



HERŞEY BAZAAR

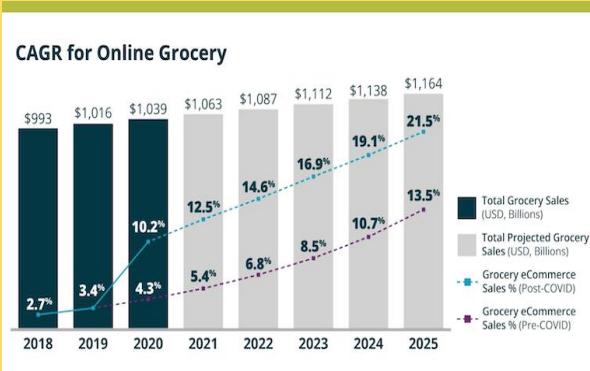
an e-commerce platform



Introduction

Introduction

With onset of Covid-19, online marketplace industry has boomed, making it a lucrative business opportunity



Online E-Com growth:

- Top 500 companies
~\$849.5Bn in online sales in 2020
- Groceries, sporting goods, musical instruments, furniture and personal care as top gainers

Benefits of Online Marketplace

Lower setup costs (no storefronts or retail staff required)



Access to a wider customer base (sales across borders)

Wider product variety and informed decision making (reviews + recommendations)



Vision



Safe & Easy Payment (Stripe)



Omnichannel & Centralized



Customized Interface



Convenient Shipping Methods

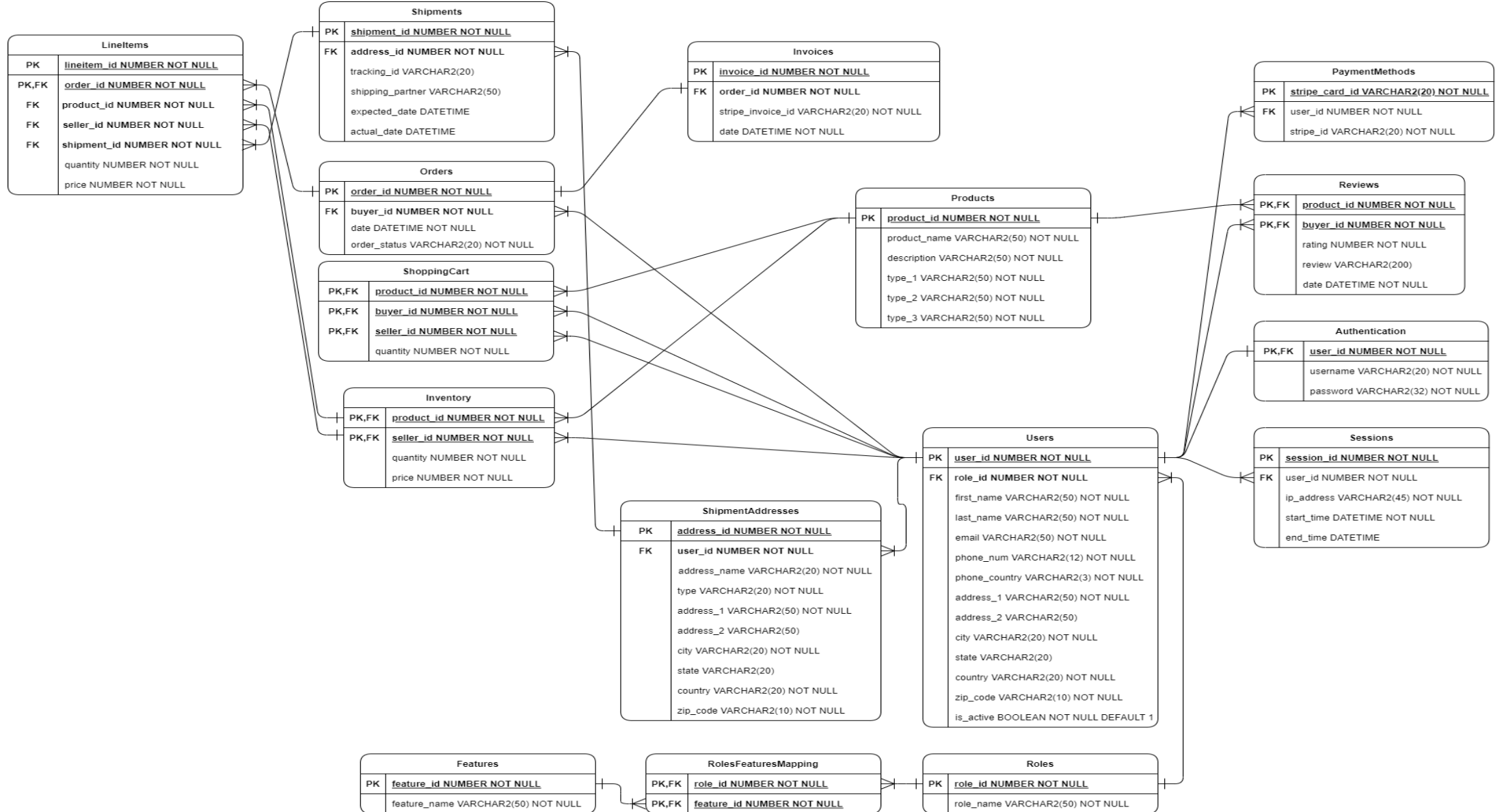


Focus on Customer Satisfaction










Database Requirement

Database Requirements : ERD



Database Requirements : Description

MAJOR ENTITIES

-  Users
-  Sessions
-  Products
-  Reviews
-  Orders
-  Shipments
-  Payment Methods

ADDITIONAL ENTITIES

- Users – Roles, Features & Role-Feature Mapping, Shipment Addresses, Authentication Details
- Products – Inventory, Reviews, Shopping Cart
- Orders – Line Items, Invoices

BUSINESS CYCLES

- User Cycle
- Inventory Management
- Order Cycle

Database Requirements : User Cycle



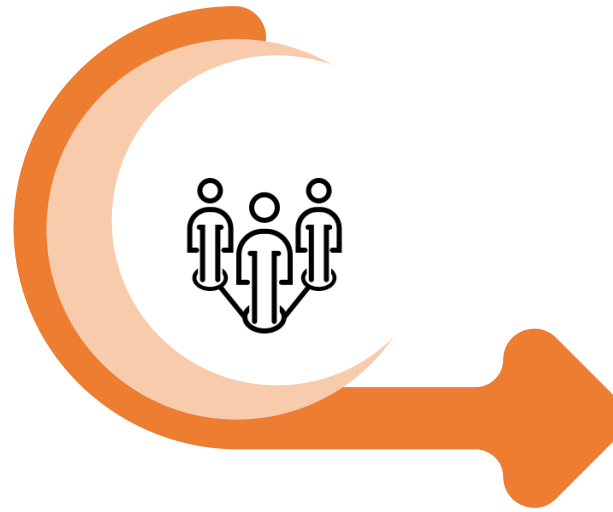
Addition of User Details

Entities Used:

- Users
- Authentication

Assumptions:

- Records for all users, both active and deleted – identified by a flag
- Only latest username-password details saved with previous entries overwritten



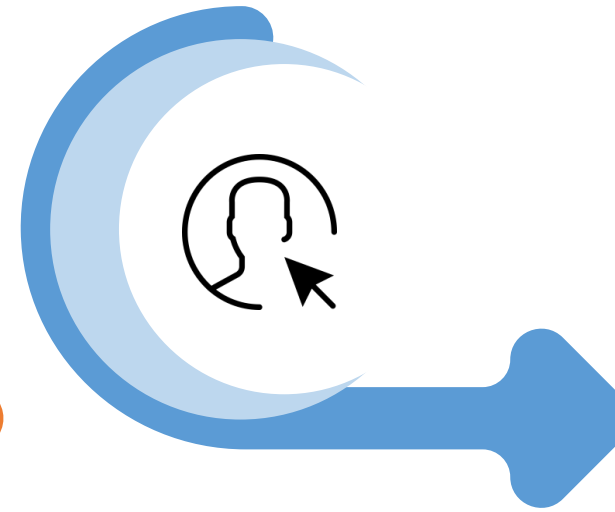
Role Assignment (Seller/Buyer/Admin)

Entities Used:

- Roles
- Features
- RolesFeaturesMapping

Assumptions:

- Multiple roles for single user (buyers can also be sellers & vice-versa)



User Engagement

Entities Used:

- Sessions

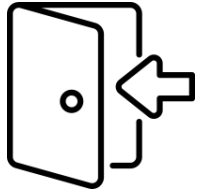
Assumptions:

- Every session/engagement data recorded

Use Cases:

- Customer segmentation
- Digital analytics & user engagement analysis
- Access control & user interface customization based on roles

Database Requirements : Inventory Management



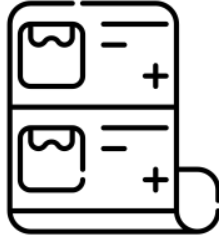
1. Login as a Seller

Entities Used:

- Users
- Authentication
- Sessions

Assumptions:

- After confirmation of role as seller, interface to provide options for editing product listings



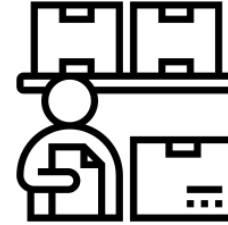
2. Edit Listings

Entities Used:

- Products

Assumptions:

- Provision for a 3-level categorization of each product as per requirement for standardization



3. Update Inventory

Entities Used:

- Inventory

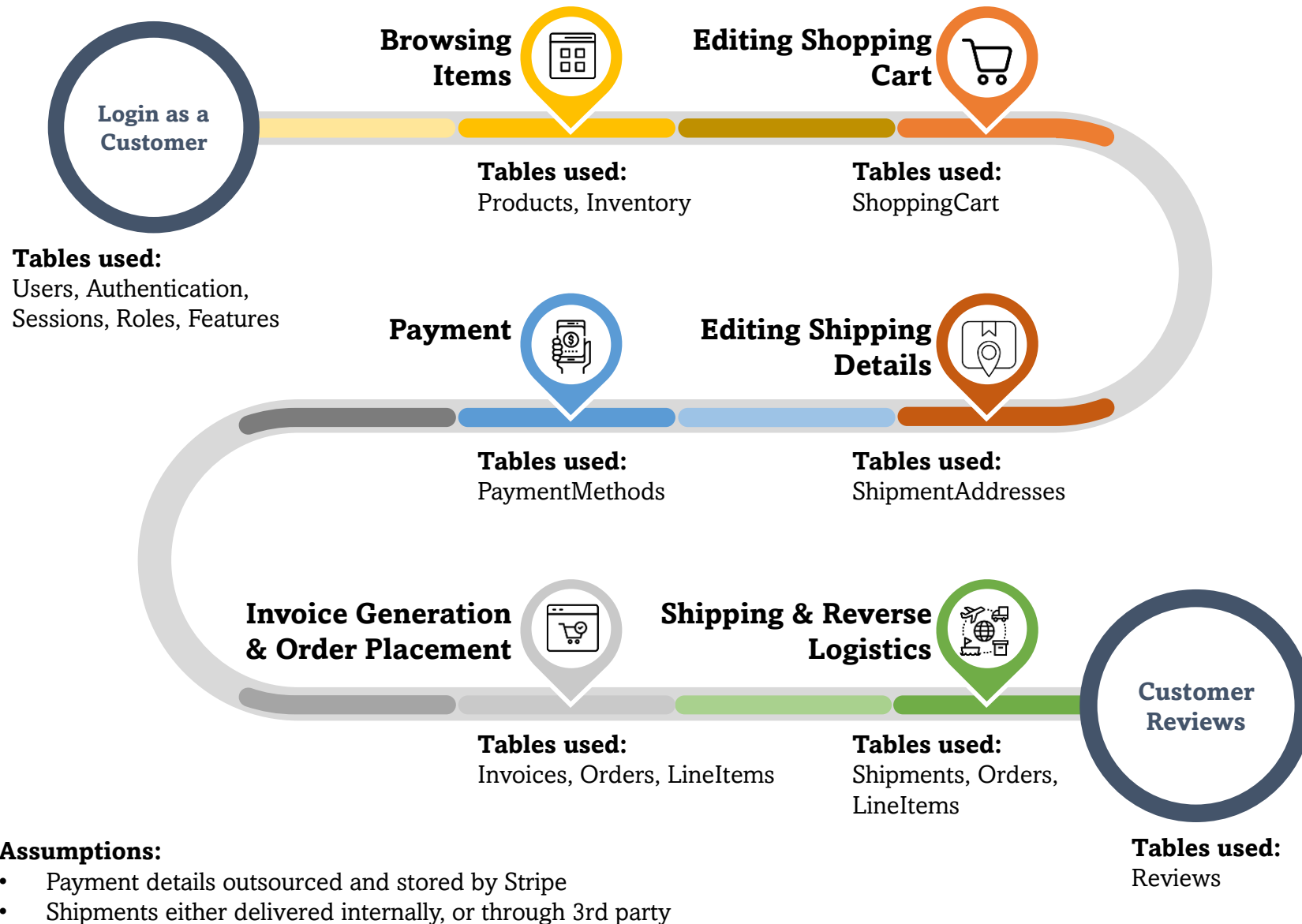
Assumptions:

- Both item quantity and prices can be updated

Use Cases:

- Listing & stock sufficiency for products
- Counterfeit checks
- Adequacy of product description
- Pricing analytics

Database Requirements : Order Cycle



Use Cases:

- RFM Analysis based on purchase patterns
- Market basket analysis
- Minimizing returns
- Product popularity
- Brand image and impact analysis
- Route optimization
- Customer churn prediction
- Supply chain analysis
- Financial Management



Future Scope & Learnings

Future Scope



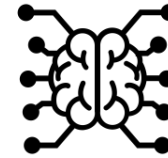
NoSQL

- Multimedia files
- Logs (text file, JSON format)
- Additional fields as JSON format to reduce redundant null values



Cloud Based Architecture

- AWS / AZURE / GCP
- AWS S3 / AZURE blob for storing unstructured files
- Scalable and available



AI & ML

- MLOps
- Time series analysis (2-year minimum data)

Learnings

1. Balancing normalization and denormalization strategies based on the business requirement and performance
2. Design flexible database incorporating both offensive and defensive approaches with the ability to switch
3. Importance of access and role tables to ensure security and proper authorization
4. Visualizing relational database through ERDs to troubleshoot and optimize the design
5. Learned debugging techniques for DDL & DML commands
6. Significance of scalability, maintainability, flexibility & structure



Thank You!

Questions?



Appendix

Database Requirements: ERD Explanation

Tables:

- Users Table:
 - Stores all details pertaining to a user like name, address, email, phone, etc.
- LineItems Table:
 - Provides details of all products included in a particular order
- Products Table:
 - Maintains a log of every product in our marketplace
- Shipments Table:
 - Tracks shipping status of orders using details from 3rd party shipping providers
- ShoppingCart Table:
 - Tracks the products, quantities and sellers for a particular buyer order
- Reviews Table:
 - Tracks the rating, review and date for buyer reviews about a product

Database Requirements: ERD Explanation

- Tables:
 - Orders: Tracks order date and status
 - Inventory: Tracks product details for all products in stock
 - Invoices: Tracks invoice details for an order
 - PaymentMethods: Tracks the payment method used by a user
 - Authentication: Tracks the login details for a user (verified during login)
 - Sessions: Tracks user IP address and start and end time for website visit
 - Roles: Outlines the various user privileges and roles
 - Features: Tracks access controls for users
 - RolesFeaturesMapping: Breaks the many-to-many relationship between Roles and Features
 - ShipmentAddresses: Tracks Address details for the various Users