

Final Project 2 (PMG497)**Assignment #2**

Chapter 3: Research Methodology

Localization of Lighting Manufacturing and Its Impact on Industrial Competitiveness in Saudi Arabia

Student: Ali Alfayez

Student ID: 232002320

Semester: Second Trimester 2026

3.1 Introduction

This chapter presents the research methodology adopted to investigate the impact of localization of lighting manufacturing on industrial competitiveness in Saudi Arabia. It explains the methodological choices made throughout the study, including the research design, operational definitions of variables, target population, sampling strategy, data collection methods, data types and statistical analysis procedures. A systematic methodology enhances the reliability and validity of the findings and ensures that the research objectives and hypotheses are addressed objectively.

3.2 Operational Definitions of Research Variables

Variable	Definition	Dimensions	Measurement
Localization of Lighting Manufacturing	Extent to which manufacturing activities are localized within Saudi Arabia.	Manufacturing capability, Local sourcing, Local R&D, Workforce development	5-point Likert
Industrial Competitiveness	Ability of firms to compete through quality, innovation, cost and responsiveness.	Quality, Cost, Innovation, Delivery, Export	5-point Likert

Localization is measured through four dimensions: local manufacturing capability, local supply chain development, local research and development, and workforce development. Industrial competitiveness is measured using product quality, cost competitiveness, innovation capability, delivery performance and export competitiveness.

3.3 Research Design (Research Onion)**Research Philosophy**

The study adopts a positivist philosophy because it seeks to objectively measure relationships between variables using numerical data and statistical testing.

Research Approach

A deductive approach is used. Existing theories relating localization and competitiveness are used to formulate hypotheses which are then tested empirically.

Research Strategy

A quantitative survey strategy is selected because it allows standardized data collection from a relatively large number of respondents.

Research Choice

A mono-method quantitative design is adopted using a structured questionnaire.

Time Horizon

A cross-sectional design is employed as data will be collected once during the study period.

3.4 Research Population and Sampling

The population consists of professionals working in the Saudi lighting manufacturing industry, including executives, engineering managers, production managers, procurement specialists, quality managers, R&D engineers and consultants. These participants possess practical knowledge of localization practices and competitive performance.

Purposive sampling will be used because respondents are selected based on their professional experience and ability to provide informed responses. A target sample of 150–200 respondents is considered appropriate for the planned statistical analyses.

3.5 Data Collection Method

Primary data will be collected through a structured questionnaire using a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). The questionnaire will be distributed electronically through Microsoft Forms, Google Forms and professional business networks. Secondary data will be collected from peer-reviewed journal articles, books, Saudi Vision 2030 publications, Ministry of Industry reports, NIDLP publications and other credible industry sources.

3.6 Types of Data

Primary data consists of questionnaire responses obtained directly from industry professionals. Secondary data includes academic literature, government reports, policy documents and published industry statistics used to support the theoretical framework and discussion.

3.7 Statistical Analysis Procedures

Research Objective	Statistical Technique
Describe respondent profile	Frequency & Percentage
Measure localization and competitiveness	Mean & Standard Deviation
Assess questionnaire reliability	Cronbach's Alpha
Examine relationships	Pearson Correlation
Test hypotheses	Multiple Regression

IBM SPSS Statistics will be used to analyse the collected data. Descriptive statistics will summarize respondent characteristics and research variables. Cronbach's Alpha will evaluate internal consistency of the questionnaire. Pearson correlation will examine relationships between variables, while multiple regression analysis will determine the impact of localization on industrial competitiveness. Statistical significance will be evaluated at $\alpha = 0.05$.

3.8 Ethical Considerations

Participation will be voluntary. Respondents will be informed about the purpose of the study before completing the questionnaire. No personally identifiable information will be disclosed, responses will remain confidential, and data will be used solely for academic research. Participants may withdraw at any stage without penalty.

3.9 Conclusion

This chapter has presented the methodological framework for the study. The selected research design, sampling strategy, data collection methods and statistical analysis procedures provide a robust basis for investigating the relationship between localization of lighting manufacturing and industrial competitiveness in Saudi Arabia.

References

- Saunders, M., Lewis, P., & Thornhill, A. (2023). Research Methods for Business Students.
- Creswell, J. W., & Creswell, J. D. (2023). Research Design.
- Sekaran, U., & Bougie, R. (2020). Research Methods for Business.
- Hair, J. F., et al. (2022). Multivariate Data Analysis.
- Saudi Vision 2030. (2016). Vision 2030.
- OECD. (2023). Industrial Policy Studies.
- World Bank. (2024). Manufacturing and Global Value Chains.