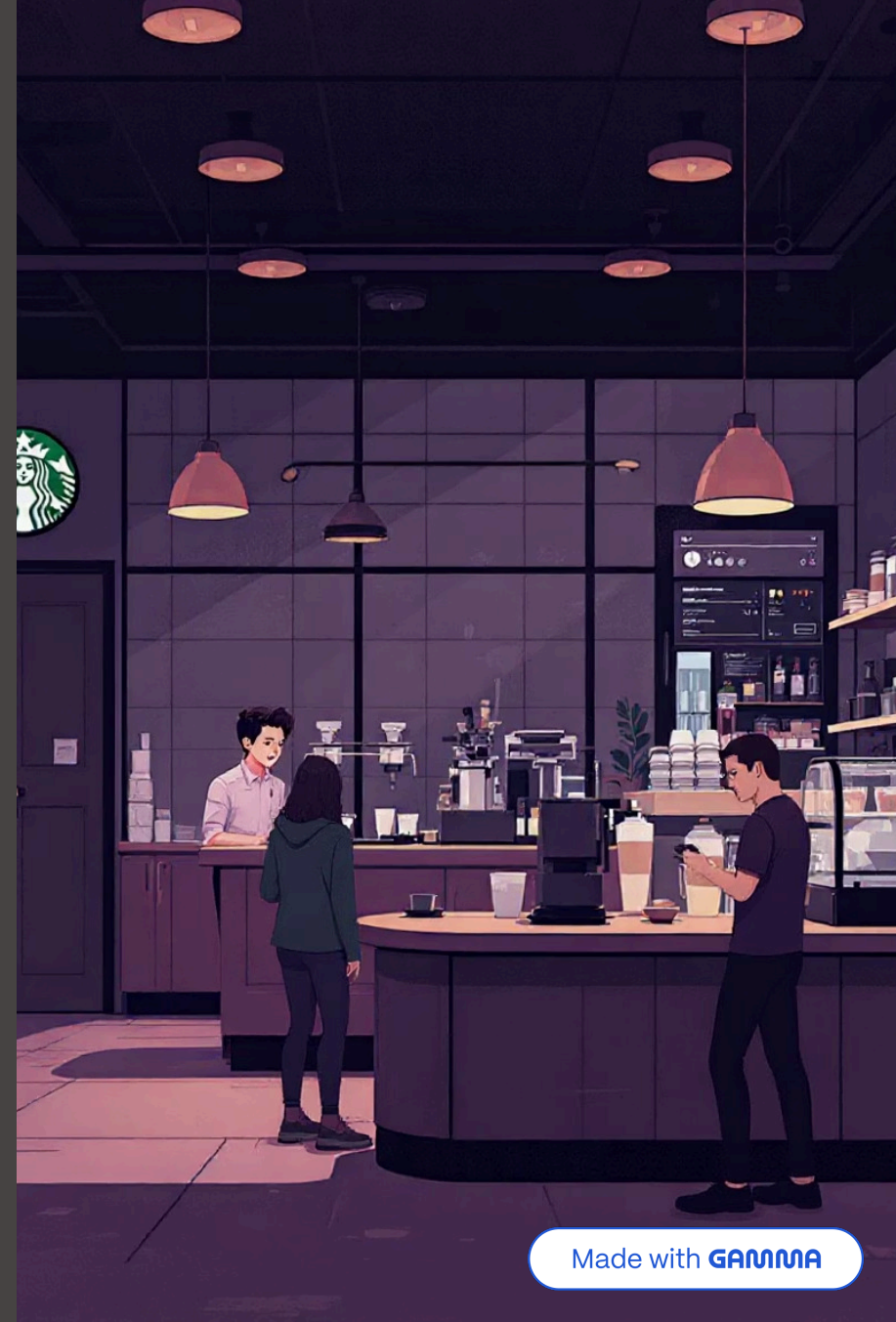


Process Reengineering using Data Analytics

Starbucks Coffee Serving Setup

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Objective

Reengineer Starbucks' coffee-serving process to **minimize human resource dependency** and **reduce operational costs** using minimal new technology.

The goal: selectively integrate lightweight, cost-effective digital tools that streamline key bottlenecks at cashier and order management stages.

Enable digital ordering, automated payments, and real-time inventory updates through existing infrastructure—achieving efficiency without compromising service quality.

12-15

Minutes

Current service time per customer

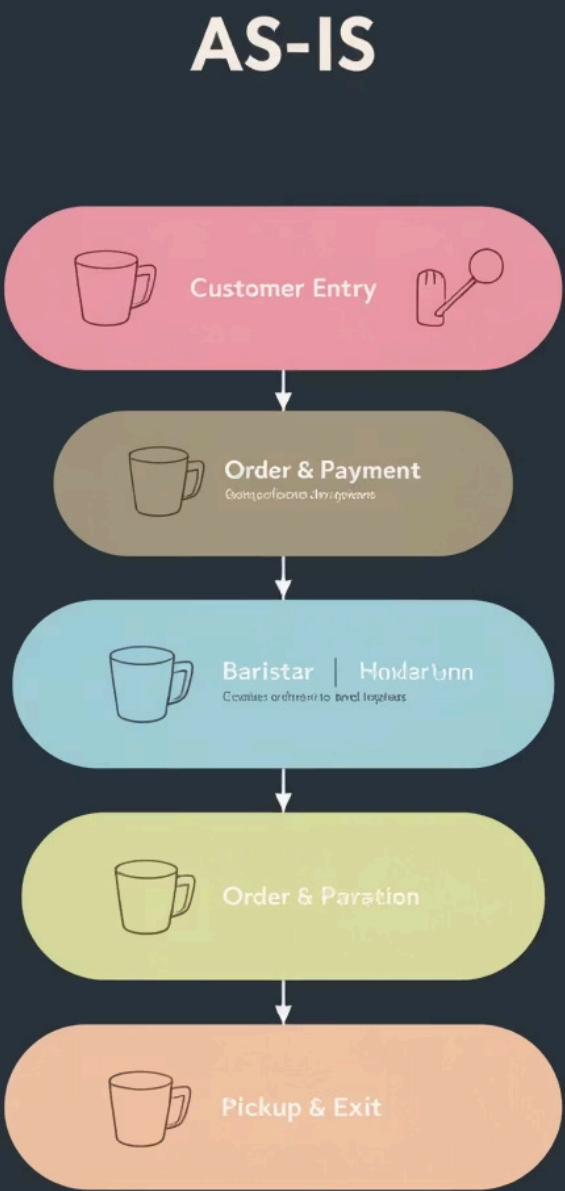
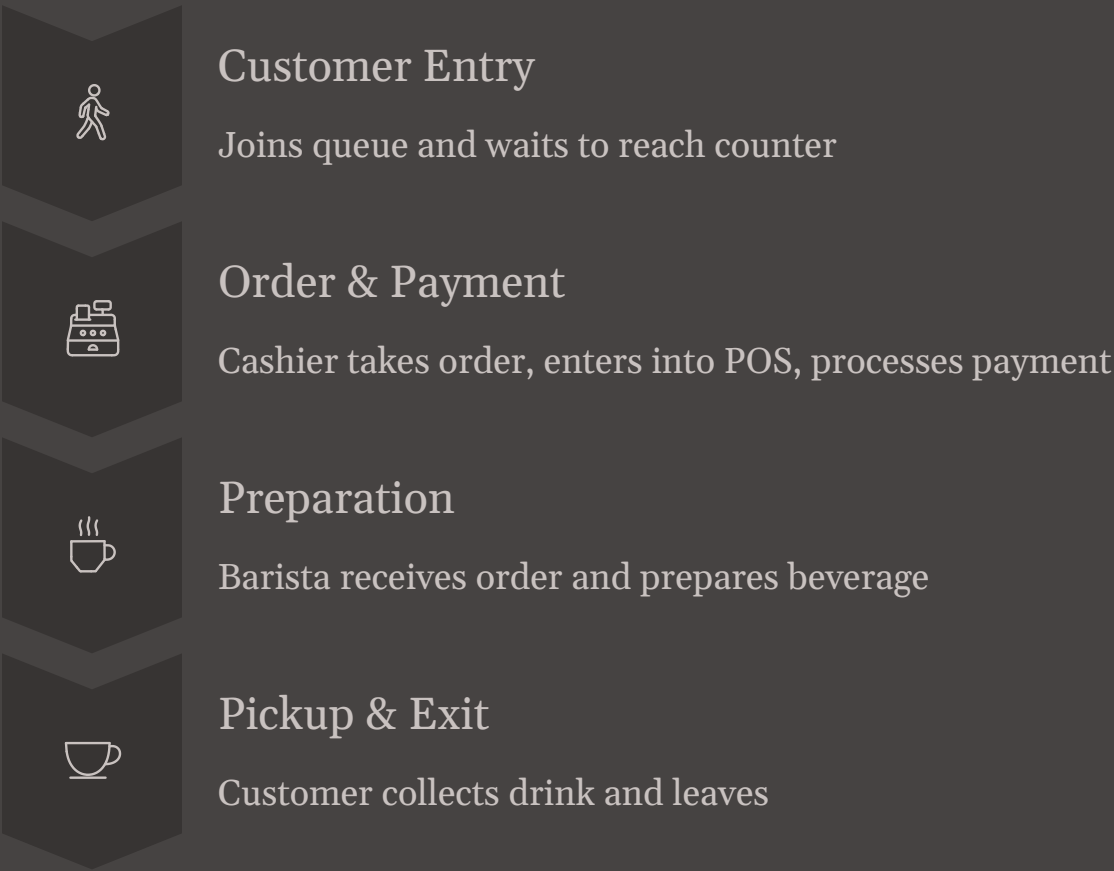
6-7

Minutes

Target service time after reengineering

Current Process Analysis (As-Is)

The current process involves three key roles—customer, cashier, and barista—supported by manual inventory. The workflow begins when customers enter and queue, often waiting several minutes during busy hours.



Key Observations & Current KPIs

Observations

Service Time

12-15 minutes per customer from entry to exit; increases during peak hours

Waiting Time

5-7 minutes before reaching cashier; longer queues during rush periods

Bottlenecks

Longest delays during queueing and drink preparation, especially for customized orders

Manual Processes

Data entry slows cashier-barista communication; inventory updates lack automation

Current KPIs

- Average waiting time per customer
- Total transaction time
- Number of staff on duty per shift
- Average queue length during peak hours



KPI Reframing

To align with reengineering goals of reducing staff and costs through technology, we shift focus toward KPIs capturing **efficiency, automation, and resource optimization**.

Customer Turnover Rate

Measures customers served per hour—higher values indicate better flow and reduced bottlenecks

Staff Utilization Rate

Evaluates how effectively employees' active time is used, minimizing idle time

Automation Efficiency Index

Tracks proportion of automated tasks, reflecting reduced manual effort

Cost Per Transaction

Assesses cost-effectiveness by combining labor, equipment, and process expenses per order

Technology Impact Analysis

The redesigned process integrates digital ordering, automatic payment, and real-time inventory updates to streamline operations.



Digital Ordering App

Impact: Customers order and pay remotely, reducing cashier dependency

Improves: Waiting time, total process time

Challenge: Development & maintenance costs



Automated Payment Gateway

Impact: Processes transactions instantly, eliminating manual handling

Improves: Staff efficiency

Challenge: Transaction fees, security compliance



Smart Inventory Sync

Impact: Automatically updates stock levels when ingredients are used

Improves: Inventory turnover

Challenge: Integration cost with POS system

Data Analytics Dashboard

Monitors peak hours, customer flow, and resource usage

AI Demand Prediction

Predicts sales and adjusts staffing/inventory dynamically

To-Be Process Analysis



Customer Entry

Opens the app and checks menu



Order & Payment Online

Places an order and make payment online



Preparation

Barista starts preparing the order



Pick-up & Exit

Customer comes to the counter and picks up the order

Customer Entry



**Order & Payment
Online**



Preparation



Pick-up & Exit

Justification for Minimal Technology

Why Mobile App Over Kiosks?

The reengineering approach deliberately prioritizes a **low-cost digital app** over hardware-heavy alternatives like self-service kiosks.

Kiosks involve significant upfront and maintenance costs, including physical installation, space allocation, and periodic servicing.

The Smart Alternative

A mobile app leverages customers' **existing devices**, requiring no additional hardware, store modifications, or long-term servicing expenses.

Achieves same HR and efficiency benefits with greater scalability, lower overhead, and faster implementation.

❏ **Result:** By using a digital app for ordering and payment, Starbucks can eliminate the cashier role, automate order transmission to barista systems, and maintain real-time inventory updates—all with minimal operational disruption and far lower capital cost.