

Interaction Design TEE

Digitalizing Shopping Cart Experience in Indian Retails

*A system designed to bring real-time awareness
and control into everyday shopping.*

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Shopping in supermarkets today is a largely passive experience.
Users add items without real-time awareness of cost or system feedback.

Shopping Behaviour Insights

28% of supermarket purchases are unplanned. [1]

35.1% of customers leave when faced with long queues [2]

References:

1. Wikipedia contributors. (2026, March 20). Consumer behaviour - Wikipedia. https://en.wikipedia.org/wiki/Consumer_behaviour
2. Botsie, G. (2025, April 15). The Grocery Queue: a consumer behaviour challenge. The Analysis Game. <https://the-analysis-game.co.uk/p/the-grocery-queue-a-consumer-behaviour-challenge>



About

Grocery shopping today is a **largely passive experience**. Users pick items **without real-time awareness of cost**, relying on memory and estimation.

This lack of visibility leads to decision fatigue, unexpected billing totals, and reduced control over spending.

Real-Time Cart Interaction System introduces a continuous feedback system within the shopping journey.



Current Problem

- Users manually pick items with no real-time awareness of total cost.
- Long queues at billing counters (peak frustration point).
- No clear visibility of offers/discounts on the shopping bill.
- Difficult navigation in large stores.

Behavioural Insight

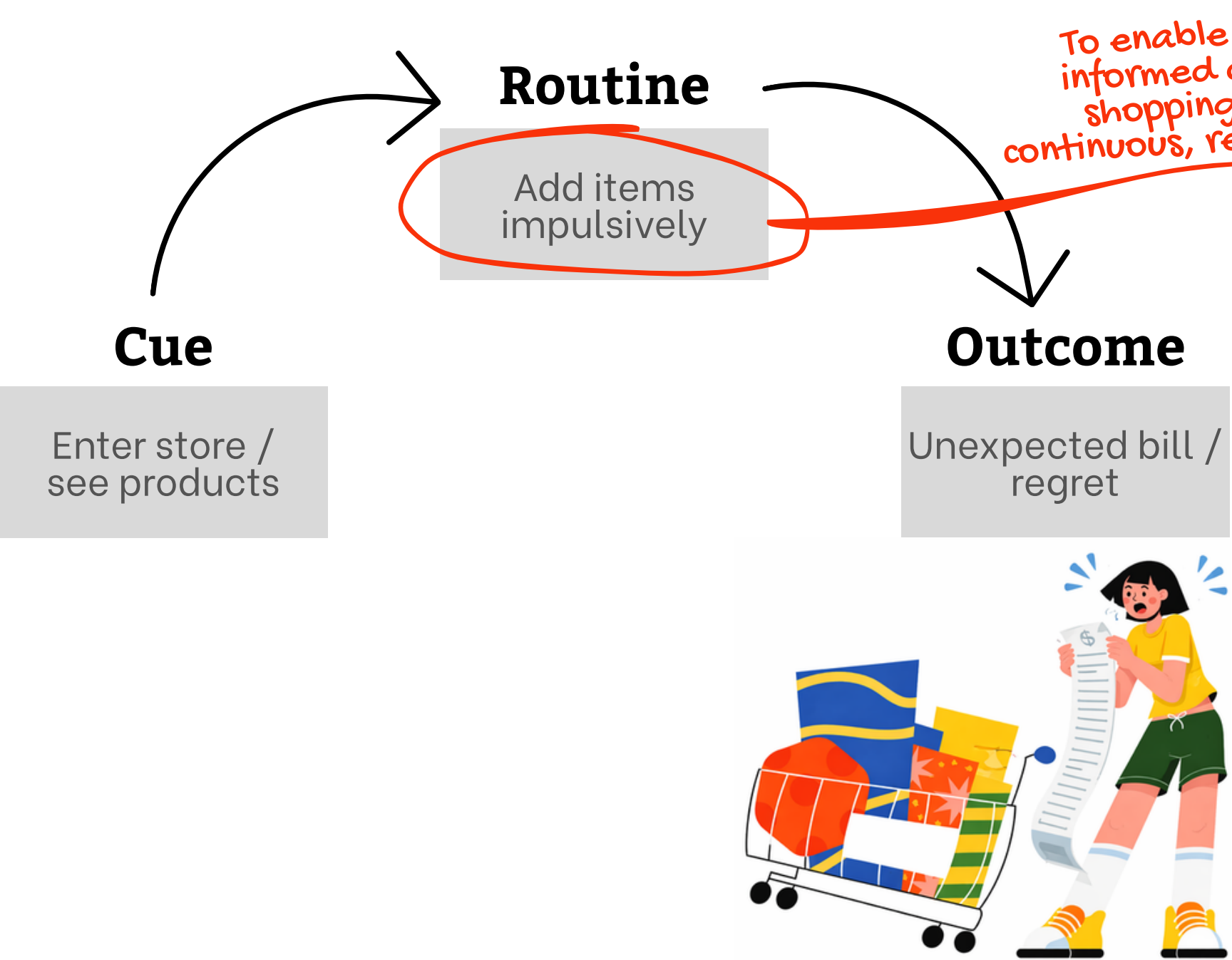
People do not actively track spending while shopping.

Instead, they rely on **Approximation, Habitual picking, Visual attraction** (offers, packaging)

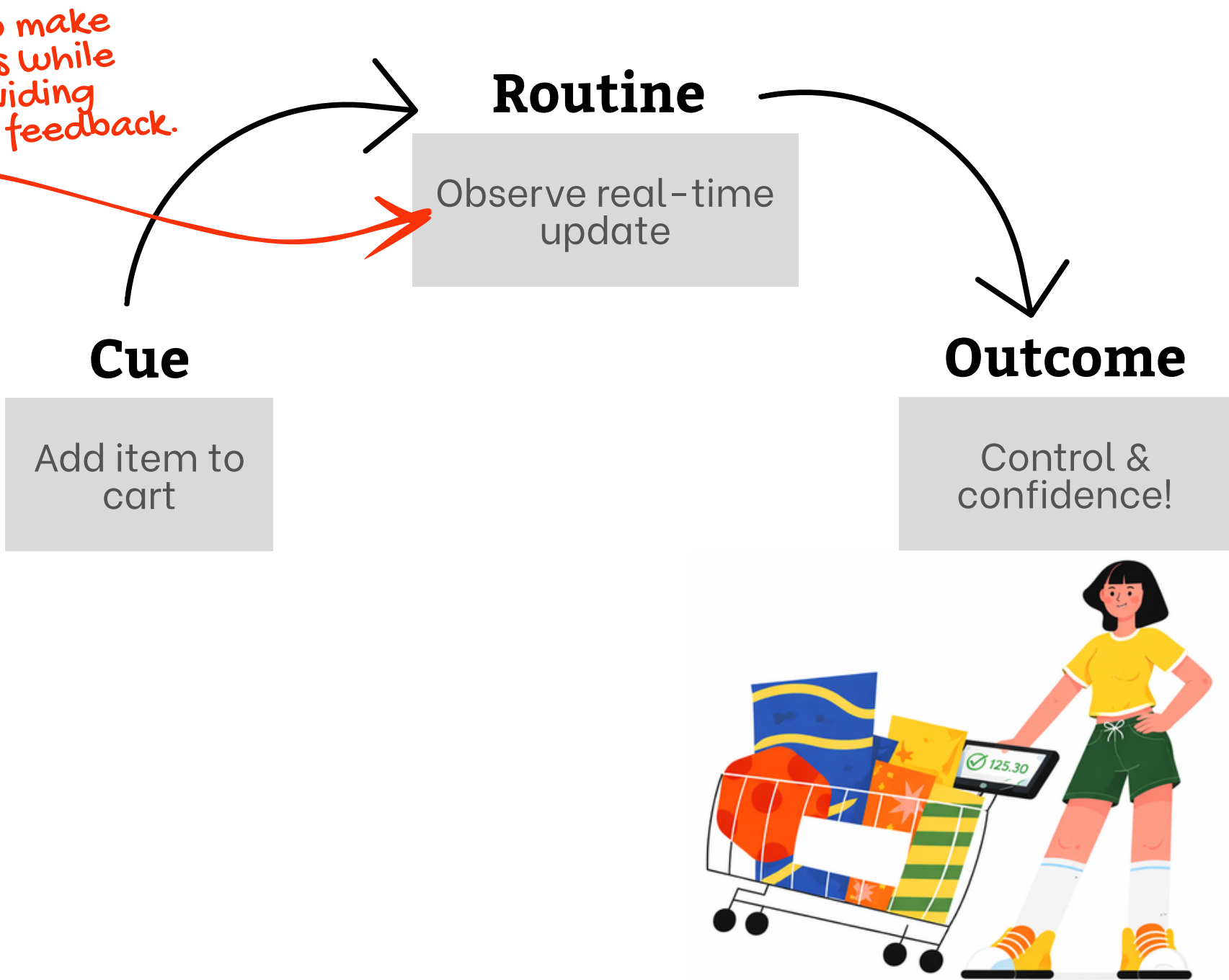
Decision-making improves significantly when feedback is immediate and visible.

Interaction Loop

EXISTING INTERACTION LOOP



REDESIGNED INTERACTION LOOP



To enable users to make informed decisions while shopping by providing continuous, real-time feedback.

Target Context

Designed for premium-mid Indian retail

Target stores: Go Fresh, JioMart, Nature's Basket

Not DMart – their entire model is cost-efficiency and low operational overhead. This system requires hardware investment and staff onboarding.



Why these stores?

- They invest in customer experience
- Shoppers are more tech-comfortable
- Margins allow for hardware integration
- Already digitising checkout and loyalty systems

Solution

We transformed the conventional cart into a digital smart shopping cart equipped with an integrated display system that tracks items and provides real-time feedback.



PRODUCT OVERVIEW

FORM AND DIMENSIONS

Cart Dimensions:

- Length: 80–100 cm
- Width: 50–60 cm
- Height: 90–110 cm

Handle:

- Width: 45–55 cm
- Grip Diameter: 3–4 cm

Screen:

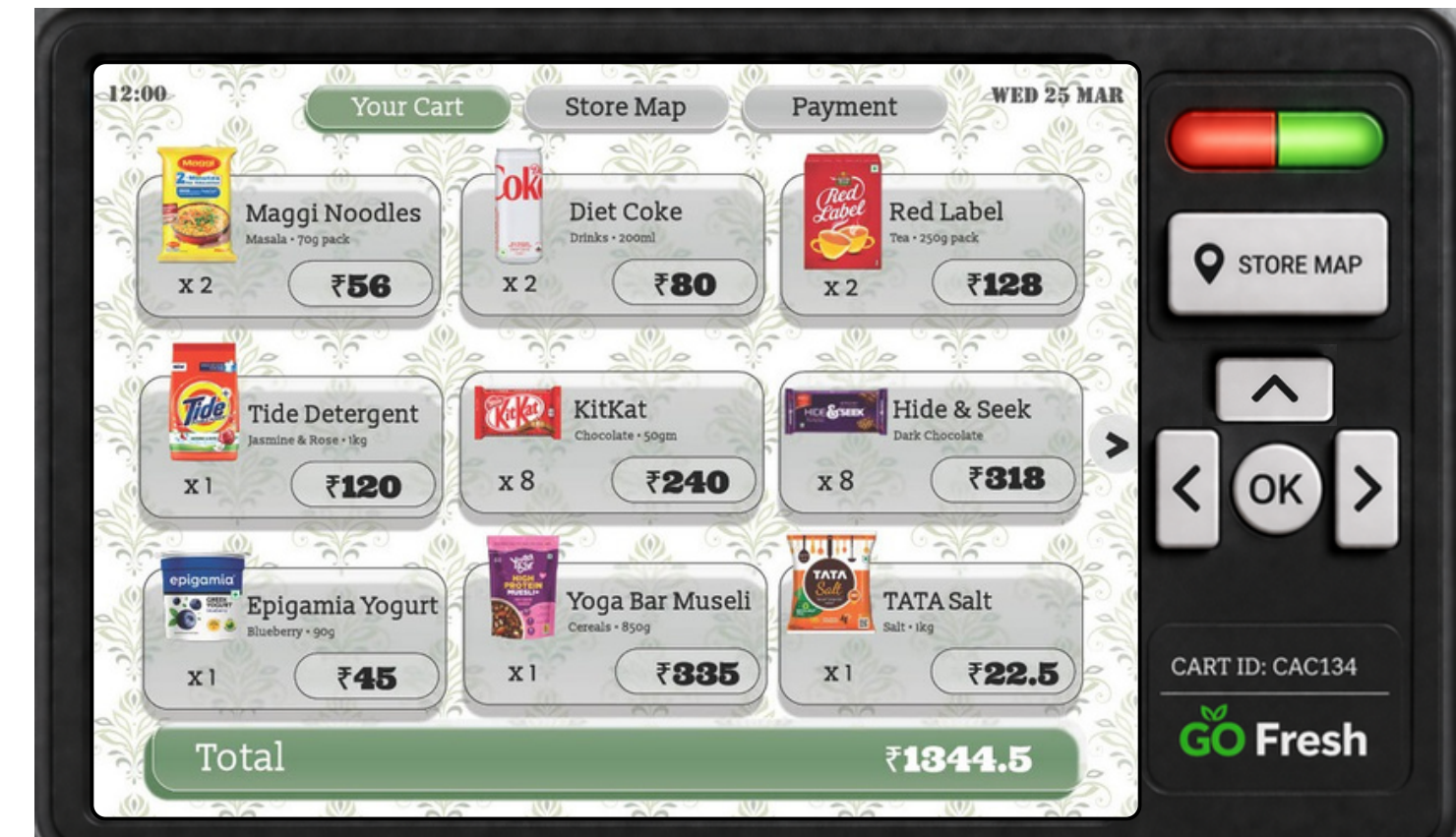
- Size: 7" (W) × 5" (H)
- Placement: Centre of handle
- Tilt Angle: 20–30° towards user

Lo-fi mockups



PHYSICAL INTERACTION

- Flip-up screen – optional interaction
- Tactile buttons – navigation
- Cart-based detection system
- Light indicators:
 - Green → success
 - Red → error



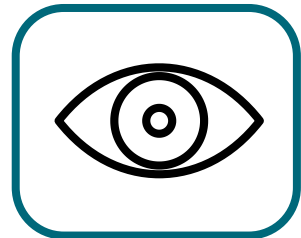
DIGITAL INTERACTION

- Language selection (Indian context)
- Item list + quantity + total
- Grid-based layout → more items visible
- Scroll buttons (not touch)
- Store map navigation



Multimodal Experience

SENSORY



Real-time digital display

VISUAL



Audio beeps/voice alerts on item not scanned and if any error.

AUDITORY



Tactile Press Buttons

TOUCH



Physical cart movement

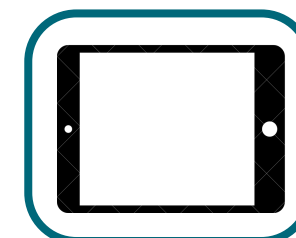
KINESTHETIC

INTERACTION



Not applicable

VOICE



On-screen display of content.

TEXT



Green light glows when item placed

GESTURE



Visual bill summary, category icons, cart dashboard

GRAPHICS

TECHNOLOGY INVOLVED

ITEM DETECTION SYSTEM

The cart uses a combination of sensing technologies to identify items placed inside.

Weight Sensors

Detect changes in load

Helps confirm addition/removal

RFID (Radio Frequency Identification)

Tagged products are identified instantly

Enables accurate item recognition

Camera-based Detection (Optional)

Visual verification of items

Helps reduce errors in detection

SYSTEM LOGIC

Matches item with store database.

Updates cart list in real-time.

Triggers feedback (visual + UI).

CONNECTIVITY

Syncs with store inventory system.

Enables pricing and item data retrieval.

Edge Cases:

ITEM NOT DETECTED OR MISDETECTED

Scenario: Item placed but not detected.

System response:

- Red LED activates on cart frame and a beep sound will play.
- Display shows: “Item not recognised.”
- External Support : Reach out to the store staff.

OFFERS, DISCOUNTS, DYNAMIC PRICING

The cart knows what’s on sale

The system syncs with the store’s live inventory and pricing database.

When a discounted item is added, the cart display highlights the saving (e.g., “₹20 off applied”).

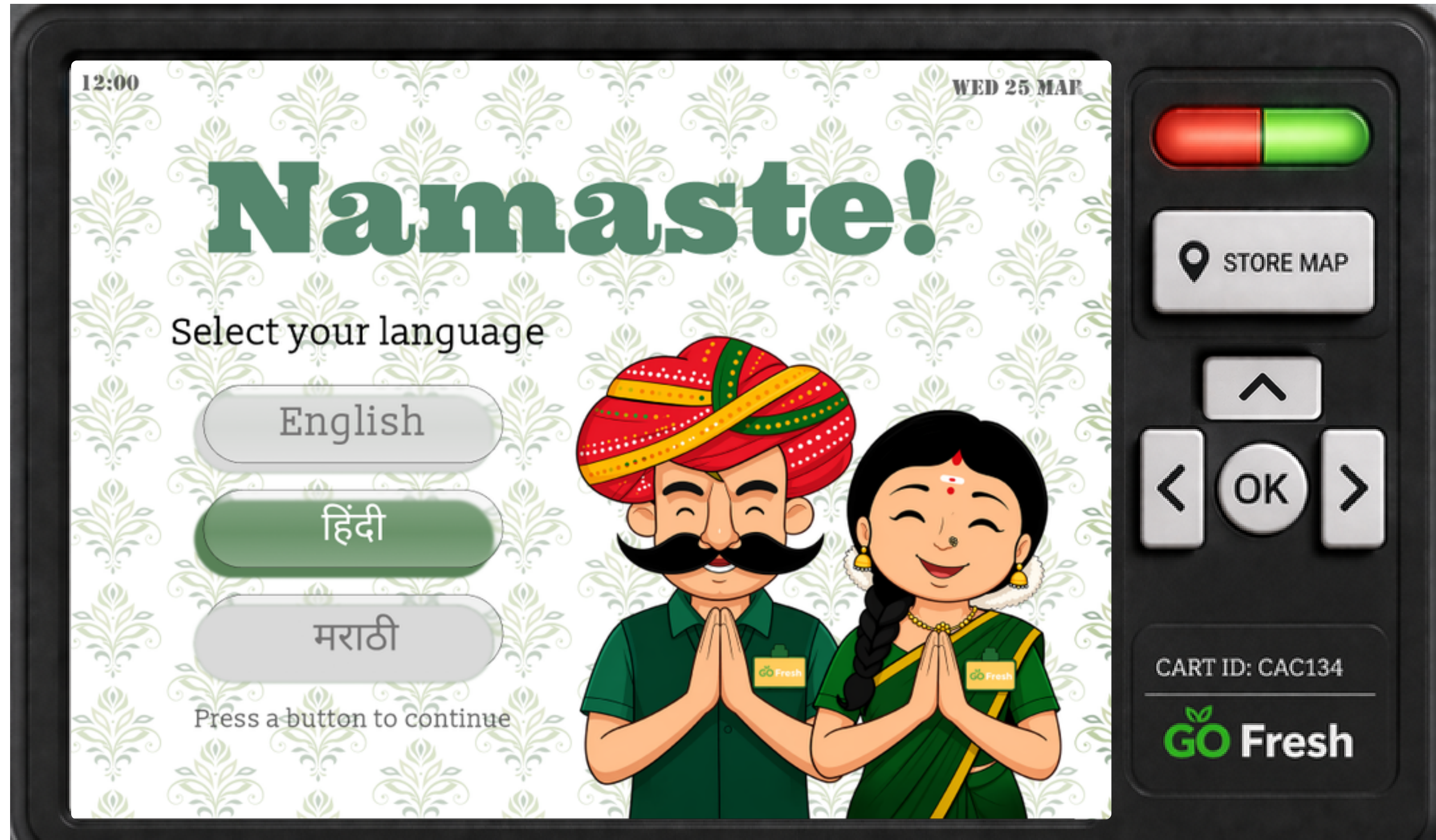
MULTIPLE QUANTITIES AND RAPID ITEM HANDLING

Scenario: Repeated addition of the same item in quick succession.

System response:

- The system allows up to 5 consecutive additions of the same item.
- After the limit is reached, further additions are restricted.

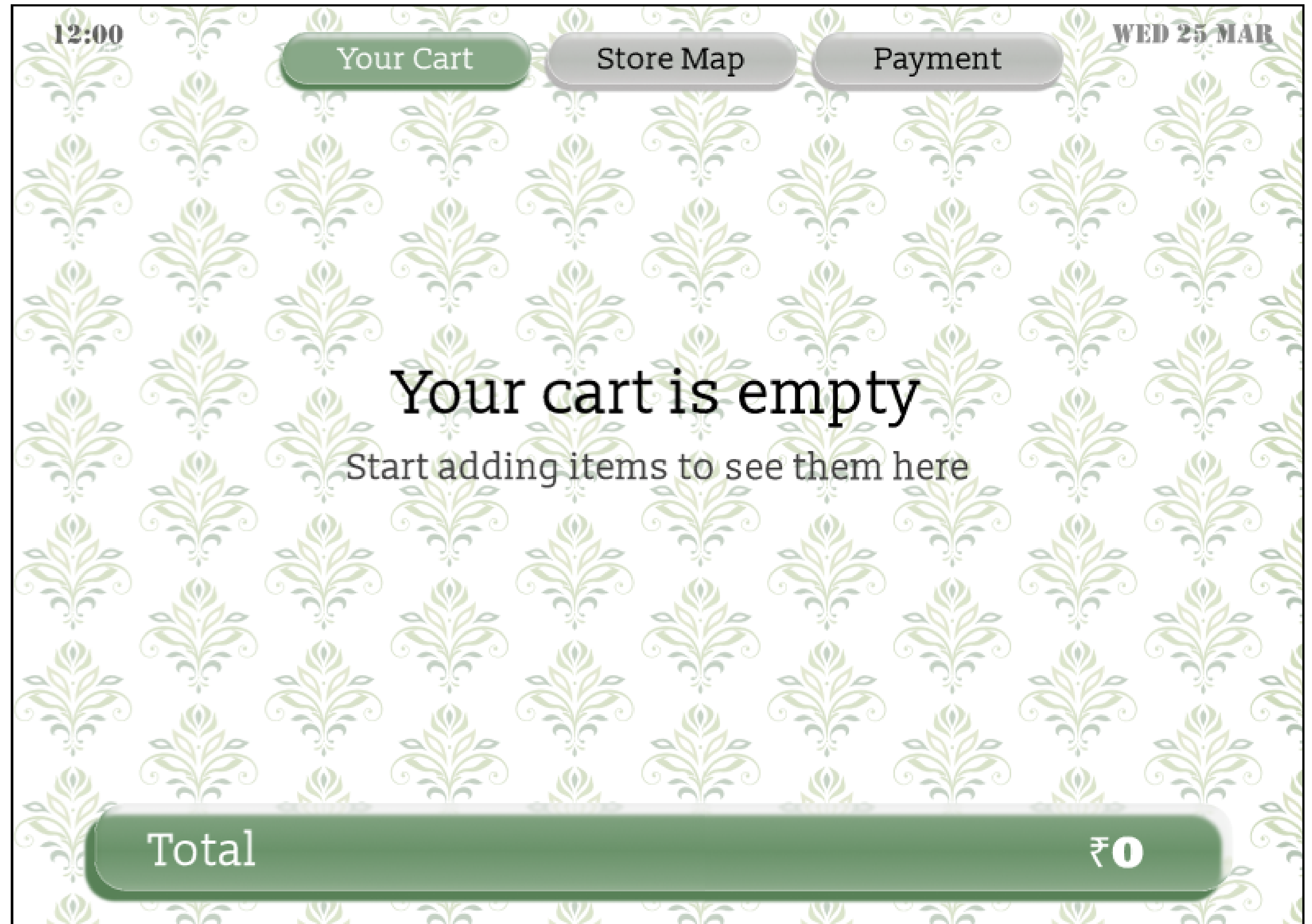
UI SCREENS



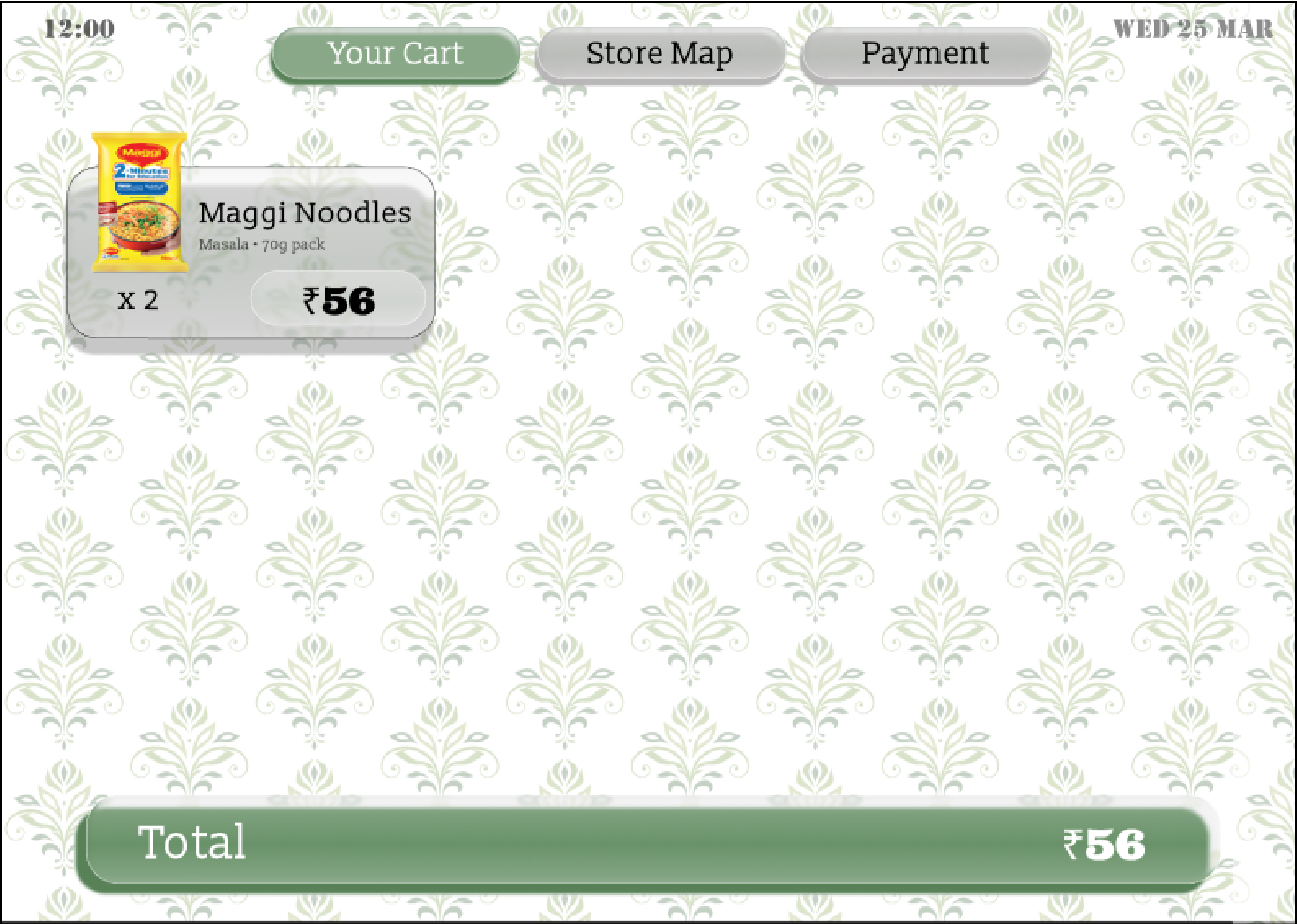
Initial State:
*Language Selection
Interface*



Empty State:
Cart with No Items



Active State:
*Item Successfully
Added to Cart*



Active State:
Multi-Item Cart Overview

12:00

WED 25 MAR

Your CartStore MapPayment



Maggi Noodles
Masala • 70g pack

X 2

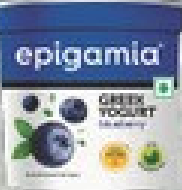
₹56



Tide Detergent
Jasmine & Rose • 1kg

X 1

₹120



Epigamia Yogurt
Blueberry • 90g

X 1

₹45

Total₹221

Item Removed

12:00

WED 25 MAR

Your CartStore MapPayment



Maggi Noodles
Masala • 70g pack

X 2

₹56



Tide Detergent
Jasmine & Rose • 1kg

X 1

₹120



Item
Removed

Total

₹176

Active State:
Multi-Item Cart Overview

12:00

Your CartStore MapPayment

WED 25 MAR



Maggi Noodles
Masala • 70g pack

x 2

₹56



Diet Coke
Drinks • 200ml

x 2

₹80



Red Label
Tea • 250g pack

x 2

₹128



Tide Detergent
Jasmine & Rose • 1kg

x 1

₹120



KitKat
Chocolate • 50gm

x 8

₹240



Hide & Seek
Dark Chocolate

x 8

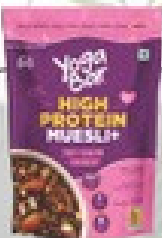
₹318



Epigamia Yogurt
Blueberry • 90g

x 1

₹45



Yoga Bar Museli
Cereals • 850g

x 1

₹335



TATA Salt
Salt • 1kg

x 1

₹22.5

Total

₹1344.5

Offers and Discounts
Applied

12:00

Your Cart

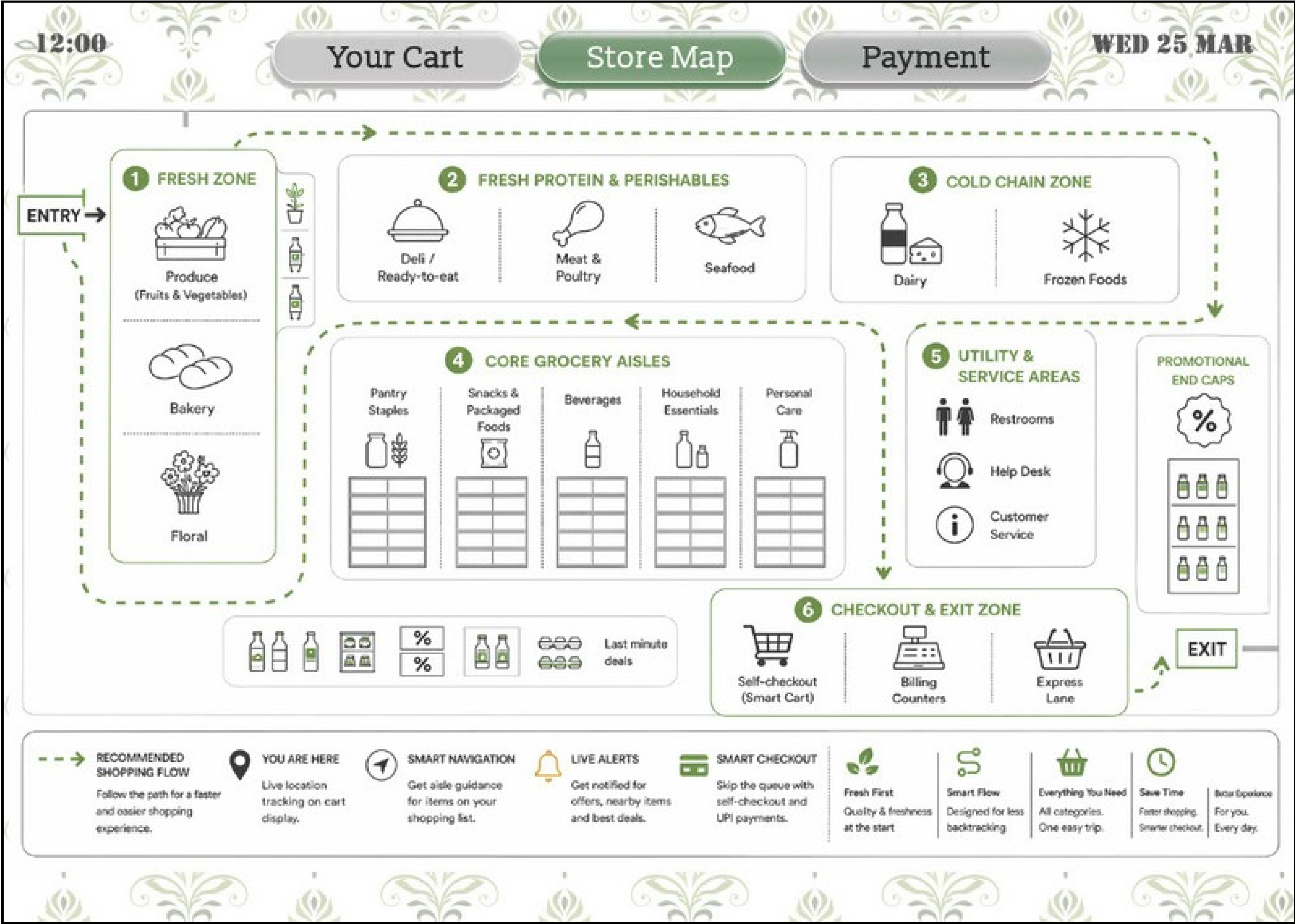
Store Map

Payment

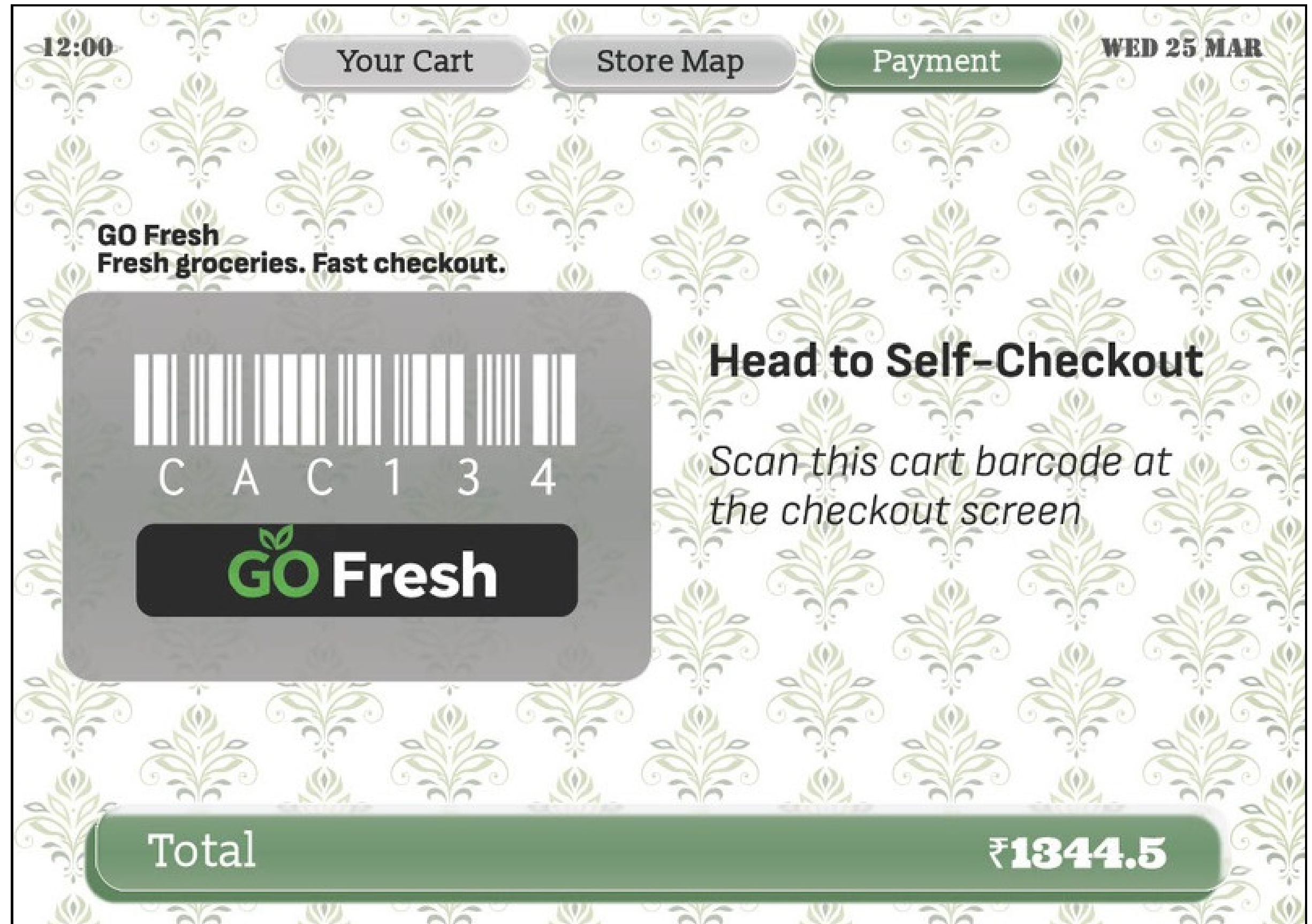
WED 25 MAR

 Maggi Noodles Masala • 70g pack x 2 ₹56	 Diet Coke Drinks • 200ml x 2 ₹14 OFF ₹66	 Red Label Tea • 250g pack x 2 ₹128	
 Tide Detergent Jasmine & Rose • 1kg x 1 ₹120	 KitKat Chocolate • 50gm x 8 ₹240	 Hide & Seek Dark Chocolate x 8 ₹318	
 Epigamia Yogurt Blueberry • 90g x 1 ₹15 OFF ₹30	 Yoga Bar Museli Cereals • 850g x 1 ₹35 OFF ₹300	 TATA Salt Salt • 1kg x 1 ₹22.5	
Total			₹1280.5
			You saved ₹64

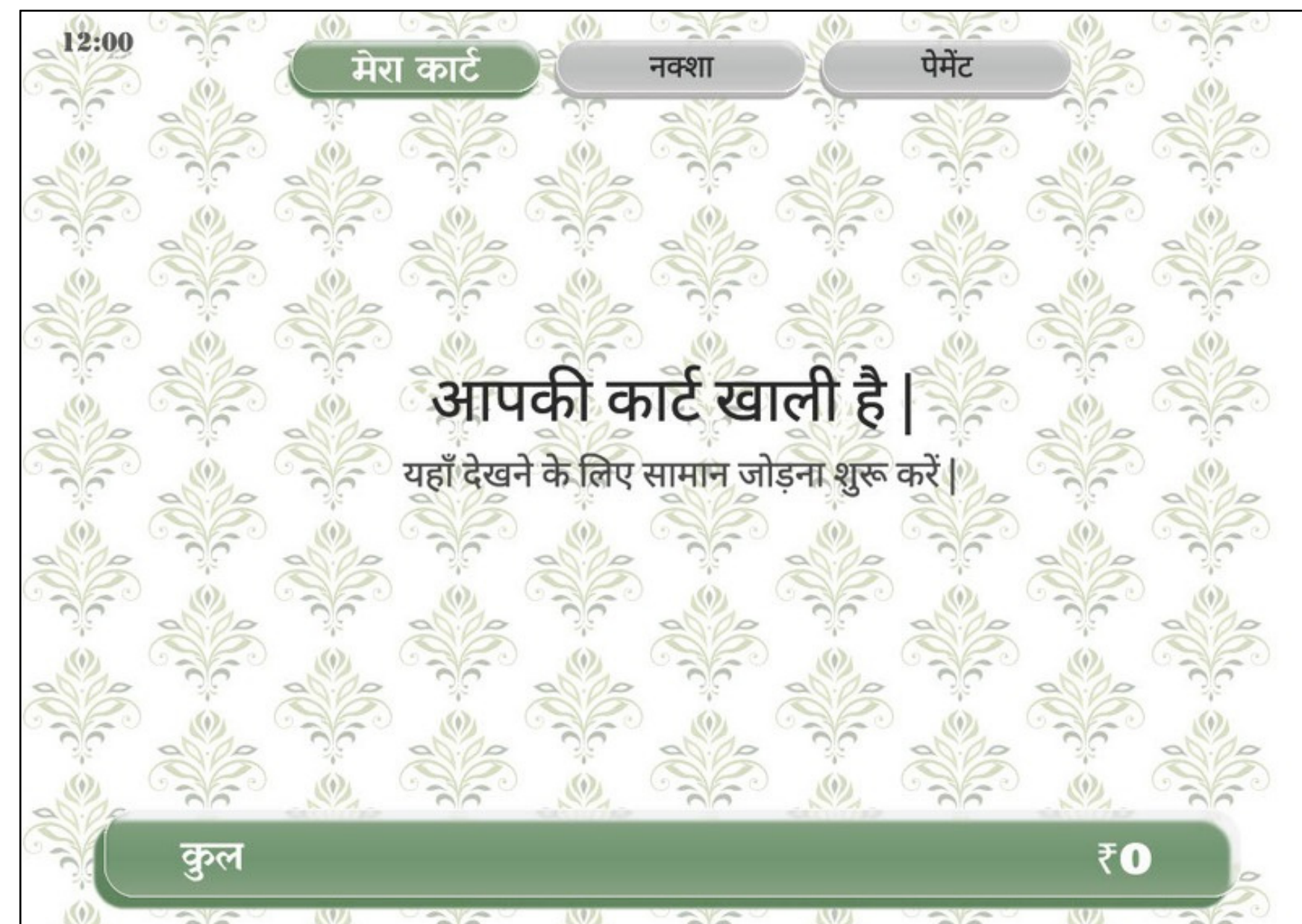
In-Store Map Interface



Checkout State:
*Self-Checkout via
Cart Barcode*



In Hindi:



12:00

मेरा कार्ट

नक्शा

पेमेंट

WED 25 MAR



मैगी नूडल्स
मसाला • 70 ग्राम

X 2

₹56



डाइट कोक
पेय - 200 मि.ली.

X 2

₹80



रेड लेबल
चाय - 250 ग्राम पैक

X 2

₹128



टाइड डिटर्जेंट
जैस्मिन & रोज • 1 किलो

X 1

₹120



किटकैट
चॉकलेट - 50 ग्राम

X 8

₹240



हाइड एंड सीक
हाक चॉकलेट

X 8

₹318



एपिगामिया योगर्ट
ब्लूबेरी • 90 ग्राम

X 1

₹45



योगा बार म्यूसली
अनाज - 850 ग्राम

X 1

₹335



टाटा नमक
नमक - 1 किग्रा

X 1

₹22.5

कुल

₹1344.5

12:00

मेरा कार्ट

नक्शा

पेमेंट

WED 25 MAR

गो फ्रेश
ताज़ा किराना. तेज़ भुगतान.



C A C 1 3 4

GO Fresh

सेल्फ-चेकआउट की
ओर जाएँ

चेकआउट स्क्रीन पर इस कार्ट का
बारकोड स्कैन करें

कुल

₹1344.5

Thank You.