**Final Project: Digital Transformation Strategy for Midsized Retailer**

**Step 1: Assess Current Systems (9 poin)**

**1.1 Current System Architecture**

* **POS System:** Windows CE terminals, lambat (>5 detik per transaksi), outdated card reader drivers (2009).
* **E-commerce Platform:** Magento 1.9, MySQL terpisah per toko, page load >2 detik, cumulative layout shift >0.25.
* **Data Storage:** On-premise SQL database per store, nightly batch ke HQ → fragmented data, inconsistent customer profiles.
* **Inventory Management:** Manual via Excel → stockouts, delayed reordering.

**1.2 Pain Points Matrix**

|  |  |  |
| --- | --- | --- |
| **Pain Point** | **Impact** | **Root Cause** |
| Slow checkout | Konversi menurun, lost sales | Windows CE lambat, old drivers |
| Inventory stockouts | Produk habis, restock delayed | Manual Excel, batch updates |
| Fragmented customer data | Kurang personalisasi marketing | Data tidak konsisten antara Magento dan store DB |

**1.3 Key Inefficiencies**

* Manual CSV imports & duplicate data entry → menghambat scaling.
* Customer data inconsistent → marketing personalization terbatas.
* POS & web lambat → customer dissatisfaction.
* Lack of real-time inventory → missed omnichannel opportunities.

**Step 2: Define Stakeholder Requirements (10 poin)**

**2.1 Stakeholders & Interests**

|  |  |
| --- | --- |
| **Stakeholder** | **Interest / Need** |
| Customers | Fast checkout <2s, unified cart, real-time stock |
| Store Staff | Reliable POS <5s, inventory lookup cepat |
| Management | Single customer view, margin & sales analytics |
| IT Team | Maintainable, secure, API-first, GDPR compliant |

**2.2 Functional Requirements (FR)**

1. In-store sales ≤5 detik.
2. Real-time inventory decrement.
3. 360° customer profile API.
4. BOPIS (Buy Online Pickup In-Store).

**Justifikasi:**

* FR1 & FR2 → customer experience & staff efficiency.
* FR3 → management analytics & marketing personalization.
* FR4 → mendukung omnichannel operations.

**2.3 Non-Functional Requirements (NFR)**

1. Availability >99.9%.
2. Page load <2 detik on 4G.
3. Scale 3x traffic during peak holiday.

**Justifikasi:**

* Mendukung UX, reliability, dan scalability untuk ekspansi 100+ stores.

**Step 3: Evaluate Alternative Solutions (7 poin)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Option** | **Functional Fit (40%)** | **Scalability (20%)** | **Cost (20%)** | **Implementation Risk (10%)** | **Vendor Viability (10%)** | **Total Score** |
| Salesforce Commerce Cloud + POS | 9 | 10 | $150k | 15 | High | 8.85 |
| Shopify Plus + Square POS | 8 | 7 | $50k | 10 | Medium | 7.15 |
| Custom Microservices | 9 | 10 | $300k | 25 | Medium | 7.25 |

**Recommendation:** **Shopify Plus + Square POS**  
**Rationale:** Cepat implementasi (3 bulan), biaya rendah ($50k), cukup scalable untuk 100+ stores.

**Trade-offs:**

* Fitur lanjutan terbatas dibanding Salesforce.
* Vendor dependency untuk custom features.
* Cocok untuk quick-win & ekspansi jangka pendek.

**Step 4: Feasibility & Risk Analysis (8 poin)**

**4.1 Feasibility**

* **Technical:** Cloud SaaS via REST API, minimal on-prem → feasible.
* **Economic:** NPV positif dalam 5 tahun → biaya efisien.
* **Operational:** Staff training feasible 8 minggu → aligned dengan 9 bulan timeline.

**4.2 Risks & Mitigation**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk** | **Probability** | **Impact** | **Score** | **Mitigation** |
| Data migration loss | 3 | 4 | 12 | 2 dry runs, checksum validation |
| Vendor outage | 2 | 5 | 10 | SLA 99.9%, POS offline mode |

**Mitigation ensures success:**

* Backup & dry run → mencegah lost data.
* Offline POS mode → mengurangi downtime vendor outage.
* Timeline 9 bulan feasible.

**Step 5: Visualizations & Recommendations (6 poin)**

**5.1 How Solution Addresses Pain Points**

* Checkout latency → Shopify + Square POS → transaksi cepat.
* Inventory stockouts → real-time inventory update.
* Marketing segmentation → unified customer profile.

**5.2 Visual Artifact**

**ERD (contoh untuk Lucidchart):**

* **Entities:** Customer, Order, Product, Inventory, Supplier
* **Relationships:**
  + Customer ↔ Order (1:M)
  + Order ↔ Product (M:N) via OrderItem
  + Product ↔ Inventory (1:1 per store)
  + Supplier ↔ Product (1:M)

**Process Flow (Omnichannel Checkout):**

1. Customer adds items → unified cart (online/in-store).
2. Real-time inventory decrement.
3. Payment processed → POS or online.
4. BOPIS → notify store staff for pickup.

**UML Use Case Diagram (Checkout):**

* Actors: Customer, Staff, System
* Use cases: Browse, Add to Cart, Checkout, Payment, BOPIS

**5.3 Implementation Roadmap (9 Months)**

|  |  |
| --- | --- |
| **Month** | **Milestone** |
| 1-2 | Infrastructure setup, API integrations |
| 3 | Staff training & POS setup |
| 4 | Data migration dry runs & validation |
| 5-6 | Shopify + Square deployment |
| 7 | Testing, feedback, minor customizations |
| 8 | Go-live, monitoring |
| 9 | Post-launch evaluation & optimization |