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NAME:	**ECHO JOSEPH**
PROGRAM:	**MASTER OF BUSINESS ADMINISTRATION, MBA in LOGISTICS AND SUPPLY CHAIN MANAGEMENT**
REG. NO.:	**MBALSCM/TLU-00116EJ**
ACADEMIC SESSION:	**2025/2026 SESSION**
YEAR/SEMESTER:	**FIRST/SECOND**
DATE:	**OCTOBER 22, 2026**
INSTRUCTION:	**ANSWER ALL THE QUESTIONS**

SECOND SEMESTER RESEARCH WORKS FOR MASTER OF BUSINESS ADMINISTRATION [MBA] DEGREE PROGRAM IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

RESEARCH OBJECTIVES

The research works on the under-listed courses are designed to enable the student achieve the following objectives:

1 To expose the student to the rudiments of effective research backed up with empirical case studies to discuss and to have proper understanding of the courses as researched upon.

2 To enable the student be able to carry out independent self-studies at the post graduate levels.

3 To enable the student apply the knowledge acquired from the various courses researched on at real life scenario like at the work places and to participate on contemporary business related discussions as occasion may demand.

4 To apply the knowledge acquired from the various course to a real life situation towards solving problems at work places.

5 With the knowledge, graduates of these courses can effectively render consultancy services based on their various professional and academic certifications.

6 It is further to enable the student to begin to think of undertaking further study with additional in-depth research works up to doctoral level.

7 It will further enable the students at the completion of their programs be able to compete alongside their counterparts in such similar areas of study globally based on current trends and demands.

NECESSARY INSTRUCTIONS
ON HOW TO ANSWER THE RESEARCH QUESTIONS

This program is a Master of Business Administration (MBA) degree program. Therefore students are advised to follow the following steps in answering the questions:

1 The research student is expected to attempt all the questions

2 There are four courses and each of the course carry four questions each with their sub questions

3 Each of the questions with the sub questions should be presented in a chapter form. Since there are four questions for each of the courses, it implies that each course should be presented in four chapters.

4 State the chapter first, then the questions as written in the research document, before answering.

5 At the end of answering all the four questions for each of the courses, there should be references at the end.

6 The typing should be in 14 point (size), with 1.5 line spacing and well justified

7 Students are to use the recommended text books as stated in the study time table to answer the questions unless otherwise directed contrary by the academic supervisor.

8 All research works must be submitted within four months.

9 Should the student not meeting up to the four months period for submission of all works, he/she should apply for extension not more than two weeks.

10 All submissions should be sent to the academic supervisor's direct email mbagwuignatius11@gmail.om for assessment.

STUDENT NAME: **ECHO JOSEPH**

PROGRAMME: **MASTER OF BUSINESS ADMINISTRATION [MBA]**

FACULTY: **BUSINESS AND MANAGEMENT SCIENCES**

DEPARTMENT: **LOGISTICS AND SUPPLY CHAIN MANAGEMENT**

COURSE: **LOGISTICS MODELLING AND ANALYTICS**

COURSE CODE: **LSCM 605**

UNIT: **3**

BOOK: **THE LOGIC OF LOGISTICS AND ANALYTICS**

AUTHOR: **DAVID SIMECHI-LEVI; XIN CHEN; JULIEN BRAMEL; 3RD EDITION**

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THE RESEARCH QUESTIONS

[C] COURSE: LOGISTICS MODELLING AND ANALYTICS [CODE: LSCM 605]

1ai As a research student of Logistics Modelling and Analytics, define and present explanatory operational frameworks of Logistics Management to a group logistics practitioners in a Logistics Management seminar where are speaking as the Seminar Presenter.

ii Explain how you can manage cost and uncertainty in typical logistics scenario in the context of logistics modelling and analytics [page 3]. Use a typical case scenario as illustrative frameworks.

iii Present typical examples of such cost management and uncertainties

bi Discuss the necessary strategies you would adopt in modelling logistics problems for greater efficiency and effectiveness [page 7]

ii Carefully discuss logistics and supply chain in real and actual practice citing typical practical scenarios to buttress your discussions [page 8]

iii In a sudden logistics problems of challenges, what strategies or steps would you adopt as techniques to evaluate and proffer solutions in such logistical problems to bring about the desired results? [Page 9]

ci Using explanatory analytical models as in the pages of the research text, you are required to explain the under-stated frameworks:

- Convexity and supermodularity [page 15]
- Convex analysis [page 15]
- Convex sets and convex functions [page 15]
- Continuity and differentiability properties [page 18]

ii Explain the characterization of convex functions the positive or negative implications in a typical logistics modelling and analytics [a 23]

iii What is optimization in its generic term and discuss this concept with in relation to convexity and optimization [page 25]; and discrete convex analysis [page 35]

2ai Explain the logic behind game theory in a typical logistic modelling and analytics scenario [page 45]

ii Write and discuss on non-cooperative game theory as can be manifested in logistics modelling and analytics and its relevance to logistics management at large [page 47].

iii What is the tenets of cooperative game theory and explain the under-listed under this theory:

- Core [page 55]
- Nucleolus [page 59]
- Shapley value [page 61]

bi In the scenario of worst–case analysis [page 65] as may be seen in logistics modelling and analytics discuss on the bin-packing problems and first-fit and best-fit [pages 66 -68]

ii With explanatory frameworks, explain first-fit decreasing and best-fit decreasing cooperative game theory as may be applied within logistics modelling and analytics [page 71]

iii Explain the concepts of the travelling sales man problem as may be encountered in logistics modelling and analytics [page 72] and the concepts of local search heuristics [page 75]

ci Explain the term, 'average-case analysis' as may be encountered in logistics modelling analytics [page 85]

ii Explain the term, 'bin-packing problem' in logistics operations [page 86].

iii In mathematical programming-based bounds [page 99]; you are required to write on the following, stating their relevance in logistics modelling and analytics in particular and logistics management at large:

- Lagrangian relaxation [page 103]
- Lagrangian relaxation and the travelling sales man problem [page 105]
- The 1-tree lower brand [page 106]
- The 1-tree lower bound and Lagrangian relaxation [page 107]

3ai Discuss the concept of economic lot size model in logistics modelling and analytics as may be seen in totality of logistics operation. [page 117]

ii What does the power-of-two policies stand for in logistics modelling and analytics and express its workability. [page 121]

iii Discuss on the following reference to logistics modelling analytics:

- The finite-horizon model [page 119]
- Multi-item inventory models [page 122]
- A single-warehouse multiretailer model [page 129]
- Worst-case analyses [page 125]

bi Discuss on models with capacity constraints in logistics modelling and analytics [page 143]

ii Explain the concept and operations of the Wagner-Whitin Model as may seen in logistics modelling and analytics and logistics operations at large. [page 137]

iii Write on single-item models with pricing in logistics modelling and its likely benefits.

ci Discuss the following concepts as applicable in logistics modelling and analytics:

- Single-period models [page 152]
- Main results [page 158]
- Multi-echelon systems [page 172]
- Quasiconvex loss functions [page 159]

ii Explain the ideology behind models with positive lead times in logistics modelling and analytics [page 169]

iii Discuss the ideology of K-Convex functions in logistics modelling and analytics and the implication in the entire logistics management operations.

4ai What are the relevance of the following models in respect of integration of inventory and pricing in logistics modelling and analytics?

- Demand models [page 178)
- Additive demand functions [page 190]
- Single-period stochastic models [page 178]
- General demand functions [page193]

ii Explain the concept of expected utility risk-averse models as may be applicable in logistics modelling and analytics [page 203]

iii Describe the scenario of alternative approach to the optimality policies in logistics operations and modelling [page 194]

bi Discuss the operations of inventory and pricing competition in relation to logistics modelling and analytics [page 213]

ii Explain the operational terminology of inventory games with quantity discounts [page 222]

iii Explain inventory games in completion, coordination and design models [page 211]

ci What are procurement contracts in logistics modelling and analytics? [page 229]

ii Discuss on wholesale price and buy-back contracts in logistics operations at large [pages 231 & 233]

iii Present explanatory discussions on revenue-sharing and portfolio contracts as may be applicable in logistics modelling and analytics. [pages 234 & 235]

NOTE:

1. The academic second semester work, starts October 22, 2026 and ends February 22, 2027.
2. You are to pay Examination Fee of ₦20,000.00 for each course. (Compulsory Payment)
3. Each course should contain a minimum of 20 pages.
4. The front page should be properly addressed. A sample will be sent to you on your request.
5. All the research works must be approved by the supervisor.

Thanks and wishing you success in your academic research.

Prof. Mbagwu Ignatius N. PhD, PhD, ***FCAI, FCPA, FMA, FFC*, *FIDP*, *FSBPA***
Supervisor
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