

Changemakers: Creativity and Value Creation

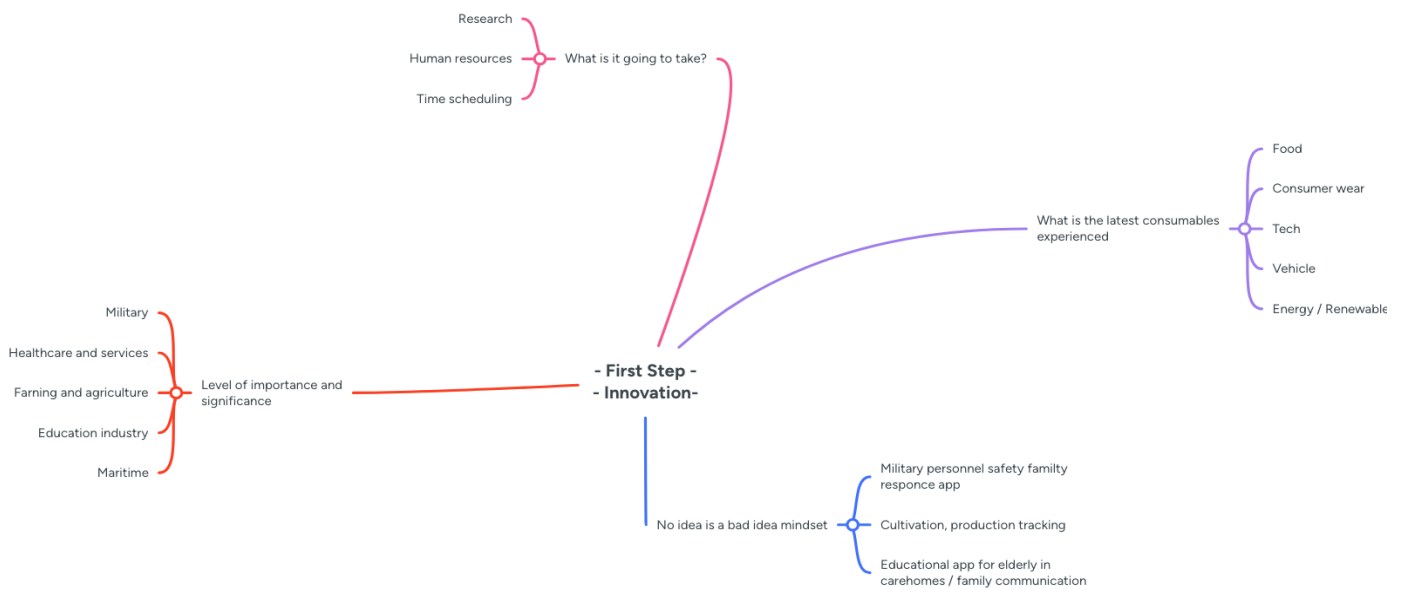
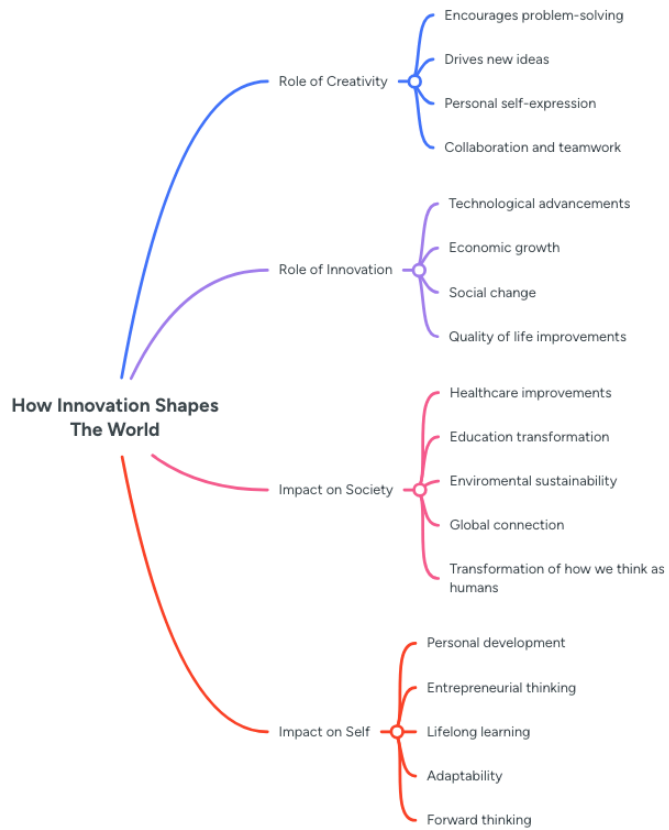
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Assignment 1: Innovation & Research

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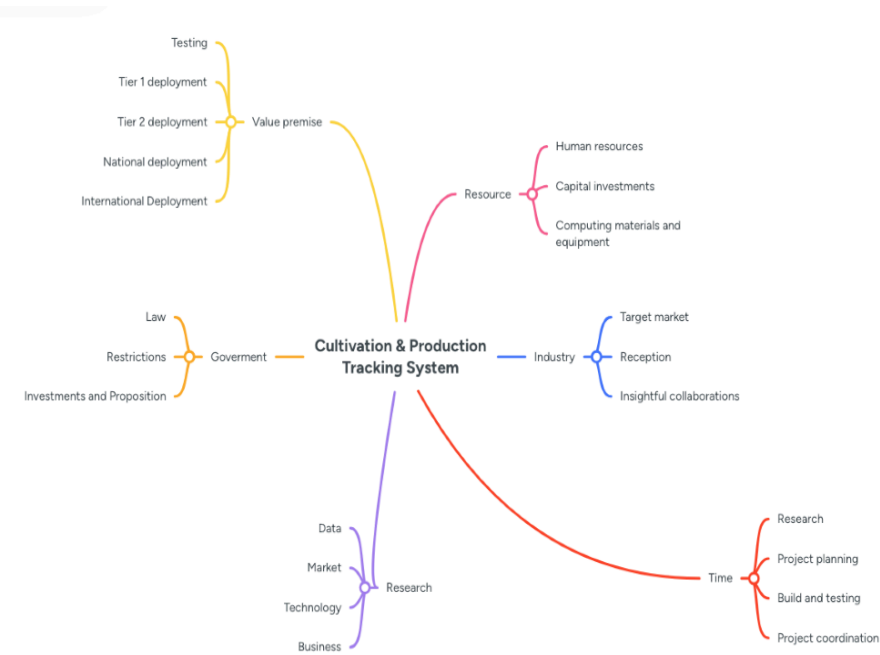
Question 1

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Question 2

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References

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Question 1

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Aim and Objectives

Project Title: Cultivation & Production Tracking System

Aim: To design and implement a digital tracking system that streamlines the monitoring of cultivation processes and production outputs for improved agricultural efficiency, transparency, and decision-making.

Objectives:

To analyse the existing methods of cultivation and production tracking in agricultural enterprises.

To identify the requirements for an effective digital tracking system tailored to specific crops or agricultural products.

To develop a prototype system that records, stores, and visualises real-time data from cultivation to production stages.

To evaluate the system's effectiveness in improving traceability, production planning, and resource management.

To recommend best practices and scalability options for wider adoption in the agricultural sector.

Question 2

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Appropriate Research Philosophy

Given the technological and operational nature of the project, the "Pragmatism" research philosophy is most appropriate. Pragmatism emphasises practical solutions to real-world problems by integrating diverse methods and perspectives.

This philosophy is suitable because the project aims to create a system that addresses tangible issues in agricultural tracking, requiring both qualitative insights from stakeholders and current practices, and quantitative data system performance and productivity metrics. Pragmatism allows for a mixed-methods approach that leverages the strengths of both qualitative and quantitative research, aligning with the iterative design and evaluation process typical of technology implementation projects.

Question 3

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Research Tools, Databases, and Search Strategies

To conduct a comprehensive literature review and gather relevant information for the cultivation and production tracking system, the following tools and databases are recommended:

Search Tools and Databases

Google Scholar: Broadly used for academic articles, theses, conference papers, and books related to agriculture and information systems.

Scopus: Offers an extensive database of peer-reviewed literature across disciplines, useful for tracking recent advancements and citation analysis.

Web of Science: Provides access to high-quality research articles and citation indexing, especially in science and technology.

IEEE Xplore: Essential for research on technological solutions, system design, and implementation in agriculture.

AGRIS (FAO): Specialised in agricultural science and technology, with global coverage of research publications.

Search Strategies

Use Boolean operators (AND, OR, NOT) to refine searches.
e.g. “cultivation tracking system” AND agriculture AND production.

Employ synonyms and related keywords such as “agricultural monitoring,” “farm management system,” or “supply chain traceability.”

Apply filters for publication date (last 5-10 years), language, and document type (peer-reviewed articles, case studies).

Review reference lists of relevant articles to identify further sources.

By using these search tools and strategies, researchers can efficiently locate high-quality, up-to-date literature on cultivation and production tracking systems, helping ensure the project is grounded in existing knowledge and innovative approaches.

References

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Question 1

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Strategies to Enhance Validity, Reliability, Generalisability and Ethical Considerations

Ensuring the validity, reliability, generalisability, and ethical rigour of research is vital for the development of a robust cultivation and production tracking system.

Validity: To enhance validity, the research will employ triangulation by collecting data from multiple sources, such as interviews with farmers, agricultural experts, and analysis of existing digital solutions. By cross-verifying data from stakeholders and current systems, the project can ensure that findings accurately reflect real-world practices. Validity will also be strengthened through pilot testing of survey instruments and system prototypes, allowing for refinement and alignment with project objectives.

Reliability: Reliability will be addressed through the standardisation of data collection instruments, such as structured questionnaires and observational checklists. Consistent procedures will be followed when collecting and recording data, and clear operational definitions for all variables will be established. Reliability will be further supported by conducting a pilot study to identify and correct inconsistencies before the main data collection phase.

Generalisability: While the primary focus is on a specific context (such as a particular crop or region), purposive sampling will be used to include farms of different sizes and operational models. This diversity enhances the generalisability of findings across the agricultural sector. Additionally, collecting both qualitative and quantitative data allows for broader applicability, as patterns can be identified and compared.

Ethical Considerations: Ethical integrity will be maintained by obtaining informed consent from all participants, ensuring confidentiality of responses, and securely storing all research data. Participants will be fully briefed on the purpose of the research and their right to withdraw at any time. The project will comply with institutional and national ethical guidelines for research involving human subjects.

Question 2

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Research Strategies/Data Collection Methods and Pilot Design

A mixed-methods approach is appropriate for this project, combining both quantitative surveys, system log data and qualitative (e.g. Interviews, focus groups) strategies.

Data Collection Methods:

Surveys: Distribute structured questionnaires to farm managers and workers to gather quantitative data on current tracking practices and technology adoption.

Semi-Structured Interviews: Conduct interviews with stakeholders to gain qualitative insights into challenges and user requirements.

System Prototype Testing: Deploy a prototype tracking system in a pilot setting to collect real-time usage data and feedback.

Pilot Data Collection Method:

A pilot survey will be designed and administered to a small group of farm managers. The survey will include questions on current record-keeping methods, perceived barriers to adopting digital tracking, and preferences for system features. Feedback from the pilot will be used to refine survey items for clarity and relevance. Additionally, a brief demonstration of the prototype system will be offered, followed by a feedback questionnaire assessing usability and perceived value.

Question 3

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Quantitative and Qualitative Analysis Types

Quantitative Analysis

Descriptive Statistics: Summarising survey responses such as frequency of digital tool usage, average farm size.

Inferential Statistics: Applying t-tests or chi-square tests to compare adoption rates between different farm types or regions.

System Analytics: Analysing prototype system log data to assess frequency and patterns of use.

Qualitative Analysis

Thematic Analysis: Coding interview transcripts to identify common themes, such as barriers to digital adoption or desired system features.

Content Analysis: Systematically categorising open-ended responses from surveys or feedback forms to extract actionable insights.

Narrative Analysis: Understanding individual user experiences and stories related to cultivation tracking.

By integrating these strategies and analytical approaches, the project will produce robust, actionable findings to guide the implementation and scaling of a cultivation and production tracking system.

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