UTM

UNIVERSITI TEKNOLOGI MALAYSIA

DATABASE

SECD2523

SECTION 10

LECTURER: DR. ROZILAWATI

GROUP NAME: TECHTITANS

No	Name	Matric No.
1	Puventhiran A/L Ganeson	A22EC0262
2	Ee Ze Qing	A22EC0155
3	Winki Wong Jia Xuan	A22EC0116
4	Mok Yun Yi	A22EC0078

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1.0 Overview of the project

In this day and age, there has been a significant change in the e-commerce market that has changed how companies and consumers place their orders. The rise of digital commerce platforms was not only easier for the shopping experience but also revolutionized how sellers and retailers interact with their clients. Our e-commerce system, rightfully called “Vrify”, takes precedence from the groundbreaking success of “Shopee”. This innovative e-commerce platform raised standards in the Asian region and beyond, within this dynamic and always-changing environment.

In appreciation of Shopee’s amazing impact and outstanding accomplishments in the field of online shopping, the name “Vrify” pays respect to the company. With Vrify, we are hoping to expand the insightful lessons we’ve learned from Shopee’s experience while also offering our own viewpoint and proactive solutions to meet the specific needs and tastes of our target market.

We have far bigger plans for Vrify than just the typical. After giving careful consideration to the difficulties encountered by today’s e-commerce customers, we aim to include features that influence the direction of e-commerce in the future. Our ongoing commitment to quality drives us to deliver a personalised, fast, secure purchasing experience that caters to your individual tastes regardless of the location of the desired item. We have bigger plans for Vrify than just conventional e-commerce. We’ve made use of cutting-edge technology to provide customers with an unconventional shopping experience.

Through the use of augmented reality (AR) and virtual reality (VR) elements, shoppers may go on a shopping trip that includes not just transactions but also experiences and items. Before making a picture, have the ability to digitally try on apparel, accessories, or even house furniture. Vrify’s augmented capabilities let you see items in your real environment, guaranteeing that you will receive exactly what you see. Whether you are remodeling your living space or your wardrobe, Vrify’s AR integration will help everybody to make more accurate and precise decisions.

We also consider the feedback from the users who are using the existing online shopping platform in order to enhance the system from time to time. By actively listening to the user experiences as well as suggestions, we are able to identify the scopes to make any improvement on it which directly addresses the user needs. This is an effective and proactive method that allows us to adapt and evolve the platform to better serve our users. By putting all our effort into

enhancing this system, we strive to have an online shopping platform that meets our expectations.

2.0 Problem Statements

1. Limitations on two-dimension

Static two-dimensional photos and written descriptions are the backbone of traditional e-commerce, nevertheless, they fall short of capturing the features and physical characteristics of goods. Customers are not able to get a thorough comprehension of things since they can only imagine and evaluate them based on the text and photos alone. This limitation limits their capacity to examine details, textures, or measurements up close, which is really crucial when making a decision, especially when buying house furniture, apparel or accessories. Customers are sometimes left feeling apprehensive and disappointed when they are unable to personally inspect things before making a purchase. When purchasing clothes and accessories, for example, buyers frequently fret about whether they will fit well and will compliment their bodies as intended. Similar to this, buyers of home furnishing might be unsure about whether a specific item would match their current style and fit in their available area. These kinds of worries may lead to a greater rate of post-purchase returns and unhappiness as the merchandise may not live up to the customer's expectations. The lack of practical expertise makes it more difficult for buyers to make correct and wise purchases. Therefore, customers lack trust in their choices when they are not able to touch, feel, or try on things, which will lead to hesitancy and abandonment of shopping carts.

2. High return rates

The increased number of product returns in the e-commerce sector is a result of the difficulty clients encounter when assessing things online. Due to the absence of a physical shopping experience businesses encounter operational problems when it comes to managing returns and exchanges from customers who receive products that fall short of their expectations. High return rates are a critical problem for online purchasing since they have an effect on both profitability and consumer pleasure.

3. Technology gaps

The major difficulty in tackling these concerns is the deficiency of technology on several e-commerce sites. Traditional methods often cannot integrate cutting-edge technology

like virtual reality (VR) and augmented reality (AR). This immersive and educational buying experience that these technologies offer is vital in closing the gap between online shopping and in-store purchasing. The lack of these developments limits consumers' ability to interact and comprehend items in the digital space, which emphasizes the necessity for creative solutions like Vrify.

4. **Decreased trust from customers**

   In fact, customers' trust in the online purchasing experience is undermined when things are not accurately represented on screen. As they are unsure about the items' look, fit, and compatibility, they can be reluctant to buy. This will lower the level of customers' confidence resulting in organizations missing out on sales opportunities and increasing customer dissatisfaction which may negatively impact reputation and brand loyalty. Customers can't make good decisions when reading reviews online. Improving the review system's reliability, genuineness, and accuracy is necessary to build trust among customers, make the user experience better, and raise general satisfaction in the e-commerce platform.

5. **Counterfeit products**

   A concerning problem nowadays has arisen wherein certain sellers are dishonestly selling knockoff products as name-brand merchandise. This bad behavior ends up with the customers receiving very different things that were first advertised as a result of this dishonest activity. This action not only damages the reputation of the shop but also damages the trust users place in the platform.

6. **Delivery delay and issues**

   Due to order delays that exceed the initial expected delivery periods, customers are facing difficulties. The parcel tracking information and notifications are either nonexistent or erroneous. Due to this, the shipment also often gets misplaced or damaged during delivery. Customers will definitely become frustrated as a result of these problems, and they will not trust the dependability of online shopping platforms anymore.

7. **The app interface is not user-friend**

   The existing app UI has become one of the challenges the user faces which results in hard to browse and also interact with it efficiently. The complex layout may lower user satisfaction as well as raise bounce rates as the users are not able to access the system freely. An app with an unfriendly design will affect the user experience a lot.

8. **Lack of personalized recommendations**

   Customers sometimes will face the problem of the online shopping platform with personalized stuff recommendations as they are not able to locate something they truly enjoy. For your information, some of the users didn't make any purchases when browsing for a long period as there was nothing that attracted them. In order to solve this type of question, we aim to have personalizing recommendation features in the online shopping platform which will leverage data more effectively to understand the user behavior as well as ensure the recommendations are updated in real-time in response to user actions.

3.0 Data & Transaction requirement

3.1 Proposed business rule

1. The system operates 7 days a week and 24 hours per day.
2. Customer accounts need to be created with a valid email address and phone number and personal information.
3. Sellers need to register an account with a real business registration name with SSM.
4. Sellers are required to verify business licenses before registering an account.
5. Customers are able to access AR and VR interaction when shopping for a product.
6. Orders can only be processed after successful payment authorization.
7. Payment status of the orders will be updated in 2 minutes.
8. Acceptable payment methods included credit or debit cards and online banking transfer.
9. Shipping options and its costs need to be stated before checkout.
10. Sellers need to always track the parcel if it is handed to the customer.

3.2 Proposed data & transactional

3.2.1 Transaction requirements

3.2.1.1 Data Entry

- Enter the details of the customer.
- Enter the details of the seller.
- Enter the details of the product information.
- Enter the details of the payment details.
- Enter the details of the shipping information.
- Enter the details of the reviews.

3.2.1.2 Data Update/Delete

- Update/Delete the details of the customer.
- Update/Delete the details of the seller/.
- Update/Delete the details of the product information.
- Update/Delete the details of the payment details.
- Update/Delete the details of the shipping information.
- Update the tracking details.
- Update/Delete the details of the reviews.

3.2.1.2 Data Queries

- List details of the customer.
- List details of the ordered product.
- List the payment details.
- List the product tracking details with the tracking number.
- Identify the payment for each customer order.

- Identify the shipment status.
- Identify the parcel path.
- List the product reviews.

3.2.2 Data requirements

Customer:

The customer data included customer ID, username,Email,password and phone number.Each customer has their own customer ID when the account registered successfully.

Seller:

The seller data included seller ID, username,Email,password and phone number.Each seller has their own seller ID when the account registered successfully.

Product:

The product data stored product ID, product description, product name, and price

Order:

The order information is stored when a customer makes an order. The data included order ID, name of products,order date, order product quantity, total price.The order number is unique for every order.

Payment:

The payment data is stored when a customer successfully makes an order .The data includes payment ID,payment method and payment amount.The order ID and customer ID are included as well which are references from different entities. Each payment has its own payment ID.

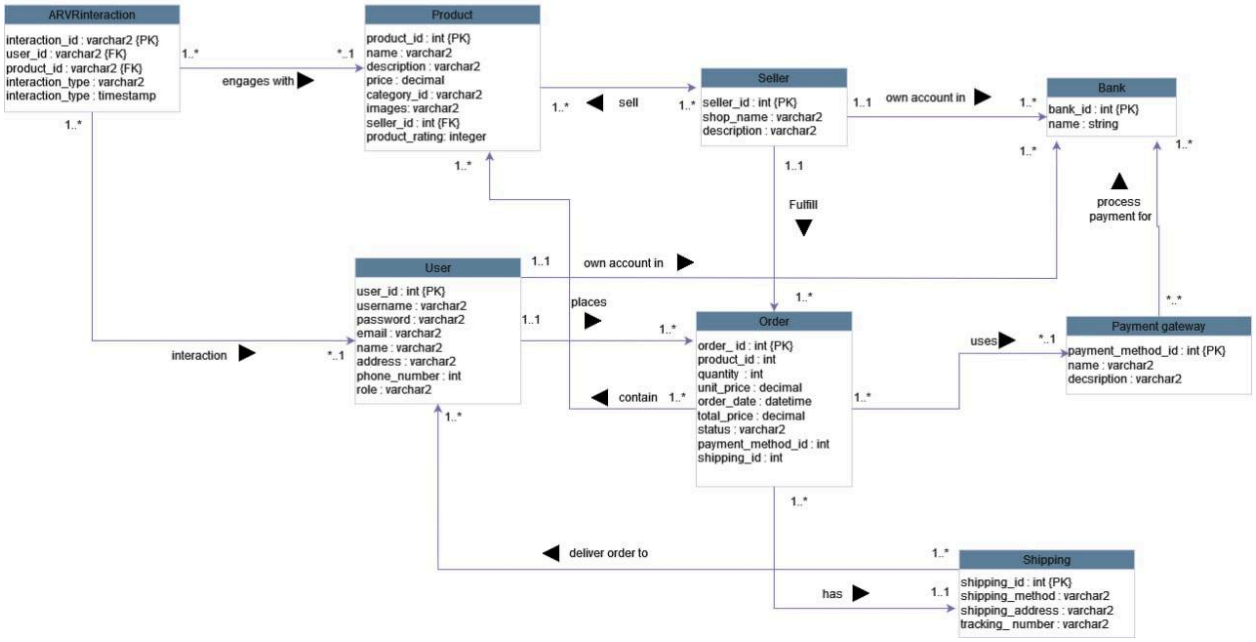
Shipping:

The shipping data is stored when the customer makes payment successfully ,and the seller authorizes the order. It included shipping ID,Order ID,shipping carrier,and shipping address where shipping ID is unique for each order.

4.0 Database conceptual design

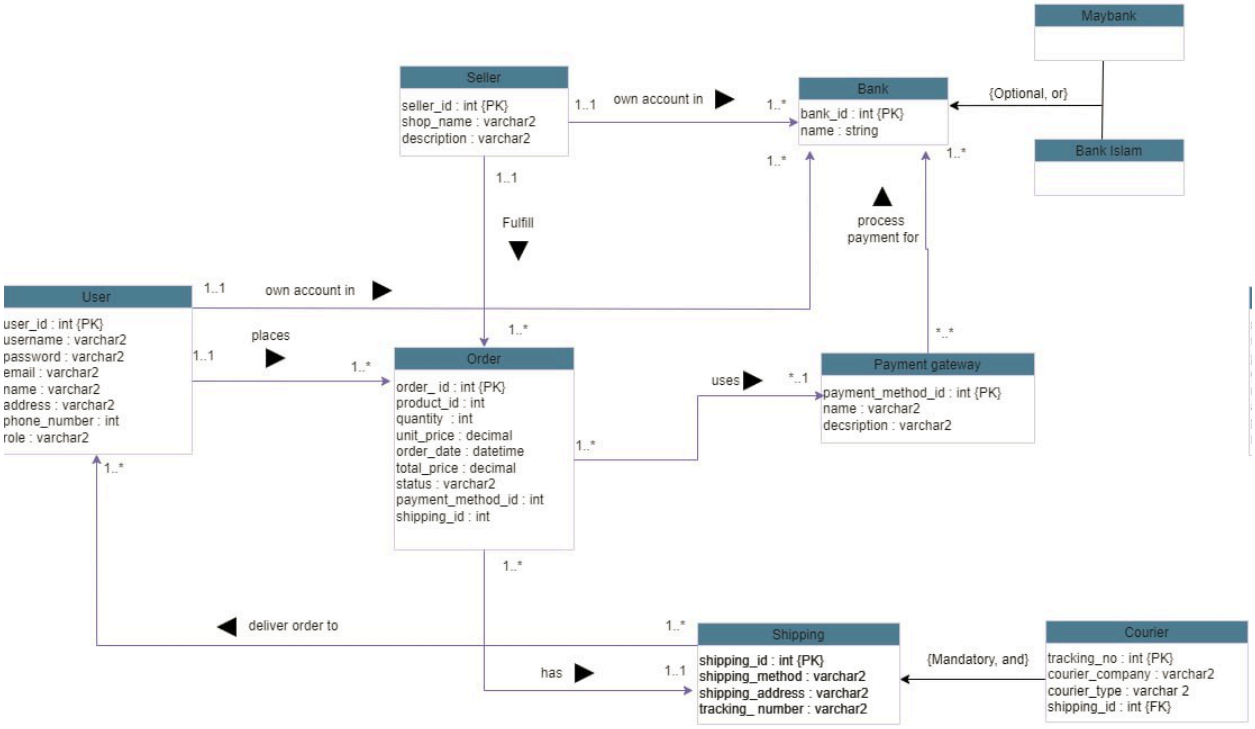
4.1 Conceptual ERD

ERD DIAGRAM



4.2 Enhanced ERD (EERD)

EERD DIAGRAM



5.0 Data dictionary

5.1 Description of Entities

Entities	Description	Occurrence
Customer	Hold the customer data used in the online shopping platform	Customer able to make the order and payment for the order
Seller	Hold the data of the seller	Seller able to process the order made by the customer, pack and send it to the courier
Payment gateway	Hold the data of the payment gateway	Payment is processed by the customer and included in the invoice of an order
Bank	Hold the data of the bank	Bank will record the payment detail when the customer is pay by online banking, any refund will be sent to the customer too when the customer cancel the order or the customer have no receive their parcel
Shipping	Hold the data of the shipping	Shipping and notifying the customer about the parcel's status
Order	Hold the data of the order	Order is made by the customer will be sent to the seller. The order includes the tracking number of the order, customer information and seller information

5.2 Description of Relationship

Entity	Multiplicity	Relationship	Multiplicity	Entity
Customer	1..1	own account in	1..*	Bank
	1..1	places	1..*	Order
Seller	1..1	own account in	1..*	Bank

	1..1	fulfill	1..*	Order
Payment gateway	*..*	process payment for	1..*	Bank
Shipping	1..*	deliver order to	1..*	Customer
Order	1..*	has	1..1	Shipping
	1..*	uses	*..1	Payment gateway
Bank	-	-	-	-

5.3 Description of Attributes

Entity	**Attribute**	**Description**	**Data Type**	**Constraint**
Customer	user_id	User's ID	VARCHAR2(15)	PRIMARY KEY
	username	User's name	VARCHAR2(25)	NOT NULL
	password	User's account password	VARCHAR2(25)	NOT NULL
	email	User's email	VARCHAR2(25)	NOT NULL
Seller	seller_id	Seller's ID	VARCHAR2(25)	PRIMARY KEY
	shop_name	Shop's name	VARCHAR2(25)	NOT NULL
	description	Shop's description	VARCHAR2(150)	NOT NULL
Payment gateway	payment_method_id	Payment method's ID	VARCHAR2(25)	PRIMARY KEY
	name	Payment method's name	VARCHAR2(25)	NOT NULL
	description	Payment gateway's description	VARCHAR2(150)	NOT NULL
Shipping	shipping_id	Shipping's ID	VARCHAR2(15)	PRIMARY KEY

	shipping_method	Shipping's method	VARCHAR2(25)	NOT NULL
	tracking_number	Tracking's number	NUMBER(15)	NOT NULL
Order	order_id	Order's ID	VARCHAR2(15)	PRIMARY KEY
	product_id	Product's ID	VARCHAR2(15)	NOT NULL
	quantity	Order's quantity	INTEGER	NOT NULL
	unit_price	Order's unit price	DECIMAL(10, 2)	NOT NULL
	order_date	Order's date	DATE	NOT NULL
	total_price	Order's total price	DECIMAL(10, 2)	NOT NULL
	status	Order's status	CHAR(1)	NOT NULL
	payment_method	Payment method	CHAR(1)	NOT NULL
	shipping_id	Shipping's ID	VARCHAR2(15)	FOREIGN KEY REFERENCE SHIPPING
Bank	bank_id	Bank's ID	VARCHAR2(15)	PRIMARY KEY
	name	Bank's name	VARCHAR2(25)	NOT NULL

6.0 Summary

In a nutshell, through comprehensive requirement analysis, user expectations for the development of our system, “Vrify”, which will include AR and VR elements, has been carefully measured via questionaries. We thoroughly analysed the current workflow, roles and responsibilities of system users, and different requirements, including functional and non-functional ones. Our emphasis on efficiency, and performance, together with thorough entity relationships and data flow diagrams, have given us a solid basis to build our suggested improvements and comprehend the existing system. This calculated method guarantees that incorporating AR and VR functionalities conforms to user expectations, resulting in a dynamic and engaging e-commerce environment in “Vrify”.

To graphically illustrate the relationships and interactions among various data entities inside the “Vrify” system, we have created an Entity Relationship Diagram (ERD) in combination with the data dictionary. The created ERD really helped us a lot in creating solutions that smoothie meet user expectations by improving the nowadays existing e-commerce system.

In addition, we have utilized a data dictionary to describe and record the data items and their properties in the “Vrify” system in order to guarantee transparency and precision in our study. The data dictionary is an important tool which provides all parties engaged in the system development, including the data type declaration, the occurrence of the entities, and the relationship between entities.

With this comprehensive understanding in place, our proposed improvements for “Vrify” are grounded in a solid foundation. We are poised to seamlessly integrate AR and VR features, ensuring they not only meet but exceed user expectations. With “Vrify”, consumers can expect a dynamic and engaging e-commerce experience where the integration of cutting-edge technology seamlessly fits their wants and aspirations thanks to this demanding and careful approach.