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**IS 684 Group Assignment Submission**

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**THE EDGE IN KNOWLEDGE**

**Written With Passion**

## Introduction to the Business Case

In the rapidly evolving healthcare sector, efficient patient management is crucial for delivering quality care and ensuring patient satisfaction. This business case focuses on the patient management process at our hospital, a vital aspect directly impacting both patient experience and operational efficiency. Currently, our hospital relies on a predominantly manual system for handling patient arrivals, registrations, consultations, and payments. This process, while functional for a smaller patient base, is now strained under the increasing demand.

Our hospital's patient management system includes several key steps: patients arrive without appointments, manually register with a Personal Assistant (PA), receive a token for their turn, wait for consultation, see the doctor, and finally, handle payment and record-keeping through the same PA. This system has served us well in the past, but as our patient numbers grow, it's evident that a more streamlined, technologically integrated approach is necessary.

The following sections of this business case will delve into a detailed observation of the current situation, the implications of continuing with this status quo, and our recommendations for a transformative improvement. The proposed changes aim to address current bottlenecks and enhance overall service quality, preparing our hospital for future challenges in patient care.

## Observation: Current State of Patient Management

The patient management process at our hospital, primarily a manual system, has been the backbone of our operations. It encompasses patient registration, queue management, consultation facilitation, payment processing, and medical record maintenance. This system is primarily handled by a PA who serves as the central point for all these activities.

**Existing Problems and Challenges**
- Manual Registration and Queue Management: Patients arriving without appointments lead to ad-hoc registration and queue management. This manual process, reliant on the PA, is prone to errors and delays.
- Inefficient Waiting Times: The lack of a structured appointment system results in unpredictable and often extended waiting periods for patients, causing dissatisfaction and inefficiency.
- Payment Collection Inconsistencies: Payments are processed manually, usually in cash, without a standardized system. This leads to potential revenue leakage and difficulties in financial reconciliation.

- Record Keeping Limitations: Patient records are manually logged and stored. This method is time-consuming, error-prone, and makes retrieval of patient history cumbersome.

## Performance or Capability Gaps

- Queue Management: Currently, there's no real-time tracking of patient flow. A more efficient system could reduce patient wait times by at least 30%.
- Appointment and Registration Efficiency: A digitized system could potentially handle patient registrations 50% faster than the current manual method.
- Financial Transactions Accuracy: Electronic payment systems have a near 100% accuracy rate for transactions and record-keeping, a significant improvement over the current manual process.

## Best Practices Not Followed
- Use of Digital Health Records: Unlike the prevailing industry standards, our hospital has not adopted Electronic Medical Records (EMR), which are essential for efficient healthcare management.
- Online Appointment Scheduling: The absence of an online appointment system is a significant gap, as this is a common best practice in modern healthcare facilities.
- Automated Queue Systems: Most healthcare providers now use digital queue systems for better time management and patient flow, a practice we have yet to adopt.

In summary, our current patient management process, while functional, is beset with inefficiencies and challenges that are increasingly untenable in the face of growing patient numbers. The lack of technological integration in appointment scheduling, queue management, payment processing, and record keeping is leading to increased wait times, potential financial discrepancies, and overall patient dissatisfaction. This observation underscores the need for a comprehensive overhaul of our patient management system to align with contemporary best practices and meet the evolving needs of our patients and staff.

## Implication: Risks and Lost Opportunities of Maintaining Status Quo

## Risks of Continuing Current Practices
- Decreased Patient Satisfaction: Continuing with the manual system poses a significant risk of declining patient satisfaction. Industry benchmarks suggest that patient

- satisfaction can drop by as much as 40% due to extended wait times and inefficient service delivery.
- Financial Losses: The current manual payment system is vulnerable to errors and fraud. It is estimated that hospitals can lose up to 5-10% of their revenue due to inefficient payment processes.
- Operational Inefficiencies: The lack of digital tools in managing patient flow can lead to a 30-50% decrease in operational efficiency, as staff spend more time on administrative tasks than patient care.
- Compromised Quality of Care: Without an Electronic Medical Records (EMR) system, there is an increased risk of medical errors and compromised patient care, potentially impacting patient health outcomes.

**Lost Opportunities**
- Inability to Scale Operations: As patient numbers grow, the current system's limitations will prevent the hospital from efficiently scaling its operations, potentially missing out on serving a larger patient population.
- Failure to Adopt Technological Advancements: By not embracing digital transformation, the hospital misses out on the benefits of modern healthcare technology, such as improved data analysis, telehealth opportunities, and advanced patient care models.
- Reduced Competitive Edge: In a sector where patients increasingly value convenience and efficiency, failing to modernize may result in losing patients to competitors who offer these features.

**Business Impact vs. Risk and Urgency vs. Importance**
- Business Impact: The current process inefficiencies directly impact the hospital's ability to serve its patients effectively and maintain financial health. The manual system's limitations are increasingly detrimental to operational efficiency and patient experience.
- Risk Assessment: The risks involved in maintaining the status quo are high, given the potential financial losses, decrease in patient satisfaction, and operational challenges. There is also a reputational risk as patient perceptions of the hospital's quality decline.
- Urgency and Importance: The urgency to address these issues is high. Patient management is a core aspect of the hospital's operations, and improvements here are crucial for immediate and long-term success. The importance of transitioning to a more efficient, digital system cannot be overstated in the context of evolving healthcare industry standards and patient expectations.

In conclusion, the implications of maintaining the current patient management system are significant and far-reaching. The risks and lost opportunities highlight the urgent need for an

overhaul to safeguard the hospital's reputation, financial stability, and, most importantly, the quality of patient care.

## Recommendation: Enhancing Patient Management System

### Proposed Improvements
- Implement an Electronic Appointment and Queue Management System: Introduce an online booking system along with a digital token system for efficient queue management. This will streamline patient flow and reduce waiting times.
- Adopt Electronic Medical Records (EMR): Transition to an EMR system to improve patient data management, reduce errors, and enhance the quality of care.
- Establish an Electronic Payment System: Introduce various electronic payment methods to streamline financial transactions, reduce errors, and prevent revenue loss.
- Staff Training and Development: Invest in training programs for staff to adapt to new technologies and processes effectively.
- Patient Feedback Mechanism: Implement a digital feedback system to gather insights on patient experiences and identify areas for further improvement.

### Work Effort for Transition
- Technology Implementation: Setting up digital systems requires initial investment in software and hardware, along with integration into existing infrastructure.
- Staff Training: Adequate training sessions and support materials must be developed to ensure a smooth transition for staff.
- Data Migration: Transitioning to EMR involves migrating existing patient records to the new system, requiring time and careful handling to ensure data integrity.

### Benefits and Stakeholders
- Patients: Improved experience through reduced wait times, streamlined processes, and better care.
- Staff: Reduced administrative burden and enhanced work efficiency.
- Hospital Management: Increased operational efficiency, financial accuracy, and better patient retention rates.
- Healthcare Providers: Easier access to patient history, leading to improved diagnostic and treatment processes.

### Risks/Costs Analysis
- Costs: Initial investment in technology, training, and system integration. These costs, however, are mitigated by the long-term benefits of increased efficiency and patient satisfaction.

- Risks: Potential resistance to change among staff, temporary disruption during the transition phase.

**Alternative Recommendations**
- Phased Implementation: Instead of a complete overhaul, introduce changes in phases, starting with the most critical areas like the EMR and appointment system.
- Outsource Certain Functions: Consider outsourcing elements like the electronic payment system to specialized providers to reduce implementation complexity.

**Special Concerns of Sponsors/Stakeholders**
- Budget Constraints: Ensure the project stays within budget while achieving the desired improvements.
- Minimal Disruption: Plan the transition to cause the least disruption to ongoing operations.
- Return on Investment: Clearly demonstrate the long-term financial benefits of the proposed changes, such as through reduced operational costs and increased patient throughput.

In summary, the recommendation involves a comprehensive upgrade of the patient management system, focusing on digitalization and process optimization. This transition, while requiring initial investment and effort, offers substantial benefits in operational efficiency, patient satisfaction, and financial management, thus outweighing the costs and risks of maintaining the status quo.

**Appendix**

**"As-Is" Process Flow:**
- Patients typically arrive at the hospital without prior appointments.
- The Personal Assistant (PA) manually registers each patient, noting down their name and reason for visit.
- After registration, the PA issues a physical token or slip to the patient to indicate their turn.
- Patients wait in a common area until their token number is called.
- Patients consult with the doctor once their token number is called.
- After the consultation, patients pay for the services. The PA handles the payment transactions.
- The PA or medical staff manually records the patient's visit details and any relevant medical information.

**Key Challenges in the "As-Is" Process:**
- Inefficiency: The manual registration and token system is time-consuming and inefficient, especially with increasing patient numbers.
- Long Wait Times: Without appointment scheduling, patients experience long and unpredictable wait times.
- Payment Issues: The lack of a formal payment system leads to potential revenue loss and difficulties in financial management.
- Inadequate Record Keeping: Manual record keeping is prone to errors and inefficiencies, hindering effective patient care.
- Staff Overload: The PA and other staff are overwhelmed with the increasing workload, leading to potential service quality issues.
- Lack of Patient Feedback: Without a feedback system, the hospital misses' opportunities for improvement based on patient experience.

**Proposed "To-Be" Scenario (process flow improvement):**
- Patients book appointments online, receive a digital token, and are notified of their scheduled time.
- Upon arrival, patient's check-in via a kiosk or with a receptionist, updating their token status.
- The EMR system is updated with patient arrival, and healthcare providers access patient history electronically.
- Payments are processed electronically post-consultation, with options for direct billing to insurance.

- Patients provide feedback through a digital platform, contributing to continuous service improvement.

**How to fill the gap?**
- Digital Appointment System: Implement an online booking system for patients to schedule appointments ahead of time, reducing walk-ins and wait times.
- Automated Token and Queue Management System: Introduce a digital token system linked with the appointment system, providing real-time updates on waiting times and consultation schedules.
- Electronic Payment and Billing System: Establish an electronic payment system, allowing various payment methods (credit/debit cards, online payments) and integrated billing for transparent and efficient financial transactions.
- Electronic Medical Records (EMR): Transition to an EMR system for efficient, secure, and accessible patient data management.
- Staff Training Programs: Conduct regular training sessions for staff, especially those interacting with new technology, to ensure smooth transitions and effective usage.
- Patient Feedback System: Implement a digital feedback mechanism to capture patient experiences and suggestions for further improvements.
- Insurance Integration: Create an interface for seamless integration with health insurance providers, facilitating easier claim processing and reducing administrative burdens.
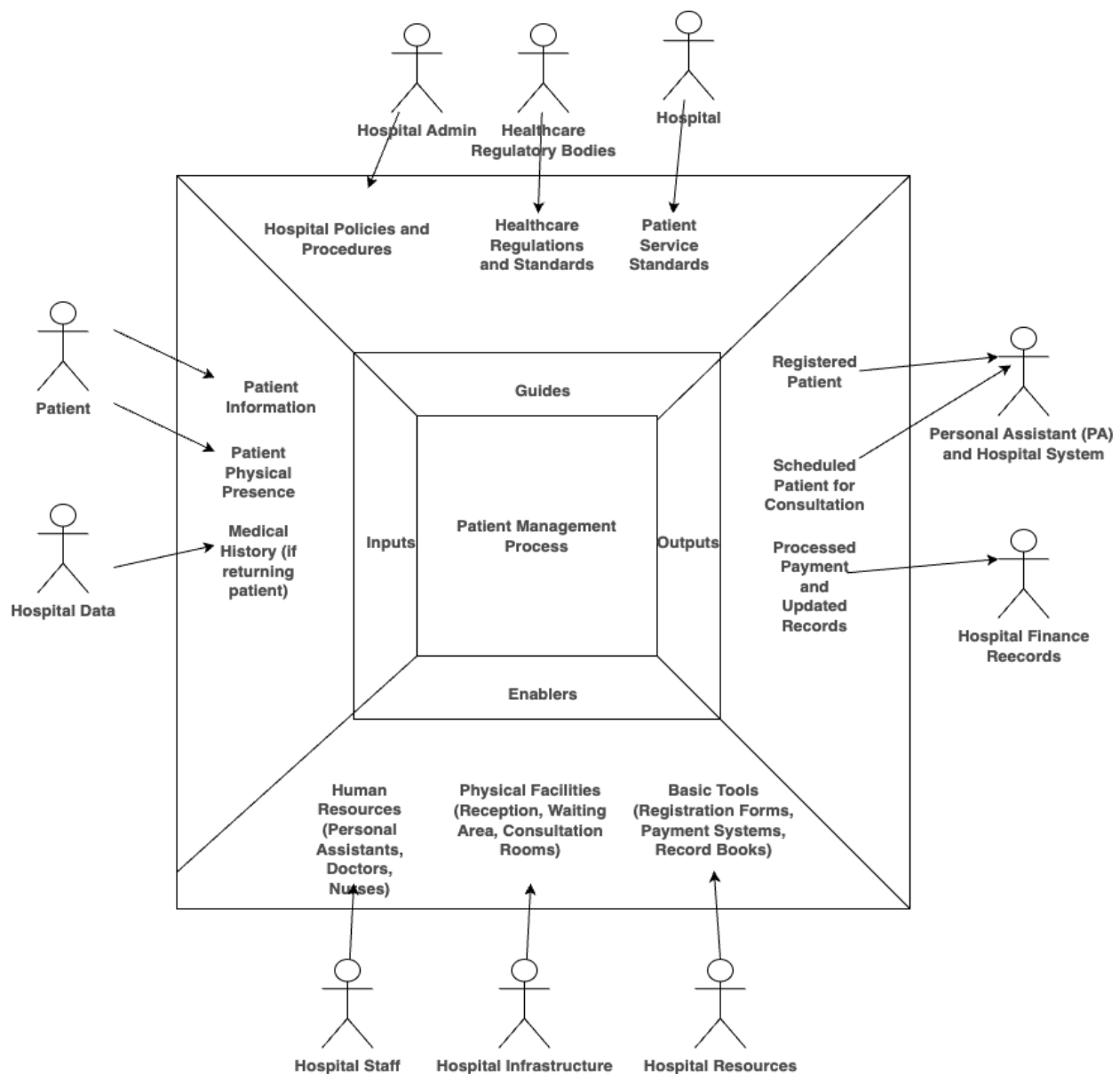
## Scope Diagram

**Process Trigger: Patient Arrival at Hospital**

This marks the start of the process when a patient arrives, typically without a prior appointment.

**Process Outcome (Intended Outcome): Completed Patient Consultation and Payment**

The intended outcome is a successfully managed patient visit from arrival to departure, encompassing registration, consultation, payment, and record-keeping.

**Work System Snapshot**

| Work System Snapshot | | |
|---|---|---|
| **Customer** | **Products & Services** | |
| 1. Internal: Hospital staff, including doctors, and administrative personnel.<br>2. External: Patients seeking medical consultation | ● Patient registration and management services, including walk-in registrations, manual token issuance for appointments, and in-person payment processing.<br>● Medical consultation and treatment services.<br>● Manual record-keeping of patient histories and treatments. | |
| **Work Practices** | | |
| 1. Patients arrive without appointments and manually register with a Personal Assistant (PA).<br>2. PA issues a physical token indicating the patient's turn.<br>3. Patients wait for their turn for consultation.<br>4. Post-consultation, patients handle payments and record-keeping with the PA. | | |
| **Participants** | **Information** | **Technologies** |
| ● Patients arriving for medical services.<br>● Personal Assistants handling registration, token issuance, and payment processing.<br>● Medical staff, including doctors and nurses, provide consultation and treatment. | ● Patient personal and medical information collected during registration.<br>● Financial transaction details for consultations and treatments.<br>● Manual logs of patient visits and medical history. | ● Basic office equipment (computers, printers, etc.) for administrative tasks.<br>● No significant use of advanced medical IT systems or digital patient management tools. |
| **Strategy** | **Infrastructure** | **Environment** |

| | | |
|---|---|---|
| ● The current strategy focuses on providing healthcare services through a predominantly manual process. <br> ● Aimed at servicing a smaller patient base with a more personal, albeit less efficient, approach. | ● Shared hospital infrastructure like IT systems, medical equipment, and administrative support. <br> ● Basic IT infrastructure for manual data entry and storage. | ● Operates within a healthcare sector that is increasingly digitized, facing growing patient numbers and expectations for efficient service. <br> ● Regulatory environment requiring accurate patient data management and privacy compliance. |

**Harmon's Business Problem Process Analysis Checklists**

1. Output Problems:
   - Quality of Output: There might be issues with the quality of service due to extended waiting times and inefficient registration, leading to patient dissatisfaction.
   - Timeliness of Output: The manual process results in delays in patient servicing, which is a significant problem.
   - Appropriateness of Output: The current output (service provided) may not meet modern healthcare standards, especially in terms of efficiency and use of technology.

2. Input Problems:
   - Timeliness of Inputs: Patients arriving without appointments create unpredictable inputs, causing disruptions and inefficiencies.
   - Flow of Input: The manual system might not handle patient inflow efficiently, leading to bottlenecks.

3. Guide Problems:
   - Problems With Policies or Business Rules: The existing system may not align well with modern healthcare policies that emphasize efficiency and digitalization.
   - Problems With Documentation, Manuals, etc.: Manual record-keeping is prone to errors and inefficiency.

4. Enabler Problems:
   - Employee Problems: Staff, particularly Personal Assistants, may be overwhelmed due to understaffing or lack of appropriate tools and technology.

- IT Problems: The lack of an integrated IT system for appointments, record-keeping, and payment processing is a significant issue.
- Facilities, Equipment, and Location Problems: Inadequate facilities or equipment to handle a large patient inflow efficiently.

5. Activity or Flow Problems:
- Flow Problems: The sequence and flow of activities (registration, consultation, payment) are not optimized.
- Process and subprocess measures: There might be inadequate measures to assess the efficiency and effectiveness of each subprocess in patient management.

6. Process Management Problems:
- Day-to-Day Management Problems: The managers may face challenges in effectively planning, organizing, and controlling the patient management process due to the manual nature and inefficiencies of the current system.
- Communication problems: Inefficiencies in communication due to manual processes can lead to misunderstandings or mismanagement.
- Monitoring and Control Problems: The current manual system may not provide adequate data for effective monitoring and control of the process.

## Questions from Level 2 of Alter's Work System Method

System and Opportunities (SO)

1. SO1 (Problems/Opportunities): The main problems are inefficient manual processes for patient registration, queue management, payment processing, and record keeping. Opportunities lie in digitizing these processes to enhance efficiency and patient satisfaction.
2. SO2 (Work System with Problems/Opportunities): The work system here is the hospital's patient management process, encompassing patient registration, consultation, payment, and record maintenance.
3. SO3 (Contributing Factors): Key factors include a lack of digital tools, reliance on manual processes, and absence of a structured appointment system.
4. SO4 (Constraints): Potential constraints could be budget limitations for technology upgrades, resistance to change among staff, and the challenge of integrating new systems with existing practices.
5. SO5 (Work System Snapshot): The snapshot would show a manually operated patient management system, where a Personal Assistant (PA) is central to multiple tasks, leading to inefficiencies and errors.

Analyze the System and Identify Possibilities (AP)

1. AP1 (Customers and Concerns): The customers are the patients, whose primary concerns are long wait times, inefficient service, and potential errors in record keeping.
2. AP2 (Quality of Products/Services): Currently, services are inefficient and prone to error due to manual processes.
3. AP3 (Work Practices): Work practices are outdated and heavily reliant on manual input, which is inefficient.
4. AP4 (Roles, Knowledge, and Interests): The roles of staff, particularly the PAs, are not well aligned with efficient work practices due to the reliance on manual processes.
5. AP5 (Information/Knowledge Improvement): Better information systems, like EMR, could significantly improve efficiency and patient care quality.
6. AP6 (Technology Improvement): Introduction of digital tools for appointment scheduling, queue management, and electronic payment could greatly improve the system.
7. AP7 (Fit with Environment): The current system's lack of digital tools doesn't fit well with the evolving digital healthcare environment.
8. AP8 (Infrastructure Usage): The work system underutilized available technological infrastructure that could enhance efficiency.
9. AP9 (Strategy Appropriateness): The current strategy of manual processing is not appropriate for modern healthcare demands.

10. AP10 (Operation as a Whole): As a whole, the system operates inefficiently and is not well integrated with modern healthcare practices.

Recommend and Justify Changes (RJ)

1. RJ1 (Recommended Changes): Implement digital systems for appointment scheduling, queue management, EMR, and electronic payment.
2. RJ2 (Comparison with Alternatives): The preferred digital transformation is more efficient and patient-friendly compared to maintaining the status quo or partially digitalizing the system.
3. RJ3 (Comparison to Ideal System): The recommended system aligns well with an ideal digital patient management system but may lack advanced features like AI-driven analytics.
4. RJ4 (Addressing Problems/Opportunities): The recommendations address the core problems of inefficiency, long waiting times, and error-prone manual processes.
5. RJ5 (New Problems/Costs): New challenges could include training staff, initial setup costs, and adapting to the new digital system.
6. RJ6 (Conformity to Principles): The proposed system conforms well to modern work system principles emphasizing efficiency, digitalization, and user-friendliness.
7. RJ7 (Implementation): Implementation would require phased introduction of technologies, staff training, and careful data migration.
8. RJ8 (Stakeholder Influence): Stakeholder acceptance, particularly from staff and management, is crucial for successful implementation.
9. RJ9 (Justification of Changes): The changes are justified by long-term benefits in efficiency, patient satisfaction, and cost savings.
10. RJ10 (Questionable Assumptions): Assumptions about ease of technology integration and staff adaptability to digital systems might be overly optimistic and need further evaluation.