Logistics	191	51.3
Technology	73	19.6
Food Processing Industry	9	2.4
Manufacturing	22	5.9

Finance	36	9.7
Other	41	11.0
Total	372	100.0

Table 4.1: Table showing the demographics of the responses from questionnaire

4.4 Descriptive Statistics of Measures Used

T**able 4.2 below represents descriptive statistics on information technology adoption** with the Sample-T test. Based on the findings of the statement "Computers enhance the supply chain (SC) performance of small and medium-sized enterprises (SMEs)," the used Likert scale generated a calculated mean of 6.540. This calculation indicates that respondents agree with the assumption that computers improve the supply chain performance of SMEs.

The assessment of the results using the Likert scale yields a computed mean of 6.355 for the statement "Internet connectivity helps to improve the supply chain (SC) performance of small and medium-sized enterprises (SMEs)." This result reveals that respondents agree that Internet access serves a beneficial role in improving the SC performance of SMEs.

According to the Likert scale used, the analysis of the data yields a computed mean of 6.140 for the statement "Smartphones help to improve the supply chain (SC) performance of small and medium-sized enterprises (SMEs)." This result indicates that respondents agree that cellphones do contribute to improving the SC performance of SMEs.

Utilizing the Likert scale, the analysis of the data reveals a calculated mean of 6.460 for the statement "Information technology adoption is directly linked to supply chain (SC) performance." This result implies that respondents agree that the adoption of information technology is directly related to supply chain performance.

The analysis of the findings, using the applicable Likert scale, yields a computed mean of 6.374 for the statement "The adoption of information technology in small and medium-sized enterprises (SMEs) has a positive influence on their supply chain (SC) performance." This implies that respondents agree that employing information technology within SMEs has a positive influence on their supply chain performance.

According to the adopted Likert scale, the results show a computed mean of 1.973 for the statement "The adoption of information technology in small and medium-sized enterprises (SMEs) has no influence on their supply chain (SC) performance." This indicates that respondents strongly disagree with the assumption that incorporating information technology into SMEs has no effect on their supply chain performance.

The Likert scale analysis of the data yields a computed mean of 6.245 for the statement "The supply chain unit of small and medium-sized enterprises (SMEs) cannot achieve their maximum output without the adoption of information technology." This suggests that respondents agree that the use of information technology is vital for SMEs' supply chain units to achieve maximum output.

The analysis of the findings using the Likert scale indicates a computed mean of 2.202 for the statement "A very good supply chain (SC) performance is very possible without information technology adoption." This suggests that respondents believe that getting extremely strong supply chain performance is difficult without the use of information technology.

INFORMATION TECHNOLOGY ADOPTION

No.	Statement	Min	Max	Mean	Std. Deviation
1	Computers enhance the SC performance of SMEs	1.00	7.00	6.540	.847

2	Internet connectivity helps to improve the SC performance of SMEs	1.00	7.00	6.355	.691
3	Smart phones help to improve the SC performance of SMEs	1.00	7.00	6.140	1.029
4	Information technology adoption is directly linked to SC performance	1.00	7.00	6.460	.705
5	The adoption of information technology in SMEs has a positive influence on their SC performance	1.00	7.00	6.374	.85100
6	The adoption of information technology in SMEs has a no influence on their SC performance	1.00	7.00	1.973	1.408
7	The supply chain unit of SMEs cannot produce their maximum output without the adoption of information technology	1.00	7.00	6.245	.986
8	A very good SC performance is very possible without information technology adoption	1.00	7.00	2.202	1.554

Table 4.2: Table showing descriptive statistics on Information Technology Adoption

Table 4.3 below represents Descriptive statistics on Supply Chain Performance with the Sample –T Test. Given the analysis of the findings using the applicable Likert scale, a calculated mean of 6.476 is produced for the statement "Our use of technologies or practices to optimize storage space

has a positive impact on cost reduction." This implies that respondents agree that their firm's use of technology or methods to improve storage space efficiency has a positive influence on cost reduction.

In accordance with the evaluation of findings using the Likert scale, a computed mean of 6.382 is determined for the statement "Implementation of strategies or technologies minimizes equipment maintenance and downtime costs." This indicates that respondents agree with the notion that implementing techniques or technology results in lower equipment maintenance and downtime costs.

The computed mean of 6.290 is determined from the analysis of the data using the chosen Likert scale for the statement "We have established efficient systems to track and meet delivery deadlines." This indicates that respondents agree that their companies have effectively built methods to monitor and meet delivery deadlines.

Referring to the Likert scale, a computed mean of 6.245 is apparent for the statement "Our organization can quickly alter production capacity to meet changing requirements." It shows that respondents agree that their firm can quickly modify production capacity to meet changing needs.

As per the applied Likert scale, the analysis of the results demonstrated a computed mean of 6.323 for the statement "Our communication channels enable swift interaction with customers." This indicates that the respondents agree with the idea that the communication channels in place facilitate rapid interactions with customers.

The analysis of the findings using the Likert scale provided a computed mean of 6.134 for the statement "The time required to transition from product development to production is minimal. This shows that respondents agree that the time required to transition from product development to production is truly limited.

SUPPLY CHAIN PERFORMANCE

No.	Statement	Min	Max	Mean	Std. Deviation
1	Our use of technologies or practices to optimize storage space has a positive impact on cost reduction	1.00	7.00	6.476	.851
2	Implementation of strategies or technologies minimizes equipment maintenance and downtime costs	1.00	7.00	6.382	.738
3	We have established efficient systems to track and meet delivery deadlines	2.00	7.00	6.290	0.702
4	Our organization can quickly alter production capacity to meet changing requirements	1.00	7.00	6.245	.857
5	Our communication channels enable swift interaction with customers	2.00	7.00	6.323	.61300
6	The time required to transition from product development to production is minimal	1.00	7.00	6.134	1.030

Table 4.3: Table showing descriptive statistics on Supply Chain Performance

Table 4.4 below represents Descriptive statistics on Leadership Commitment with the Sample –T Test. By employing the Likert scale, the analysis of responses reveals that for the statement "Information technology adoption in the supply chain of small and medium enterprises (SMEs) is impossible without leadership commitment," the calculated mean is 6.110. This suggests that

respondents do not agree with the idea that integrating information technology into SMEs' supply chains is unattainable without dedicated leadership.

The statement "Leadership commitment is the only important variable in ensuring excellent supply chain performance in business organizations" received a mean score of 2.457 with a standard deviation of 1.853. This suggests general agreement on the importance of leadership commitment, though opinions vary to some extent.

Using the same Likert scale, the analysis indicates that the computed mean for the statement "Supply chain (SC) performance is largely influenced by leadership commitment" is 6.481. This implies that respondents concur with the notion that the commitment demonstrated by leadership has a substantial impact on supply chain performance.

Based on the analysis utilizing the Likert scale, the calculated mean is 6.591 for the statement "Leadership commitment is the key moderator between information technology adoption and supply chain (SC) performance." This demonstrates respondents' agreement that leadership commitment is pivotal in moderating the relationship between IT adoption and supply chain performance.

Furthermore, the analysis using the Likert scale shows that the computed mean for the statement "The relationship between information technology adoption and supply chain (SC) performance cannot successfully thrive without leadership commitment" is 6.605. This indicates respondents' alignment with the idea that the success of the relationship between IT adoption and supply chain performance is contingent upon leadership commitment.

Lastly, the assessment employing the Likert scale reveals a computed mean of 6.637 for the statement "The lack of leadership commitment can negatively affect information technology adoption and supply chain (SC) performance in business organizations." This underscores respondents'

agreement that insufficient commitment from leadership can have a negative impact on both IT adoption and supply chain performance within business organizations.

LEADERSHIP COMMITMENT

No.	Statement	Min	Max	Mean	Std. Deviation
1	Information technology adoption in the supply chain of SMEs is impossible without leadership commitment	1.00	7.00	6.110	1.205
2	Leadership commitment is the only important variable in ensuring excellent SC performance in business organizations.	1.00	7.00	2.457	1.853
3	SC performance is largely influenced by leadership commitment	1.00	7.00	6.481	0.918
4	Leadership commitment is the key moderator between information technology adoption and SC performance	2.00	7.00	6.591	0.669
5	Information technology adoption and SC performance relationship cannot successfully thrive without leadership commitment	1.00	7.00	6.605	0.571

6	The lack of leadership commitment can negatively affect information technology adoption and SC performance in business organizations	2.00	7.00	6.637	0.545

Table 4.4: Table showing descriptive statistics on Leadership Commitment

4.5 Reliability test

Table 4.5 shows that Information Technology Adoption had an alpha value of 0.743 with a given number of elements (8), Supply Chain Performance had an alpha value of 0.829 with a given number of items = 7, and Supply Chain Digitalization Leadership Commitment had an alpha value of 0.783 with 5 items. According to Taber (2018), the results collected reflect a good level.

Table 4.5: Cronbach Alpha Values

Constructs	Cronbach's Alpha	No of Items
SECTION B: INFORMATION TECHNOLOGY ADOPTION	.743	8
SECTION C: SUPPLY CHAIN PERFORMANCE	.829	6
SECTION D: LEADERSHIP COMMITMENT	.783	6

Table 4.5: Table showing Section B, C and D's Cronbach Alpha Values and Number of Items

4.6 Correlation Matrix

The provided correlation matrix outlined the connections involving the moderating variable "leadership commitment," the dependent variable "supply chain performance," and the independent variable "IT adoption." The matrix contains Pearson correlation coefficients and corresponding p-values.

Information Technology Adoption and SC Performance: The correlation coefficient between IT adoption and supply chain (SC) performance is approximately 0.278. The significance level (p-value) is less than 0.001, indicating a statistically significant relationship. A positive correlation suggests that as IT adoption increases, supply chain performance tends to improve.

SC Performance and Leadership Commitment: The correlation coefficient between supply chain (SC) performance and leadership commitment is approximately 0.303. The significance level (p-value) is less than 0.001, indicating a statistically significant relationship. There is a positive correlation, with leadership commitment moderating the impact of IT adoption on SC performance.

Information Technology Adoption and Leadership Commitment: The correlation coefficient between IT adoption and supply chain (SC) performance is approximately 0.171. The significance level (p-value) is less than 0.01, signifying a statistically significant relationship. There is a weak positive correlation, with leadership commitment moderating the relationship between IT adoption and SC performance.

In summary, the correlation analysis revealed relationships among the variables. Leadership commitment appeared to moderate the connection between IT adoption and supply chain performance. Further exploration is recommended to better understand these interactions and dependencies. These findings provide valuable insights for potential research and analysis avenues.

		Information technology adoption is directly linked to SC performance	SC performance is largely influenced by leadership commitment	Leadership commitment is the key moderator between information technology adoption and SC performance
Information technology adoption is directly linked to SC performance	Pearson Correlation	1	.278**	.171**
	Sig. (2-tailed)		0	0.001
	N	372	372	372
SC performance is largely influenced by leadership commitment	Pearson Correlation	.278**	1	.303**
	Sig. (2-tailed)	0		0
	N	372	372	372
Leadership commitment is the key moderator between information technology adoption and SC performance	Pearson Correlation	.171**	.303**	1
	Sig. (2-tailed)	0.001	0	
	N	372	372	372

Table 4.6: A Table showing the correlation matrix of the various variables

4.7 Regression Analysis

A regression analysis from PROCESS Hayes Macro Model 1 was used to investigate how the level of leadership commitment may moderate the impact of IT adoption on supply chain performance. Regression analysis provides valuable insights into the complex interplay between IT adoption, supply

chain performance, and leadership commitment by quantifying these relationships, facilitating informed decision-making and deeper understanding within the context of supply chain management and leadership dynamics.

X = independent variable = ITA = Information Technology Adoption

Y = dependent variable = SCP = Supply Chain Performance

W = moderating variable = LC = Leadership commitment

4.7.1 Outcome Variable: SCP.

Model Summary

R	R-sq	MSE	F	df1	df2	p
.4715	.2223	.1648	34.5823	3.0000	363.0000	.0000

Table 4.7: A Table showing Model summary of outcome variable: Leadership commitment is the key moderator between information technology adoption and SC performance from regression analysis

The Model Summary provides crucial insights into the regression model's fit, revealing key statistical metrics for understanding the relationship between predictor variables and the outcome variable, Supply Chain Performance (SCP). The correlation coefficient (R) of 0.4715 indicates a moderate positive association, while the R-squared value (0.2223) signifies that 22.23% of SCP variance is explained by the model. The Mean Squared Error (MSE) at 0.1648 quantifies the average squared difference between actual and predicted SCP values, reflecting the model's accuracy. The F-statistic (34.5823) with degrees of freedom (df1, df2) at 3.0000 and 363.0000 respectively underscores the collective significance of predictor variables in explaining SCP. The low p-value (0.0000) reinforces the statistical significance of at least one predictor variable. These metrics collectively affirm

the model's robust fit, demonstrating its efficacy in capturing the nuances of the relationship between predictor variables and SCP.

Model

	coeff	Se	t	p	LLCI	ULCI
constant	-11.4718	3.3821	-3.3919	.0000	-18.1227	-4.8209
ITA	2.7615	.6349	4.3497	.0000	1.5130	4.0100
LC	2.9455	.5737	5.1344	.0000	1.8174	4.0737
Int_1	-.4515	.1073	-4.2096	.0000	-.6625	-.2406

Product terms key: Int_1 : ITA x LC

Table 4.8: A Table showing Model summary for ITA from regression analysis

Constant: The intercept, representing the estimated value of the outcome variable (SCP) when all predictor variables (ITA and LC) are zero, is -11.4718. The t-value of -3.3919 with a p-value of 0.0008 indicates that the intercept is significantly different from zero.

ITA (Information Technology Adoption): A one-unit increase in ITA is associated with a 2.7615-unit increase in SCP. The t-value of 4.3497 and a p-value of 0.0000 suggest that ITA is a statistically significant predictor.

LC (Leadership Commitment): A one-unit increase in LC is associated with a 2.9455-unit increase in SCP. The t-value of 5.1344 and a p-value of 0.0000 indicate that LC is a statistically significant predictor.

Int_1 (Interaction Term): The interaction term between ITA and LC (represented by Int_1) is -0.4515. This term accounts for the additional impact on SCP when ITA and LC interact. The negative coefficient suggests a dampening effect. The t-value of -4.2096 and a p-value of 0.0000 indicate that the interaction term is statistically significant.

Product Terms Key: The product term key explains that Int_1 is the interaction between ITA and LC, denoted as ITA x LC.

In summary, this model suggests that both ITA and LC individually have a positive and significant impact on SCP. The interaction term (ITA x LC) significantly contributes to the model, indicating that the combined effect of ITA and LC is not simply additive but involves an interaction that influences SCP.

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	.0380	17.7211	1.0000	`363.0000	.0000
Focal predict: ITA (X)					
Mod var: LC (W)					

Table 4.9: A Table showing Test(s) of highest order unconditional interaction

R2-chng (R-squared Change): The change in R-squared due to the addition of the interaction term is 0.0380. This indicates the improvement in the proportion of variance in the outcome variable SCP) explained by including the interaction term in the model.

F-statistic (Test Statistic): The F-value is 17.7211, used to test the overall significance of adding the interaction term to the model.

Degrees of freedom (df1, df2): df1 is 1 and df2 is 363, representing the degrees of freedom ssociated with the numerator and denominator of the F-statistic, respectively.

p-value: The p-value is 0.0000, indicating that the test for the significance of the interaction term is statistically significant. In other words, the interaction between ITA and LC significantly contributes to explaining the variance in SCP.

Focal Predictors: The focal predictors involved in the interaction are ITA (denoted as X) and LC (denoted as W).

Conditional effects of the focal predictor at values of the moderator(s):

LC	Effect	se	t	P	LLCI	ULCI
5.5000	.2780	.0803	3.4623	.0006	.1201	.4359
5.8333	.1275	.0692	1.8439	.0660	-.0085	.2635
6.0000	.0523	.0701	.7459	.4562	-.0855	.1900

Table 4.10: A Table showing Conditional effects of the focal predictor at values of the moderator(s)

LC (Moderator - Leadership Commitment): The different levels of the moderator (LC) at which the conditional effects are assessed are 5.5000, 5.8333, and 6.0000.

Effect: This represents the estimated effect of Information Technology Adoption (ITA) on Supply Chain Performance (SCP) at each level of the moderator.

se (Standard Error): The standard error provides an indication of the precision of the estimated effect.

t (t-value): The t-value assesses whether the estimated effect is significantly different from zero. Higher t-values indicate greater significance.

p (p-value): The p-value tests the null hypothesis that the estimated effect is equal to zero. Smaller p-values suggest greater significance.

LLCI (Lower Limit of Confidence Interval): This is the lower boundary of the confidence interval for the estimated effect.

ULCI (Upper Limit of Confidence Interval): This is the upper boundary of the confidence interval for the estimated effect.

Explanation: For each level of the moderator (LC), the table presents the estimated effect of ITA on SCP along with associated statistical measures. At LC = 5.5000, the estimated effect is 0.2780, and it is statistically significant (p = 0.0006), suggesting a positive impact of ITA on SCP. At LC = 5.8333, the estimated effect is 0.1275, with a p-value of 0.0660, indicating a positive impact, but with a slightly lower significance. At LC = 6.0000, the estimated effect is 0.0523, and the p-value is 0.7459, suggesting a weaker and statistically non-significant impact.

These results provide insights into how the relationship between ITA and SCP varies at different levels of Leadership Commitment, offering a nuanced understanding of the conditional effects within the specified ranges of the moderator.

Analysis notes and errors

The level of confidence for all confidence intervals in output is 95.0000. The "W values" in conditional tables are the 16th, 50th, and 84th percentiles.

4.8 Hypothesis Testing:

Null Hypotheses (H0):

H0: There is no significant relationship between IT Adoption (ITA) and Supply Chain Performance (SCP).

H0: There is no significant relationship between Leadership Commitment (LC) and SCP.

H0: The interaction effect (Int_1) between ITA and LC is not significant.

Alternative Hypotheses (H1):

H1: There is a significant relationship between ITA and SCP.

H1: There is a significant relationship between LC and SCP.

H1: The interaction effect (Int_1) between ITA and LC is significant.

Significance Level (α): Set at 0.05.

Regression Coefficients:

For ITA: The coefficient is 2.7615, with a p-value < 0.05. Reject H0, indicating a significant positive relationship between ITA and SCP.

For LC: The coefficient is 2.9455, with a p-value < 0.05. Reject H0, suggesting a significant positive relationship between LC and SCP.

For Int_1: The coefficient is -0.4515, with a p-value < 0.05. Reject H0, indicating a significant interaction effect between ITA and LC on SCP.

R2-chng Test:

R2-chng is 0.0380 with a p-value < 0.05. Reject H0, indicating that the inclusion of the interaction term significantly improves the model.

Conditional Effects of ITA at Different Levels of LC:

LC at 5.5000: The effect is 0.2780 with a p-value < 0.05.

LC at 5.8333: The effect is 0.1275 with a p-value < 0.05.

LC at 6.0000: The effect is 0.0523 with a p-value > 0.05.

Conclusion:

The results suggest a significant positive relationship between IT adoption, leadership commitment, and supply chain performance. Additionally, the interaction effect between ITA and LC significantly influences SCP. The conditional effects of ITA at different levels of LC further highlight the moderating role of LC in this relationship.

4.9 Overview of Findings

The findings from the analysis underscore the substantial and positive contributions of both Information Technology Adoption (ITA) and Leadership Commitment (LC) to Supply Chain Performance (SCP). In isolation, each factor demonstrates a significant influence on SCP, suggesting that organizations stand to benefit from both robust IT adoption strategies and strong leadership commitment in their pursuit of supply chain optimization. However, the analysis goes beyond examining individual contributions and delves into the interactive dynamics between ITA and LC. The results reveal that the interaction between these two factors plays a pivotal role in enhancing the model's predictive power for SCP. This signifies that the combined effect of ITA and LC is not simply additive; rather, their synergy yields a more profound impact on supply chain outcomes. The inclusion of the interaction term, represented by Int_1, significantly improves the model's ability to explain variations in SCP, adding a layer of complexity to the understanding of the relationship between IT adoption and supply chain efficiency.

Furthermore, the investigation unveils an intriguing nuance in the relationship between ITA and SCP, dependent on the varying levels of LC. The conditional effects analysis highlights that the impact of ITA on SCP is contingent on the level of leadership commitment within the organization. Notably,

stronger effects are observed at lower levels of LC, indicating that the positive influence of ITA on SCP is particularly pronounced in settings where leadership commitment might be less prominent.

4.10 Discussion of Findings

This study, drawing insights from a diverse sample of 372 participants, elucidates the constructive impact of Information Technology (IT) adoption on the performance of supply chains (SC). A significant finding emerges with the identification of leadership commitment as a pivotal moderator, exhibiting positive correlations with both IT adoption and SC performance. The incorporation of nuanced perspectives and divergent views contributes to a more profound understanding of this intricate relationship, adding depth to the study's findings. Practical implications underscore the strategic significance of prioritizing both IT adoption and robust leadership commitment for organizations seeking to optimize supply chain outcomes, particularly in the ever-evolving landscape of contemporary business. This discussion aligns with the findings of relevant studies such as Amoani (2015) and Koul (2010), which emphasize the interconnectedness of IT adoption, leadership commitment, and supply chain performance. These studies underscore the need for organizations to strategically integrate technology while fostering strong leadership commitment to navigate the complexities of the modern business environment effectively.

4.10.1 Relationship between IT Adoption and SC Performance

The regression analysis explores the intricate relationship between Information Technology Adoption (ITA) and Supply Chain Performance (SCP), drawing insights from studies such as Premkumar and Roberts (1999), and Melville et al. (2004). The overall model fit, represented by an R-squared of 0.2223, signifies that 22.23% of SCP variance is explained. Notably, both ITA and

Leadership Commitment (LC) demonstrate positive and statistically significant coefficients, corroborating the findings of previous research. Specifically, the coefficient for ITA stands at 2.7615 (p-value < 0.0000), indicating a robust association between increased IT adoption and improved SCP. Similarly, the positive coefficient of 2.9455 (p-value < 0.0000) for LC reaffirms the positive correlation between heightened leadership commitment and enhanced SCP, aligning with insights from Sambamurthy et al. (2003). However, the introduction of the interaction term (Int_1) adds complexity, with a statistically significant negative interaction term (p-value < 0.0000) highlighting LC's moderating effect on the ITA-SCP relationship. Examining conditional effects at different LC levels reveals nuances in this moderation. At a lower LC level (5.5000), the conditional effect of ITA on SCP is 0.2780 (p-value = 0.0006), indicating a significant positive impact. However, as LC increases to 5.8333 and 6.0000, the conditional effects decrease (0.1275 and 0.0523, respectively), with diminishing statistical significance, aligning with the findings of Melville et al. (2004). In essence, these insights affirm that IT adoption independently contributes to SCP, with higher ITA associated with improved outcomes. The moderation effect of LC underscores its influence on the ITA-SCP relationship, emphasizing the amplified positive impact of ITA on SCP in the presence of strong leadership commitment, while acknowledging the nuanced negative moderation effect in certain conditions. This synthesis of research provides a vital perspective for organizations navigating the complexities of optimizing supply chain performance.

4.10.2 Leadership Commitment as a Key Moderator

Leadership Commitment (LC) emerges as a pivotal moderator in shaping the dynamic interplay between Information Technology Adoption (ITA) and Supply Chain Performance (SCP). Participants unequivocally assert the indispensable role of effective leadership commitment in ensuring the success

of IT adoption initiatives and subsequently enhancing SCP. This perception aligns with established literature and is reinforced by the statistical analysis, which discloses a significant and positive coefficient for LC (2.9455, $p < 0.0000$), indicating that heightened leadership commitment correlates with improved SCP. This finding resonates with the insights of Sambamurthy, Bharadwaj, and Grover (2003), highlighting leadership commitment's crucial function in aligning IT strategies with supply chain objectives, fostering innovation, and facilitating resource allocation. Leadership commitment is underscored as a linchpin in navigating the intricacies of IT integration, driving innovation, and promoting supply chain agility. Moreover, the external environment, shaped by industry characteristics and trading partners, significantly influences the impact of IT, with leadership commitment playing a central role in addressing industry-specific challenges and leveraging external factors. Participants emphatically agree that a deficiency in leadership commitment can adversely affect both IT adoption and SC performance, echoing the findings of Melville et al. (2004). In essence, while Leadership Commitment positively influences the ITA-SCP relationship, it's noteworthy that the negative interaction effect observed in the data suggests that, under certain conditions, this relationship may be weakened. This study underscores the strategic imperative of cultivating robust leadership commitment in tandem with IT adoption for organizations striving to optimize supply chain outcomes within a dynamic business landscape.

4.10.3 Impact of Leadership Commitment on IT Adoption and SC Performance

The regression analysis for Model 1, encompassing a sample size of 372, unveils intricate dynamics surrounding the influence of Leadership Commitment (LC) on both Information Technology Adoption (ITA) and Supply Chain Performance (SCP). The statistical significance of the relationship ($p < 0.0000$) emphasizes the substantive impact of LC in this context. In terms of IT Adoption, LC exhibits

a robust and positive association, as indicated by the significant coefficient of 2.9455 ($p < 0.0000$). This finding resonates with the insights of Sambamurthy, Bharadwaj, and Grover (2003), highlighting the pivotal role of leadership commitment in fostering a more pronounced acceptance and integration of information technology within organizational frameworks. Turning to the realm of Supply Chain Performance, the regression coefficients elucidate an independent positive effect of LC. With ITA held constant, a one-unit rise in LC corresponds to a 2.95-unit increase in SCP ($p < 0.0000$). This underscores LC as a fundamental driver of heightened supply chain performance, emphasizing its standalone significance in this context. The interaction term (Int_1) between ITA and LC further unveils LC's moderating role. With a coefficient of -0.4515 ($p < 0.0000$), this interaction effect delineates that under conditions of elevated LC, the positive impact of ITA on SCP is accentuated. Conversely, in situations of lower LC, this impact is notably subdued. The integration of insights from Melville et al. (2004) underscores the importance of leadership commitment in optimizing IT adoption, subsequently influencing supply chain performance by facilitating resource alignment, navigating complexities, and capitalizing on external influences.

4.10.4 The Interaction Effect: Leadership Commitment as a Moderator

The regression model (Model 1) examines the relationship between Supply Chain Performance (SCP) as the outcome variable, Information Technology Adoption (ITA) as the focal predictor, and Leadership Commitment (LC) as the moderator. The model, based on a sample size of 372, reveals a statistically significant relationship ($p < 0.0000$) with an R-squared value of 0.2223, indicating that approximately 22.23% of the variance in SCP can be explained by ITA and LC. Examining the coefficients, the constant term is -11.4718 ($p = 0.0008$), suggesting that SCP is negatively impacted when ITA and LC are held constant. For ITA, the coefficient is 2.7615 ($p < 0.0000$), indicating a positive relationship with SCP. This implies that a one-unit increase in ITA is associated with a 2.76-

unit increase in SCP, holding LC constant. The key moderator, Leadership Commitment (LC), exhibits a coefficient of 2.9455 ($p < 0.0000$), indicating a positive and significant impact on SCP. This means that, holding ITA constant, a one-unit increase in LC is associated with a 2.95-unit increase in SCP. The interaction term (Int_1) between ITA and LC is -0.4515 ($p < 0.0000$), signifying the moderating effect of LC on the relationship between ITA and SCP. The test of highest order unconditional interaction reveals a significant R-squared change (0.0380, $p < 0.0000$), indicating that the interaction effect between ITA and LC contributes significantly to the predictive power of the model. Further exploration through conditional effects shows that, at different values of LC (5.5, 5.8333, and 6), the effect of ITA on SCP varies. For instance, at LC = 5.5, the effect is 0.2780 ($p = 0.0006$), suggesting a positive impact. Conversely, at LC = 6, the effect diminishes to 0.0523 ($p = 0.7459$). These findings provide a nuanced understanding of the relationship dynamics. Strong leadership commitment not only independently contributes positively to SCP but also moderates the positive impact of ITA. The specific coefficients and interaction effects quantify the extent of these relationships, offering valuable insights for organizations aiming to strategically leverage IT adoption and leadership commitment to optimize supply chain performance. Papers that further contribute to this discussion include Sambamurthy, Bharadwaj, and Grover (2003) and Melville et al. (2004), emphasizing the pivotal role of leadership commitment in IT adoption and supply chain performance optimization.