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How the adaption of AI effects the resilience of supply chain management

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INTRODUCTION

In today's increasingly interconnected and dynamic global environment, supply chains face a multitude of disruptions, from natural disasters and pandemics to economic shocks and geopolitical tensions. These disruptions can severely impact supply chain resilience, the ability of a supply chain to anticipate, adapt, and recover from disruptions. Artificial intelligence (AI) has arisen as a powerful tool to enhance supply chain resilience by providing strategic decisions based on data analysis and interpretation, enabling predictive analytics, and automating decision-making processes.

Resilience in a supply chain is the ability to improve operational resources to manage and cope with external and internal shocks. Supply chain resilience became an essential element for enterprises to effectively deal with disruption and keep operations running as a result of today's fluid and connected business environment. The potential of AI technology for improving supply chain management practices is increasingly being recognized, given the increasing complexity and volatility in global markets. However, the issue of the extent to which the adoption of AI technologies has an impact on the resilience of supply chain management remains to be explored and investigated.

An assessment of the impact of the adoption of AI technologies on the resilience of supply chain management is a research issue addressed in this study. The purpose of the study is to understand the mechanism by which artificial intelligence technologies indirectly affect the resilience of the supply chain. In particular, a proposed research model indicates that the adoption of artificial intelligence technologies in supply chain management can have an indirect impact on resilience through organizational culture and readiness, technological infrastructure, and integration.

The rationale of the research model is to take into account that, for successfully adopting and integrating AI technologies, there are complex organizational factors as well as levels of collaboration within the supply chain network. The main driving factors are organizational culture readiness to accept change and the existence of suitable technology infrastructure between supply chain partners. These factors also influence how effectively artificial intelligence technology is being adapted which it affects the overall resilience of supply chain management systems.

The proposed research model presents a framework that suggests the adaption of AI technologies in supply chain management can have an indirect effect on the resilience of the system. This effect is mediated by several key factors. First, organizational culture and readiness play a crucial role in determining the extent to which AI technologies are integrated within the organization. Second, the presence of suitable technology infrastructure and integration capabilities is essential for the effective utilization of AI technologies in the supply chain.

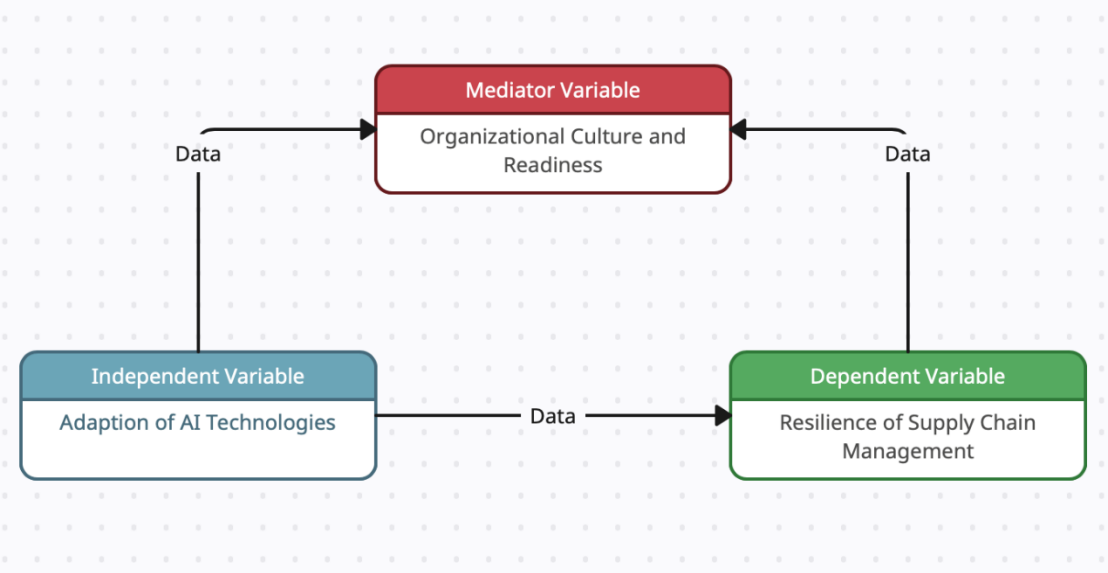

Figure (1): Study framework

Decision makers through the exploration and understanding of relationships between adoption of AI technologies, organizational factors as well as supply chain resilience. The results of the study can be used by strategic planning efforts and guidance for organisations to use artificial intelligence technology in order to enhance their supply chain resilience which will help them cope with uncertainty and disruption on a worldwide basis.

By investigating the relationships between AI technology adoption, organizational factors, and supply chain resilience, this research aims to provide valuable insights for practitioners and decision-makers in the field of supply chain management. The findings of this study can inform strategic planning efforts and guide organizations in effectively leveraging AI technologies to enhance their supply chain resilience. Ultimately, this research contributes to the body of knowledge surrounding the adaption of AI technologies and its impact on the resilience of supply chain management.

Literature review

Adaption of AI Technologies

The adoption of artificial intelligence (AI) technologies in supply chain management has gained significant attention in recent years due to its potential to enhance resilience and improve performance. To examine the impact of artificial intelligence concerning supply chain resilience, Khan et al. (2022) highlight the role of digital innovation, including artificial intelligence, in enhancing the resilience of the supply chain in the healthcare sector during the COVID-19 pandemic in their systematic literature review. The study shows how Artificial Intelligence can play a role in managing disruptions and implementing resilience strategies.

During the COVID-19 pandemic, AI technologies played a critical role in maintaining supply chain resilience. The study of Seyed Hosseini et al. (2021) emphasizes the importance of AI in enabling organizations to adapt and respond to the challenges produced by the pandemic effectively.

Also, effective knowledge management processes are essential for organizations to adopt the full potential of AI in their supply chains. Their research emphasizes the importance of knowledge management in facilitating the effective use of AI and its impact on supply chain resilience. The adoption of AI in supply chains is driven by various factors. These factors include organizational agility, top management support, and government support. Their research emphasizes the importance of these drivers in facilitating AI adoption and its impact on supply chain resilience and performance.

Examining the impact of AI applications during the COVID-19 study conducted a bibliometric analysis detect the significant role of AI in various industries, especially healthcare, logistics, and manufacturing, in responding to the challenges posed by the pandemic. The relationship between supply chain dynamism, disruption orientation, resilience, and financial performance was explored (Boone et al., 2021). Their findings indicate a positive association between these factors, highlighting the importance of supply chain resilience for achieving favorable financial outcomes.

A systematic literature review on artificial intelligence for supply chain management has been carried out, to support the disruptive potential of AI (Seyed Hosseini et al., 2021). Their findings show that artificial intelligence enables data analysis, predictive modeling and automatic decision making in a timely manner to improve the management of the entire supply chain. Further explores the role of AI in enhancing accountability in supply chains, they highlight how AI technologies provide transparency, traceability, and auditability, contributing to improved accountability throughout the supply chain. Addressing the healthcare sector specifically, (Boone et al,2021) emphasize the use of AI in identifying, assessing, and mitigating supply chain risks. Their research highlights the relevance of AI technologies in managing disruptions and enhancing supply chain resilience in healthcare settings.

Resilience of Supply Chain Management

Explores the unique challenges and practices of supply chain risk management (SCRM) in the healthcare sector was reviewed, explores and provides a specific perspective on SCRM in the healthcare industry, addressing the industry-specific considerations and strategies for managing supply chain risks. Investigating the direct and indirect effects of AI, supply chain resilience (SCRes), and supply chain performance (SCP) under the context of supply chain dynamics highlights the potential of AI in building SCRes and improving SCP. The findings suggest that AI has a direct impact on SCP in the short term, but its information processing capabilities should be harnessed to build long-lasting SCRes and can provide empirical evidence of the benefits of AI in enhancing supply chain resilience and performance (Pedro Senna 2020). By incorporating the findings and insights from these articles into the literature review, a comprehensive understanding of supply chain risk management, resilience, performance, and the role of artificial intelligence can be achieved and provide a more holistic view of the subject and contribute to the existing body of knowledge in the field.

The importance of information sharing and effective management in supply chains for better decision-making and improved performance suggests that organizations should encourage communication and network integration among supply chain members to enhance information management and system infrastructure (Veera Pandiyan, 2018). This integration can lead to improved performance in manufacturing firms in the long run. The organizations need to stay updated with information system infrastructure and technology advancements, particularly in the era of the fourth industrial revolution. It also mentions the potential of IT and information practices to influence intra- and inter-organizational relationships and performance. However, previous studies have shown the need for further research in this area.

Organizational Culture and Readiness

Emerging market investigation of the drivers of AI adoption and their effects on supply chain resilience and performance (Mengmeng, 2022). Their findings suggest that organizational culture and readiness are important factors that facilitate the successful adaption of AI technologies and improve supply chain resilience. The focus is on the relationship between supply chain dynamism, disruption orientation, resilience, and financial performance, and the importance of developing dynamic capabilities to effectively respond to disruptions in the supply chain and improve financial performance. Incorporating the findings from this article can provide valuable insights into the factors influencing supply chain resilience and its impact on financial performance. The investigates the strategies and measures adopted by organizations to enhance their supply chain resilience in the face of unprecedented disruptions (Mahak, 2022). The insights can contribute to the understanding of the specific challenges and experiences related to managing supply chain disruptions during a global crisis such as a pandemic.

The application of AI in supply chain management and its potential benefits are significant of aligning organizational culture and readiness with technology infrastructure to maximize the effectiveness of AI and enhance supply chain resilience (Reza Toorajipour, 2021). emphasizes the need for organizations to foster a culture that supports innovation and change, and develop readiness in terms of leadership support and employee skills.

Organizational readiness becomes crucial, it proposes a framework that encompasses three key elements: external forces related to emergent technologies, appropriate strategies derived from value chain analysis, and critical resources and capabilities in the digital era. By considering these elements, organizations can better understand and respond to the challenges and opportunities presented by digital transformation. The framework suggests that organizations should assess external forces, such as emerging technologies and market trends, and align their strategies accordingly. Value chain analysis helps identify areas where digital transformation can create value or reduce costs. It allows organizations to identify the necessary resources and capabilities required to implement digital initiatives successfully.

Organizations need to adapt their business models and processes to leverage the potential of digital technologies. The importance of dynamic capabilities, such as agility, innovation, and adaptability in enabling organizations to respond effectively to the changing digital landscape and the role of ecosystems, collaborations, and partnerships in enhancing an organization's digital readiness.

Overall, the organizational readiness for digital transformation is a multifaceted process requires a deep understanding of external forces, an alignment of strategies with emerging technologies, and the development of critical resources and capabilities. By embracing digital transformation and fostering a culture of innovation and adaptability, organizations can position themselves to thrive in the digital era (Rui P. Silva, 2022). The supply chain integration fully mediates the relationship between supply chain information management and information system infrastructure towards manufacturing performance. However, the research is limited to a specific sample of electrical and electronics manufacturing firms and further research is needed to generalize the results to a wider sample.

Research model and hypotheses:

The proposed research model presents a framework that suggests the adaption of AI technologies in supply chain management can have an indirect effect on the resilience of the system. This effect is mediated by several key factors. First, organizational culture and readiness play a crucial role in determining the extent to which AI technologies are integrated within the organization. Second, the presence of suitable technology infrastructure and integration capabilities is essential for the effective utilization of AI technologies in the supply chain.

H1: There is a positive relationship between the adoption of AI technologies and the resilience of the supply chain.

AI enables effective data analysis, decision-making, and risk management, leading to enhanced resilience in supply chain operations. By using AI technologies, organizations can better adapt and respond to disruptions, improve transparency and traceability, and ultimately enhance their overall supply chain resilience.

H2: The relationship between the adoption of AI technologies and the resilience of supply chain is mediated by organization culture and readiness.

Organizational culture and readiness act as mediators in the relationship between the adoption of AI technologies and supply chain resilience. Organizations with a culture that supports innovation, openness to change, and collaboration, along with a high level of readiness in terms of resources, infrastructure, and capabilities, are more likely to adopt and integrate AI technologies effectively. This, in turn, enhances their supply chain resilience by leveraging the benefits of AI for data analysis, decision-making, risk management, and overall supply chain management.

Methodology:

A quantitative approach will be taken to investigate and validate the proposed research model. The design of the study shall include data collection by surveys which will enable a complete analysis of variables to be considered.

Study Design

For the purpose and objectives of this study, the researcher applied the quantitative method and the nature of the thesis requires choosing this method. The quantitative method uses sampling techniques to gather information from current and prospective customers and send out online surveys, online polls, questionnaires, etc., the results of which can be expressed in numerical form.

This study's major goal is to assess how the adoption of AI affects the resilience of supply chain management. An online survey (questionnaire) was employed to collect quantitative data.

In simple random sampling each individual in the population has the same opportunity to be included in the survey. So, the participants in this study were chosen randomly to form the study's sample.

In this study, the data from the questionnaire is analyzed by statistical analysis carried out with the SPSS program.

Result:

- Gender

It is clear from the following table on the distribution of the study sample by gender that the proportion of males is 96%, and females 4%.

Table 1: Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	96	96.0	96.0	96.0
	Female	4	4.0	4.0	100.0
	Total	100	100.0	100.0	

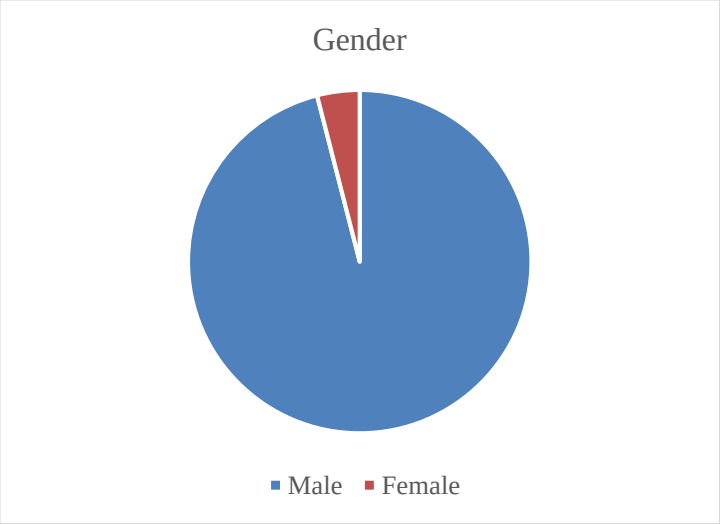

Figure (1) Gender

- Age

It is evident from the following table regarding the distribution of the study sample according to age, that the highest percentage is (36-40 years) with 40%, followed by (31-35 years) with a percentage of 21%, (26-30 years) with a percentage of 20% (More than 40 years) with a percentage of 11% and (21- 25 years) with a percentage of 8%.

Table 2: Age

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21- 25 years	8	8	8	8
	26-30 years	20	20	20	28
	31-35 years	21	21	21	49
	36-40 years	40	40	40	89
	More than 40 years	11	11	11	100
	Total	100	100.0	100.0	

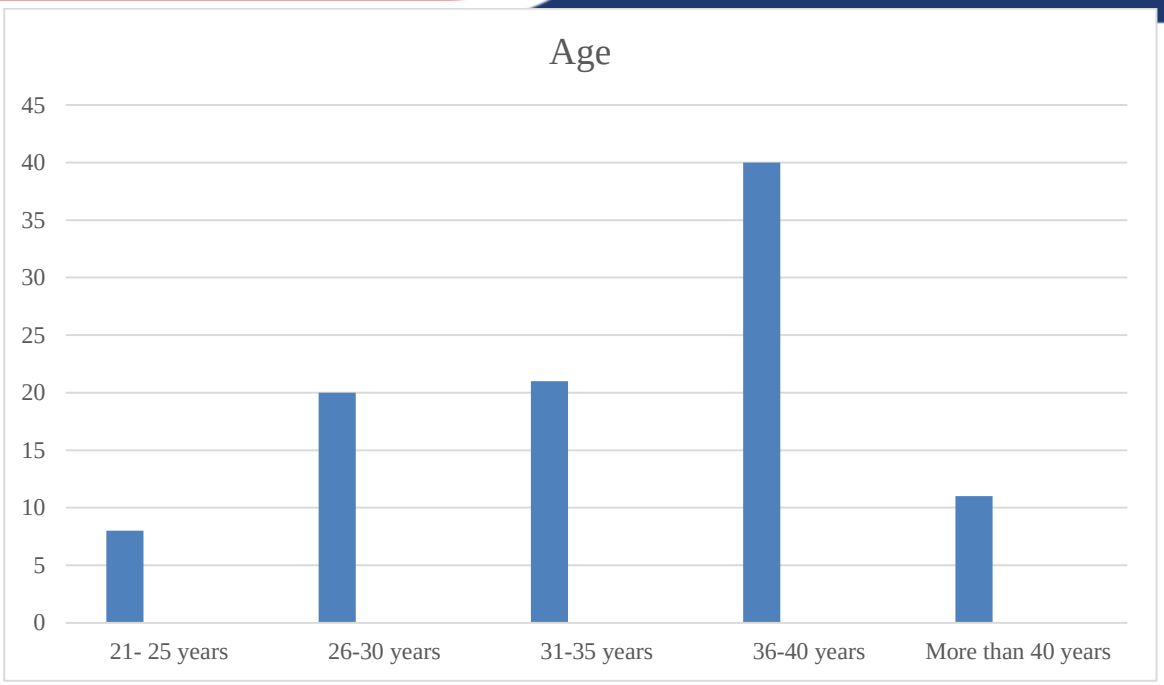

Figure 2 Age

- Working experience

It is evident from the following table regarding the distribution of the study sample according to Working status, that the highest percentage is (6-10 years) with 40%, followed by (More than 10 years) with a percentage of 35%, (Less than 1 year) with a percentage of 13% and (1-5 years) with a percentage of 12%.

Table 3: Working experience

Working experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	13	13	13	13
	1-5 years	12	12	12	25
	6-10 years	40	40	40	65
	More than 10 years	35	35	35	100
	Total	100	100.0	100.0	

Figure 3 Working experience

Adoption of AI:

- ✓ Statement "Our company's supply chain has the ability to extract meaning and useful knowledge from disruptions and unexpected events" came in the first place with an arithmetic mean of 4.23 and a standard deviation of .36979. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Our company's supply chain has the ability to maintain a desired level of control over structure and function at the time of disruption" came in the second place with an arithmetic mean of 4.22 and a standard deviation of .675. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Our company's supply chain can move to a new, more desirable state after being disrupted "came in the third order, with a mean of 4.21 and a standard deviation of .832. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Our company's supply chain can quickly return to its original state after being disrupted" mean of 4.15 and a standard deviation of .687. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Our company's supply chain is well prepared to deal with financial outcomes of supply chain disruptions "in the fifth rank came with an arithmetic mean of 3.89 and a standard deviation of .751. Therefore, the direction of the responses of the study sample is neutral.
- ✓ The statement "Our company's supply chain can adequately respond to unexpected disruptions by quickly restoring its product flow" came in the sixth order, and its arithmetic mean was 3.87 and a standard deviation was .812. Therefore, the direction of the responses of the study sample is neutral.

It was apparent from the table that the information held by the Adoption of AI, the most significant of which was the maximum amount of time that our company's supply chain can extract meaning and useful knowledge from disruptions and unexpected events

Table 4: Descriptive Statistics

Descriptive Statistics						
Sentences	N	Min	Max	Mean	Std. Deviation	p-value
Our company's supply chain is able to adequately respond to unexpected disruptions by quickly restoring its product flow	100	3	5	3.87	.812	0.001
Our company's supply chain can quickly return to its original state after being disrupted	100	3	5	4.15	.687	0.001
Our company's supply chain can move to a new, more desirable state after being disrupted	100	2	5	4.21	.832	0.320
Our company's supply chain is well prepared to deal with financial outcomes of supply chain disruptions	100	3	5	3.89	.751	0.121
Our company's supply chain has the ability to maintain a desired level of control over structure and function at the time of disruption	100	3	5	4.22	.675	0.603
Our company's supply chain has the ability to extract meaning and useful knowledge from disruptions and unexpected events	100	3.00	4.60	4.2380	.36979	0.001

Table 5: Adoption of AI

S	Strongly disagree		not agree		Neutral		Agree		Strongly Agree	
	F	%	F	%	F	%	F	%	F	%
Our company's supply chain is able to adequately respond to unexpected disruptions by quickly restoring its product flow	-	-	-	-	40	40%	33	33%	27	27%
Our company's supply chain can quickly return to its original state after being disrupted	-	-	-	-	17	17%	51	51%	32	32%
Our company's supply chain can move to a new, more desirable state after being disrupted	-	-	2	2%	20	20%	33	33%	45	45%

Our company's supply chain is well prepared to deal with financial outcomes of supply chain disruptions	-	-	-	-	34	34%	43	43%	23	23%
Our company's supply chain has the ability to maintain a desired level of control over structure and function at the time of disruption	-	-	-	-	14	14%	50	50%	36	36%
Our company's supply chain has the ability to extract meaning and useful knowledge from disruptions and unexpected events										

Organizational Culture and Readiness:

- ✓ Statement "In this organization, employees are willing to try new health and safety procedures or techniques." came in the first place with an arithmetic mean of 4.24 and a standard deviation of .712. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "In this organization new programs for improving employee health and safety have been successful." came in the first place with an arithmetic mean of 4.21 and a standard deviation of .902. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Management regularly tries new and better approaches to occupational health and safety policies and practices." came in the second order, with a mean of 4.13 and a standard deviation of .884. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Management supports the efforts of all employees to improve the safety and health of the workforce" came in the third order, with an arithmetic mean of 4.13 and a standard deviation of .812. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "In this organization, learning how to use new procedures or techniques is made easy." in the fourth rank came with an arithmetic mean of 4.12 and a standard deviation of .844. Therefore, the direction of the responses of the study sample is neutral.

- ✓ Statement "Management provides sufficient budget to train staff on changes to health and safety programs." came in the fifth order, and its arithmetic mean was 4.11 and a standard deviation was .48017. Therefore, the direction of the responses of the study sample is neutral.
- ✓ Statement "In this organization more should be done about health and/or safety." came in the second order, with a mean of 4.09 and a standard deviation of .911. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Management currently supports existing occupational health and safety policies and practices. "in the fourth rank came with an arithmetic mean of 4.09 and a standard deviation of .818. Therefore, the direction of the responses of the study sample is neutral.

- ✓ Statement "In this organization, employees adapt to new procedures and processes when needed." came in the third order, with an arithmetic mean of 4.07 and a standard deviation of .820. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "In this organization major things are going on that would make it hard to adopt a new approach to health and safety." came in the fifth order, and its arithmetic mean was 4.00 and a standard deviation was .888. Therefore, the direction of the responses of the study sample is neutral.
- ✓ Statement "In this organization changes should be made to existing policies and procedures to better address health and safety issues." came in the fifth order, and its arithmetic mean was 3.59 and a standard deviation was .880. Therefore, the direction of the responses of the study sample is neutral.

According to the data presented in the table that the Organizational Culture and Readiness lower costs associated in this organization, employees are willing to try new health and safety procedures or techniques**.**

Table 6: Descriptive Statistics of Organizational Culture and Readiness

Descriptive Statistics					
	N	**Min**	**Max**	**Mean**	**Std. Deviation**
In this organization new programs for improving employee health and safety have been successful.	100	2	5	4.21	.902
In this organization major things are going on that would make it hard to adopt a new approach to health and safety.	100	1	5	4.00	.888
Management currently supports existing occupational health and safety policies and practices.	100	3	5	4.09	.818
Management regularly tries new and better approaches to occupational health and safety policies and practices.	100	3	5	4.13	.812
Management supports the efforts of all employees to improve the safety and health of the workforce.	100	2	5	4.13	.884
Management provides sufficient budget to train staff on changes to health and safety programs.	100	3.00	5.00	4.1120	.48017
In this organization more should be done about health and/or safety.	100	2	5	4.09	.911

In this organization changes should be made to existing policies and procedures to better address health and safety issues.	100	2	5	3.95	.880
In this organization, employees adapt to new procedures and processes when needed.	100	2	5	4.07	.820
In this organization, learning how to use new procedures or techniques is made easy.	100	3	5	4.12	.844
In this organization, employees are willing to try new health and safety procedures or techniques.	100	3	5	4.24	.712
In this organization new programs for improving employee health and safety have been successful.	100	2.50	5.00	4.0575	.51720

Table 7: Frequency &Percent of Organizational Culture and Readiness

S	Strongly disagree		not agree		Neutral		Agree		Strongly Agree	
	F	%	F	%	F	%	F	%	F	%
In this organization new programs for improving employee health and safety have been successful.	-	-	3	3%	23	23%	24	24%	50	50%
In this organization major things are going on that would make it hard to adopt a new approach to health and safety.	2	2%	2	2%	21	21%	44	44%	31	31%
Management currently supports existing occupational health and safety policies and practices.	-	-	-	-	29	29%	33	33%	38	38%
Management regularly tries new and better approaches to occupational health and safety policies and practices.	-	-	-	-	27	27%	33	33%	40	40%
Management supports the efforts of all employees to improve the safety and health of the workforce.	-	-	3	3%	24	24%	30	30%	43	43%
Management provides sufficient budget to train staff on changes to health and safety programs.	-	-	5	5%	22	22%	32	32%	41	41%
In this organization more should be done about health and/or safety.	-	-	2	2%	35	35%	29	29%	34	34%
In this organization changes should be made to existing policies and procedures to better address health and safety issues.	-	-	2	2%	24	24%	39	39%	35	35%
In this organization, employees adapt to new procedures and processes when needed.	-	-	-	-	30	30%	28	28%	42	42%
In this organization, learning how to use new procedures or techniques is made easy.	-	-	-	-	16	16%	44	44%	40	40%
In this organization, employees are willing to try new health and safety procedures or techniques.	-	-	5	5%	22	22%	32	32%	41	41%
In this organization new programs for improving employee health and safety have been successful.	-	-	2	2%	35	35%	29	29%	34	34%
In this organization major things are going on that would make it hard to adopt a new approach to health and safety.	-	-	2	2%	24	24%	39	39%	35	35%
Management currently supports existing occupational health and safety policies and practices.	-	-	-	-	30	30%	28	28%	42	42%
Management regularly tries new and better approaches to occupational health and safety policies and practices.	-	-	-	-	16	16%	44	44%	40	40%

Management supports the efforts of all employees to improve the safety and health of the workforce.	-	-	5	5%	22	22%	32	32%	41	41%
Management provides sufficient budget to train staff on changes to health and safety programs.	-	-	2	2%	35	35%	29	29%	34	34%
In this organization more should be done about health and/or safety.	-	-	2	2%	24	24%	39	39%	35	35%
In this organization changes should be made to existing policies and procedures to better address health and safety issues.	-	-	-	-	30	30%	28	28%	42	42%
In this organization, employees adapt to new procedures and processes when needed.	-	-	-	-	16	16%	44	44%	40	40%

Resilience of Supply Chain Management:

- ✓ Statement "supply chain Installation service is one of the after-sale services offered by an organization to their customers" came in the first place with an arithmetic mean of 4.37 and a standard deviation of .747. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Effective supply chain management can achieve cost savings "came in the second order, with a mean of 4.07 and a standard deviation of 1.112. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "supply chain helps customers to transport brought product easier." came in the third order, with an arithmetic mean of 4.03 and a standard deviation of .784. Therefore, the direction of the responses of the study sample is Agree.
- ✓ Statement "Point collecting from purchasing items or point redemption has influence customers to spend more." in the fourth rank came with an arithmetic mean of 3.84 and a standard deviation of. 368.Therefore, the direction of the responses of the study sample is neutral.
- ✓ Statement "supply chain Customers will be satisfied and the organization's image will improve if installation service is of high quality." in the fifth rank came with an arithmetic mean of 3.82 and a standard deviation of 0.443. Therefore, the direction of the responses of the study sample is neutral.

According to the data presented in the table, Resilience of Supply Chain Management, lower costs associated with supply chain Installation service is one of the after-sale service offered by an organization to their customers**.**

Table 8: Descriptive Statistics of Benefits of Effective Biomedical Waste Management

Descriptive Statistics						
	N	Min	Max	Mean	Std. Deviation	p-value
Point collecting from purchasing items or point redemption has influence customers to spend more.	100	3	4	3.84	.368	0.344
Effective supply chain management can achieve cost	100	1	5	4.07	1.112	-

savings						
supply chain helps customers to transport brought product easier.	100	3	5	4.03	.784	0.314
supply chain Installation service is one of the after-sale service offered by an organization to their customers.	100	3	5	4.37	.747	0.013
supply chain Customers will be satisfied and the organization's image will improve if installation service is of high quality.	100	3	5	3.82	0.443	٠,٠٠

Table 9: Frequency & Percent of Benefits of Effective Biomedical Waste Management

S	Strongly disagree		not agree		Neutral		Agree		Strongly Agree	
	F	%	F	%	F	%	F	%	F	%
Point collecting from purchasing items or point redemption has influence customers to spend more.	-	-	-	-	16	16%	84	84%	-	-
Effective supply chain management can achieve cost savings	3	3%	7	7%	19	19%	22	22%	49	49%
supply chain helps customers to transport brought product easier.	-	-	-	-	29	29%	39	39%	32	32%
supply chain Installation service is one of the after-sale service offered by an organization to their customers.	-	-	-	-	16	16%	31	31%	53	53%
supply chain Customers will be satisfied and the organization's image will improve if installation service is of high quality.	-	-	-	-	٢٠	٢٠%	٣٠	٣٠%	٥٠	٥٠

Hypotheses Development

- **There is positive relationship between the adoption of AI technologies and the resilience of supply chain.**

It is clear from the table that is a positive, a statistically significant relationship between the adoption of AI technologies and the resilience of supply chain was less than 0.05.

Table 10: t - test

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.371[a]	.137	.129	.42902
a. Predictors: (Constant), the adoption of AI technologies				
b. Dependent Variable: a the resilience of supply chain				

ANOVAa					
Model	Sum of Squares	Df	Mean Square	F	Sig.

1	Regression	2.872	1	2.872	15.606	.000b
	Residual	18.038	98	.184		
	Total	20.910	99			
a. Dependent Variable: the resilience of supply chain						
b. Predictors: (Constant), the adoption of AI technologies						

Coefficients a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.513	.386		6.503	.000
	the adoption of AI technologies	.364	.092	.371	3.950	.000
a. Dependent Variable: the resilience of supply chain						

- **The relationship between the adoption of AI technologies and the resilience of the supply chain is mediated by organizational culture and readiness.**

It is clear from the table that there is a positive, statistically significant relationship between the adoption of AI technologies and the resilience of supply chain is mediated by organization culture and readiness, where the significance ratio was less than 0.05, with an increase in the adoption of AI technologies and the resilience of supply chain is mediated by organization culture and readiness.

Table 11: Chi-Square Tests

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	113.437[a]	40	.000
Likelihood Ratio	102.925	40	.000
Linear-by-Linear Association	5.253	1	.022
N of Valid Cases	100		
a. 50 cells (92.6%) have expected count less than 5. The minimum expected count is .12.			

Conclusion:

Finally, manufacturers around the world are increasingly worried about supply chain disruptions. More expenses, less money coming in, and unhappy customers are all possible outcomes of such glitches in company operations. Businesses can take proactive steps to strengthen their supply networks so they can

better withstand and recover from interruptions. A well-executed risk management strategy, investments in technology, and cooperative partnerships with vendors and customers are all part of this. Businesses can guarantee their supply chains can withstand interruptions and keep operating at a high level by following these steps.

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