

Fulfilment in Logistics and Supply Chain

Assignment #2
Chapter 3: Research Methodology

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3.1 Introduction

This chapter outlines the research methodology adopted in this study, which investigates the role of Fulfilment in Logistics and Supply Chain performance. The methodology provides a structured framework for how the research was designed, how data was collected, and how it was analysed to address the research questions and test the hypotheses formulated in Chapter 2.

This chapter follows the Research Onion framework proposed by Saunders, Lewis, and Thornhill, which provides a layered approach to research design beginning with the overarching philosophy and working inward toward the specific data collection and analysis methods.

3.2 Operational Definitions for Research Variables

Operational definitions translate abstract concepts into measurable terms. The table below presents the key variables of this study, their types, and how they are measured:

Variable	Type	Operational Definition	Measurement
Fulfilment Process Efficiency	Independent	Degree to which order processing, picking, packing, and shipping are executed accurately and	7-point Likert (1-5)
Inventory Management Accuracy	Independent	Extent to which inventory records align with physical stock, minimizing stockouts and overstock	5-point Likert (1-5)
Technology Adoption	Independent	Level of use of WMS, automation, AI forecasting, and tracking systems in fulfilment	5-point Likert (1-5)
Last-Mile Delivery Performance	Dependent	Effectiveness of the final delivery stage on-time rates, delivery attempts, and cost management	6-point Likert (1-5)
Customer Satisfaction	Dependent	Level of customer contentment with fulfilment outcomes including speed, accuracy, and return	6-point Likert (1-5)

3.3 Research Design The Research Onion

This study adopts the Research Onion model (Saunders et al., 2019) as the overarching framework for research design, moving from the outermost philosophical layer inward toward specific data collection methods:

PHILOSOPHY	Positivism	The study adopts a positivist philosophy the relationships between fulfilment variables can be objectively measured and tested.
APPROACH	Deductive	Hypotheses are derived from existing theory and tested against collected data.
STRATEGY	Survey	A structured questionnaire is distributed to logistics and supply chain professionals.
TIME HORIZON	Cross-Sectional	Data is collected at a single point in time a snapshot of current fulfilment practices.
DATA COLLECTION	Questionnaire	Primary data gathered through an online questionnaire with five-point Likert scale items.

3.4 Research Population and Sampling

The target population consists of individuals with direct or indirect involvement in Logistics and Supply Chain operations including supply chain managers, e-commerce and fulfilment center employees, project managers in logistics, and academic researchers in the GCC region. A sample of 85 respondents was achieved using purposive (judgmental) sampling, ensuring that all participants had relevant knowledge of fulfilment operations. Snowball sampling was used as a supplementary technique to expand the sample through professional referrals.

The questionnaire was distributed online via Google Forms over three weeks. This sample size meets the recommended threshold of 30 respondents per research variable for quantitative social science research.

3.5 Data Collection and Types of Data

This study relies primarily on a structured questionnaire comprising 35 items across six sections. All attitudinal items use a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The questionnaire was piloted with 10 respondents before full distribution to ensure clarity.

Section	Content	Items
Section A	Demographic and professional profile	5
Section B	Fulfilment Process Efficiency	7
Section C	Inventory Management Accuracy	6
Section D	Technology Adoption in Fulfilment	5
Section E	Last-Mile Delivery Performance	6
Section F	Customer Satisfaction	6
Total		35

Secondary data sources academic textbooks, journal articles, and online publications were also consulted to support the literature review and provide industry context.

3.6 Statistical Analysis Procedures

Data was analysed using IBM SPSS Statistics (Version 26). The following procedures were applied to address the research objectives and test the hypotheses at a significance level of $\alpha = 0.05$:

- Descriptive Statistics (frequencies, mean, standard deviation) to profile the sample and describe each variable
- Cronbach's Alpha to assess internal consistency reliability of each questionnaire dimension
- Pearson Correlation to measure the strength and direction of relationships between variables
- Simple Linear Regression to test the predictive impact of each independent variable on dependent variables
- Content Validity confirmed through expert review by three academics and two industry practitioners

Mean scores from the Likert scale are interpreted as: Low (1.00–2.33), Moderate (2.34–3.67), and High (3.68–5.00).

3.7 Conclusion

This chapter outlined the methodological framework guiding this research. The study employs a positivist philosophy, a deductive approach, and a survey strategy, using a structured 35-item questionnaire distributed to 85 logistics and supply chain professionals in the GCC region. Data is quantitative in nature and was analysed using descriptive statistics, reliability tests, Pearson correlation, and regression analysis. This rigorous framework ensures that the findings presented in Chapter 4 are valid, reliable, and capable of producing meaningful conclusions about the strategic role of Fulfilment in modern supply chain operations.

References

Books

- Chopra, S., & Meindl, P. (2021). Supply Chain Management: Strategy, Planning, and Operation (7th ed.). Pearson Education.
- Christopher, M. (2016). Logistics & Supply Chain Management (5th ed.). FT Publishing International.
- Waters, D. (2009). Supply Chain Management: An Introduction to Logistics (2nd ed.). Palgrave Macmillan.
- Saunders, M., Lewis, P., & Thornhill, A. (2019). Research Methods for Business Students (8th ed.). Pearson Education.

Online Sources

- Saudi Vision 2030. (2023). National Industrial Development and Logistics Program. <https://www.vision2030.gov.sa>
- Investopedia. (2023). What Is Order Fulfillment? <https://www.investopedia.com>
- Inbound Logistics. (2023). The ABCs of Fulfilment. <https://www.inboundlogistics.com>
- Amazon. (2023). How Fulfillment by Amazon Works. <https://sell.amazon.com>