Project Plan

AI Integrated Inventory Management System

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| Industry Partner |  |
| Primary Instructor | Anjana Shah |
| Team Member | Jaqueline Medeiros |
| Team Member | Gorkem Sari |
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Document Revision History

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| --- | --- |
| Revision # | Date |
| Version 1.0 | October 8th, 2023 |

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1. Executive Summary

The following describes the project to be executed.

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| Objective | The AI Integrated Inventory Management System (AI-IIMS) project aims to revolutionize inventory management in retail establishments by leveraging artificial intelligence (AI) technologies. The primary objective is to optimize inventory control, minimize costs, and enhance decision-making through data-driven insights. |
| Corporate Goals Addressed | Improved Inventory Management: AI-IIMS aligns with the corporate goal of achieving efficient and effective inventory management, which is critical for retail profitability.  Cost Reduction: By reducing overstocking and minimizing waste, AI-IIMS contributes to the goal of cost reduction and improved financial performance.  Data-Driven Decision-Making: The project aligns with the corporate goal of fostering data-driven decision-making by providing actionable insights to store managers. |
| Planned Start Date | The project is scheduled to commence on September 18, 2023, marking the beginning of development and implementation activities. |
| Planned End Date | The project is expected to conclude on March 29, 2024, at which point it will transition into the monitoring and maintenance phase, ensuring ongoing system performance and improvements. |

2. Project Approvers, Reviews and Distribution List

Approvers, reviewers and distribution list

|  |  |  |  |
| --- | --- | --- | --- |
| Project Role | Name | E-mail | Date |
| Team members | Jaqueline Medeiros | 101400994@george | Oct 8, 2023 |
| Team members | Gorkem Sari | 101266503@george | Oct 8, 2023 |
| Team members | Igor Oliveira | 101375347@george | Oct 8, 2023 |
| Team members | Valunchanut Simaroj | 101386344@george | Oct 8, 2023 |
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|  |  |  |  |

3. Scope

Define the sum total of all of its products and their requirements or features.

|  |  |
| --- | --- |
| In Scope | Out of Scope |
| Inventory Forecasting: The system will forecast product quantities to be ordered based on historical data and delivery schedules. | Procurement and deployment of hardware infrastructure. |
| Reconciliation: The system will reconcile actual sales and inventory data to identify discrepancies. | Inventory Tracking: IMS will track inventory levels, sales, deliveries, and waste. |
| Development and implementation of advanced AI algorithms for demand forecasting. | Detailed system design, which will be covered in subsequent project documentation. |
| Integration of the AI-IIMS with existing inventory management systems and databases. | Point of Sale (POS) System: IMS will not include POS functionality. |

4. Deliverables

This project will deliver the following.

|  |  |
| --- | --- |
| Deliverable | Description |
| AI-IIMS Software Application | Development of a comprehensive AI-powered inventory management software. |
| AI Algorithms for Demand Forecasting | Implementation of advanced AI algorithms for accurate demand forecasting. |
| Integration with Existing Systems: | Seamless integration with current inventory management systems and databases |
| User Training Programs | Creation of training programs for efficient system utilization. |
| Project Documentation | Comprehensive project documentation, including design specs and user manuals. |

5. Assumptions

This project makes the following assumptions;

Data Availability: Assumption that historical sales data and delivery schedules are readily available and accurate for demand forecasting.

Stakeholder Cooperation: Assumption that all key stakeholders, including inventory clerks, administrators, and managers, will actively participate in user training and system adoption.

Existing System Compatibility: Assumption that the AI-IIMS can be integrated smoothly with existing inventory management systems and databases without major technical challenges.

Budget and Resources: Assumption that the allocated budget and resources will be sufficient to complete the project as planned.

Risk Mitigation Effectiveness: Assumption that the risk mitigation strategies outlined in the project plan will effectively address potential issues that may arise during the project.

User Acceptance: Assumption that end-users will embrace and effectively utilize the AI-IIMS software after training.

Accuracy of AI Algorithms: Assumption that the developed AI algorithms will provide accurate demand forecasts based on historical data.

Regulatory Compliance: Assumption that the AI-IIMS will comply with all relevant regulatory requirements and standards.

Timely Project Execution: Assumption that the project will be executed within the planned timelines without significant delays.

Data Security: Assumption that robust data security measures will be in place to protect sensitive inventory and sales data.

6. Dependencies

The following are the internal and external dependencies that will have to be acknowledged and addressed;

Internal Dependencies:

Data Availability: The project depends on the availability of accurate historical sales data and delivery schedules for the development of AI algorithms and demand forecasting. The accuracy and completeness of this data are critical.

Resource Allocation: Internal resource availability, including project team members and budget allocation, is essential for project execution. Delays or shortages in resources can impact the project timeline.

Integration with Existing Systems: The successful integration of AI-IIMS with the organization's existing inventory management systems and databases is an internal dependency. Any delays or technical challenges in integration must be addressed promptly.

User Training: User training programs are vital for efficient system utilization. The project relies on the timely completion of training sessions for inventory clerks, administrators, and managers.

External Dependencies:

Third-Party APIs: If the project relies on third-party APIs for data or services, it depends on the availability and stability of these external APIs. Any changes or disruptions in these APIs can affect project functionality.

Regulatory Approvals: If the project requires regulatory approvals or compliance with industry standards, it depends on timely approval and adherence to regulatory requirements. Delays in approvals can impact project timelines.

Supplier Data: In cases where supplier data is used for inventory management, dependencies exist on the accuracy and reliability of data provided by suppliers.

Technology Infrastructure: The project depends on the stability and availability of the organization's technology infrastructure, including servers, networks, and data storage systems. Downtime or technical issues can affect project operations.

External Consultants or Vendors: If external consultants or vendors are involved in the project, their availability and performance can be external dependencies. Delays or issues with external parties can impact project outcomes.

Market Conditions: Market conditions and consumer behavior can impact demand forecasting. The project relies on accurate market data and conditions for effective inventory management.

7. Risk Management

|  |  |  |  |
| --- | --- | --- | --- |
| Potential Risk | Severity (H/M/L) | Likelihood (H/M/L) | Management Strategy |
| Data Inaccuracy | H | H | Implement data validation checks, regular data quality audits, and establish data correction protocols. Ensure accurate historical data for demand forecasting. |
| Resource Shortages | M | M | Maintain a resource buffer, cross-train team members, and have contingency plans for temporary resource shortages. |
| Integration Challenges | H | M | Conduct thorough integration testing, involve IT experts, and establish a clear communication channel with integration partners. Have backup plans in case of delays. |
| Regulatory Delays | M | M | Start the regulatory approval process early, closely monitor progress, and have contingency plans for potential delays. |
| Third-Party API Downtime | M | M | Identify alternative APIs or develop backup solutions, and regularly monitor the reliability of third-party APIs. |

8. Communication

**Reporting**

The following reports will be produced;

|  |  |  |
| --- | --- | --- |
| Report | Audience | Frequency |
| Report | Audience | Frequency |
| AI System Performance Report | Project Manager, Stakeholders | Weekly |
| Inventory Status Report | Inventory Managers, Suppliers | Bi-weekly |
| AI Training Progress Report | System Administrators | Monthly |
| Stock Health Report | Inventory Managers | Monthly |
| Supplier Performance Report | Business Owners, Suppliers | Monthly |
| Sales Analytics Report | Business Owners, Sales Team | Monthly |

**Meetings**

The following meetings/communication will be established;

|  |  |  |  |
| --- | --- | --- | --- |
| Meeting | Purpose | Attendees | Frequency |
| Project Kick-off Meeting | To initiate the project | All team members, Stakeholders | One-time |
| Weekly Progress Meeting | Review weekly progress & challenges | All team members | Weekly |
| AI System Review Meeting | Review AI performance & training | System Administrators, Project Manager | Monthly |
| Inventory Strategy Meeting | Discuss inventory strategies | Business Owners, Inventory Managers | Quarterly |
| Supplier Collaboration Meet | Strengthen supplier relationship | Business Owners, Suppliers | Monthly |

9. Task Listing (WBS- Work Breakdown Structure)

The following resource proposal template summarizes the resource hours committed to this project, upon final approval of this document.

|  |  |  |  |
| --- | --- | --- | --- |
| Reference | Tasks | Duration | Dependency |
| A | Develop AI algorithms for stock alerts | 1 week | None |
| B | Integrate demand forecasting model | 1 week | A |
| C | Optimize supplier ordering system | 1 week | B |
| D | Design AI-driven shelf space allocation | 1 week | C |
| E | Implement stock health monitoring system | 1 week | D |
| G | Secure AI models & data configuration | 1 week | F |
| H | Schedule AI model training & retraining | 1 week | G |

10. Gantt Chart

Create a detailed Gantt Chart from your Task Listing(Use any software tool and paste the image or upload as a separate file that can be opened as pdf/doc/xls)

Below is an example:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Task | Period | | | | Completed | |
| Inventory Stock Alerts: | | Sep 18 | Sep 24 | Pending | |
| Demand Forecasting | | Sep 25 | Oct 01 | Pending | |
| Supplier Ordering: | | Oct 02 | Oct 08 | Pending | |
| Shelf Space Allocation: | | Oct 09 | Oct 15 | Pending | |
| Stock Health Monitoring: | | Oct 16 | Oct 22, | Pending | |

11. Milestones

|  |  |  |
| --- | --- | --- |
| Major Activity or Milestone | Estimated Milestone Target date | Owner/Reviewer Team Members |
| Project Kick-off | 28 September 2023 | Project Manager, Stakeholders |
| Requirement Gathering Completion | 14 October 2023 | Business Analyst, Stakeholders |
| AI Model Design & Prototyping | 31 October 2023 | Data Scientists, System Administrator |
| Inventory Management System Integration | 30 November 2023 | Developers, System Integrators |
| Frontline Staff Training Module Release | 15 December 2023 | Training Team, Frontline Staff |
| Inventory Managers Alert System Release | 28 December 2023 | Developers, Inventory Managers |
| Supplier Interface Beta Release | 15 January 2024 | Developers, Supplier Representatives |
| System Performance Monitoring Tools Implementation | 31 January 2024 | System Administrators, IT Support |
| User Acceptance Testing (UAT) Start | 14 February 2024 | Quality Assurance Team, End-users |
| System Go-live/Deployment | 28 February 2024 | IT Support, All Users |
| Post-deployment Review | 15 March 2024 | Project Manager, Stakeholders |
| Project Closure | 24 March 2024 | Project Manager, Senior Stakeholders |

12. RAM – Responsibility Assignment Matrix

Create a RAM from your Task Listing. A sample is shown below:



13. Approval

The signatures below indicate their approval of the contents of this document.

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| --- | --- | --- | --- |
| Project Role | Name | Signature | Date |
| Team Member | Jaqueline Medeiros | Jaqueline Medeiros | October 8, 2023 |
| Team Member | Gorkem Sari | Gorkem Sari | October 8, 2023 |
| Team Member | Valunchanut Simaroj | Valunchanut Simaroj | October 8, 2023 |
| Team Member | Igor Oliveira | Igor Oliveira | October 8, 2023 |