Decision Support and Knowledge Management in Alignment with Saudi Vision 2030

Designing an Intelligent Enterprise Operating Platform

تصميم منصة تشغيل مؤسسية ذكية لدعم القرار وإدارة المعرفة

Abstract

This study proposes an enterprise operating platform that brings requests, tasks, files, approvals, knowledge, and performance indicators into one environment, then adds an AI layer for retrieval, summarization, and early detection of operational risk. It begins from the premise that digital transformation is not achieved by multiplying systems, but by connecting data with the context of work and decision-making.

The study adopts Design Science Research and draws on knowledge-management and information-systems literature, retrieval-augmented generation, the Saudi Digital Government Strategy 2023-2030, and national data and AI governance principles. It develops a seven-layer architecture covering channels, workflow, data, knowledge, AI, analytics, security, and governance.

A generic advertising-agency operating system is used as the applied case. The evaluation framework includes request cycle time, reporting accuracy, knowledge-retrieval speed, source-supported decisions, overdue work, permission compliance, and data protection. The proposed platform is a field-testable design model rather than a completed empirical result.

Keywords

enterprise operating platform, knowledge management, decision support, digital transformation, retrieval-augmented generation, data governance, Saudi Vision 2030.

Study scope: An applied design study for a configurable enterprise platform suitable for Saudi organizations, using an illustrative case that discloses no named organization or operational data.

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Study Profile and Scientific Contribution

Submission readiness: This edition has been revised as an applied conceptual study suitable for scholarly submission, with an explicit methodology, stated limitations, and in-text citations in APA 7 style. It does not claim unmeasured experimental outcomes; it presents a design model that can be field-tested.

Item	Description
Study type	Applied conceptual research based on Design Science Research.
Central problem	Operational data and knowledge are fragmented across email, files, task tools, and databases, delaying their conversion into traceable operational visibility and decisions.
Original contribution	An operating architecture that connects workflow with institutional memory, analytics, and AI while defining measurable outcomes and data-governance controls.
Unit of analysis	The journey of requests, decisions, and knowledge across teams and systems through archiving and organizational learning.
Verifiability	The model can later be evaluated through predefined operational, quality, and governance indicators.
Publication language	English, with Arabic contextual terminology and international and Saudi references.

Scientific and Applied Value

Architectural contribution
A layered model connecting operations, data, knowledge, and AI without mixing responsibilities.

Knowledge contribution
Transforms documents, decisions, and lessons into institutional memory connected to work context.

Decision contribution
Provides alerts, explanations, and sources rather than a descriptive dashboard alone.

National alignment
Supports digital-by-design, data governance, integration, and service-lifecycle principles.

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Introduction

Organizations today possess email, file storage, task tools, databases, and reporting dashboards, yet they often lack a unified operational picture. Data exists, but its context is scattered: Why was a decision made? Which version is approved? Where is the supporting document? Who owns the action? What caused the delay? When these questions are not connected in one record, digitization becomes an accumulation of tools rather than a transformation of work.

An enterprise operating platform connects each request to its state, owner, files, approvals, indicators, and knowledge. It adds an AI layer capable of summarizing activity, retrieving similar cases, and detecting risks while displaying the source and preserving human decision authority. This direction aligns with digital-by-design, data governance, integration, and service-lifecycle principles in the Digital Government Strategy 2023-2030 (Digital Government Authority, 2023).

The study draws on knowledge-management theory, which distinguishes knowledge stored in documents from knowledge embedded in practice and decisions. Nonaka (1994) described organizational knowledge creation as a conversion and interaction process, while knowledge-management systems research shows that technology creates value when it supports knowledge creation, storage, transfer, and application (Alavi & Leidner, 2001).

> **Design hypothesis:** Better decisions do not come from more data alone, but from data connected to context, source, validity, history, and accountability.

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Research Problem and Gap

The problem is the gap between abundant data and the ability to use it in decisions. Requests arrive through email, tasks are followed in one tool, files are stored in a repository, and reports are prepared in a separate spreadsheet. Fragmentation causes repeated data entry, conflicting numbers, delayed reports, and the loss of knowledge when employees move or teams change.

ERP and project-management systems address parts of the problem, but do not always provide a flexible model connecting each organization's specific operating journey with unstructured knowledge, files, and decision rationales. Adding an AI assistant over inconsistent data can produce persuasive but unreliable answers. The organization therefore needs an operating layer that serves as a source of truth and defines what AI may read, summarize, and recommend.

Research Questions

- What components are required for an operating platform connecting operations, data, knowledge, and decisions?
- How can daily outputs become institutional memory that can be retrieved and reused?
- What is the role of AI in summarization, detection, and retrieval without hiding the source?
- How should permissions, audit, and data protection be designed across platform layers?
- Which indicators demonstrate improvement in operations and decision quality?

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Designing an Intelligent Enterprise Operating Platform

Objectives

- Define the enterprise operating platform and distinguish it from a stand-alone task tool.
- Propose a scalable and integrable seven-layer architecture.
- Embed knowledge management into daily workflow rather than a separate repository.
- Define AI roles and the boundaries of human approval.
- Build an operational, knowledge, decision, and governance measurement framework.

Importance

The platform can improve efficiency by reducing repetition, improving visibility, and making expertise easier to retrieve. It may also help small and medium-sized organizations build operating and analytical capability without assembling many disconnected systems.

At the national level, the model is consistent with interconnected, data-driven digital services and the development of a knowledge economy and scalable local digital products.

Study Limitations

Limit	Definition
Verification	This edition contains no production dataset or before-and-after comparison.
Scope	The platform does not replace specialized financial or human-resource systems.
Technology	The architecture is neutral toward vendors and software frameworks.
Generalization	Processes, permissions, and indicators must be adapted to each sector.

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Methodology

The study uses Design Science Research to construct a model for an operational problem. The steps include mapping the work journey and data sources; reviewing knowledge-management and decision-support literature; reviewing Saudi digital-transformation and data-protection frameworks; deriving architectural requirements; building the applied case and interface; and defining verification measures.

Derived Design Requirements

Requirement	Rationale
Single source of truth	Prevent differences in state, deadline, and ownership across systems.
Contextual knowledge	Reach the relevant document or decision inside the request or project context.
Audit trace	Prove who created, changed, or approved an item, when, and why.
Integration capability	Connect email, storage, calendar, and identity without duplicating entire systems.
Citable intelligence	Display source, date, and validity when summarizing or recommending.
Before-and-after measurement	Establish a baseline and test the platform's effect on the process.

The generic case demonstrates internal coherence rather than effectiveness. A later field study must include real users and data under suitable approvals and controls.

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Theoretical Framework and Knowledge Management

An enterprise operating platform connects how work enters, moves, is approved, and is measured. It differs from a task tool because it represents the organization's specific entities, relationships, and rules. It differs from a document repository because it creates knowledge from work and returns that knowledge to a decision at the appropriate moment.

Institutional knowledge includes explicit items such as policies and templates and contextual knowledge found in reasons for selection, modification, and exception. Knowledge-management research shows that technology creates value when it supports knowledge creation, storage and retrieval, transfer, and application (Nonaka, 1994; Alavi & Leidner, 2001).

Component	Application in the Platform
Work context	Connect a document or decision to the request, client, service, result, and owner.
Knowledge lifecycle	Create, review, approve, version, use, then archive or withdraw.
Retrieval	Search by entity, context, and meaning while displaying source and version.
Validity	Exclude withdrawn documents and respect access and data classification.
Measurement	Time to access, freshness, reuse rate, and impact on the decision.

Retrieval-augmented generation can connect a question to relevant passages from policies and previous cases rather than relying on model memory alone (Lewis et al., 2020). The answer must still show source and date and may not exceed the requester's permissions.

> **Governing principle:** Knowledge is not measured by file count, but by whether an authorized person receives an approved, traceable version in the correct context.

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Enterprise Decision Center Interface

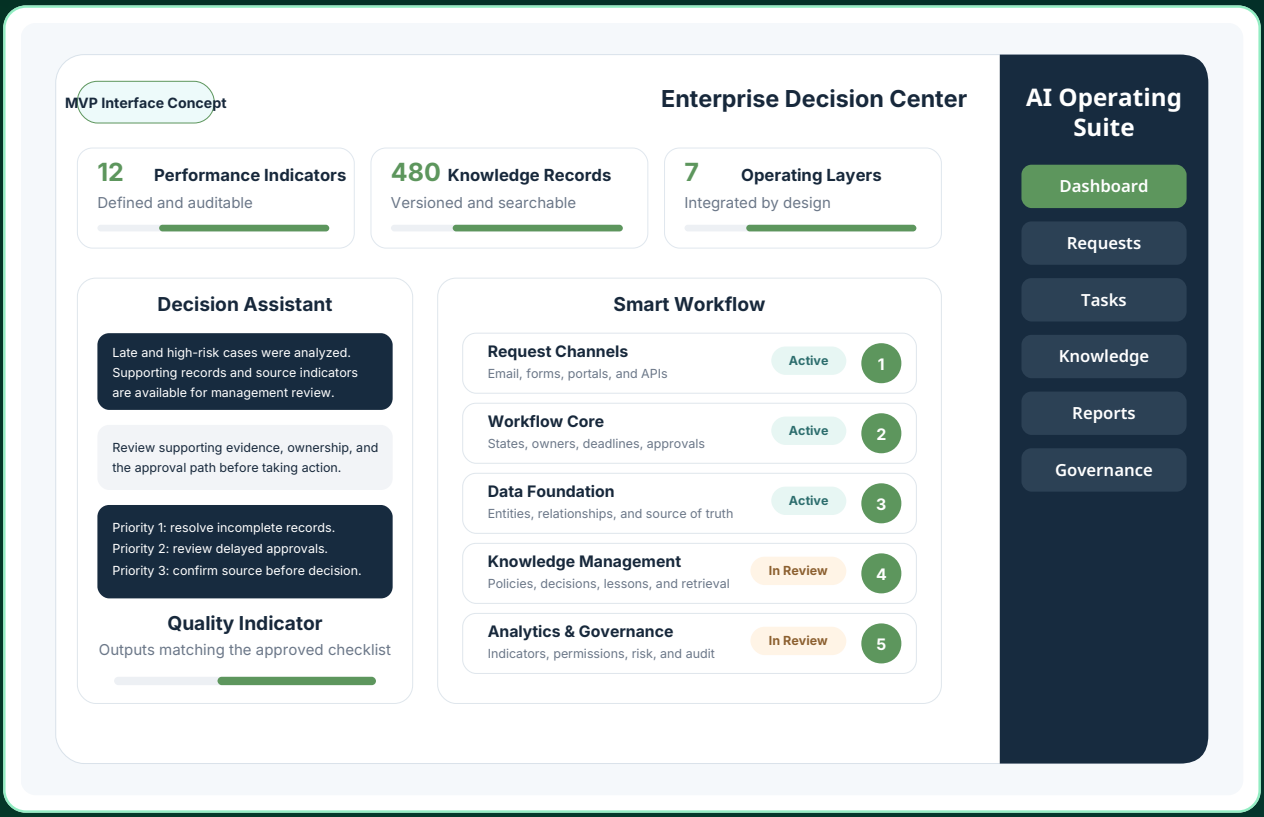

Figure 1. The enterprise decision center interface used in the applied platform concept.

The interface connects performance indicators, knowledge records, operating layers, workflow state, and a decision assistant. The displayed figures are interface examples, not research findings. During implementation, each indicator must be derived from operational records and allow the user to drill down from the number to the cases that produced it.

Interface Element	Enterprise Publication Requirement
Performance indicator	Definition, source, owner, refresh frequency, and acceptance threshold.
Knowledge record	Title, source, version, validity, sensitivity, and relationship to work.
Decision assistant	Recommendation, rationale, sources, confidence, and available action.
Workflow	State, owner, deadline, exceptions, approvals, and audit trace.

Proposed Architecture

The platform consists of seven layers that separate responsibilities and support gradual expansion. Separation does not mean isolation; each layer has a clear contract, data responsibility, and permission boundary.

1. Channels
Email, forms, portals, and API integrations.

2. Workflow
States, tasks, deadlines, approvals, and exceptions.

3. Data
Entity model, relationships, data dictionary, and source of truth.

4. Knowledge
Documents, policies, decisions, lessons, and indexing.

5. Artificial Intelligence
Summarization, retrieval, classification, alerts, and suggestions.

6. Analytics
Indicators, trends, delay causes, and data quality.

7. Security and Governance
Identity, permissions, encryption, retention, and audit.

Integration, Not Replacement

The platform integrates with email, storage, calendar, and identity systems; it does not need to duplicate every specialized function. Its purpose is to unify operational context and reference while leaving specialized systems in their proper roles.

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Applied Case: Advertising-Agency Operating System

The platform receives client requests and converts them into records connected to the brief, service, deadline, owner, files, and approvals. Requests move through routing, execution, review, delivery, and archiving. At each stage, decisions, revisions, and delay reasons are recorded, producing a view that can be analyzed across clients, services, and teams.

1. **Request and Brief**
   A unified record for requirements, files, request source, and missing information.
2. **Allocation and Capacity**
   Visibility into workload, skills, and deadlines while management retains the final allocation decision.
3. **Production and Review**
   Versions, comments, checklists, and approvals connected to the deliverable.
4. **Delivery and Archiving**
   Link the final version to the client, project, and retention rules.
5. **Analysis and Learning**
   Detect delay causes, revision types, time estimates, and recurring lessons.

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Decision Support and Governance

The platform should not provide an opaque decision. Each recommendation should identify the event or indicator that triggered it, the data used, reference sources, alternatives, and confidence limitations. Approval remains with the authorized role. This design reduces excessive automation and increases reviewability.

Decision	Platform Support	Human Responsibility
Priority setting	Deadline, client impact, approval status, and capacity.	Operations manager or authorized owner.
Task routing	Specialization, workload, history, and relevant performance.	Team manager with fairness review.
Delay alert	Time deviation, missing inputs, and dependencies.	Task owner and operations manager.
Delivery approval	Checklist, versions, and previous approvals.	Reviewer or account manager.
Deletion or retention	Data type, purpose, and regulatory requirement.	Data owner or authorized role.

Saudi PDPL guidance requires clarity of purpose and lawful basis, minimization, retention, security, and accountability. The study therefore proposes a processing-activity record, data classification, access and retention policies, and impact assessment where required (Saudi Data & AI Authority, 2023).

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Measurement Framework and Expected Analytical Outcomes

The platform should be evaluated across four balanced dimensions. The operational dimension measures time and on-time completion. The knowledge dimension measures access and reuse. The decision dimension measures recommendation quality and source support. The governance dimension measures compliance, permissions, and data quality.

O
Operations

K
Knowledge

D/G
Decision and Governance

Indicator	Definition	Desired Direction
Request cycle time	From intake to closure, with waiting stages separated.	Decrease
On-time completion	Requests closed by the agreed date.	Increase
Knowledge retrieval time	Time to reach a valid document or previous case.	Decrease
Source-supported decisions	Recommendations showing clickable evidence and references.	Increase toward 100%
Report consistency	Agreement between indicators and workflow records.	Increase
Access or retention violations	Permission incidents or excessive storage.	Zero

The expected analytical outcome is that decision quality improves when the platform reduces context-gathering time and increases source clarity, not when it replaces the manager. This must be tested against a baseline with users and an independent quality review.

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National Alignment and Discussion

The model aligns with the Digital Government Strategy 2023-2030 principles of digital by design, data governance, integration, and lifecycle management (Digital Government Authority, 2023). Alignment becomes meaningful only when these principles are translated into a unified source of truth, access control, audit, and measurable service indicators rather than the simple use of AI terminology.

Efficiency
Reduce re-entry, manual search, and report preparation time.

Service quality
Clarify state, deadline, responsibility, and early warning of delay.

Knowledge economy
Preserve expertise, connect it to outcomes, and enable reuse.

Data governance
Define classification, permissions, retention, and a source for each indicator.

Contribution and Limitations

The proposed platform differs from a document repository because it connects knowledge with action and outcomes; from a dashboard because it allows movement from a number to the underlying case and source; and from a chatbot because it operates within permissions, workflow state, and audit trails. Success still depends on the quality of entity definitions, states, and data ownership, and on avoiding documentation burdens that users reject.

- Begin with one measurable use case before broad expansion.
- Unify data and indicator definitions across departments before adding analytics.
- Keep the final decision with an authorized role and display the source of each recommendation.
- Field-test the model using the organization's own baseline rather than general national indicators.

> **Critical conclusion:** Technology does not compensate for missing organization; it amplifies the strengths or weaknesses of the existing system. The platform must therefore begin with process, data, and governance design.

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Implementation Roadmap and Monitoring Indicators

1 **Discovery and Standardization**
Map the work journey, data dictionary, connected systems, roles, and baseline.

2 **Operating Core**
Build requests, tasks, approvals, files, and audit for one defined use case.

3 **Knowledge and Analytics**
Index approved documents and connect indicators directly to operating events.

4 **Constrained AI**
Add summarization, retrieval, and alerts with sources, permissions, and human review.

5 **Expansion and Improvement**
Evaluate impact, correct data-quality problems, then expand modules and integrations.

Project Indicators

Data-completeness rate, weekly platform use, request-closure time, report-preparation time, indicator accuracy, knowledge reuse, and the number of exceptions and incidents.

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Conclusion and Recommendations

The study presents an architecture for an intelligent enterprise operating platform that unifies workflow, data, knowledge, analytics, and governance. The framework shows that AI creates value when it operates over an organized source of truth, displays its evidence, and respects permissions rather than attempting to compensate for missing organization.

The study recommends beginning with a limited operating core, establishing a data dictionary and clear indicator ownership, connecting knowledge to cases and decisions, and applying privacy-by-design principles. Every recommendation should be traceable, and platform value should be measured by decision time, service quality, and knowledge retrieval rather than by the number of screens or forms.

Future Research Agenda

- Implement the model in an organization and measure indicators before and after at least one complete work cycle.
- Study how data quality affects summarization, alerts, and decisions.
- Compare keyword and semantic retrieval for Arabic institutional knowledge.
- Measure how explanation affects calibrated trust and user behavior.
- Analyze platform feasibility and total cost of ownership for SMEs.

Originality statement: The study presents a generic design model based on literature and professional experience without using data from a named organization or claiming unmeasured outcomes. Effectiveness requires independent field validation.

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References follow APA 7 conventions. NIST identifiers use NIST AI 600-1 and NIST AI 100-1, and the Digital Government Strategy 2023-2030 is used as the current national digital-government reference in the source article.

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