

The Role of Procurement Risk Management in Enhancing Supply Continuity (A Field Study at Yemen Company for Flour Mills & Grain Silos, Aden)

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Article History	Abstract
Original Research Article	<i>This study found that procurement risk management significantly improves supply continuity at the Yemen Company for Flour Mills and Grain Silos, explaining 46% of its variance. Risk assessment, mitigation, and monitoring were effective, but shipping-contract gaps and geopolitical disruptions remain challenges. The study recommends long-term freight agreements and a specialized risk-management unit.</i> Keywords: Procurement, Risk Management, Supply Continuity, Yemen Company, Flour Mills, Grain Silos, Aden.
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Introduction

Procurement risk management is essential for ensuring supply continuity, particularly for organizations dependent on imported raw materials amid economic, political, and logistical uncertainties. Effective risk management enables organizations to anticipate disruptions, implement timely mitigation measures, and maintain the availability of critical inputs. Weaknesses in managing procurement risks can cause supply interruptions, production bottlenecks, and ultimately undermine organizational performance and stability.

Problem Statement

The Yemen Company for Flour Mills and Silos faces major procurement risks from currency volatility, Red Sea shipping disruptions, and global grain-market instability, threatening supply continuity and production planning.

In light of these external challenges, the company's purchasing department faces increasing pressure to manage procurement risks effectively and maintain a stable flow of essential raw materials. This highlights the need to examine how purchasing risk management practices can strengthen

supply continuity and support the company's ability to respond to environmental uncertainties. Therefore, this study seeks to answer the following main research question:

How do procurement risk management practices enhance supply continuity at the Yemen Company for Flour Mills and Grain Silos under severe environmental fluctuations?

Sub- Questions:

Q1: How does risk assessment affect supply stability and prevent grain stock-outs under exchange rate and Red Sea crises?

Q2: To what extent does risk mitigation (supplier diversification, hedging) enhance supply flexibility in finding alternative sourcing channels?

Q3: What is the role of risk monitoring in accelerating the speed of recovery from sudden global supply chain disruptions?

Study Hypotheses

Main Hypothesis:

H0: There is no statistically significant impact of procurement risk management dimensions (collectively) on enhancing supply continuity at the Yemen Company for Flour Mills and Grain Silos – Aden, at a significance level of ($\alpha \leq 0.05$).

Sub-Hypotheses:

H0a: Risk assessment has no statistically significant impact on maintaining supply stability at a significance level of ($\alpha \leq 0.05$).

H0b: Risk mitigation has no statistically significant impact on enhancing supply flexibility at a significance level of ($\alpha \leq 0.05$).

H0c: Risk monitoring has no statistically significant impact on accelerating the speed of recovery at a significance level of ($\alpha \leq 0.05$).

Study Objectives

General Objective:

This study aims to examine the role of procurement risk management in enhancing supply continuity at the Yemen Company for Flour Mills and Grain Silos in Aden.

Sub-Objectives:

1. To evaluate the role of procurement risk assessment in safeguarding supply continuity.
2. To analyze the impact of implemented risk mitigation strategies on preserving supply continuity.
3. To determine the effectiveness of continuous risk monitoring frameworks in maintaining supply continuity.
4. To measure the holistic effect of integrated procurement risk management (assessment, mitigation, and monitoring) on overall supply continuity.
5. To formulate actionable recommendations aimed at optimizing procurement risk management frameworks within the target company.

Significance of the Study

Theoretical Significance:

This study addresses a research gap by examining supply continuity and risk management in conflict-affected economies, highlighting how firms respond to currency, maritime, and commodity-price shocks and build supply-chain resilience.

Practical Significance:

The study provides practical and strategic value by helping the Yemen Company for Flour Mills and Silos strengthen procurement resilience against exchange-rate volatility, shipping disruptions, and supplier risks. It also offers a benchmark for other Yemeni industries facing similar challenges and supports policymakers and society by contributing to supply continuity, food security, price stability, and access to essential commodities.

Conceptual Framework:

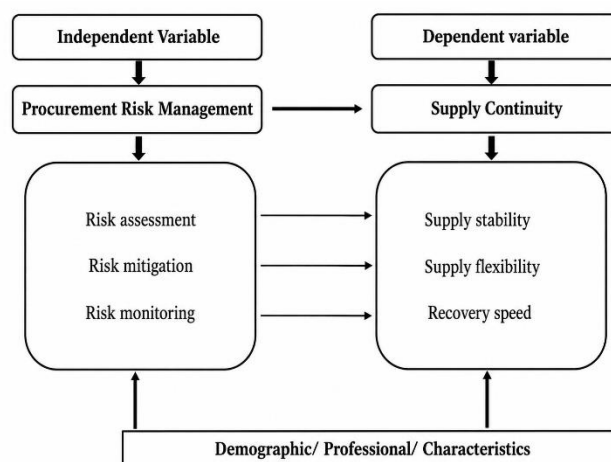


Figure 1.1: Conceptual Framework of the Study.

Key Concepts Definitions:

• Procurement Risk Management (Independent Variable)

Procurement risk management is defined as the strategic and administrative framework implemented by the Yemen Company for Flour Mills and Grain Silos to proactively identify, assess, and control risks associated with importing wheat, thereby ensuring the stability of food resources in a volatile economic environment.

• Risk Assessment (Dimension 1)

Risk assessment is defined as the systematic process of identifying and prioritizing potential threats—such as exchange rate fluctuations and maritime risks—that could delay the arrival of grain shipments to the company's silos in Aden.

• Risk Mitigation (Dimension 2)

Risk mitigation is defined as the proactive strategies adopted to maintain strategic wheat reserves and diversify shipping routes, thereby minimizing the impact of regional logistical disruptions on inbound supply operations.

• Risk Monitoring (Dimension 3)

Risk monitoring is defined as the continuous administrative process of tracking shipping schedules and market prices to ensure that supply chain operations remain stable, resilient, and secure against sudden environmental changes.

- **Supply Continuity (Dependent Variable)**

Supply continuity is defined as the ability of the Yemeni Company for Flour Mills and Grain Silos to maintain a steady, uninterrupted flow of wheat and grain to the Aden market, thereby safeguarding food security despite challenging external economic and security conditions.

- **Supply Stability (Dimension 1)**

Supply stability is defined as the constant, reliable availability of high-quality wheat and essential raw materials at the production plants, ensuring that manufacturing lines operate efficiently without sudden interruptions.

- **Supply Flexibility (Dimension 2)**

Supply flexibility is defined as the operational capability to rapidly adjust sourcing strategies, modify order volumes, and alter shipping routes to overcome logistical obstacles and sustain continuous commercial operations.

- **Recovery Speed (Dimension 3)**

Recovery speed is defined as the precise duration or time required to restore full operational capacity and stabilize disrupted grain shipments following any sudden procurement or logistical shock.

Limits of the study

- **Subjective Limits:** The subjective limits of this study are represented by the Independent Variable, which is Procurement Risk Management and its dimensions (Risk Assessment, Risk Mitigation, and Risk Monitoring). It is also represented by the Dependent Variable, which is Supply Continuity and its dimensions (Supply Stability, Supply Flexibility, and Recovery Speed).
- **Geographical Limits:** Yemeni Company for Flour Mills and Grain Silos – Aden.
- **Timeline Limits:** From 2025 to 2026.
- **Human Limits:** Employees of Procurement, Finance/ Accounting, Planning/ Warehouses, and Top management.

Literature Review

Le (2025), “Purchasing Risk Management and Its Impact on Supply Chain Continuity under Macroeconomic Vulnerability.”

The study aimed to investigate the relationship between purchasing risk management and supply chain continuity under macroeconomic vulnerability conditions. The target population included procurement employees working in manufacturing and commercial firms affected by economic instability. The sample consisted of procurement staff selected from organizations exposed to macroeconomic fluctuations such as exchange rate volatility. The

methodology followed a descriptive-analytical approach using structured questionnaires as the main data collection tool. The findings revealed that effective purchasing risk management significantly reduces supply disruptions and improves inventory stability during periods of economic uncertainty.

Pandya & Vahoniya (2025), “Developing an Integrated Risk Assessment Model for Industrial Procurement and Inventory Security.”

The study aimed to develop an integrated risk assessment model for evaluating procurement risks and improving inventory security in industrial operations. The target population included industrial procurement departments responsible for managing raw material flows and supply continuity. The sample was based on industrial procurement units using risk-matrix evaluation tools and operational procurement data. The methodology applied a descriptive-analytical design combining field observation with quantitative modeling techniques. The findings indicated that early identification of procurement risks significantly reduces inventory vulnerabilities and prevents supply chain disruptions.

Anozie et al. (2024), “Leveraging Advanced Technologies in Supply Chain Risk Management (SCRM) to Mitigate Healthcare Disruptions: A Comprehensive Review.”

The study aimed to analyze the role of advanced technologies in mitigating supply chain disruptions in critical sectors such as healthcare. The target population focused on healthcare supply chain systems and critical logistics operations. The sample was based on secondary data collected from published literature, reports, and documented supply chain studies. The methodology used a descriptive literature review with qualitative meta-synthesis techniques. The findings revealed that advanced digital technologies and automated tracking systems significantly improve risk detection and accelerate mitigation responses.

Celestin & Sujatha (2024), “Impact of Global Supply Chain Disruptions on Business Resilience: Strategies for Adapting to Pandemics and Geopolitical Conflicts.”

The study aimed to analyze how organizations adapt to global supply chain disruptions and strengthen resilience. The target population included global manufacturing and healthcare sectors. The sample consisted of survey data and case study interviews from organizations across multiple industries. The methodology applied a descriptive-analytical approach using questionnaires and interviews. The findings indicated that supplier diversification and digital forecasting significantly improve recovery speed and enhance overall business resilience.

Research Gap

The study fills key research gaps by examining procurement risk management in Yemen's crisis environment, particularly during the 2025–2026 Red Sea shipping crisis. It focuses on the strategically vital wheat and grain milling sector, employs a mixed-method approach, and applies Resource Dependence Theory to explain how procurement practices enhance supply resilience amid severe external dependency and disruption.

Study Methodology

Profile of the Study Application: Yemen Company for Flour Mills and Grain Silos (YCMGS) – Aden

The Yemen Company for Flour Mills and Grain Silos

(YCMGS) in Aden serves as the practical field for this study. Established in 1992 and beginning production in 1999, the company is a leading industrial entity under the HSA Group. It plays a vital role in Yemen's food security through the large-scale importation, storage, and processing of wheat. Strategically located near the Port of Aden, YCMGS operates extensive grain silos and milling facilities powered by advanced technology. For the purpose of this field study, the company represents a critical environment to examine Procurement Risk Management. Its heavy reliance on international supply chains and exposure to global market fluctuations provide a realistic context for investigating how procurement strategies enhance Supply Continuity amid economic and logistical challenges.

Table (3.1): Company Profile

Item	Details
Company	Yemen Company for Flour Mills and Grain Silos
Type	Private Company
Location	Aden – Yemen
Sector	Food Manufacturing
Activity	Wheat import, storage, flour production

Method used in this Research

This study followed a descriptive analytical approach, which was considered suitable for investigating the relationship between procurement risk management and supply continuity. This approach aimed to describe the current status of the study variables and analyze the field data collected from the respondents to reach scientific conclusions.

Study Population and Target Sector

The macro-population of the investigated organization encompasses all functional layers, totaling (557) employees

distributed across industrial, technical, and administrative units. However, to ensure high empirical rigor and avoid contextual dilution, this study strictly defined its Target Population to include only personnel directly operationalized within the core risk-bearing departments relative to supply chain operations (Senior management, Procurement, Warehousing, Finance, Planning, and Internal Audit). This relevant, specialized targeted group consists of exactly (131) employees.

Table (3.2): Total Organization Population (The Macro-Population)

Item	Number
Total Employees	557
Male	545
Female	12

Interpretation: The significant disparity between male and female employees within the organization is primarily attributed to the nature of the industry, which requires extensive physical labor and operational roles traditionally

dominated by male personnel. This gender distribution is consistent with the general workforce composition within this specific industrial sector.

Table (3.3): The Study Target Population

Item	Number
Total Employees	131
Male	126
Female	5

Study Sample and Response Rate

Due to company limitations, a total of (50) questionnaires were successfully distributed. Among these, (47) validated responses were retrieved and completely cleared for final statistical processing, while (3) questionnaires were

discarded due to missing entries or incomplete sections. This culminates in a highly credible response rate of 94% from the distributed cluster, and captures 35.8% of the entire specialized target population (47 / 131), which is highly representative for inferential analysis within single-case corporate frameworks.

Table (3.4): Sample Size and Response Rate

Item	Number	Percentage
Distributed	50	100%
Valid Responses	47	94%
Excluded	3	6%
Final Sample	47	94%

Sampling Technique

The study utilized a Purposive (Non-Probability) Sampling Technique. This deliberate selection method was necessary to target key informants who possess the specific professional knowledge, technical expertise, and daily operational exposure to procurement cycles, financial clearance, and inventory logistics. By restricting the sample to these specialized administrative and operational cells, the gathered data yields authentic strategic insights rather than generalized, non-expert responses.

Data Collection Sources

Two main sources were relied upon to gather information:

Primary Sources:

A Structured Questionnaire: Designed specifically for this study and distributed to employees across various departments.

Secondary Sources:

These included academic books, journals, previous studies, and official company reports used to build the theoretical framework.

Research Tool (Instrument)

The questionnaire was the primary tool used to measure the study variables. A five-point Likert scale was adopted, ranging from strongly disagree (1) to strongly agree (5).

The following table details the variables, dimensions, and the number of paragraphs assigned to each:

Table (3.5): Questionnaire Structure

Variable	Dimension	Number of Paragraphs	
Procurement Risk Management	Risk Assessment	7	1-7
	Risk Mitigation	6	8-13
	Risk Monitoring	6	14-19
Supply Continuity	Supply Stability	5	20-24
	Supply Flexibility	5	25-29
	Recovery Speed	6	30-35
Total		35	

Validity and Reliability of the Tool: To ensure the quality, accuracy, and academic rigor of the study, the following validation and reliability procedures were applied:

Questionnaire Review: The questionnaire was reviewed and validated by a panel of academic experts from the university, as well as experienced professionals from the field. This included valuable feedback from the company's Procurement Manager and Human Resources Manager.

This comprehensive review process ensured that all items were clear, precise, and highly relevant to the study's core objectives.

Reliability (Internal Consistency): To evaluate the reliability and internal consistency of the research instrument, Cronbach's Alpha coefficient was calculated using SPSS. Professionally, a Cronbach's Alpha value of 0.70 or above indicates acceptable reliability. As shown in Table (3.6), all calculated values significantly exceeded this

threshold, demonstrating an excellent level of reliability and stability for the measurement instrument.

Table (3.6): Reliability Test Results (Cronbach's Alpha)

Variable	Cronbach's Alpha	Results
Procurement Risk Management	0.904	Excellent / Highly Reliable
Supply Continuity	0.925	Excellent / Highly Reliable
Overall Instrument	0.943	Excellent / Highly Reliable

Statistical Analysis Methods

The data collected in this study were analyzed using the Statistical Package for the Social Sciences (SPSS, Version 20), employing the following statistical techniques:

Frequencies and Percentages: Used to describe the demographic and personal characteristics of the study sample.

Arithmetic Means and Standard Deviations: Used to measure the level of responses and relative importance of the questionnaire items.

Pearson Correlation and Regression Analysis: Used to examine the linear relationship and statistical impact between Procurement Risk Management (independent variable) and Supply Continuity (dependent variable).

Ethical Considerations: All participants involved in this study were fully informed about its academic purpose, and their participation was completely voluntary. Strict confidentiality was maintained throughout the research process. All collected data was secured, anonymized, and utilized strictly for academic research purposes, ensuring no individual identification or corporate sensitive data was compromised.

Sample Characteristics

Study Population and Sample: The study population comprises all employees of the Yemen Company for Flour Mills and Grain Silos. The study sample consisted of a purposive sample of employees totaling (50) individuals. A

total of (50) questionnaires were distributed, of which (47) were deemed valid for statistical analysis.

Data and Information Collection Sources: The study relied on two primary sources for data and information collection:

- Primary Sources: The study relied on primary sources to collect field data through the questionnaire instrument.
- Secondary Sources: The secondary sources for this study comprised books, periodicals, scientific research papers, and relevant websites.

Study Instrument: The study instrument consisted of a designed questionnaire representing the independent variable, Procurement Risk Management, comprising 19 items distributed across three sub-dimensions: the first dimension, Risk Assessment, included 7 items; the second dimension, Risk Mitigation, included 6 items; and the third dimension, Risk Monitoring, included 6 items. The dependent variable, Supply Continuity, was divided into three dimensions: the first dimension, Supply Stability, included 5 items; the second dimension, Supply Flexibility, included 5 items; and the third dimension, Recovery Speed, included 6 items.

Testing the Reliability and Validity of the Study Instrument:

- Testing the Reliability of the Study Instrument:

Table (1): Cronbach's Alpha Reliability Test Results for the Study Instrument

Questionnaire Axis	Number of Items	Reliability Coefficient (Alpha)
Total – Procurement Risk Management	19	0.904
Total – Supply Continuity	16	0.925
Overall Questionnaire	35	0.943

As shown in Table (1), the reliability coefficient for the independent variable, Procurement Risk Management, yielded a reliability score of (0.904), while the reliability

coefficient for the dependent variable, Supply Continuity, yielded a reliability score of (0.925). These results indicate a high reliability ratio, signifying that the sample is

homogeneous in its responses to the questionnaire and that the findings can be generalized to the study population. The overall reliability coefficient of the data collection instrument was (0.943), indicating a very high reliability ratio that qualifies it as a suitable and effective measurement instrument for this study, with results that can be generalized to the study population to a very high degree.

Statistical Methods:

The most important statistical methods used in this study are as follows:

- Cronbach's Alpha coefficient to test the reliability of the study sample.
- Frequencies, percentages, means, and standard deviations.
- One-sample T-test.
- Simple linear regression.
- Multiple regression analysis.

Distribution of the Study Sample According to Sample Characteristics:

1- Distribution of the Research Sample by Gender:

Table No. (2): Distribution of the Sample Research by Gender

Gender	Frequency	Percentage (%)
Male	44	93.6
Female	3	6.4
Total	47	100.0

Interpretation:

Table (2) shows that male employees at the Yemen Company for Flour Mills and Grain Silos outnumber female employees, with males accounting for (93.6%) compared to (6.4%) females, reflecting the predominantly male nature of the company's work environment.

2- Distribution of the Research Sample by Age:

Table No. (3): Distribution of the Research Sample by Age

Age Groups	Frequency	Percentage (%)
30 years and below	12	25.5
31–40 years	22	46.8
41–50 years	10	21.3
51 years and above	3	6.4
Total	47	100.0

Interpretation:

Table (3) shows that the largest group falls within the (31–40 years) age bracket at (46.8%), followed by those under 30 years at (25.5%), the (41–50 years) group at (21.3%), and those aged 51 years and above at (6.4%).

3- Distribution of the Research Sample by Educational Qualification:

Table No. (4): Distribution of the Sample Research by Educational Qualification

Educational Qualification	Frequency	Percentage (%)
High School	13	27.7
Diploma	7	14.9
Bachelor's degree	26	55.3
Master's Degree	1	2.1

Doctorate	0	0
Total	47	100.0

Interpretation:

Table (4) shows that Bachelor's degree holders ranked first at (55.3%), followed by High School holders at (27.7%), Diploma holders at (14.9%), and Master's degree holders at (2.1%). No member of the sample held a Doctorate degree.

4- Distribution of the Research Sample by Department:

Table No. (5): Distribution of the Research Sample by Department

Department	Frequency	Percentage (%)
Senior Management	1	2.1
Procurement Management	6	12.8
Finance / Accounting	6	12.8
Planning and Materials	17	36.2
Warehouse Management	15	31.9
Internal Audit	2	4.3
Total	47	100.0

Interpretation:

Table (5) shows that the Planning and Materials department ranked first at (36.2%), Warehouse Management second at (31.9%), Procurement Management and Finance/Accounting shared third at (12.8%) each, Internal Audit fourth at (4.3%), and Senior Management last at (2.1%).

5- Distribution of the Research Sample by Job Title:

Table No. (6): Distribution of the Research Sample by Job Title

Job Title	Frequency	Percentage (%)
Manager	1	2.1
Head of Department	2	4.3
Supervisor	7	14.9
Employee	37	78.7
Total	47	100.0

Interpretation:

Table (6) shows that the Employee category ranked first at (78.7%), Supervisor second at (14.9%), Head of Department third at (4.3%), and Manager last at (2.1%).

6- Distribution of the Research Sample by Years of Experience:

Table No. (7): Distribution of the Research Sample by Years of Experience

Years of Experience	Frequency	Percentage (%)
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Less than 5 years	13	27.7
5–10 years	16	34.0
11–15 years	5	10.6
More than 15 years	13	27.7
Total	47	100.0

Interpretation:

Table (7) shows that those with 5–10 years of experience ranked first at (34.0%), followed by those with less than 5 years and more than 15 years at (27.7%) each, while those with 11–15 years ranked last at (10.6%).

Section Two: Descriptive Analysis of Study Variables: In this section, means, standard deviations, and relative importance were used to analyze the dimensions and items of the questionnaire pertaining to Procurement Risk Management and Supply Continuity.

First: Descriptive Analysis of the Procurement Risk Management Variable Dimensions:

- Risk Assessment Dimension:

Table No. (8): Means, Standard Deviations, Ranks, and Relative Importance for the Risk Assessment Dimension

	Risk Assessment	Weighted Mean	Std. Dev.	Rank	Relative Weight	Computed T-Value	Sig. Level	Direction
1	The company has a clear system for identifying wheat supply risks globally.	4.57	0.77	1	91.40	13.96	0.00	Strongly Agree
2	The company assesses risks associated with the global supply chain.	4.51	0.78	2	90.20	13.34	0.00	Strongly Agree
3	Suppliers are evaluated based on their ability to supply under crisis and conflict conditions.	4.43	0.77	4	88.60	12.64	0.00	Strongly Agree
4	The company relies on accurate future forecasts to identify potential crises before they occur.	4.43	0.77	4	88.60	12.64	0.00	Strongly Agree
5	The impact of exchange rate fluctuations on import costs is analyzed periodically.	4.38	0.85	5	87.60	11.18	0.00	Strongly Agree
6	Risks (financial, logistical, political) are classified to prioritize their management.	4.45	0.80	3	89.00	12.36	0.00	Strongly Agree
7	Relevant departments are involved in the risk assessment process.	4.32	0.96	6	86.40	9.44	0.00	Strongly Agree
	Overall Mean	4.44			Strongly Agree			
	Std. Deviation	0.08						

The Risk Assessment dimension received a very high overall rating (Mean = 4.44), with all items significantly exceeding the hypothetical mean ($p < 0.05$). The strongest areas were clear identification of global wheat supply risks, global supply-chain risk assessment, and risk prioritization/classification, indicating a robust risk-assessment system. -

Risk Mitigation Dimension:

Table No. (9): Means, Standard Deviations, Ranks, and Relative Importance for the Risk Mitigation Dimension

	Risk Mitigation	Weighted Mean	Std. Dev.	Rank	Relative Weight	Computed T-Value	Sig. Level	Direction
1	The company adopts a 'multi-supplier' policy to avoid sudden disruptions or supplier refusals.	4.40	0.90	2	88.0	10.69	0.00	Strongly Agree
2	The company maintains a safety stock to handle unexpected fluctuations in global markets.	4.32	0.96	3	86.4	9.44	0.00	Strongly Agree
3	Long-term contracts exist with reliable shipping companies to ensure continuous shipment delivery.	4.11	0.96	6	82.2	7.89	0.00	Agree
4	The company has plans to address sudden fluctuations in global wheat or exchange rate prices.	4.28	0.58	4	85.6	15.12	0.00	Strongly Agree
5	The company has immediate alternatives in case suppliers fail to provide required quantities of raw materials.	4.23	0.76	5	84.6	11.16	0.00	Strongly Agree
6	Proactive measures are taken to reduce the impact of risks before they occur.	4.51	0.62	1	90.2	16.67	0.00	Strongly Agree
	Overall Mean	4.31			Strongly Agree			
	Std. Deviation	0.14						

The Risk Mitigation dimension received a high overall rating (Mean = 4.31), with all items significantly exceeding the hypothetical mean ($p < 0.05$). Key strengths were proactive risk-reduction measures and a multi-supplier strategy, while long-term shipping contracts represented the weakest area.

- Risk Monitoring Dimension:

Table No. (10): Means, Standard Deviations, Ranks, and Relative Importance for the Risk Monitoring Dimension

	Risk Monitoring	Weighted Mean	Std. Dev.	Rank	Relative Weight	Computed T-Value	Sig. Level	Direction
1	Supplier performance and compliance with deadlines and quality standards are monitored regularly.	4.55	0.50	1	91.0	21.19	0.00	Strongly Agree
2	The procurement risk register is updated periodically based on the current political and economic situation.	4.38	0.74	5	87.6	12.83	0.00	Strongly Agree
3	An effective information-sharing system exists regarding disruptions in Red Sea international navigation routes.	4.34	0.76	6	86.8	12.10	0.36	Strongly Agree
4	High coordination exists between departments (Procurement, Finance, and Planning) to address any emerging risk.	4.53	0.62	3	90.6	16.93	0.36	Strongly Agree
5	Lessons from past crises (such as global wars) are utilized to enhance current monitoring mechanisms.	4.55	0.65	2	91.0	16.31	0.00	Strongly Agree
6	Deviations in the procurement process are detected in a timely manner.	4.49	0.75	4	89.8	13.65	0.00	Strongly Agree
	Overall Mean	4.47			Strongly Agree			
	Std. Deviation	0.09						

The Risk Monitoring dimension received a very high overall rating (Mean = 4.47), with all items significantly exceeding the hypothetical mean ($p < 0.05$). Key strengths were regular supplier-performance monitoring and strong interdepartmental coordination, while information sharing on Red Sea shipping disruptions was comparatively weaker.

Second: Descriptive Analysis of the Supply Continuity Variable Dimension:

- Supply Stability Dimension:

Table No. (11): Means, Standard Deviations, Ranks, and Relative Importance for the Supply Stability Dimension

	Supply Stability	Weighted Mean	Std. Dev.	Rank	Relative Weight	Computed T-Value	Sig. Level	Direction
1	Wheat and raw materials flow to the company regularly despite surrounding challenges.	4.34	0.84	2	86.80	10.92	0.00	Strongly Agree
2	The company successfully maintains supply stability despite exchange rate fluctuations.	4.34	0.67	1	86.80	13.75	0.00	Strongly Agree
3	The company maintains adequate inventory levels to ensure production continuity.	4.28	0.80	4	85.6	10.95	0.00	Strongly Agree
4	The company's plans contribute to reducing the likelihood of supply disruption.	4.26	0.74	5	85.2	11.69	0.00	Strongly Agree
5	Suppliers comply with agreed delivery schedules.	4.28	0.68	3	85.6	12.83	0.00	Strongly Agree
	Overall Mean	4.30			Strongly Agree			
	Std. Deviation	0.04						

The Supply Stability dimension received a high overall rating (Mean = 4.30), with all items significantly exceeding the hypothetical mean ($p < 0.05$). Key strengths were maintaining regular wheat/raw-material flows despite challenges and sustaining supply stability amid exchange-rate fluctuations.

- Supply Flexibility Dimension:

Table No. (12): Means, Standard Deviations, Ranks, and Relative Importance for the Supply Flexibility Dimension

	Supply Flexibility	Weighted Mean	Std. Dev.	Rank	Relative Weight	Computed T-Value	Sig. Level	Direction
1	The company adapts quickly to any sudden change in global wheat export policies.	4.30	0.72	2	86.00	12.36	0.00	Strongly Agree
2	Alternative supply sources are available and ready to use when any primary supplier fails or refuses.	4.26	0.61	4	85.20	14.18	0.00	Strongly Agree
3	The company's procedures are flexible enough to modify shipping plans and routes when transport problems occur.	4.34	0.56	1	86.8	16.34	0.00	Strongly Agree
4	The work team has sufficient authority to modify supply plans to handle emergency situations.	4.13	0.80	5	82.6	9.70	0.00	Agree
5	The company has flexibility in making supply decisions.	4.28	0.74	3	85.6	11.78	0.00	Strongly Agree

	Overall Mean	4.26			Strongly Agree
	Std. Deviation	0.08			

The Supply Flexibility dimension received a high overall rating (Mean = 4.26), with all items significantly exceeding the hypothetical mean ($p < 0.05$). Key strengths were flexible shipping plans/routes and rapid adaptation to changes in global wheat export policies, while emergency decision-making authority was comparatively weaker.

- Recovery Speed Dimension:

Table No. (13): Means, Standard Deviations, Ranks, and Relative Importance for the Recovery Speed Dimension

	Recovery Speed	Weighted Mean	Std. Dev.	Rank	Relative Weight	Computed T-Value	Sig. Level	Direction
1	Supply operations return to normal quickly after any sudden disruption ends.	4.32	0.73	6	86.4	12.47	0.00	Strongly Agree
2	The company has contingency plans to restore operational efficiency in record time.	4.36	0.74	3	87.2	12.70	0.00	Strongly Agree
3	The company's procedures help reduce downtime resulting from delayed shipment arrivals.	4.45	0.65	1	89.0	15.19	0.36	Strongly Agree
4	Fast logistical and financial alternatives are available to compensate for any sudden shortage in inventory.	4.36	0.61	2	87.2	15.42	0.36	Strongly Agree
5	The company's current systems help expedite decision-making to restore supply flows to the market after any crisis.	4.32	0.70	5	86.4	13.01	0.00	Strongly Agree
6	Lessons are drawn from past crises to	4.34	0.82	4	86.8	11.28	0.00	Strongly Agree

	improve recovery speed.							
	Overall Mean	4.36			Strongly Agree			
	Std. Deviation	0.05						

The Recovery Speed dimension received a high overall rating (Mean = 4.36), with all items significantly exceeding the hypothetical mean ($p < 0.05$). Key strengths were reducing downtime from shipment delays and using contingency plans to rapidly restore operational efficiency.

Section Three: Testing Study Hypotheses

In this section, the study hypotheses were tested using simple linear regression analysis, structural regression analysis, path analysis, the independent-samples T-test, and one-way analysis of variance (ANOVA). The study hypotheses are presented as follows:

Main Hypothesis: "There is no statistically significant effect of Procurement Risk Management on Supply Continuity among employees of the Yemen Company for Flour Mills and Grain Silos at a significance level of 0.05." This hypothesis branches into the following sub-hypotheses:

First Sub-Hypothesis: "There is no statistically significant effect of Procurement Risk Management, as represented by the Risk Assessment dimension, on Supply Continuity at a significance level of 0.05." To test this hypothesis, simple linear regression analysis was used and the results were as follows:

Table No. (14): Regression Results for the Relationship between Risk Assessment and Supply Continuity

Independent Variable	Param.	Coeff.	Std. Error	T (Calc.)	Sig.	R	R ²	F / Sig.
Regression Constant	α	2.18	0.39	5.64	0.00	0.64	0.41	30.82 / 0.00
Risk Assessment	β	0.48	0.09	5.55	0.00			

Risk Assessment has a statistically significant positive effect on Supply Continuity ($r = 0.64$, $\beta = 0.48$, $R^2 = 41\%$, $p < 0.05$). Thus, the null hypothesis is rejected, confirming that stronger risk assessment significantly enhances supply continuity.

Second Sub-Hypothesis: "There is no statistically significant effect of Procurement Risk Management, as represented by the Risk Mitigation dimension, on Supply Continuity at a significance level of 0.05." To test this hypothesis, simple linear regression analysis was used and the results were as follows:

Table No. (15): Regression Results for the Relationship between Risk Mitigation and Supply Continuity

Independent Variable	Param.	Coeff.	Std. Error	T (Calc.)	Sig.	R	R ²	F / Sig.
Regression Constant	α	1.75	0.50	3.54	0.00	0.61	0.37	26.93 / 0.00
Risk Mitigation	β	0.59	0.11	5.19	0.00			

Risk Mitigation has a statistically significant positive effect on Supply Continuity ($r = 0.61$, $\beta = 0.59$, $R^2 = 37\%$, $p < 0.05$). Thus, the null hypothesis is rejected, confirming that effective risk mitigation significantly enhances supply continuity.

Third Sub-Hypothesis:

"There is no statistically significant effect of Procurement Risk Management, as represented by the Risk Monitoring dimension, on Supply Continuity at a significance level of 0.05." To test this hypothesis, simple linear regression analysis was used and the results were as follows:

Table No. (16): Regression Results for the Relationship between Risk Monitoring and Supply Continuity

Independent Variable	Param.	Coeff.	Std. Error	T (Calc.)	Sig.	R	R ²	F / Sig.
Regression Constant	α	2.06	0.69	3.00	0.00	0.44	0.19	10.80 / 0.00
Risk Monitoring	β	0.50	0.15	3.29	0.00			

Risk Monitoring has a statistically significant positive effect on Supply Continuity ($r = 0.44$, $\beta = 0.50$, $R^2 = 19\%$, $p < 0.05$). Thus, the null hypothesis is rejected, confirming that effective risk monitoring significantly enhances supply continuity.

To determine the relative order of importance of the effect of each Procurement Risk Management dimension on Supply Continuity within a single model, multiple regression analysis was used and the results were as follows:

Table: Regression Results for the Relationship between Procurement Risk Management and Supply Continuity

Variables	Param.	Coeff.	Std. Error	T (Calc.)	Sig.	R	R ²	F / Sig.
Regression Constant	A	1.52	0.07	20.97	0.00	0.68	0.46	120.02 / 0.00
Risk Assessment	B1	0.30	0.02	19.39	0.00			
Risk Mitigation	B2	0.30	0.02	15.44	0.00			
Risk Monitoring	B3	0.04	0.02	2.02	0.04			

Procurement Risk Management has a statistically significant positive effect on Supply Continuity ($r = 0.68$, $R^2 = 46\%$, $p < 0.05$). Risk Assessment and Risk Mitigation had the strongest effects ($\beta = 0.30$ each), followed by Risk Monitoring ($\beta = 0.04$). Thus, the main null hypothesis is rejected, confirming that effective procurement risk management significantly enhances supply continuity.

Conclusion and Recommendation

Conclusions

- Risk Assessment Dimension:** The company demonstrates a robust and proactive system for identifying and prioritizing global wheat supply risks. However, limited cross-departmental involvement in risk assessment restricts broader logistical and financial insights.
- Risk Mitigation Dimension:** The company demonstrates strong risk-mitigation practices, particularly through multi-supplier sourcing and robust safety-stock management. However, the absence of long-term shipping contracts exposes the company to freight-rate volatility and maritime disruptions, creating a critical supply-chain vulnerability.
- Risk Monitoring Dimension:** The company demonstrates strong supplier monitoring and interdepartmental coordination. However, the lack of a real-time digital information-sharing

system for monitoring maritime threats, particularly in the Red Sea, limits proactive responses to emerging disruptions.

- Supply Stability Dimension:** The company demonstrates strong supply resilience, maintaining steady wheat flows despite exchange-rate volatility and regional disruptions. However, its approach relies heavily on post-disruption inventory buffers rather than proactive measures that prevent supply disruptions.
- Supply Flexibility Dimension:** The company demonstrates strong supply flexibility in adjusting shipping routes and responding to global wheat-export changes. However, centralized decision-making and limited field-level authority delay emergency responses and reduce operational agility.
- Recovery Speed Dimension:** The company effectively minimizes downtime from shipment delays, but slow decision-making and the lack of automated, pre-approved financial and logistical contingencies hinder rapid post-crisis recovery and restoration of supply flows.

Recommendations

Based on the study findings and the identified operational gaps, the study proposes the following practical and

strategic recommendations for the management of Yemen Company for Flour Mills and Silos:

1. **Establishment of a Dedicated Supply Risk Management Unit:** Management should establish an independent supply-chain risk unit separate from routine procurement functions to reduce staff overload and ensure continuous risk monitoring through dynamic risk matrices.
2. **Implementation of Financial Risk Mitigation and Currency Buffers:** The financial department should establish currency hedging mechanisms and bank agreements to secure foreign currency at predictable rates for wheat imports, alongside an internal price-stabilization fund to mitigate exchange-rate and import-cost fluctuations.
3. **Execution of Long-Term Contracts of Affreightment (COA):** The logistics and procurement departments should adopt long-term Contracts of Affreightment (COAs) with reliable shipping lines to stabilize freight costs and ensure uninterrupted vessel arrivals at Aden Port, reducing exposure to Red Sea and Bab-el-Mandeb disruptions.
4. **Strategic Reallocation and Dynamic Management of Multi-sourcing Networks:** Procurement management should dynamically diversify suppliers based on geopolitical risk, establishing pre-approved backup suppliers in lower-risk regions such as Australia and North America to enable rapid shifts during localized maritime disruptions and maintain supply continuity.
5. **Modernization of Dynamic Safety Stock Management:** The storage and operations departments should optimize safety-stock policies using early-warning forecasting models and increase strategic grain reserves during high-risk periods to ensure uninterrupted production during major supply disruptions.
6. **Digitalization and Real-Time Cargo Tracking Integration:** The IT and supply chain departments should integrate the ERP system with real-time satellite cargo tracking to enhance shipment visibility, support cross-departmental coordination, and enable early intervention before vessel delays disrupt supply continuity.
7. **Integration of Artificial Intelligence for Predictive Supply Chain Analytics:** Management should adopt AI and machine learning tools to strengthen predictive

procurement and logistics, enabling wheat-price forecasting, shipping-delay prediction, and automated inventory optimization, thereby improving proactive risk mitigation and supply continuity.

Suggestions for Future Research

To expand upon the boundaries of this investigation, the following avenues are suggested for future academic research:

1. **Cross-Sector Replication:** Future research should extend the framework to diverse manufacturing sectors, such as pharmaceuticals and energy, to strengthen the generalizability of the findings.
2. **Introduction of Advanced Mediating Variables:** Future studies should examine mediating and moderating variables, such as AI in logistics, organizational agility, and strategic green sourcing, to better explain their combined effects on supply-chain resilience.
3. **Measuring the Financial Impact of Currency Volatility on Inventory Carrying Costs:** Future research should empirically examine the impact of exchange-rate volatility on the costs of acquiring and holding safety stocks, focusing on how industrial firms can balance supply security with working-capital efficiency in volatile economic environments.

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