Business Analyst Internship – Week 2 Assignment

Case Study: Self-Service Checkout Implementation for a Retail Chain

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1. Problem Summary

Retail chains across the UK and US, including Tesco and Walmart, are increasingly challenged by long checkout queues, staffing inefficiencies, and inconsistent customer experiences. As consumer expectations evolve toward faster, contactless, and personalized shopping experiences, legacy systems struggle to meet modern operational demands.

The core business problem lies in optimizing checkout operations to reduce waiting times, improve transaction throughput, and enhance customer satisfaction without incurring disproportionate staffing costs. The current system leads to long queues, manual errors, and low workforce efficiency.

Key Issues Identified:

• Average queue time: 8 minutes during peak hours.
• Customer satisfaction: 70% (target >85%).
• Overdependence on staff for checkout operations.
• Manual transaction errors averaging 3–4%.
• Limited data analytics and real-time performance visibility.

The business objective is to redesign the checkout experience through AI and automation, ensuring reduced queues, higher efficiency, better customer engagement, and measurable cost savings.

2. Options Evaluation (Pros, Cons, Risk, ROI)

Three key options were identified and analyzed for implementation feasibility, impact, and return on investment. Each option was evaluated against qualitative and quantitative criteria, including customer experience, scalability, and financial outcomes.

Option	Pros	Cons	Risk Level	ROI (3 Years)
Upgrade Staffed Tills	Quick implementation; familiar for staff; lower upfront cost.	Limited long-term benefit; still dependent on manpower; not scalable.	Low	10%
Self-Service Kiosks	Improves speed; reduces queues; enables data-driven insights; lowers staffing cost by 15%.	High setup cost; potential theft; requires tech support and training.	Medium	25%
Mobile 'Scan & Go' App	Futuristic; enhances convenience; minimal staff intervention.	High development cost; low initial adoption; device compatibility issues	High	20%

From this analysis, the Self-Service Kiosk option offers the best trade-off between cost, operational efficiency, and scalability. It provides measurable ROI and improves the customer journey without relying heavily on mobile adoption or legacy systems.

3. Business Analysis Techniques & Requirements

A structured Business Analysis approach was adopted to gather insights, analyze workflows, and define functional requirements. This ensured alignment between business objectives and system capabilities.

Techniques Used:

• Stakeholder Analysis – Mapped stakeholders including store managers, IT staff, finance, and customers.
• Interviews & Surveys – Captured staff and customer perspectives on checkout bottlenecks.
• Process Mapping – Visualized the 'as-is' and proposed 'to-be' checkout process.
• Cost-Benefit Analysis – Compared ROI, CAPEX, and OPEX for each alternative.
• User Stories & Acceptance Criteria – Defined use cases such as barcode fallback, loyalty integration, and fraud alerts.

High-Level Requirements:

• PCI DSS-compliant payment system.
• User-friendly UI/UX with accessibility compliance.
• Real-time POS integration and inventory sync.
• AI-based theft detection and alerting system.
• CRM integration for personalized offers.
• System scalability to support 100+ stores.
• 99.9% uptime and encrypted data management.

4. Recommended Option & Roadmap (with KPIs)

After assessing all potential options, the recommended approach is to deploy AI-Powered Self-Service Kiosks. This solution provides a practical balance between technological readiness, customer satisfaction, and operational ROI. It can be implemented in phases to reduce disruption while allowing gradual optimization.

Phase	Timeline	Key Activities	Deliverables
Short Term	0–6 months	Pilot rollout in 5 stores; collect user feedback; adjust UX/UI.	Pilot success report and feedback log.
Medium Term	6–18 months	Pilot rollout in 5 stores; collect user feedback; adjust UX/UI.	Pilot success report and feedback log.
Long Term	18–36 months	Add AI Vision for item recognition; link mobile 'Scan & Go' for hybrid model.	Full AI-driven omnichannel checkout ecosystem.

Key Performance Indicators (KPIs):

• Queue time reduced by 40% within six months.
• Customer satisfaction increased from 70% to 85%.
• Labour cost reduced by 20% across stores.
• ROI achieved within three years.
• System uptime maintained at 99.9%.
• 100% compliance with PCI DSS and GDPR standards.

5. Conclusion

The AI-Powered Self-Service Kiosk solution represents the most feasible and value-driven approach for transforming retail checkout operations. By introducing automation, AI, and data integration, it enhances customer satisfaction while optimizing labour and operational costs.

The project aligns with the organization's digital transformation strategy, creating a long-term foundation for innovation. Through effective BA techniques, a phased roadmap, and measurable KPIs, the solution ensures strategic execution, risk mitigation, and demonstrable business value within three years of implementation.

Ultimately, this initiative modernizes the retail experience, providing faster service, better insights, and stronger customer loyalty — solidifying the retailer's competitive advantage in an increasingly digital market.