

# **Project Proposal**

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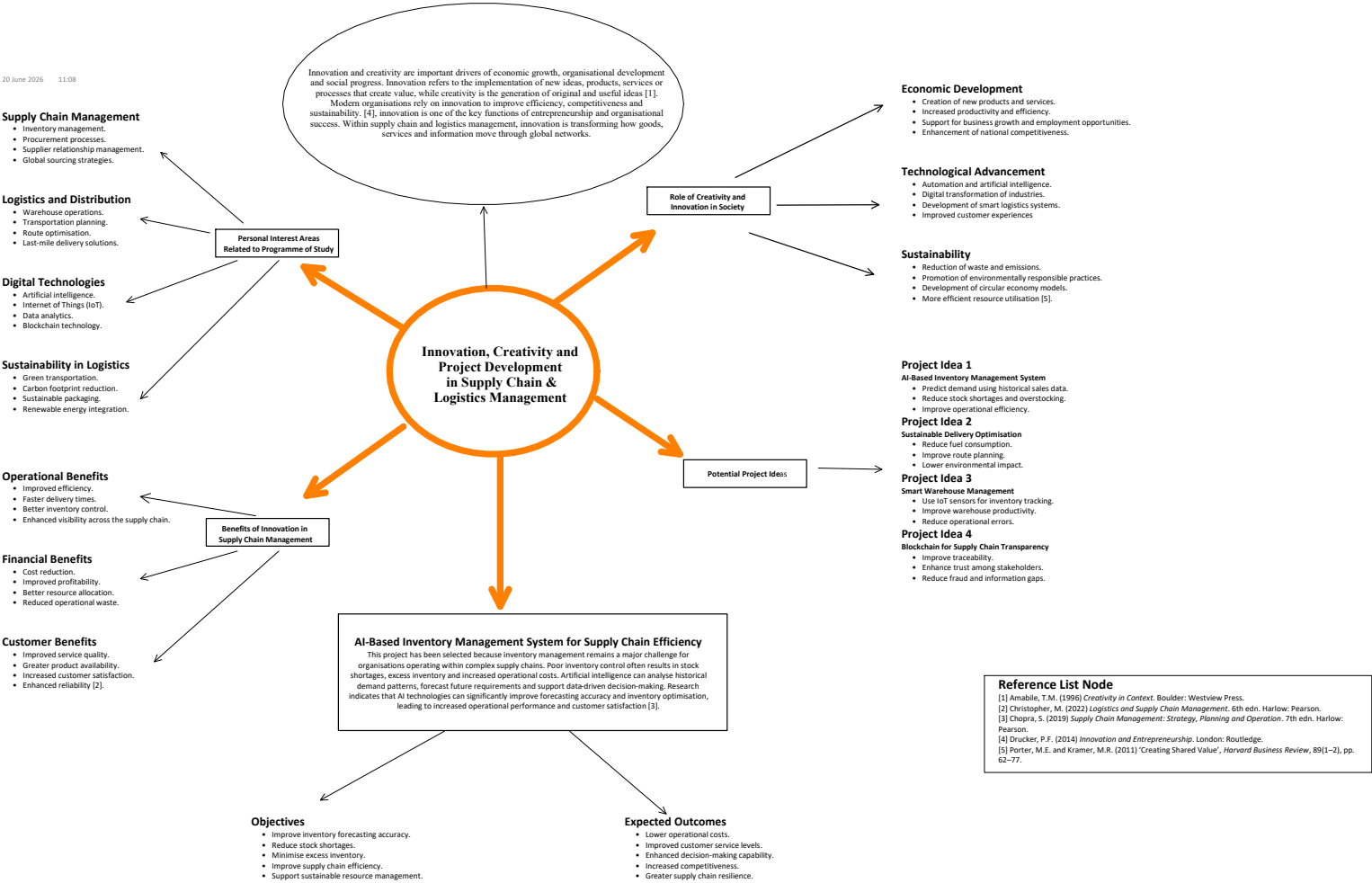
**Student Number: 2433740**

**Assignment title Title: AI-Based Inventory Management  
System for Supply Chain Efficiency**

**Module Name: ACCA5033 Creativity and Value Creation**

**Lecture: Dr Osman Elgawi**

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Reference List

[1] Christopher, M. (2022) *Logistics and Supply Chain Management*. 6th edn. Harlow: Pearson.

[2] Chopra, S. (2019) *Supply Chain Management: Strategy, Planning and Operation*. 7th edn. Harlow: Pearson.

[3] Creswell, J.W. and Creswell, J.D. (2018) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. 5th edn. London: Sage.

[4] Saunders, M., Lewis, P. and Thornhill, A. (2019) *Research Methods for Business Students*. 8th edn. Harlow: Pearson.

**Introduction**

This project investigates how Artificial Intelligence (AI)-based inventory management systems can improve supply chain efficiency by enhancing demand forecasting, reducing inventory costs and improving operational performance. To ensure that the research findings are credible and useful, appropriate research strategies must be implemented. These include maintaining validity, reliability, generalisability and ethical standards throughout the research process. Furthermore, suitable data collection methods and analytical techniques are required to gather and interpret information effectively.

**Research Strategy and Data Collection Methods**

A mixed-method research strategy could be adopted; however, this project will primarily use a quantitative survey approach because it allows data to be collected efficiently from multiple respondents and supports statistical analysis of perceptions regarding AI-based inventory management systems.

The main data collection method will be an online questionnaire distributed to individuals studying or working in supply chain and logistics-related fields. The questionnaire will contain closed-ended questions using a five-point Likert scale ranging from strongly disagree to strongly agree. This approach allows numerical data to be collected and analysed efficiently.

**Quantitative and Qualitative Analysis**

Quantitative analysis involves the examination of numerical data using statistical techniques [3]. For this project, descriptive statistics such as frequencies, percentages, means and charts will be used to analyse survey responses. These methods will help identify patterns and trends relating to perceptions of AI in inventory management.

Qualitative analysis focuses on understanding meanings, experiences and opinions through textual data [4]. Common qualitative methods include thematic analysis, content analysis and coding of interview responses. Although this project primarily uses quantitative data, qualitative feedback from the pilot study may be analysed using thematic analysis to identify recurring suggestions and areas for improvement.

By combining strong research quality measures with appropriate data collection and analysis techniques, the project will generate reliable findings regarding the role of AI in improving inventory management and supply chain efficiency.



**Validity, Reliability, Generalisability and Ethical Considerations**

Validity refers to the extent to which a research study accurately measures what it intends to measure [4]. To enhance validity, the project will use questions that are directly related to AI implementation and inventory management performance. Academic literature and industry reports will also be used to support the interpretation of findings. A pilot survey will be conducted before the main data collection process to identify unclear questions and improve the overall quality of the research instrument.

Reliability refers to the consistency of research findings if the study is repeated under similar conditions [2]. Reliability will be enhanced by using standardised survey questions and maintaining a consistent data collection process. Clear instructions will be provided to participants to reduce misunderstandings and ensure that responses are collected in a systematic manner.

Generalisability concerns whether research findings can be applied to a wider population beyond the study sample [3]. To improve generalisability, the research will seek responses from individuals with knowledge of supply chain operations, logistics or inventory management. Although the project may involve a relatively small sample due to time constraints, selecting participants with relevant experience will improve the usefulness of the findings.

Ethical considerations are essential in all research activities. Participants will be informed about the purpose of the study and their participation will be voluntary. Confidentiality and anonymity will be maintained throughout the project. Participants will also have the right to withdraw from the study at any stage. No personal information will be disclosed, and collected data will only be used for academic purposes [1].

**Pilot Data Collection**

A pilot questionnaire was designed and tested with five participants who had basic knowledge of supply chain management. The pilot included the following sample questions:

- ☐ 1. AI can improve inventory forecasting accuracy.
- ☐ 2. AI systems can reduce inventory-related costs.
- ☐ 3. Organisations should invest in AI-based inventory management technologies.
- ☐ 4. Lack of technical expertise is a barrier to AI implementation.
- ☐ 5. AI improves overall supply chain efficiency.

Feedback from participants suggested that Question 4 should provide examples of technical expertise to improve clarity. Participants also recommended simplifying some technical terminology to ensure easier understanding. As a result, minor modifications were made to the questionnaire before the final version was prepared. The pilot questionnaire and feedback summary should be included in the Appendix section of the proposal.

**Reference List**

[1] Bell, E., Bryman, A. and Harley, B. (2022) *Business Research Methods*. 6th edn. Oxford: Oxford University Press.

[2] Bryman, A. (2016) *Social Research Methods*. 5th edn. Oxford: Oxford University Press.

[3] Creswell, J.W. and Creswell, J.D. (2018) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. 5th edn. London: Sage.

[4] Saunders, M., Lewis, P. and Thornhill, A. (2019) *Research Methods for Business Students*. 8th edn. Harlow: Pearson.