

P3 Logical ERD Model

MoveIn Essentials Inventory and Order Management System – MooKit

1. Introduction

Purpose:

The objective of Logical ERD Model is to provide a structured representation of MooKit's data requirements, spanning marketing campaigns, order management, product packaging, and quality assurance. The ERD is designed to optimize data management, streamline workflows, and facilitate scalability across business functions.

Scope:

The ERD focuses on the following areas:

Marketing: Platforms, campaigns, and targeting to improve customer acquisition.

Customer Management: Handling customer information, support inquiries, and marketing strategies.

Order Processing: Structuring data around orders, payment processors, logistics, and quality control.

Product Packaging: Managing package creation, validation, and linking to product details.

Supplier and Seller Management: Differentiating between various seller types (factory and individual sellers) and linking them to products.

Business Goals:

- 1. Affordability:** Optimize costs by managing campaigns and processing orders efficiently.
- 2. Customization:** Enable personalized marketing and package creation.
- 3. Logistics Efficiency:** Facilitate effective order processing and timely delivery.
- 4. Sustainability:** Reduce resource wastage through wellmanaged data and controlled operations.

2. Entity Descriptions and Attributes

2.1 Marketing and Campaign Management

1. Marketing Platform

Attributes:

PlatformID (PK): Unique identifier for each marketing platform.

PlatformName: Name of the platform (e.g., Facebook, Google Ads).

PlatformType: Type of platform (e.g., social media, search engine).

CostStructure: Details of the cost model used (e.g., CPM, CPC).

AdFormat: Format of advertisement (e.g., text, video).

Relationships: Utilized in multiple Marketing Campaigns.

2. Marketing Campaign

Attributes:

CampaignID (PK): Unique identifier for each campaign.

StartDate: Campaign start date.

EndDate: Campaign end date.

TargetAudience: Target demographic for the campaign (e.g., age group, location).

Relationships:

Targets customers through CampaignTarget.

Linked to a Marketing Platform.

3. CampaignTarget

Attributes:

CustomerID (FK): Reference to the Customer targeted.

CampaignID (FK): Reference to the Marketing Campaign.

Purpose: Facilitates a manytomany relationship between Customer and Marketing Campaign.

2.2 Customer and Support Management

4. Customer

Attributes:

CustomerID (PK): Unique identifier.

Name: Full name of the customer.

Email: Customer's email address (unique).

Address: Mailing address.

Phone: Contact number.

PlatformID (FK): Marketing platform through which they were acquired.

Relationships:

Targeted by multiple Marketing Campaigns.

Places multiple Orders.

Can submit multiple Customer Support inquiries.

5. Customer Support

Attributes:

SupportID (PK): Unique identifier for each support request.

InquiryDate: Date the inquiry was made.

ResolutionStatus: Status of the inquiry (e.g., Open, Resolved).

CustomerID (FK): Reference to Customer who made the inquiry.

Purpose: Tracks customer issues and provides a link to the Customer table for support purposes.

2.3 Order Processing and Logistics

6. Order

Attributes:

OrderID (PK): Unique identifier.

OrderDate: Date when the order was placed.

TotalAmount: Total order value.

Status: Current order status (e.g., Pending, Completed, Cancelled).

QAID (FK): References Quality Assurance Team responsible for review.

ProviderID (FK): Logistics provider for the order.

CustomerID (FK): Customer placing the order.

ProcessorID (FK): Payment processor for the transaction.

Relationships:

Contains multiple OrderLines for different MooPackages.

7. OrderLine

Attributes:

OrderID (FK): References the Order it belongs to.

PackageID (FK): References MooPackage included in the order.

Purpose: Establishes a manytomany relationship between Order and MooPackage.

8. Logistics Provider

Attributes:

ProviderID (PK): Unique identifier.

LP_Name: Name of the logistics provider.

LP_ContactInfo: Contact details.

ServiceArea: Area covered by the logistics provider.

9. Payment Processor

Attributes:

ProcessorID (PK): Unique identifier.

Name: Name of the payment processor.

TransactionFee: Processing fee per transaction.

Purpose: Manages payment processing information for Orders.

2.4 Product, Package, and Quality Assurance Management

10. MooPackage

Attributes:

PackageID (PK): Unique identifier.

PackageName: Name of the package.

Description: Details of the package contents.

Price: Cost of the package.

Availability: Availability status (e.g., In Stock, Out of Stock).

QAID (FK): References Quality Assurance Team for validation.

Purpose: Represents products combined into packages for sale.

11. PackageCreation

Attributes:

CreationID (PK): Unique identifier.

PackageID (FK): References MooPackage created.

AdminID (FK): References the Admin responsible.

ProductID (FK): References Product included in the package.

CreationDate: Date of creation.

CreationTime: Time of creation.

Description: Notes on the creation process.

Purpose: Manages the package creation process, tracking which admin created which package on which date.

12. Quality Assurance Team

Attributes:

QAID (PK): Unique identifier.

QAName: Team member name.

QARole: Role within QA.

Email: QA contact email.

Phone: QA contact phone number.

2.5 Seller and Product Management

13. Product

Attributes:

ProductID (PK): Unique identifier.

Name: Product name.

Description: Product details.

Price: Base price of the product.

Category: Category the product belongs to.

14. ProductSeller**Attributes:**

SellerID (FK): References Seller.

ProductID (FK): References Product.

ListedPrice: Price at which the seller lists the product.

StockQuantity: Quantity of stock available.

Purpose: Establishes a manytomany relationship between Seller and Product.

15. Seller**Attributes:**

SellerID (PK): Unique identifier.

SellerName: Seller's name.

SellerContactInfo: Seller's contact information.

Email: Seller's email address.

City: City where the seller is based.

Subtypes:

Factory Supplier: Has additional attributes for factory address details.

Individual Seller: Has attributes for home address details.

3. Relationships and Cardinalities**1. Customer - CampaignTarget - Marketing Campaign:**

Many-to-many between Customer and Marketing Campaign through CampaignTarget.

2. Order - OrderLine - MooPackage:

Many-to-many between Order and MooPackage via OrderLine.

3. Product – ProductSeller - Seller:

Many-to-many between Product and Seller through ProductSeller.

4. MooPackage - PackageCreation - Product:

Many-to-many between MooPackage and Product through PackageCreation.

4. Business Rules and Constraints

1. Order Status must be limited to "Pending", "Completed", or "Cancelled".
2. Only packages approved by the Quality Assurance Team (with a valid `QAID`) can be included in orders.
3. Each CampaignTarget entry must have a valid `CustomerID` and `CampaignID`.
4. Each ProductSeller relationship must have a listed price that cannot be negative.

5. Data Integrity and Security

Data Integrity: Ensure all foreign keys (e.g., `CustomerID`, `OrderID`) are accurate to maintain relational integrity.

Security: Mask sensitive customer and payment details and implement rolebased access control for database access.

6. Reporting and Analytics Requirements

Customer Acquisition Reports: Generate reports based on `PlatformID` and `CampaignID`.

Order Processing Reports: Track `OrderStatus` and `TotalAmount` for sales forecasting.

Inventory Reports: Use ProductSeller data to monitor stock and seller performance.

