



KIURE ENGINEERING LIMITED

Arusha, Tanzania

Improving Efficiency in Construction Business Sector through Information and Communication Technology (ICT)

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1. INTRODUCTION

Kiure Engineering Limited is a full-service general construction company based in Arusha, Tanzania, with over twenty years of experience delivering civil and building construction works across East Africa. Founded in 2004 by Managing Director Omar Jumaam Kiure, the company grew from a brick-making enterprise into a major regional contractor.

Recognizing that timely, accurate information is central to running construction projects efficiently, the company has progressively adopted Information and Communication Technology (ICT) across its operations. This article has been prepared for the Contractors Registration Board (CRB) to describe how ICT is applied in the company's day-to-day operations, from tendering and project delivery to finance, fleet management and internal controls, and to outline the company's roadmap for further digital investment.

2. OVERVIEW OF DIGITAL TRANSFORMATION

Kiure Engineering Ltd has moved away from paper-based processes toward integrated digital systems in nearly every department. This was brought about when the government mandated the submission of government tenders through NeST (nest.go.tz), the National e-Procurement System of Tanzania. This was a tell-tale sign to us that we also needed to evolve and not get left behind. Another separate, isolated Windows Server on office network with Active Directory is used for secure document sharing between departments.

The core of this transformation is an Enterprise Resource Planning (ERP) system, Tactive (www.tactivesoft.com), which the company uses to run daily office and site operations.

Tactive is a commercially available, construction-focused ERP developed by Tactive Software Systems, and is readily acquirable off the shelf by any contractor. Acquisition follows a straightforward procedure: the vendor is contacted through their website for a product demonstration, after which licensing is agreed based on the modules and number of users required, with the system offered on a subscription basis in both cloud-hosted and on-premise arrangements.

While the software works out of the box, it is not applied purely off the shelf: an initial implementation phase is required to configure it to the company's own processes — including the chart of accounts, approval chains, BOQ formats and user roles — which the vendor supports remotely during onboarding. Indicative direct costs are 63.89 USD subscription per user at a minimal of 30 users and 6 months upfront payment, with implementation and training absorbed within the onboarding period.

In Conjunction with Tactive, Majority of our civil works are also managed with the help of our partners at Afritrack, who assist with fleet management, fuel inspection, location tracking and driver assignment to our entire logistics division. Fuel levels, drivers' locations are fully monitored remotely by logistics and accounting departments to supervise daily activities.

In practical terms, Afritrack installs GPS tracking units and fuel-level sensors on each vehicle and item of plant. These devices report to a central dashboard that shows, in real time, each vehicle's location, engine ignition status, motion state and fuel level. Fuel inspection is therefore continuous rather than manual: any abnormal drop in fuel level raises an alert, allowing fuel theft or leakage to be detected immediately, while recorded fuel consumption per trip is reconciled against the fuel logs kept in the ERP. Trip history and mileage data support driver assignment and accountability — each journey is tied to a named driver — and mileage-based reminders help schedule preventive maintenance before breakdowns occur. This gives the logistics division full visibility of goods and equipment moving between project sites and suppliers at any moment.

3. BILLS OF QUANTITIES (BOQ) AND BUDGET MANAGEMENT

Bills of Quantities issued by NeST, clients, or other vendors are received in Excel format and imported directly into the ERP. Once imported, the BOQ is processed by the Quantity Surveyor function to establish project budgets, material plans and labor requirements, which then become the financial baseline against which the project is executed and monitored.

4. PROJECT PLANNING AND SCHEDULING

Using the imported BOQ, the ERP generates a project schedule that Site Engineers use to plan and sequence works, including Gantt-chart style schedules for tracking daily site activities. This links the commercial baseline (the BOQ and budget) directly to the execution plan, so that progress on site can be measured against both time and cost from the same source data.

5. INTEGRATED ERP OPERATIONS

The ERP is the operational backbone of the company and is used across departments for both internal administration and project-related activity. Internal operations such as labor payments, payroll, sick leave, travel allowances are processed directly in the ERP. Project-related procurement of materials, services, subcontractors and assets is initiated in the ERP by the personnel requiring the resource — typically the responsible Engineer — with other departments joining the workflow at the appropriate stage, as summarized below.

ERP Module	Primary Function
Procurement	Requisitions, supplier sourcing, purchase orders and approvals
Inventory	Stock control, warehouse receipts, issue notes and stock ledgers
Finance	Payments, invoicing, claims, journals and financial reporting
HR & Payroll	Employee records, contracts, attendance and payroll processing
Projects	Budgets, project schedules, progress tracking and site reporting
Assets	Asset registration, allocation, maintenance and depreciation tracking
Fleet	Vehicle tracking, fuel logs, maintenance schedules and driver accountability

Table 1: Core ERP modules and their function within Kiure Engineering Limited

6. WORKFLOW AUTOMATION AND INTERNAL CONTROLS

The Four-Eye Principle

Requests raised by any department follow the four-eye principle: every request must be approved by another member of staff from a different department before it is actioned. The ERP generates automated approval notifications and records time stamps against each step, which preserves accountability and creates an auditable trail of who requested, approved and actioned each transaction.

Procurement Workflow

A typical resource request originates on site or in a project office, where an Engineer raises a request in the ERP for materials, services, subcontractors or assets.

The Procurement department then identifies and engages a suitable supplier, Finance processes the related payment, and Stores or the receiving site confirms receipt, at which point inventory is updated automatically. This sequencing keeps requisition, sourcing, payment and stock records tied to a single transaction in the ERP rather than separate paper trails.

Cash Operations

Cash-based operations are handled through a separate, dedicated process outside the standard procurement workflow described above, reflecting the different controls required for cash handling compared with supplier-based purchasing.

7. CLIENT INVOICING AND CLAIMS MANAGEMENT

Client-facing documents — Purchase Orders, Delivery Notes, Receipts issued by site personnel, and records of resources issued — are all generated and tracked within the ERP. Claims to clients are placed through the ERP based on the BoQ and the value of work completed to date, once the threshold set out in the relevant contract has been reached. Tying claims directly to the BQ and recorded progress improves billing accuracy and supports more predictable cash flow.

8. FINANCIAL REPORTING AND BANKING

The ERP produces real-time financial reports, including balance sheets and other management accounts, drawn directly from transactional data such as invoices, payments and journals. This gives management current financial visibility without waiting for manual, end-of-period consolidation.

Allowing the management team to gather the “Financial health” of each project, something to be very careful about especially as of late

9. ICT INFRASTRUCTURE AND INFORMATION SECURITY

Day-to-day office operations are supported by a network infrastructure, designed to minimize downtime and keep ERP and communication systems available.

We have also employed the use of “Docu-sign” A website that allows secure signing of key documents. Rather than just placing signatures on documents, most times without the person responsible even knowing. We now ensure each document can be signed virtually, but it has to be by the person responsible

10. DIGITAL TOOLS IN MARKETING

The company uses social media platforms for advertising, content creation and recruitment of new personnel, supported by artificial intelligence tools to improve the quality and consistency of content produced for these channels. Such tools help us target our specific audience and ensure maximum visibility of our work, allowing the acquisition of new clients.

11. FUTURE ROADMAP

Kiure Engineering has identified two priority areas for further ICT investment:

- A custom-built ERP– Despite all its benefits, our current ERP still has some shortcomings, we are currently in the stage of developing a home-based ERP that we hope to be able to deploy to local contractors. It will incorporate machine learning capabilities to optimize daily operations
- TRA Electronic Fiscal Device (EFD) API Integration – connecting client invoicing directly to the Tanzania Revenue Authority's EFD system, so that invoices and fiscal receipts issued to clients are generated and reported electronically at the point of issue

14. BENEFITS REALISED

The adoption of ICT across Kiure Engineering's operations has delivered measurable operational benefits:

- Reduced paperwork and faster turnaround in tendering, procurement and claims processing
- Improved cross-departmental collaboration through a shared ERP platform
- Stronger accountability through the four-eye approval principle and time-stamped audit trails
- Real-time financial and operational visibility for management decision-making
- Secure handling of sensitive documents through Active Directory on a redundant network Infrastructure
- Improved tracking of fleet, inventory and project progress against budget and schedule

15. CONCLUSION

As seems to be the norm with most other sectors of the Global economy, Africa happens to be left decades behind. To keep honest with Vision 2050, Tanzania-and indeed construction- must keep pace with the rest of the world. Technology and AI is no longer a thing of the future. It is our daily reality and those who adapt are the ones that will survive to tell stories to the future generation