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AURA (ARTIFICIAL UNIFIED RESOURCE ANALYTICS): AN AI-ENABLED ENTERPRISE RESOURCE MANAGEMENT SYSTEM FOR SMALL AND MEDIUM ENTERPRISES

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2. ABSTRACT

Small and Medium Enterprises (SMEs) often manage employees, attendance, projects, meetings and reports in separate tools, which leads to manual data entry, data silos and slow managerial decisions. This paper presents AURA (Artificial Unified Resource Analytics), a web-based, AI-enabled Enterprise Resource Management System designed for SMEs. AURA centralises employee, department, attendance, project, meeting and report management in a single Flask application backed by a SQLite database, and applies role-based access control through separate manager and employee interfaces. Real-time executive dashboards, automated PDF and CSV reports and a deterministic Business Health Overview, a score from 0 to 100 that combines attendance consistency, project milestones and meeting discipline, give managers an integrated view of organisational performance. Two pretrained foundation models extend the platform: Amazon Chronos-2 for attendance forecasting and TabPFN for employee risk classification. Project Delay Prediction, Employee Workload Prediction and a WhatsApp Business Health Summary are identified as Phase 2 work and are not presented as operational. The contribution of the paper is a system design and implementation that combines transactional SME operations with lightweight embedded analytics, positioned against a survey of the literature on AI adoption, project management, business intelligence and ERP in SMEs. No accuracy, efficiency or user-study results are reported because none

were available; the AI components are described as integrated rather than experimentally validated, and quantitative evaluation with authorised SME data remains future work.

3. KEYWORDS: AURA; Enterprise resource management; Small and medium enterprises; Artificial intelligence; Business intelligence; Attendance forecasting; Role-based access control; Predictive analytics.

4. INTRODUCTION

Small and Medium Enterprises depend on timely information about their people, projects and meetings, yet they typically have limited budgets, few specialised IT staff and little capacity to integrate several software products. A systematic review of AI in SMEs identifies resource scarcity, shortages of technical skills and fragmented software tools as the main hurdles, and concludes that SMEs need lightweight, modular tools rather than monolithic enterprise suites [1]. In practice, employee records, attendance logs, project trackers, meeting calendars and management reports are often kept in separate systems. Information must then be re-entered and reconciled by hand, reports are compiled manually, and managers decide on the basis of fragmented data.

Conventional ERP platforms address integration but are not an easy answer for smaller organisations. Reviews of ERP in SMEs note that SMEs have limited resources and characteristics that make ERP adoption riskier than in large enterprises [2], and that cost, complexity and prolonged deployment are recurring causes of failed implementations [3]. At the same time, the literature links embedded analytics to operational productivity, business agility and faster managerial decisions [4], but predictive models are usually studied apart from the transactional systems in which the data are created.

This paper presents AURA (Artificial Unified Resource Analytics), an AI-enabled Enterprise Resource Management System for SMEs. AURA brings employee, department, attendance, project, meeting, dashboard and report management into one centralised web platform with role-based access control. It adds a deterministic Business Health Overview and two pretrained foundation models, Amazon Chronos-2 for attendance forecasting [5] and TabPFN for employee risk classification [6]. Advanced predictive modules for project delay and employee workload are under development as Phase 2 work.

The objectives of the project are: (i) to develop a unified enterprise platform for managing employees, departments, attendance, projects, meetings, dashboards and automated reports under role-based access control; (ii) to integrate foundation AI models for attendance forecasting and employee risk classification within current operational workflows; (iii) to provide real-time dashboards, automated PDF and CSV reports and a deterministic Business Health Overview that improve organisational visibility; (iv) to formulate and train dedicated models for Project Delay Prediction and Employee Workload Prediction as Phase 2 objectives; and (v) to design an integration framework for a proposed WhatsApp Business Health Summary as a lightweight future communication channel.

The main contributions are an integrated, layered architecture that unites transactional SME operations with dashboards, deterministic business-health analytics and selected AI capabilities; a description of the implemented modules and role-specific interfaces; and a clear separation between what is operational, what is integrated but not yet validated, and what is planned. The paper is a system-design and implementation study and does not report experimental performance. The remainder of the paper is organised as follows. Section 4 also gives background and related work, Section 5 describes the materials and methods, Section 6 presents the architecture, Section 7 the functional modules and Section 8 the AI and business intelligence components. Section 9 discusses the results, the research gap and the limitations, and Section 10 concludes and outlines future work.

4.1 Background and Related Work

AI adoption in SMEs. A systematic review of 89 studies under the Technology–Organisation–Environment framework identifies resource scarcity, technical skill shortages and fragmented software tools as the principal barriers to AI in SMEs and argues for modular tools; it is a conceptual review and provides no software artefact [1]. A survey of 202 senior IT and business executives calibrates AI capability in terms of data assets, personnel and infrastructure and reports a positive relationship with firm performance, which implies that decision metrics should be transparent for managers without data-science expertise [7].

AI in project management. A review of 93 papers maps AI applications across project-management knowledge areas, including schedule forecasting, risk detection and milestone tracking [8]. A survey-based study that applies multi-criteria (AHP) measurement to service-sector companies finds the highest AI support for project management in professional, scientific and technical activities [9]. A survey of automation approaches proposes a five-

level maturity model from manual tracking to autonomous decision support [10]. These works are confined to project management and do not integrate human-resource or attendance data.

Business value of AI and business intelligence. An integrative review of 85 studies links AI capabilities to productivity, agility and faster managerial decisions [4]. A multiple case study of enterprise AI transformation projects reports gains from process optimisation and automated reporting, although it concerns large corporations with dedicated IT infrastructure [11]. A systematic review of business intelligence success identifies data quality, intuitive interface design and integration as critical determinants [12].

ERP in SMEs. Reviews of ERP in SMEs describe limited resources and SME-specific characteristics as sources of adoption risk [2], and cost, complexity and long deployment as recurring failure factors [3]. The latter pre-dates modern lightweight web frameworks and pretrained foundation models.

Predictive analytics for project delay and workload. A comparative machine-learning study on construction projects shows that tree-based ensemble models can identify delay risk from task-velocity and milestone features, although it is specific to civil engineering and requires domain-specific feature engineering [13]. A real-time framework for employee workload in railway control rooms combines a gradient-boosting model (LightGBM, the best performer in that study) with SHAP explanations and is evaluated on 15-minute intervals in a specialised setting [14]. Both are methodological references for the Phase 2 modules of AURA rather than components of the current system.

Foundation models for forecasting and tabular prediction. Chronos-2 is a pretrained model that handles univariate, multivariate and covariate-informed forecasting in a zero-shot manner [5]. TabPFN is a tabular foundation model trained on synthetic datasets that is reported to outperform earlier methods on datasets of up to 10,000 samples [6]. Such models are attractive for SMEs because they can be applied without training a new model from scratch for each organisation; whether this advantage holds within AURA has not yet been evaluated.

Table 1 summarises the literature and its relevance to AURA.

Table 1. Summary of the related literature and its relevance to AURA.

Ref.	Study type and focus	Relevance to AURA
[1]	Systematic review (89 studies) of AI in SMEs: scarce resources, skills and fragmented tools	Justifies a centralised, lightweight platform
[8]	Systematic review (93 papers) of AI across project-management knowledge areas	Guides project monitoring and proactive delay detection
[9]	Survey and AHP-based measurement of AI support to project management	Supports deadline tracking and project analytics
[10]	Survey of automation approaches; five-level maturity model	Frames progression from rule-based scoring to decision support
[4]	Review (85 studies) of how AI creates business value	Supports embedding analytics in operations
[11]	Multiple case study of enterprise AI transformation (large firms)	Supports centralised operational data; SME gap remains
[7]	PLS-SEM survey (202 executives) on AI capability	Requires explainable metrics for non-specialist managers
[12]	Systematic review of business intelligence success	Informs dashboard design: data quality, simple interface, integration
[2], [3]	Literature reviews of ERP in SMEs: constraints and failure factors	Defines the constraints AURA aims to avoid
[13]	Comparative machine-learning study of construction project delay	Method reference for Phase 2 delay prediction
[14]	Explainable real-time workload prediction (LightGBM and SHAP)	Explainability model for Phase 2 workload prediction

5. MATERIALS AND METHODS

This section describes the development approach and technical implementation of AURA as documented in the project presentation. AURA is a software artefact, and no external dataset was collected or analysed for this paper. The methods therefore describe system design and implementation rather than an experimental protocol.

5.1 System Requirements and SME Operational Needs

The existing practice that motivated the project is the use of separate software for employee, attendance, project, meeting and report management. Data are stored in different systems, which makes retrieval and analysis difficult; decisions rely on manual reports and fragmented data; available tools offer limited predictive analytics; and no unified platform connects enterprise management with AI-driven insight. The presentation does not describe a formal requirements-elicitation procedure, so the requirements below are derived from this problem analysis and from the stated objectives: (i) a single store for employee, department,

attendance, project, meeting, report and e-mail data; (ii) role-based access for managers and employees; (iii) real-time dashboards and automated PDF and CSV reports; (iv) a simple, explainable indicator of organisational health; (v) embedded AI that does not require in-house data-science expertise; and (vi) a lightweight web architecture suited to SME resources.

5.2 Development Approach and Overall Design

Development followed a staged plan. Phase 1 comprised six stages (Fig. 1): creation of the database foundation; authentication and executive dashboard; core enterprise modules; business intelligence; system testing; and preparation for the first project review. The foundation models are reported at the second project review, and advanced predictive modules form the Phase 2 roadmap. The presentation does not name a formal software-process model, and none is assumed here.

5.3 User Roles and Access Control

Access to AURA is governed by role-based access control. The architecture identifies two user groups, manager and employee, and the implemented interfaces present three role-specific views: a chief-executive view, an administrator (manager) view and an employee view. Each view exposes a different set of modules after authentication (Table 2).

Table 2. Role-specific navigation in the implemented interfaces.

Role view	Modules available in the navigation menu	Main purpose
CEO	Executive Dashboard, Business Health, Meetings, Reports, Profile & Settings	Organisation-wide executive overview
Administrator (manager)	Dashboard, Decision Center, Employees, Departments, Attendance, Projects, Meetings, Email Center, Business Health, Reports, AURA Assistant, Profile & Settings	Full operational management and oversight
Employee	Dashboard, Attendance, Projects, Meetings, Email Center, Business Health, AURA Assistant, Profile & Settings	Personal attendance, assignments and meetings

5.4 Centralised Data Management

All operational data are held in a single SQLite database. Phase 1 created tables for employees, departments, attendance, projects and meetings, and the data layer of the architecture also holds report and e-mail data. In the system workflow, enterprise data are validated before they are stored. The presentation does not document the database schema, field definitions, indexing or constraints, and they are therefore not described here.

5.5 Data Processing and Analytics

Data processing and analytics use Python with the pandas [15] and NumPy [16] libraries, together with OpenPyXL for Excel processing; PDF reports are generated with ReportLab [17]. The Business Health Overview is computed deterministically. In its general form it is a weighted combination of three component scores:

$$BH = w_A \cdot A + w_P \cdot P + w_M \cdot M\,, \quad w_A + w_P + w_M = 1 \quad (1)$$

where BH is the Business Health score on a scale of 0 to 100; A, P and M are the attendance, project-delivery and meeting-execution component scores, each expressed on a scale of 0 to 100; and w_A, w_P and w_M are non-negative weights that sum to one. The presentation states which three factors enter the score (attendance consistency, project milestones and meeting discipline) but does not state the formulae for the components or the weights. [Authors to specify the component definitions and weights.]

5.6 AI Model Integration

Two pretrained foundation models are integrated. Amazon Chronos-2 is used for attendance forecasting. Chronos-2 maps a history of observations to a forecast over a horizon without task-specific training [5]:

$$\hat{y}_{t+1}, \ldots, \hat{y}_{t+H} = F(y_1, \ldots, y_t) \quad (2)$$

where $y_1, \ldots, y_t$ is the observed history (here, an attendance series), H is the forecast horizon and F denotes the pretrained forecaster. TabPFN is used for employee risk classification. It predicts a class label for a new record conditioned on a labelled context set [6]:

$$\hat{c}_e = \operatorname{argmax}_{k \in C} P(c_e = k \mid x_e, D) \quad (3)$$

where x_e is the feature vector of employee e, D is the labelled context set, C is the set of risk classes and $\hat{c}_e$ is the predicted class. Both models are designed to be applied without training a new model from scratch [5], [6]. The presentation does not document the input granularity, forecast horizon, feature set, risk classes, thresholds or any fine-tuning, and none is assumed in this paper. [Authors to specify the attendance series, horizon, risk features and risk classes.]

5.7 Testing and Verification

The fifth stage of Phase 1 comprised module integration, bug fixing, functional testing and performance verification, and was recorded as completed before the first review. The presentation does not provide test cases, coverage, measured response times, results of performance verification, a user study, or any evaluation of the two integrated AI models. Quantitative testing evidence is therefore not reported, and the functional descriptions in this paper rest on the implemented interfaces and the project documentation.

6. PROPOSED SYSTEM AND ARCHITECTURE

AURA is a centralised, web-based enterprise resource management platform for SMEs. It integrates employee, department, attendance, project, meeting, dashboard and report management in one application, and provides a real-time Business Health Overview, attendance forecasting with Amazon Chronos-2, employee risk classification with TabPFN, and What-If scenario simulations. The presentation lists What-If simulations among the capabilities of the proposed system but gives no detail of them, so they are not analysed further in this paper.

6.1 Layered Architecture

The architecture (Fig. 2) has five layers. The *user layer* contains the two user groups, manager and employee. The *presentation layer* provides the login, dashboard and profile interfaces through which users reach the system. The *application layer* is the AURA web application, built with Flask [18], which delegates to seven services: employee, attendance, department, project, meeting, report and e-mail. The *data layer* is a SQLite database [19] in which each service has a corresponding data store. The *business intelligence layer* draws on this stored data to provide the business intelligence dashboard, Business Health, AI analytics, employee AI and smart report AI. The last two labels are given in the presentation without further description; they are read here as the employee risk classification and the report-generation intelligence, respectively.

Requests flow downwards through the layers and results flow upwards. Users interact only with the presentation layer; business logic is concentrated in the application services; persistent state is held in one database; and analytical outputs are computed from the same stored records that the operational modules update. This shared data layer is what distinguishes the design from a collection of separate point tools, because the dashboards, the

Business Health score and the AI components all read the data that the operational modules write.

6.2 System Workflow

The operational workflow (Fig. 3) has three stages and six steps: authentication and login, followed by the executive dashboard (access and overview); module operations and data processing (operations and processing); and report generation followed by the business intelligence dashboard (reports and insights). These three workflow stages describe how a user moves through the system and should not be confused with the Phase 1 and Phase 2 development roadmap.

6.3 Technology Stack

Table 3 lists the technologies identified in the project presentation and their purposes.

Table 3. Technology stack of AURA and the purpose of each component.

Layer	Technologies	Purpose
Presentation	HTML5, CSS3, JavaScript, Bootstrap 5, Jinja2	Responsive enterprise user interface
Application	Python, Flask [18]	Authentication, routing and business logic
Data processing and analytics	pandas [15], NumPy [16], OpenPyXL	Business analytics, report generation and Excel processing
Report generation	ReportLab [17]	Automated PDF reports (CSV export is also provided)
AI models	Amazon Chronos-2 [5], TabPFN [6]	Attendance forecasting; employee risk classification
Database	SQLite [19]	Centralised enterprise database
Development environment	Visual Studio Code	Application development, editing and debugging

7. SYSTEM IMPLEMENTATION AND FUNCTIONAL MODULES

The functional modules of AURA and their responsibilities are summarised in Table 4 and described in the subsections that follow. The descriptions are based on the module screens and dashboards in the project presentation; where a feature is not documented, this is stated.

Table 4. Functional modules of AURA and their responsibilities.

Module	Responsibility
Employee management	Maintains employee information, roles and organisational details
Department management	Structures the organisation into departments and gives visibility of headcount
Attendance management	Records and monitors attendance and supplies attendance indicators and forecasts
Project management	Tracks projects, their status and milestones
Meeting management	Schedules meetings and shows upcoming meetings
Authentication and RBAC	Secure login and role-specific access to modules
Executive dashboard	Presents organisational indicators in a single view
Business Health Overview	Summarises organisational health as a score from 0 to 100
Reports and communication	Generates PDF and CSV reports; provides an e-mail centre
AURA AI Assistant	Interface for asking questions about enterprise data

7.1 Employee Management

The employee module stores employee information and organisational records. The module screen (depicted in Section 7.9) lists employees with name, designation, e-mail, phone number and status, and offers search and row-level actions. Access to this module is limited to the administrator view (Table 2).

7.2 Department Management

The department module structures the organisation and gives managers visibility of how staff are distributed. The demonstration instance contains ten departments (Engineering, Sales, Customer Success, Data Science, Marketing, HR, Operations, Finance, Legal & Compliance and Product), and the dashboard presents headcount by department as a bar chart (Fig. 4).

7.3 Attendance Management

The attendance module records and monitors attendance. Employees see their own attendance status for the day, and managers see attendance trends on the dashboard. Attendance also feeds the attendance component of the Business Health Overview and is the series to which Chronos-2 forecasting is applied (Section 8.2).

7.4 Project Management

The project module supports project tracking and status monitoring. The dashboard classifies projects as completed, in progress or planning and reports the completion of the portfolio, and employees see the projects assigned to them. Project milestones enter the Business Health Overview. The employee dashboard shows task-level tracking as “coming soon” (Section 9.2), so task management is not claimed as an implemented feature.

7.5 Meeting Management

The meeting module schedules meetings and presents upcoming meetings to each user, with an executive calendar, schedule and agenda view for the CEO. Meeting execution is the third component of the Business Health Overview.

7.6 Authentication and Role-Based Access Control

Users sign in with an e-mail address and password, and the interface they receive depends on their role (Table 2). Role-specific views limit what each user sees: the employee view is restricted to personal attendance, assignments and meetings, while the administrator view covers organisation-wide management modules. The presentation does not describe the authentication mechanism, such as password storage or session handling, and no security certification or audit is claimed.

7.7 Executive Dashboard

The executive dashboard gives a real-time overview of employees, attendance, projects, departments, meetings, business health and key indicators (Fig. 4). It combines the Business Health gauge and its three components, a strip of summary counts, a bar chart of employees by department, a pie chart of project status and an attendance trend panel. The administrator dashboard also contains an Executive Intelligence panel and a Decision Center entry in the navigation menu; the presentation does not document the logic behind these.

7.8 Business Health Overview

The Business Health Overview displays a gauge from 0 to 100 with a qualitative label (in the demonstration instance, “Healthy · Low Risk”) and progress bars for attendance, project delivery and meeting execution. The calculation is described in Sections 5.5 and 8.1.

7.9 Reports and Communication

AURA generates reports automatically as PDF documents using ReportLab [17] and as CSV files. The reports dashboard (Fig. 5) presents executive, employee, attendance, project and meeting report categories. An e-mail centre supports e-mail communication, report dispatch and scheduling; the module screen shows e-mail composition, recipients, SMTP settings and an inbox. Because the module screens in Fig. 5 form a composite illustration, the detailed behaviour of individual controls is not described here.

7.10 AURA AI Assistant

The AURA AI Assistant is a chat interface in the administrator and employee navigation menus that is intended to answer questions about employees, attendance, projects, meetings and business health based on enterprise data. In the employee dashboard the assistant input is labelled “coming soon” (Fig. 6). The presentation does not describe the underlying model or its capabilities, so the assistant is treated as an interface under development and no claim is made about the quality of its answers.

8. AI AND BUSINESS INTELLIGENCE

The analytical capabilities of AURA fall into three groups that are kept separate throughout this paper: a deterministic score (Section 8.1), pretrained foundation models that have been integrated into the platform (Sections 8.2 and 8.3), and predictive capabilities that are planned or under development (Section 8.5).

8.1 Business Health Analytics

The Business Health Overview is a deterministic score from 0 to 100 that combines attendance consistency, project milestones and meeting discipline (Eq. 1). Because it is computed by fixed rules rather than learned from data, it is not a machine-learning prediction and no predictive claim is made for it. Its value lies in summarising three operational dimensions in one figure that managers can interpret without data-science expertise, which is consistent with the finding that AI-supported decision metrics should be transparent and explainable [7]. The boundaries between qualitative labels such as “Healthy · Low Risk” are not documented.

8.2 Amazon Chronos-2 Attendance Forecasting

Chronos-2 is a pretrained forecasting model that supports univariate, multivariate and covariate-informed tasks and can be used in a zero-shot manner, without task-specific

training [5]. In AURA it is the attendance forecasting component. Its intended managerial use is to give managers a forward-looking view of attendance, complementing the retrospective attendance indicators on the dashboard. This section describes the integration of the model only: the presentation reports no forecast horizon, error metrics, baseline comparison or validation on AURA data, and the predictive performance of the model in this setting has therefore not been established.

8.3 TabPFN Employee Risk Classification

TabPFN is a tabular foundation model pretrained on synthetic datasets, reported to perform well on tabular datasets of up to 10,000 samples [6]. In AURA it is used for employee risk classification, a setting in which an SME typically has small tabular datasets. The risk labels, input features, thresholds, training data and validation results are not documented in the presentation, and none are assumed. The capability is therefore described as integrated, not as validated.

8.4 Business Intelligence and Reporting

The business intelligence layer provides an executive dashboard with real-time indicators, a Business Health dashboard, a reports dashboard and automated PDF and CSV reports. These outputs address two determinants of business intelligence success identified in the literature, data consistency and interface simplicity [12], because all views are produced from one database through a single interface. How the "smart report" capability uses AI is not documented beyond its label in the architecture.

8.5 Phase 2 Predictive Capabilities

Three capabilities are not operational and are identified as Phase 2 work. *Project Delay Prediction* is an active development objective: the plan is to train a dedicated model that moves project monitoring from reactive milestone tracking to proactive delay detection, drawing on the use of tree-based ensembles and milestone features in earlier work [13]. *Employee Workload Prediction* is an active development objective that is expected to follow the explainable real-time approach of earlier work, which pairs a gradient-boosting model with SHAP explanations [14]. The *WhatsApp Business Health Summary* is a proposed integration for sending managers a brief summary of organisational health; an architectural framework is being designed, and the feature is not yet operational. The model types, features and data for these modules are not yet specified and no results exist.

9. RESULTS AND DISCUSSION

The results reported here are qualitative and are limited to what is documented in the project presentation: the architecture, the implemented modules and interfaces, and the values shown on the dashboards of a demonstration instance. No experimental evaluation, benchmark or user study was available, and none is reported.

9.1 Implemented Capabilities

Table 5 distinguishes the status of each capability according to the presentation. Core operational modules, role-based access, dashboards, the Business Health Overview and reporting are implemented. Chronos-2 and TabPFN are integrated but their predictive performance is not validated. Project Delay Prediction and Employee Workload Prediction are in active development, and the WhatsApp summary is proposed.

Table 5. Implementation status of AURA capabilities.

Capability	Status	Basis in project documentation
Employee, department, attendance, project and meeting management	Implemented	Phase 1 workflow; module screens
Authentication and role-based access	Implemented	Role-specific interfaces
Executive dashboard	Implemented	Dashboard screens
Business Health Overview	Implemented (deterministic)	Dashboard gauge and components
PDF and CSV reports; e-mail centre	Implemented	Reports and e-mail screens
AURA AI Assistant	Interface present; employee input marked “coming soon”	Navigation and dashboard screens
Chronos-2 attendance forecasting	Integrated; not validated	Project description
TabPFN employee risk classification	Integrated; not validated	Project description
Project Delay Prediction	Active Phase 2 development	Project description
Employee Workload Prediction	Active Phase 2 development	Project description
WhatsApp Business Health Summary	Proposed; not operational	Project description

9.2 User Interfaces and Role-Based Views

The three interfaces differ in scope. The CEO view is deliberately restricted to executive modules: the dashboard, business health, meetings and reports. The administrator view adds the operational modules for managing employees, departments, attendance, projects, meetings

and e-mail (Fig. 4). The employee view (Fig. 6) is organised around the individual and shows today's attendance, assigned projects, tasks, meetings, notifications and the assistant. In the screenshot, the employee has not yet marked attendance, has no assigned projects and no scheduled meetings, which illustrates the personal scope of this view. All three views use a dark theme with a theme toggle and a persistent sidebar.

9.3 Dashboard Indicators in the Demonstration Instance

Table 6 lists the values displayed on the executive dashboard in the screenshots of the presentation. The presentation does not state whether these records are real or synthetic demonstration data. They are therefore reported as illustrative output of the system, not as evidence of organisational outcomes or of system performance.

Table 6. Values displayed on the executive dashboard of the demonstration instance.

Indicator	Value displayed
Business Health score	75 / 100 ("Healthy · Low Risk")
Attendance component	88%
Project Delivery component	55%
Meeting Execution component	82%
Employees	301
Departments	10
Projects (total)	40
Projects completed	22 (55%)
Projects in progress	12 (30%)
Projects in planning	6 (15%)
Meetings	40
Attendance entries (as labelled "Attendance")	58,277

Two internal consistencies can be checked from these values. The project-delivery component (55%) equals the share of completed projects (22 of 40), and the Business Health score of 75 equals the unweighted mean of the three components, (88 + 55 + 82) / 3 = 75. This is consistent with equal weights in Eq. 1, but the weights and component formulae are not documented, so it is an observation about this instance rather than a specification of the method.

9.4 Practical Benefits for SMEs

The design has several practical advantages for SMEs, which are expected on the basis of the architecture rather than measured. A single database and a single interface remove the need to re-enter and reconcile data between separate tools. Role-based views give managers

organisation-wide visibility while limiting employees to their own information. The Business Health score gives a quick, explainable summary, and automated reports reduce manual compilation. The stack consists largely of open-source components, which suggests low licensing overhead, and the pretrained models avoid the need to build forecasting and classification models from scratch. Gains in time, cost or decision quality were not measured and are not claimed.

9.5 Research Gap and Contribution

The surveyed literature shows that traditional ERP systems are often costly or complex for SMEs [3], that AI research on project management and workload prediction is usually conducted in isolation from daily transactional workflows [8], [13], [14], and that business intelligence studies often concentrate on enterprise data warehouses rather than lightweight operational dashboards [12]. Separate point tools, in turn, create fragmented data and disconnected analytics. The gap is that ERP operations, business intelligence and AI-driven prediction tend to be treated as separate concerns.

AURA's contribution is a system design and implementation that brings employee, attendance, department, project and meeting operations together with dashboards, a deterministic business-health score and selected AI capabilities in one architecture suited to SMEs. This is a contribution of design and implementation. AURA does not claim to resolve every limitation of earlier work, and no comparison with commercial ERP systems was made.

9.6 System Limitations

The evidence supports the following limitations. First, no quantitative evaluation of the system exists: there are no measurements of response time, scalability, usability or user satisfaction, and no comparison with other platforms. Second, the AI models are integrated but not validated; forecasting accuracy and risk-classification quality must be assessed with appropriate data and evaluation methods before they are relied upon. Third, Project Delay Prediction and Employee Workload Prediction are still in development, and the WhatsApp summary is proposed rather than operational. Fourth, the data in the demonstration instance have no documented provenance, and the system has not been evaluated with real operational data from an SME. Fifth, details of the database schema, the authentication mechanism and the Business Health formula are not documented, and no security audit has been performed. Sixth, the suitability of a single SQLite database for many concurrent users has not been

tested, and the SME-specific deployment constraints have not been studied. Finally, the AI Assistant and task-level project tracking are shown as upcoming features. Production-scale deployment, commercial readiness and generalised predictive performance are therefore not claimed.

10. CONCLUSION

This paper presented AURA, an AI-enabled Enterprise Resource Management System for SMEs that addresses the fragmentation of employee, attendance, project, meeting and reporting tools. AURA provides a centralised, layered web architecture with role-based access control, implemented modules for employees, departments, attendance, projects and meetings, executive dashboards, automated PDF and CSV reports and a deterministic Business Health Overview that combines attendance, project and meeting indicators into a score from 0 to 100. Amazon Chronos-2 attendance forecasting and TabPFN employee risk classification are integrated as current AI capabilities, although their predictive performance has not yet been validated. The contribution of the work is an integrated system design that links transactional SME operations with lightweight embedded analytics. Its conclusions are limited to design and implementation, because quantitative evaluation has not yet been carried out.

10.1 Future Work

Future work should (i) complete and evaluate Project Delay Prediction; (ii) complete and evaluate Employee Workload Prediction, with explainable outputs; (iii) validate the Chronos-2 and TabPFN components with appropriate datasets, baselines and performance measures; (iv) improve the dashboards and reports, including the AI Assistant and task-level tracking; (v) evaluate the system with real operational SME data, subject to appropriate authorisation, together with usability and scalability testing; and (vi) design, implement and assess the proposed WhatsApp Business Health Summary. Items (i), (ii) and (vi) are planned or in development and are not part of the functionality reported here.

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12. REFERENCES

1. L. Oldemeyer, A. Jede, and F. Teuteberg, "Investigation of artificial intelligence in SMEs: A systematic review of the state of the art and the main implementation challenges," Management Review Quarterly, vol. 75, no. 2, pp. 1185–1227, 2025, doi: 10.1007/s11301-024-00405-4.
2. M. Haddara and O. Zach, "ERP systems in SMEs: A literature review," in Proc. 44th Hawaii International Conference on System Sciences (HICSS), IEEE, 2011, pp. 1–10, doi: 10.1109/HICSS.2011.191.
3. M. Haddara and O. Zach, "ERP systems in SMEs: An extended literature review," International Journal of Information Science, vol. 2, no. 6, pp. 106–116, 2012, doi: 10.5923/j.ijis.20120206.06. [Authors to verify: this entry is taken from the project presentation and could not be independently confirmed.]
4. I. M. Enholm, E. Papagiannidis, P. Mikalef, and J. Krogstie, "Artificial intelligence and business value: A literature review," Information Systems Frontiers, vol. 24, no. 5, pp. 1709–1734, 2022, doi: 10.1007/s10796-021-10186-w.
5. A. F. Ansari et al., "Chronos-2: From univariate to universal forecasting," arXiv preprint arXiv:2510.15821, 2025.
6. N. Hollmann, S. Müller, L. Purucker, A. Krishnakumar, M. Körfer, S. B. Hoo, R. T. Schirrmeister, and F. Hutter, "Accurate predictions on small data with a tabular foundation model," Nature, vol. 637, no. 8045, pp. 319–326, 2025, doi: 10.1038/s41586-024-08328-6.
7. P. Mikalef and M. Gupta, "Artificial intelligence capability: Conceptualization, measurement calibration, and empirical study on its impact on organizational creativity and firm performance," Information & Management, vol. 58, no. 3, Art. no. 103434, 2021, doi: 10.1016/j.im.2021.103434.
8. M. E. Nenni, F. De Felice, C. De Luca, and A. Forcina, "How artificial intelligence will transform project management in the age of digitization: A systematic literature review," Management Review Quarterly, vol. 75, no. 2, pp. 1669–1716, 2024, doi: 10.1007/s11301-024-00418-z.
9. V. Čančer, P. Tominc, and M. Rožman, "Multi-criteria measurement of AI support to project management," IEEE Access, vol. 11, pp. 142816–142828, 2023, doi: 10.1109/ACCESS.2023.3342276.

10. G. Auth, O. Jokisch, and C. Dürk, "Revisiting automated project management in the digital age – A survey of AI approaches," Online Journal of Applied Knowledge Management, vol. 7, no. 1, pp. 27–39, 2019, doi: 10.36965/OJAKM.2019.7(1)27-39.
11. S.-L. Wamba-Taguimdje, S. Fosso Wamba, J. R. Kala Kamdjoug, and C. E. Tchatchouang Wanko, "Influence of artificial intelligence (AI) on firm performance: The business value of AI-based transformation projects," Business Process Management Journal, vol. 26, no. 7, pp. 1893–1924, 2020, doi: 10.1108/BPMJ-10-2019-0411.
12. N. Ul-Ain, G. Vaia, W. H. DeLone, and M. Waheed, "Two decades of research on business intelligence system adoption, utilization and success – A systematic literature review," Decision Support Systems, vol. 125, Art. no. 113113, 2019, doi: 10.1016/j.dss.2019.113113.
13. C. N. Egwim, H. Alaka, L. O. Toriola-Coker, H. Balogun, and F. Sunmola, "Applied artificial intelligence for predicting construction projects delay," Machine Learning with Applications, vol. 6, Art. no. 100166, 2021, doi: 10.1016/j.mlwa.2021.100166.
14. L. Sobrie, M. Verschelde, and B. Roets, "Explainable real-time predictive analytics on employee workload in digital railway control rooms," European Journal of Operational Research, vol. 317, no. 2, pp. 437–448, 2024, doi: 10.1016/j.ejor.2023.09.016.
15. W. McKinney, "Data structures for statistical computing in Python," in Proc. 9th Python in Science Conference (SciPy 2010), 2010, pp. 56–61.
16. C. R. Harris et al., "Array programming with NumPy," Nature, vol. 585, pp. 357–362, 2020, doi: 10.1038/s41586-020-2649-2.
17. ReportLab Inc., "ReportLab open-source PDF toolkit," [Online]. Available: https://www.reportlab.com/opensource/
18. Pallets Projects, "Flask documentation," [Online]. Available: https://flask.palletsprojects.com
19. SQLite, "SQLite documentation," [Online]. Available: https://www.sqlite.org/docs.html