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TECHNOLOGY ADOPTION IN SUPPLY CHAIN MANAGEMENT

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ABSTRACT

The use of technology in the supply chain is seen as a necessary requirement for efficient control of today's highly competitive marketplace. Modern technology provides to increased supply chain visibility, lower operating costs, and improved customer satisfaction and retention. The use of technology in supply chain management may result in benefits such as increased data security, communication with supply chain partners, traceability, and supply and demand management skills. Auto ID has several advantages, including accuracy, cost savings, and the speed and simplicity of data storage and processing. With practically daily technological advancements in every aspect of business, organisations must synchronise by embracing and deploying new electronic commerce and supply chain technologies in order to protect market dominance, much alone increase market penetration. This study creates a model of the important elements driving the adoption of supply chain technologies.

INTRODUCTION

In today's supply chain world, technology is becoming a critical driver of an organization's performance. According to Simcha-Levi, Kaminsky, and Simcha-Levi (2000), Supply chain management (SCM) is a set of approaches for effectively integrating suppliers, manufacturers, warehouses, and stores so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, thereby reducing system-wide costs while meeting service level requirements. These organisations work together to acquire, purchase, convert/manufacture, assemble, and distribute products and services from suppliers to end users. Supply chain management involves the planning and execution of all activities including sourcing, procurement, conversion, and logistics management. It is also critical to coordinate and communicate with channel partners, who may include suppliers, intermediaries, third-party service providers, or customers. When supply chain was introduced there was less advance technology. The inventories use to manage individual

LITERATURE REVIEW

- Research (Johnson, 2006; Kumar, 2001; Patterson et al., 2003) indicates that effective use of information technology is crucial for attaining cost-effectiveness and value in complex supply chains. Early efforts to obtain a competitive edge through information technology focused on the use of model-driven, improved forecasting systems to reduce volatility and optimise.
- Enables precise inventory responses to changing demand, resulting in more suitable inventory levels across the supply chain. (Levary, 2000; Stank, Crum, and Arrango, 1999).
- Christopher, (1998) mentions, the definition by Kempainen and Vepsalainen(2003) for SCM brings up both the external and internal views on material flows.
- Merrifield (2000, p. 42) argues Historically, businesses concentrated on lowering costs and increasing quality to achieve a competitive advantage.
- (Porter and Stern, 2001, p. 28). Today, however, “companies must be able to innovate at the global frontier... and create and commercialize a stream of new products and processes that shift the technology frontier, progressing as fast as their rivals catch up”
- The Global Supply Chain Forum defines supply chain management as: “... the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders” (Lambert et al., 1998, p. 1).

RESEARCH METHODOLOGY

In present research we utilized for this undertaking was to gather essential information on our exploration point. We gathered essential information through a Google Structures made survey, and we got reactions from 110-120 members.

OBJECTIVE OF THE STUDY

The purpose of this research is to investigate the use of technology in supply chain management (SCM) and its consequences in modern corporate situations. The major goal will be to understand the variables that influence technology adoption decisions, evaluate the impact of technology on various parts of supply chain operations, and identify the problems and possibilities connected with technology adoption in SCM. By attaining these goals, the study hopes to add to the body of knowledge on technology adoption in SCM, giving insights that may help influence strategic decision-making and improve supply chain efficiency and effectiveness in modern organisations.

RESEARCH DESIGN

We employed a descriptive research technique to obtain primary data using a questionnaire. It emphasises the 'what' of the study issue rather than the 'why' of the research subject. Our study technique consists of asking questions on technology adoption in supply chain management, followed by data analysis to get conclusions about the issue. It is quantitative in nature since we will be able to collect quantifiable data to analyse the selected population sample.

SOURCES OF DATA

The data comes from two sources, which are as follows:

We chose the questionnaire as the primary data collection method for our research study since we needed answers to questions related to technology adoption in supply chain management.

For Secondary sources –we used previously collected and researched data from past studies and research papers, journal, online web sites.

HYPOTHESIS

Ho (Null Hypothesis): There is no significant relationship between the utilization of technology in supply chain management and the efficiency, transparency, and responsiveness within supply chains

H1 (Alternative Hypothesis): There is a significant relationship between the utilization of technology in supply chain management and the efficiency, transparency, and responsiveness within supply chains.

DATA ANALYSIS AND INTERPRETATION

Table 1

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
do you think technology is important in supply chain management * which technology is currently being utilized in supply chain management	114	96.6%	4	3.4%	118	100.0%

**do you think technology is important in supply chain management * which technology is currently being utilized in supply chain management
Crosstabulation**

			which technology is currently being utilized in supply chain management					Total
			IoT (internet of thing)	block chain	artificial intelligence	big data analysis	cloud computing	
do you think technology is important in supply chain management	yes	Count	27	21	31	23	6	108
		% within do you think technology is important in supply chain management	25.0%	19.4%	28.7%	21.3%	5.6%	100.0%
		% within which technology is currently being utilized in supply chain management	96.4%	95.5%	96.9%	95.8%	75.0%	94.7%
		% of Total	23.7%	18.4%	27.2%	20.2%	5.3%	94.7%
no	Count	1	1	1	1	2	6	

	% within do you think technology is important in supply chain management	16.7%	16.7%	16.7%	16.7%	33.3%	100.0%
	% within which technology is currently being utilized in supply chain management	3.6%	4.5%	3.1%	4.2%	25.0%	5.3%
	% of Total	0.9%	0.9%	0.9%	0.9%	1.8%	5.3%
Total	Count	28	22	32	24	8	114
	% within do you think technology is important in supply chain management	24.6%	19.3%	28.1%	21.1%	7.0%	100.0%
	% within which technology is currently being utilized in supply chain management	100.0 %	100.0 %	100.0%	100.0%	100.0%	100.0%
	% of Total	24.6%	19.3%	28.1%	21.1%	7.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.785 ^a	4	.148
Likelihood Ratio	4.036	4	.401
Linear-by-Linear Association	1.794	1	.180
N of Valid Cases	114		

a. 5 cells (50.0%) have expected count less than 5.
The minimum expected count is .42.

Table 2

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
what are the main reason behind the adoption of technology in supply chain management * how has the adoption of technology impacted in organization supply chain management	115	97.5%	3	2.5%	118	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.922 ^a	9	.357
Likelihood Ratio	9.865	9	.362
Linear-by-Linear Association	1.886	1	.170
N of Valid Cases	115		

what are the main reason behind the adoption of technology in supply chain management *
 how has the adoption of technology impacted in organization supply chain management
 Crosstabulation

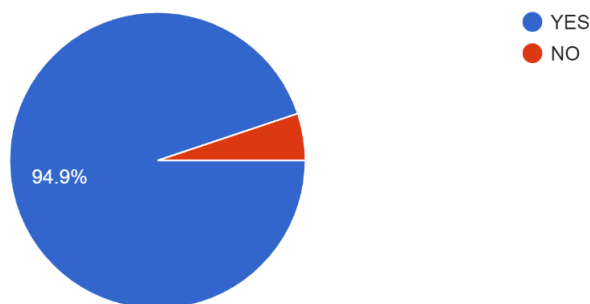
			how has the adoption of technology impacted in organization supply chain management				Total
			faster order processing & fulfillment	reduce inventory holding costs	improved customer satisfaction	enhanced inventory accuracy	
what are the main reason behind the adoption of technology in supply chain management	cost reduction	Count % within what are the main reason behind the adoption of technology in supply chain management	14 50.0%	6 21.4%	6 21.4%	2 7.1%	28 100.0%
		% within how has the adoption of technology impacted in organization supply chain management	29.8%	20.7%	20.7%	20.0%	24.3%
		% of Total	12.2%	5.2%	5.2%	1.7%	24.3%
	increase efficiency	Count % within what are the main reason behind the adoption of	14 35.0%	15 37.5%	10 25.0%	1 2.5%	40 100.0%

	technology in supply chain management % within how has the adoption of technology impacted in organization supply chain management % of Total	29.8%	51.7%	34.5%	10.0%	34.8%
		12.2%	13.0%	8.7%	0.9%	34.8%
better decision-making capability	Count % within what are the main reason behind the adoption of technology in supply chain management % within how has the adoption of technology impacted in organization supply chain management % of Total	15	7	11	5	38
		39.5%	18.4%	28.9%	13.2%	100.0%
		31.9%	24.1%	37.9%	50.0%	33.0%
		13.0%	6.1%	9.6%	4.3%	33.0%
competitive advantages	Count % within what are the main reason behind the adoption of technology in supply chain management % within how has the adoption of technology impacted in organization	4	1	2	2	9
		44.4%	11.1%	22.2%	22.2%	100.0%
		8.5%	3.4%	6.9%	20.0%	7.8%

	supply chain management % of Total	3.5%	0.9%	1.7%	1.7%	7.8%
Total	Count	47	29	29	10	115
	% within what are the main reason behind the adoption of technology in supply chain management	40.9%	25.2%	25.2%	8.7%	100.0%
	% within how has the adoption of technology impacted in organization supply chain management	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	40.9%	25.2%	25.2%	8.7%	100.0%

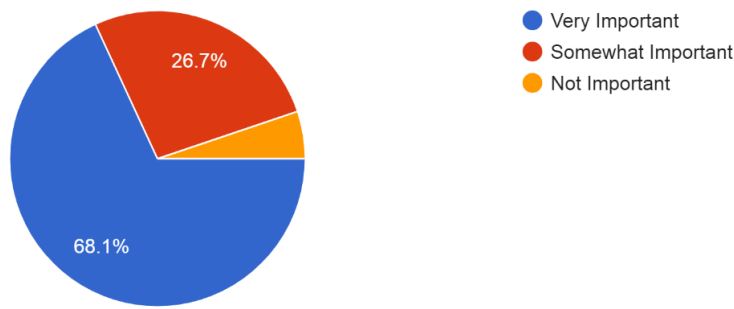
a. 7 cells (43.8%) have expected count less than 5.
The minimum expected count is .78.

Do you think Technology is important in supply chain management?
117 responses



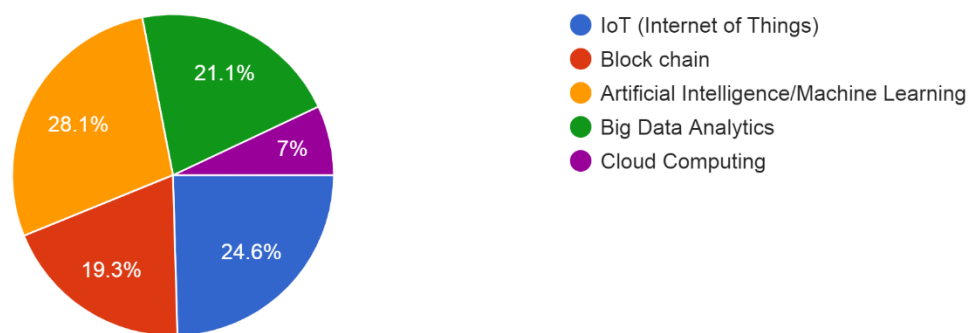
Overall, how important do you believe technology adoption is for the future success of supply chain management?

116 responses



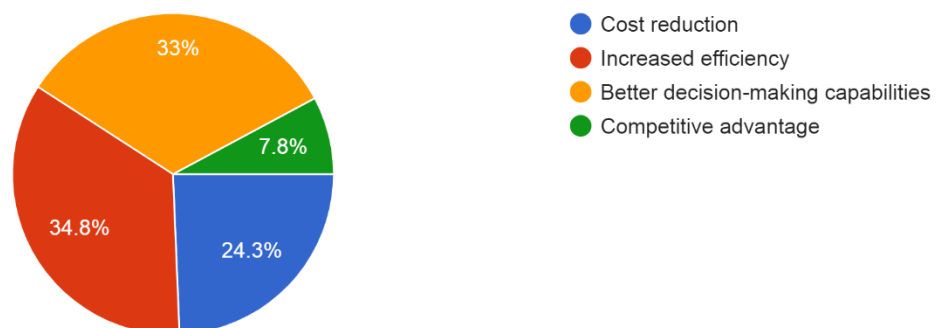
Which technologies are currently being utilized in supply chain operations?

114 responses



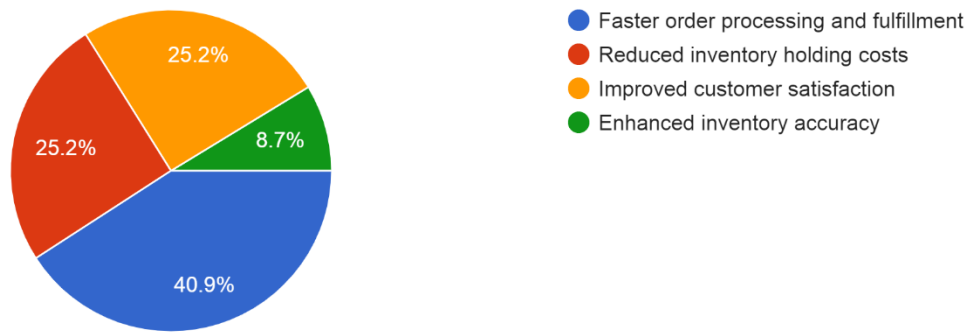
What are the main reasons behind the adoption of technology in supply chain management process?

115 responses



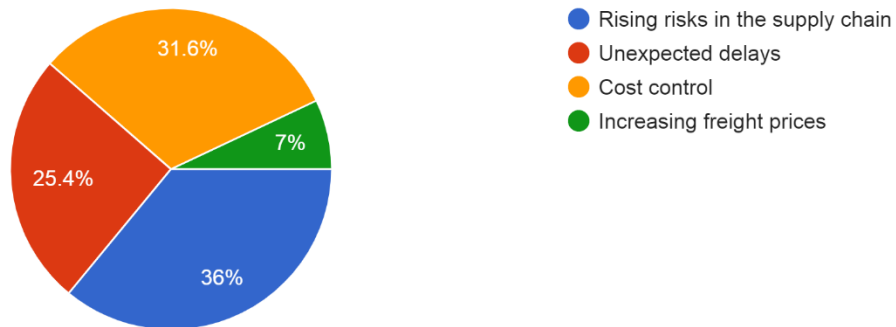
How has the adoption of technology impacted in organization's supply chain performance?

115 responses



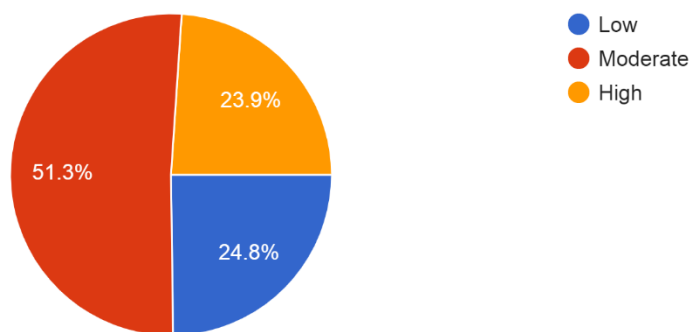
According to you what challenges or barriers have encountered in adopting technology in supply chain management?

114 responses



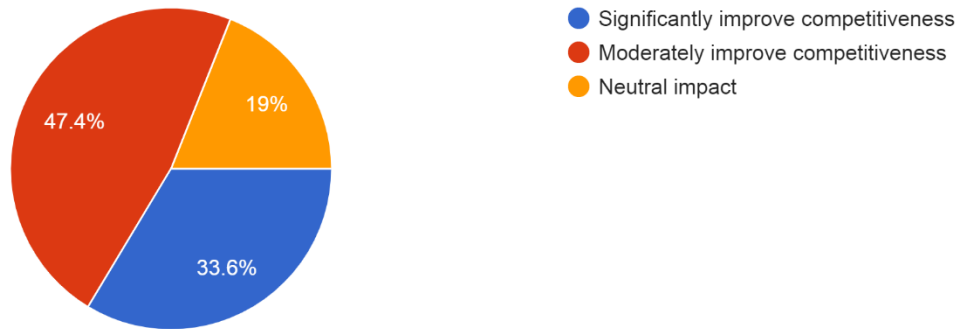
How would you rate the level of technology adoption within your organization's supply chain operations?

117 responses



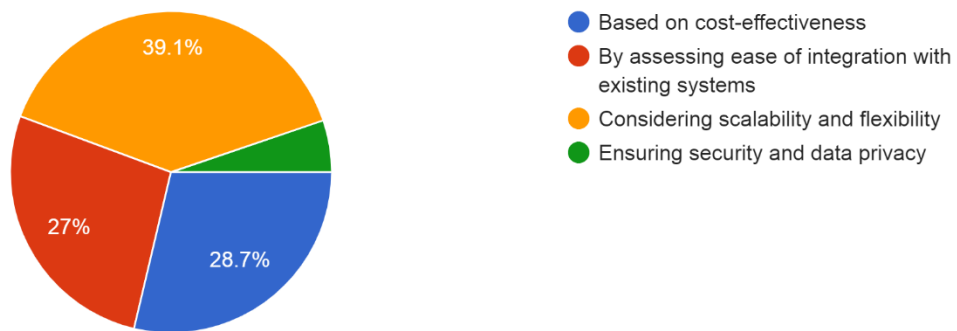
How do you anticipate technology adoption will impact the overall competitiveness of an organization in the market?

116 responses



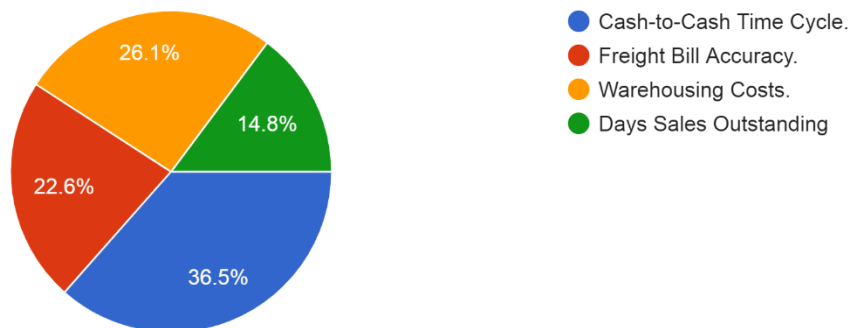
How does the organization evaluate and select new technology solutions for supply chain management?

115 responses



According to you, what are the key performance indicators (KPIs) you use to measure the success of technology adoption in the supply chain?

115 responses



PROBLEM STATEMENT

"The delayed adoption of technology in supply chain management poses a significant barrier for organisations seeking to remain competitive in today's changing economic climate. Despite the potential benefits of advanced technologies such as AI, IoT, and blockchain, many businesses face challenges such as high implementation costs, employee resistance to change, interoperability concerns, and a lack of clear understanding about the best technology mix for their specific supply chain requirements. This study aims to look into the underlying factors that are impeding technology adoption in supply chain management, assess the impact of these barriers on organisational performance, and make actionable recommendations to facilitate smoother technology integration and maximise the benefits of digitalization across the supply chain." When the supply chain was introduced, there was not many technologies they use to manage the data individual. Inventory was managed in books. There was no latest technology for machineries. But now there are many latest technologies was introduced like drones, GPS systems. For huge data there was bigdata analysis. Companies are using software like SAP, AITS for better uses.

CONCLUSION

The conclusion on technology adoption in supply chain management is that firms must accept technological improvements in order to stay competitive and efficient. AI, IoT, blockchain, and data analytics technologies boost visibility, expedite operations, save costs, and improve decision-making across the supply chain. Embracing these technologies allows businesses to adapt to changing market needs, improve cooperation with partners, and, ultimately, produce more value for consumers. Companies who adopt new technologies find that their work becomes easier. Adoption of new technology not only makes their jobs easier, but it also benefits their organisation.

REFERENCE

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