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Impact Of Information Technology On Supply Chain Management Performance: A Study Of Select Manufacturing Industries

GOPALA K N

Research Scholar
DOSR in Commerce
Tumkur University, Tumakuru.

Dr. B. SHEKHAR

Professor & Chairman
DOSR in Commerce
Tumkur University, Tumakuru.

Abstract:

This study explores the impact of Information Technology (IT) on Supply Chain Management (SCM) performance within select manufacturing industries in India. With the rapid advancement of IT tools and systems, such as Enterprise Resource Planning (ERP), Internet of Things (IoT), Artificial Intelligence (AI), and blockchain, supply chains have become more efficient, transparent, and responsive. The research focuses on how these technologies enhance key SCM performance metrics, including cost efficiency, inventory management, delivery accuracy, and customer satisfaction. Employing a mixed-methods research design, the research examines data gathered from manufacturing companies in different industries, such as automotive, pharmaceuticals, and consumer goods. The results indicate that IT adoption has a substantial impact on supply chain agility, lowers operational expenses, and enhances collaboration among stakeholders. Nevertheless, issues like high costs of implementation, lack of skills, and resistance to change remain, especially among small and medium-sized enterprises (SMEs). The research concludes that though IT is an important facilitator of SCM performance, its integration depends on strategic planning, training of the workforce, and organizational flexibility. The findings of this research offer insightful suggestions to policymakers and industry managers looking to use IT for competitiveness in the changing context of Indian manufacturing. The study underscores the importance of strategic planning, workforce training, and organizational adaptability for successful IT integration, offering actionable insights for industry leaders and policymakers to leverage IT for competitive advantage in India's manufacturing sector.

Key Words: Supply Chain Management, IoT, Artificial Intelligence, ERP, Small and Medium Enterprises, Skill Gaps, Policy Makers and Stakeholders, Strategic planning.

INTRODUCTION:

In 1982, Keith Oliver, a consultant at Booz Allen Hamilton, introduced the term "supply chain management" to the public domain in an interview for the Financial Times. In 1983 Wirt Schafts Wyche in Germany published for the first time the results of an implemented and so called "Supply Chain Management project", led by Wolfgang Partsch. As globalization increases the complexity of supply chain processes, businesses are increasingly subscribing to analytical standards to improve their decision-making capacities and enhance the efficiency of their supply chains. To be able to survive the competitive environment and ensure qualitative progress, a business needs to invest in responsible supply chain management to efficiently and sustainably respond to disruptions.

Supply chain management (SCM) has been noted as an increasingly important management field to help enterprises improve supply chain operations. SCM involves the flows of material, information, and finance in a network consisting of suppliers, manufacturers, distributors, and customers. Supply chain management play a crucial role to increase the efforts of marketing team. The main problem of supply chain is to determine how to successfully accomplish this integration. Business management has entered the latest generation so that we will simply advice for companies to use the information properly with the help of technology in supply chain management.

In the late 1920s, the introduction of mass production along assembly lines laid the foundations for supply chain management. First successfully implemented by Ford, the idea of producing consistent products on a large scale with increased efficiency changed trade and supply chains irreversibly. Keith Oliver is a British logistician and consultant known for coining the terms "Supply Chain" and "Supply Chain Management", first using them in public in an interview with Arnold Kransdorff, then working for the Financial Times, on 4 June 1982.Revenue in the Supply Chain Management Software market is projected to reach US$276.80m in 2024. Revenue is expected to show an annual growth rate (CAGR 2024-2028) of 10.01%, resulting in a market volume of US$405.40m by 2028. Supply chain encompasses all of those activities which have

been starting from moving goods from Order Management, Product Sourcing & Procurement, Transportation Management, Inventory Management, and Demand Forecasting & Replenishment. Flow of information across any supply chain coordinates the physical flows and the interdependencies of organizations in the supply chain. The managers of the supply chain make use of this information to make decisions related to the different aspects of supply chain, inbound logistics, manufacturing or operations and outbound logistics.

Five Phases of Supply Chain Management:

IT is backbone for the success of supply chain of industries. In recent days it is impossible to achieve an effective supply chain without IT. The exponential growth of Information Technology with communication technology in SCM is playing critical role in optimizing decisions of the supply chain network flow for achieving organizational competitiveness, improving higher service level, lowering inventory, supply chain costs and reducing electronic risks (e-risks). To achieve integration and effective information sharing across and beyond the organizations, IT in SCM is also required.

Software's used in Supply Chain Management of Manufacturing Industries:

The organizations are moving towards the virtual supply chain with help of following tools: The SAP Supply Chain Management software, Oracle SCM, Blue Yoder's Luminate Platform, Logility Digital Supply Chain Platform, Niche SCM solutions. The software tool automates warehouse management, optimizes global transportation management and helps a business integrate their end-to-end yard logistics processes with cloud technology. It helps to manage specific workflows and implement machine learning techniques, share real-time information with partners and suppliers, to benefit from predictive and prescriptive analytics at different stages of the supply chain. Faster delivery times and more accurate delivery estimates: SCM also involves managing the transportation and logistics of products to ensure timely delivery. Companies can enhance customer satisfaction and build trust and loyalty by delivering products on time. Software offers fast, reliable and sustainable supply chain management solutions. SCM focus on enhancing the collaboration and cooperation among all company's supply chain activities by using Information Technology efficiently. As with other business management principles, Supply chain management also applies to manufacturing industries. SCM is widely used to increase the Global

TOP SCM SYSTEMS COMPARED

	Main modules	What clients like	What clients dislike
SAP SCM	• Supply Chain Planning • Supply Chain Logistics • Manufacturing • Product Lifecycle Management • Enterprise Asset Management	✓ wide functionality, ✓ real-time scenario planning, ✓ data processing speed, ✓ variety of forecasting methods, ✓ regular updates, ✓ easy integration with core ERP	× steep learning curve, × price, × complexity of implementation and maintenance, × need for tech-savvy team
Oracle SCM	• Supply Chain Planning • Procurement • Inventory Management • Manufacturing • Maintenance • Order management • Logistics	✓ multiple configurations, ✓ variety of modules, ✓ improved visibility, ✓ security, ✓ reporting capabilities	× complexity of use, × price, × complex customization
Blue Yonder	• Supply Chain Planning • Supply Chain Execution • Omni-Channel commerce	✓ configurability, ✓ ease of use, ✓ predictive capabilities ✓ enhanced collaboration	× performance issues, × customer support issues
Logility	• Demand • Supply • Inventory • Deploy • Product • Integrated business planning • Supply chain data management	✓ robust planning functionality, ✓ ease of use, ✓ accurate forecasting, ✓ flexibility	× performance issues, × integration issues, × help desk issues

competition in various Industries including manufacturing industry. SCM focus on efficiency and increased production, manufacturers can save large amounts of money when they follow a well-designed SCM plan. In fact, 79% of companies that have what is considered a high-performing supply chain have higher levels of revenue growth than other companies within their sectors.

REVIEW OF LITERATURE:

Uday Kumar Kanike, (2023), in their research paper entitled **"Factors disrupting supply chain management in manufacturing industries"** This paper aims to explore the causes of SCM disruptions in the manufacturing sector. For this research, secondary sources will be sourced from indexed databases with good reputations, within the last 20 years and are relevant to the research problem. The researcher finds the four main variables: SCM, supply chain disruptions, delayed production, manufacturing cost. The findings highlight the importance of proactive measures in building resilient supply chains capable of effectively handling disruptions and supply chain disruptions can seriously affect the supply chain management of manufacturing businesses, leading to higher costs, production delays, decreased efficiency, and lower customer satisfaction.

Samer Hamadneha, Muhammad Turki Alshurideha, Haitham M. Alzoubic, d, Iman Akoure, Barween Al Kurdif and Shanmugan Jogheec, (2023), in their research paper entitled **"Factors affecting e-supply chain management systems adoption in Jordan: An empirical study"** The main purpose of the study is to examine factors that affect the adoption of e-SCM systems in Jordan, by using the technology, organization, and environment (TOE) framework. The study is based on primary data. The professional website LinkedIn was used to send online survey to collect data in this study during 2022. The survey aimed at supply chain managers and individuals working in the logistics and supply chain field to achieve the study aim, with participation being entirely voluntary. According to the study findings, E-SCM systems providers should focus on the relative advantage the systems offer to increase the likelihood of their adoption. The findings confirm the association between variables embedded in the TOE framework and the adoption intention of innovative supply chain systems and solutions.

Achmad Wildan Nabilaa, Mahendrawathi ERb, James C. Chena, Tzu Li Chenc, (2022), in their article **"The impact analysis of information technology alignment for information sharing and supply chain integration on customer responsiveness".** This study explored the connection between information technology alignment, information sharing, supply chain integration, and customer responsiveness. The purpose of the study is to know the effect of information technology alignment on customer responsiveness explicitly and implicitly through information exchange. This study uses the survey method to collect the data, the researchers use a Likert scale. The main variables found in this article are IT alignment, Information sharing, Supply chain integration, Customer responsiveness. This research reveals that information technology alignment significantly impacts customer responsiveness both explicitly and implicitly, through information sharing and supply chain integration.

Niken Trisnawati and I nyoman Pujawan, (2021), in their article **"Analysis of supply chain management based on the supply chain performance maturity level in manufacturing Industry"** This study is highlighting the contribution and the implementation of supply chain management maturity which can improve supply chain operational and supply chain organizational performance and study provides useful planning information in the manufacturing industry. This paper has been provided empirical study that identifies two supply chain management maturities and describes the relationship among maturity, operational performance and organization performance within the context of manufacturing Industries. This paper methodology of the sample and data collection and partial and least square path model and hypothesis test and safety risk perception and structural equation modelling.

RESEARCH GAP:

The detailed literature survey helped in identification of gap. It is observed that a large number of studies have carried out on the Effect of SCM Strategy on Operational and Financial Performance of companies and role of IT in SCM. But few researches have done study on Information technology in SCM performance. Hence there is no studies conducted Karnataka that to information technology on SCM performance in manufacturing industries. This proposed study mainly focuses to evaluate the IT in Supply chain management performance of manufacturing industries in Karnataka.

STATEMENT OF THE STUDY:

IT is the backbone for the success of supply chain industries. Supply chain management is one of competitive strategy to enhance the company's productivity and profitability. From the study decided to find out the role of information technology in supply chain management performance of manufacturing industry in Karnataka. As per literature review and research gap it is proposed to carry out this study, selected manufacturing industries in Karnataka. To examine how SCM is implemented and role of IT in SCM performance of select manufacturing industries.

OBJECTIVES OF THE STUDY:

1) To understand the role of Information Technology in Supply chain management.
2) To evaluate the supply chain performance in manufacturing industries in select sample organizations.
3) To identify the impact of Information Technology in Supply chain management performance in select manufacturing industries.
4) To study the opportunities and challenges of Information Technology in Supply chain

management in select sample organisations.

HYPOTHESIS OF THE STUDY:

- **H_{01}:** There is no significant relationship between the Information Technology and Supply chain management performances of manufacturing industries.

- **H_{02}:** There is no significant challenges facing in implementing Information Technology in Supply chain management.

RESEARCH METHODOLOGY:

Sampling Design:

A Sampling design of the study ―Information Technology in supply chain management performance: a study of select manufacturing industries in Karnataka, a random sampling method will be preferred to analyses the data collected from manufacturing industries in Karnataka.
The sample size is 55 respondents

Reliability Statistics

Cronbach's Alpha	N of Items
0.791	40

Case Processing Summary

		N	%
Cases	Valid	55	100.0
	Excluded[a]	0	0.0
	Total	55	100.0
a. Listwise deletion based on all variables in the procedure.			

0.791 Which is greater than 0.5, it means these statements are sufficient to measure the relationship between the Information technology and supply chain management.

Collection of the Data:

The requiring data for the study will be conducted using both primary and secondary sources of data. For the purpose of primary data, the study has resorted to well-structured questionnaires and data have been collected from the employees working in the select manufacturing industries in Karnataka. The source of secondary data for this study includes books, various research article,

related journals, reports, newspapers, monthly periodicals, and web resources, published and unpublished thesis.

Plan of Analysis:

The collected data will be analyzed with the help of statistical tools and techniques such as percentage, mean, standard deviation, correlation, regression, T-test, Anova using SPSS. Where ever necessary to present the data more effectively tables, charts, diagrams and graphs will be shown.

INFORMATION TECHNOLOGY IN SUPPLY CHAIN MANAGEMENT PERFORMANCE – AN ANALYSIS AND INTERPRETATION

Descriptive statistics are used to summarize and present the basic features of data in a study. They provide simple summaries about the sample and the measures, offering insights into the dataset's characteristics. "Information Technology in SCM Performance: A Study of Manufacturing Industries in Karnataka," descriptive statistics can help to understand the extent and impact of IT on SCM performance.

Table 1: Demographic Profile of Respondents

Demographic Profile	Particular	Percentage
Gender	Male	81.8
	Female	18.2
Age	Less than 25	43.6
	25-30	23.6
	30-35	20.1
	35-40	9.1
	40 and above	3.6
Occupation	Manager	18.2
	Supervisor	21.8
	Logistics Co-Ordinator	9.1
	Procurement officer	7.3
	Executive	43.6

Source: Primary Data

The above table depicts demographic profile of the respondents. The total number of respondents is 55. In this table 81.8 per cent are Male respondents and 18.2 per cent are Female respondent respectively. This indicates that response given by female is less. Because male respondents are more working in manufacturing industries. This shows the greater number of respondents are between 20-25 age groups is highly represented due to recruitment trends

favoring young, adaptable employees who can be trained in the latest IT practices in SCM. Their adaptability to new technologies makes them ideal for these roles. The current position of the respondents out of 55 respondents 43.6 per cent of the respondents are Executives, the distribution of current positions among respondents, with executives making up the largest proportion. This suggests that the survey respondents are predominantly executives.

Table 2: IT Systems Used by Company for Supply Chain Management

	Frequency	Percentage
ERP (Enterprise Resource Planning)	29	52.7
SCM Software (Supply Chain Management)	24	43.6
CRM (Customer Relationship Management)	15	27.3
WMS (Warehouse Management System)	9	16.4

Source: Primary Data

The high usage of ERP is likely due to its comprehensive nature, integrating all business functions, including supply chain management, finance, human resources, and manufacturing. The significant use of SCM Software also indicates a focus on specialized software for managing supply chain operations, such as procurement, logistics, and distribution. This combination of ERP and SCM Software suggests a strong emphasis on streamlined supply chain management.

Table 3: Emerging Technologies are considered for Future Integration into Supply Chain Operation

	Frequency	Percentage
Artificial Intelligence	22	40
Internet of Things	22	40
Block chain	6	10.9
Virtual Reality	5	9.1
Total	**55**	**100**

Source: Primary Data

The company is considering various emerging technologies for future integration into supply chain operations. Artificial Intelligence (AI) and the Internet of Things (Iota) are the top contenders, each with 40 per cent of the votes. Block chain technology and Virtual Reality (VR) are also being considered, but to a lesser extent, with 10.9 per cent and 9.1 per cent respectively. The high interest in AI and IoT is likely due to their potential to transform supply chain management. AI can enhance predictive analytics, automate decision-making, and improve efficiency. IoT can provide real-time visibility, enable track-and-trace capabilities, and

optimize logistics.

Table 4: Biggest Challenges Faced by Organization in Implementing Information Technology in Supply Chain Management

Particulars		Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Mean	SD
Lack of budget	N	13	26	11	2	3	3.8	1.0767
	%	23.63	47.27	20	3.63	5.45		
Lack of expertise	N	5	27	19	4	0	3.6	0.798
	%	9.09	49.09	34.54	7.27	0		
Resistance from employees	N	9	29	13	4	0	3.78	0.8498
	%	16.36	52.72	23.63	7.27	0		
Integration issues with existing system	N	13	31	7	4	0	3.96	0.8563
	%	23.63	56.36	12.72	7.27	0		

Source: Primary Data

The perceived barriers to adopting emerging technologies in supply chain management, with mean scores ranging from 3.6 to 3.96 and standard deviations (SD) between 0.79796 and 1.07665.

Lack of budget is having mean value 3.8 and SD = 1.07665. This is a significant barrier, indicating that financial constraints are a major concern.

Lack of expertise having mean value 3.6 and SD = 0.79796. This suggests that the company may not have the necessary skills or knowledge to implement emerging technologies.

Resistance from employees (mean = 3.78, SD = 0.84975) this indicates that some employees may be hesitant or opposed to adopting new technologies.

Integration issues with existing systems (mean = 3.96, SD = 0.85628) this is the highest- rated barrier, suggesting that compatibility and integration concerns are a major hurdle.

Formulation of Hypothesis:

H_{01}: There is no significant relationship between the Information Technology and supply chain management performance of manufacturing industries.

Summary of Correlation Test

CORRELATIONS	
Independent variable	**Dependent variable (SCM)**

(Information Technology)		Performance measurement	Inventory Management	Increase productivity	Proper logistics	Customer demand
Integration of ERP systems	r	-0.236	.332*	0.167	.309*	.347**
	Sig.	0.083	0.013	0.223	0.022	0.010
	N	55	55	55	55	55
Quality of network infrastructure	r	0.046	0.212	0.095	-0.030	0.208
	Sig.	0.738	0.120	0.491	0.827	0.128
	N	55	55	55	55	55
Adoption of cloud computing	r	-0.187	0.090	0.012	0.097	0.143
	Sig.	0.171	0.514	0.931	0.480	0.299
	N	55	55	55	55	55
Announcing communication collaboration	r	.423**	-0.105	0.031	0.151	0.219
	Sig.	0.001	0.444	0.824	0.271	0.108
	N	55	55	55	55	55
Implementation of EDI	r	-0.200	0.234	0.105	.364**	0.145
	Sig.	0.144	0.086	0.445	0.006	0.291
	N	55	55	55	55	55
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

The Integration of ERP systems related too meaningfully and absolutely with Performance measurement is influencing supply chain management performance of manufacturing industries.

The correlation co-efficient obtained between Integration of ERP systems and Performance measurement (r=-0.236; p=0.083) were found negative not significant, Inventory management (r=0.332; p=0.013) were found positive significant, increase productivity (r=-0.167; p=0.223) were found negative not significant, Proper logistics (r=0.309; p=0.022) were found positive significant, Customer demand (r=-0.347; p=0.010) were found negative significant.

The correlation co-efficient obtained between Quality of network infrastructure and Performance measurement (r=0.046; p=0.738) were found positive not significant, Inventory management (r=0.212; p=0.120) were found positive not significant, Increase productivity (r=0.095; p=0.491) were found positive not significant, Proper logistics (r=- 0.030; p=0.827) were found negative not significant, Customer demand (r=0.208; p=0.128) were found positive not significant.

The correlation co-efficient obtained between Adoption of cloud computing and Performance measurement (r=-0.187; p=0.171) were found negative not significant, Inventory management (r=0.090; p=0.514) were found positive not significant, Increase productivity (r=0.012; p=0.931) were found positive not significant, Proper logistics (r=0.097; p=0.480) were found positive not significant, Customer demand (r=0.143; p=0.299) were found positive not significant.

The correlation co-efficient obtained between Announcing communication collaboration and Performance measurement (r=0.423; p=0.001) were found positive significant, Inventory management (r=-0.105; p=0.444) were found negative not significant, increase productivity (r=0.031; p=0.824) were found positive not significant, Proper logistics (r=0.151; p=0.271) were found positive not significant, Customer demand (r=0.219; p=0.108) were found positive not significant.

The correlation co-efficient obtained between Implementation of EDI and Performance measurement (r=-0.200; p=0.144) were found negative not significant, Inventory management (r=0.234; p=0.086) were found positive not significant, Increase productivity (r=0.105; p=0.445) were found positive not significant, Proper logistics (r=0.364; p=0.006) were found positive significant, Customer demand (r=0.145; p=0.291) were found positive not significant.

Summary Regression Analysis

MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.606[a]	0.367	0.303	1.07652
a. Predictors: (Constant), Implementation of EDI, Quality of network infrastructure, Announcing communication collaboration, Adoption of cloud computing, Integration of ERP systems				

R value – correlation value between Information Technology and Supply chain Management both variables are positively correlated to the extent of .606.

R-square value (co-efficient of determination) is 0.367 or (36.7%) of the variance in the Supply chain Management is extracted by Information Technology, remaining 63.3% is an unexplained variance i.e. it is influenced by some other factors but here not considered for the study.

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	32.959	5	6.592	5.688	.000[b]
	Residual	56.786	49	1.159		
	Total	89.745	54			
a. Dependent Variable: SCM						
b. Predictors: (Constant), Implementation of EDI, Quality of network infrastructure, Announcing communication collaboration, Adoption of cloud computing, Integration of ERP systems						

The Regression ANOVA reveals the results of variance between Supply chain Management between and Information Technology. The value of the sum of squares of regression is32.959with 5 degree of freedom (df) and sum of square of residual is 56.786 with 49 degrees of freedom. Therefore, the value of means square (MSM) regression is 6.592 and residual is 1.159. The F Value is 5.688and significance level is .000 for the predicted models.

COEFFICIENTS[A]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.858	1.406		4.166	0.000
	Integration of ERP systems	0.733	0.223	0.419	3.295	0.002
	Adoption of cloud computing	0.138	0.138	0.116	0.999	0.323
	Announcing communication collaboration	0.260	0.131	0.230	1.987	0.053
	Quality of network infrastructure	0.267	0.253	0.122	1.053	0.298
	Implementation of EDI	0.302	0.178	0.212	1.695	0.096
a. Dependent Variable: SCM						

Multiple Regression Model

$Y = a + b1\ X1 + b2\ X2 + b3\ X3 + b4\ X4 + b5\ X5$

Where, Y = Dependent Variable = Supply chain management

A = Constant Value

b1, b2, b3, b4, b5 = is correspondence Beta Co-efficient (Here we considered Standardized Beta Co-efficient because both independent and dependent variables measured on different scale)

X1 = Integration of ERP systems. X2 = Quality of network infrastructure. X3 = Adoption of cloud computing. X4 = Implementation of EDI. X5 = Announcing communication collaboration

Equation

Supply chain management= 5.858+0.419*Integration of ERP systems+0.116*Adoption of cloud computing+0.230* Announcing communication collaboration+0.122*Quality of network infrastructure+0.212*Implementation of EDI

P-value = 0.000< 0.05---------Reject the null hypothesis

H_{01}: There is no significant relationship between the Information Technology and Supply chain management performance of manufacturing industries Rejected.

H_{01}: There is a significant relationship between the Information Technology and Supply chain management performance of manufacturing industries Accepted.

Conclusion:

Based on the p-value of 0.000 which is less than 0.05, therefore the null hypothesis (H_{01}) is rejected. Consequently, we accept the alternative hypothesis (H_{11}) that there is indeed a significant relationship between IT and SCM performance. This implies that IT plays a crucial role in influencing and improving SCM performance metrics within manufacturing sectors, underscoring the importance of IT integration for enhancing operational efficiency and competitiveness in these industries.

H_{02}: There is no significant challenges facing in implementing Information Technology in Supply chain management.

Summary of Regression Analysis

MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.635[a]	0.403	0.342	2.02354
a. Predictors: (Constant), Implementation of EDI, Quality of network infrastructure, Announcing communication collaboration, Adoption of cloud computing, Integration of ERP systems				

R value – correlation value between challenges facing in implementing Information

Technology in Supply chain management both variables are positively correlated to the extent of .635.

R-square value (co-efficient of determination) is 0.403 or (40.3 per cent) of the variance in the challenges is extracted by Information Technology, remaining 59.7 per cent is an unexplained variance i.e. it is influenced by some other factors but here not considered for the study.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	135.469	5	27.094	6.617	.000[b]
	Residual	200.640	49	4.095		
	Total	336.109	54			

a. Dependent Variable: Challenges

b. Predictors: (Constant), Implementation of EDI, Quality of network infrastructure, Announcing communication collaboration, Adoption of cloud computing, Integration of ERP systems

The Regression ANOVA reveals the results of variance between challenges facing in implementing Information Technology in Supply chain management The value of the sum of squares of regression is135.469with 5 degree of freedom (df) and sum of square of residual is200.640 with49 degree of freedom. Therefore, the value of means square (MSM) regression is27.094 and residual is 4.095. The F Value is6.617 and significance level is .000 for the predicted models.

COEFFICIENTS[A]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.924	2.643		3.755	0.000
	Integration of ERP systems	1.089	0.418	0.322	2.603	0.012
	Adoption of cloud computing	0.298	0.259	0.129	1.147	0.257
	Announcing communication collaboration	0.554	0.246	0.254	2.255	0.029

	Quality of network infrastructure	-0.496	0.476	-0.118	-1.043	0.302
	Implementation of EDI	1.088	0.335	0.394	3.246	0.002
a. Dependent Variable: Challenges						

Multiple Regression Model

Y = a + b1 X1 + b2 X2 + b3 X3 + b4 X4 + b5 X5

Equation

Challenges =9.924+0.322*Integration of ERP systems+0.129*Adoption of cloud computing+0.254* Announcing communication collaboration+0.118*Quality of network infrastructure+0.394*Implementation of EDI

P-value = 0.000< 0.05---------Reject the null hypothesis

H_{02}: There is no significant challenges facing in implementing information technology in supply chain management Rejected.

H_1: There is a significant challenge facing in implementing information technology in supply chain management Accepted.

Based on the p-value of 0.000 which is less than 0.05, the null hypothesis (H_{03}) is rejected. Therefore, we accept the alternative hypothesis (H_{13}) that significant challenges exist in implementing IT in SCM. This highlights the complexities and barriers that organizations encounter when integrating IT solutions into SCM processes, which may include issues related to cost, infrastructure readiness, organizational change management, and technological compatibility.

CONCLUSION:

In conclusion, "Information Technology in SCM Performance: A Study of Manufacturing Industries in Karnataka." reveals significant insights into the role and impact of IT in enhancing supply chain management. The findings indicate that IT integration, particularly through ERP systems, has positively influenced productivity, cost-effectiveness, and demand forecasting accuracy. Emerging technologies like AI, IoT, and cloud computing present promising opportunities for further advancements in SCM. However, challenges such as financial constraints, integration issues, and data security concerns need to be addressed. Emphasizing gender diversity, targeted training, and robust performance metrics can enhance workforce capabilities. Improving network infrastructure and resolving integration challenges are crucial for seamless operations. Strengthening data security measures is essential to

safeguard supply chain data. By leveraging these insights and implementing the suggested strategies, manufacturing industries in Karnataka can achieve greater operational efficiency, cost reduction, and competitiveness in the global market.

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