Software Measurement (SOEN6611)

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Descriptive Statistics

Team "Amsterdam Cartel"

Deliverable 1

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1 Background Information

To develop the Sales Analytics System, named METRICSTICS, a critical system will be implemented in order to comprehensively analyze sales performance.This system will examine statistical analysis of sales data to empower the sales management team in effectively monitoring sales trends over time, conducting thorough analyses of sales history, and making informed decisions based on the insights gained. Both sales staff and sales administration personnel will have access to METRICSTICS, allowing the sales team to diligently input sales data and the sales manager to effortlessly access statistical information for specific time periods. Additionally, METRICSTICS will enable the generation of comprehensive reports on a monthly, quarterly, and yearly basis, which will be presented to the board of members.

*Note: The key stakeholders for METRICSTICS are sales representatives, sales managers

2 Problem 1: Goal Question Metric

2.1 Goal

Analyze the sale's history to understand the sale trend during the years to project METRICSTICS from the viewpoint of the sales manager.

2.2 Smart

Smart principle consists of :

Specific: The goal is specific because it clearly defines the objective of analyzing sales history and understanding sales trends. It focuses on providing insights from the sales manager's perspective, allowing for targeted analysis.

Measurable: The goal is measurable as it can be evaluated based on the metrics and questions established. The metrics, such as yearly sales growth rate, seasonal sales variation, and product/service growth rate (see below).

Achievable: The goal is achievable because analyzing sales history and understanding sales trends is feasible through the collection and analysis of relevant sales data. With the proper tools and system in place (METRICSTICS), the sales manager can obtain the necessary insights.

Relevant: The goal is relevant to the sales manager's role and responsibilities. Understanding sales trends and projecting METRICSTICS helps the sales manager make informed decisions, optimize sales strategies, and set realistic targets for the future.

Time-bound: The goal is time-bound as it focuses on analyzing sales history over the years. It allows for the examination of trends and patterns within specific time periods and facilitates projecting METRICSTICS based on historical data.

Overall, the goal follows the SMART principle by being specific, measurable, achievable, relevant, and time-bound. This ensures that the goal is well-defined, trackable, attainable, aligned with the sales manager's responsibilities, and has a clear time frame for analysis.

2.3 Question and Metric

1. (a) Question: What is the average of sales monthly and quarterly?
   (b) Metric:
      i. Average(Mean) monthly sales
      ii. Average(Mean) quarterly sales
   (c) Mechanism:
      i. Owner = Sales Managers
      ii. Frequency Collected = following the monthly report generation
      iii. Frequency Reported = Monthly and Quarterly
2. (a) Question: What is the biggest sales growth and decline rate this year by monthly and quarterly?
   (b) Metric:
      i. Maximum monthly sales decline rate
      ii. Minimum monthly sales decline rate
      Maximum quarterly sales decline rate
      iii. Maximum quarterly sales decline rate
      Minimum quarterly sales decline rate
   (c) Mechanism:
      i. Owner = Sales Managers
      ii. Frequency Collected = following the monthly report generation
      iii. Frequency Reported = Monthly and Quarterly
3. (a) Question: How to determine that each month's and quarter's sales experience growth or decline?
   (b) Metric:
      i. compute the baseline(MAD) in terms of monthly and quarterly sale
      ii. compare it in monthly sale and quarterly sale
   (c) Mechanism:
      i. Owner = Sales Managers
      ii. Frequency Collected = following the monthly report generation
      iii. Frequency Reported = Monthly and Quarterly
4. (a) Question: Which month and quarter experienced the most significant sales change over the yea?
   (b) Metric:
      i. standard deviation of monthly and quarterly sales
   (c) Mechanism:

i. Owner = Sales Managers
ii. Frequency Collected = following the monthly report generation
iii. Frequency Reported = Monthly and Quarterly

5. (a) Question: Which month and quarter experienced the most significant sales change over the year? (standard deviation)(mean)
   (b) Metric:
      i. standard deviation of monthly and quarterly sales
   (c) Mechanism:
      i. Owner = Sales Managers
      ii. Frequency Collected = following the monthly report generation
      iii. Frequency Reported = Monthly and Quarterly
6. (a) Question: How to calculate the top 10 items that customers purchased at least twice on this platform monthly and quarterly, sorted by the number of purchases?
   (b) Metric:
      i. Count the number of times each item is purchased in a month monthly and quaterly
      ii. find the items purchased more than once and sort them by their purchasing times monthly and quaterly
   (c) Mechanism:
      i. Owner = Sales Managers
      ii. Frequency Collected = following the monthly and quaterly report generation
      iii. Frequency Reported = Monthly and Quarterly
7. (a) Question: What is the most popular item monthly?
   (b) Metric:
      i. Count the number of times each item is purchased in a month and find the item with the highest count.
   (c) Mechanism:
      i. Owner = Sales Managers
      ii. Frequency Collected = following the monthly report generation
      iii. Frequency Reported = Monthly
8. (a) Question: In which city residents make the biggest purchases on this platform for the whole year?
   (b) Metric:
      i. Count the number of purchases based on the city extracted from purchase addresses and find the city with the highest count.
   (c) Mechanism:

i. Owner = Sales Managers
ii. Frequency Collected = following the yearly report generation
iii. Frequency Reported = Yearly

9. (a) Question: How to determine the day of the year when people engage in the highest amount of shopping?

   (b) Metric:

      i. Count the number of purchases each day in a year and find the day with the highest count.

   (c) Mechanism:

      i. Owner = Sales Managers
      ii. Frequency Collected = following the yearly report generation
      iii. Frequency Reported = Yearly

3 Problem 2: Use Case Model

3.1 Use Case Diagram

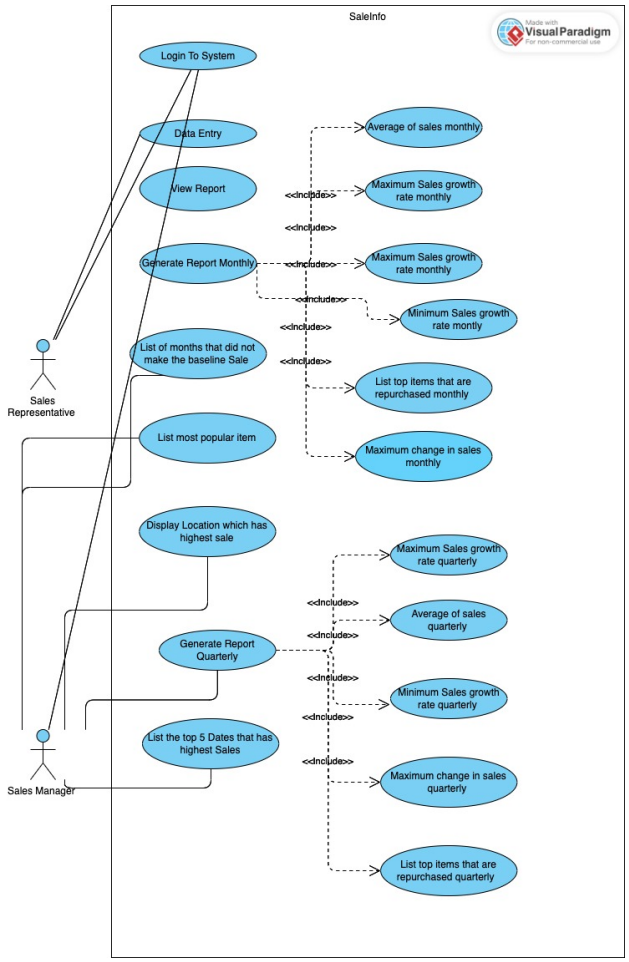

Figure 3.1: Use Case Model

3.2 Use Cases

Use Case ID	UC-1
Use Case Name	Log in to the System
Primary Actors	• Sales Representative • Sales Manager
Priority	High
Description	User can login into the System.
Pre-conditions	• User has a valid account on the system.
Post-conditions	• User logged in successfully.
Normal Flow	1 User open the login page of the system 2 System displays the login page. 3 User enters their username and their password. 4 User clicks on "Login" button. 5 System checks the User's credentials. 6 System displays the homepage. 7 User sees the homepage.

Use Case ID	UC-2
Use Case Name	Data Entry
Primary Actors	• Sales Representative
Priority	High
Description	Sale Representatives are able to entry the data regarding the customer purchasing item.
Pre-conditions	• Sale Representative login to the system.
Post-conditions	• User successfully added data.
Normal Flow	1 Users are able to enter the name of the item, purchase date, customer's address, quantity of item, and etc. 2 User click the submit button. 3 System store the sale data to database. 4 System redirect to data entry page again with empty input.

Use Case ID	UC-3
Use Case Name	View The Statistics Result
Primary Actors	• Sale Manager
Priority	High
Description	Sales Manager is able to view the statistics result generated from the sales history data.
Pre-conditions	• Sales Manager is able to login to the system. Corresponding sales data are ready in the system.
Post-conditions	• User is able to see the report page.
Normal Flow	1 User is able to see the report page. 2 Users are able to enter the conditions for the report, like time duration or specific month, etc. 3 User clicks the submit button to calculate the statistics. 4 User is able to view the statistics results.

Use Case ID	UC-4
Use Case Name	Generate report in monthly
Primary Actors	• System itself or Sales Manager
Priority	High
Description	Sales Manager is able to generate the statistics report in both monthly and quarterly.
Pre-conditions	• Sales Manager is able to login to the system. Sales data is ready in the system.
Post-conditions	• User is able to generate the report.
Normal Flow	1 User is able to see the report page. 2 Users are able to enter the conditions for the report, like time duration or specific month, etc. 3 Or the sales manager sets the needed report and the system itself will generate on time.

Use Case ID	UC-5
Use Case Name	Generate report in quarterly
Primary Actors	• System itself or Sales Manager
Priority	High
Description	Sales Manager is able to generate the statistics report in both monthly and quarterly.
Pre-conditions	• Sales Manager is able to login to the system. Sales data is ready in the system.
Post-conditions	• User is able to generate the report.
Normal Flow	1 User is able to see the report page. 2 Users are able to enter the conditions for the report, like time duration or specific month, etc. 3 Or the sales manager sets the needed report and the system itself will generate on time.

Use Case ID	UC-6
Use Case Name	List of months that did not make the baseline Sale requirement
Primary Actors	• Sale Manager
Priority	Low
Description	Users is able to see list of months whose sales requirement were not met.
Pre-conditions	• Users have a valid account on the system.Sales data is ready in the system.
Post-conditions	• User is able to generate the list successfully.
Normal Flow	1 Users are able to see the report page. 2 Users are able to see the sales of a selected month from the list.

Use Case ID	UC-7
Use Case Name	List most popular Item
Primary Actors	• Sale Manager
Priority	Low
Description	Users is able to see the most popular item.
Pre-conditions	• Users have a valid account on the system.Sales data is ready in the system.
Post-conditions	• User is able to generate the most popular item.
Normal Flow	1 Users are able to see the report page. 2 Users are able to see the sales of a selected item.

Use Case ID	UC-8
Use Case Name	Display Location which has highest sale
Primary Actors	• Sale Manager
Priority	Low
Description	Users is able to see the Location which has highest sale.
Pre-conditions	• Users have a valid account on the system.Sales data is ready in the system.
Post-conditions	• User is able to generate the most popular Location.
Normal Flow	1 Users are able to see the report page. 2 Users are able to see the sales of a selected Location.

Use Case ID	UC-9
Use Case Name	List the top 5 Dates that has highest Sales
Primary Actors	• Sale Manager
Priority	Low
Description	Users is able to see the top 5 Dates that has highest Sales.
Pre-conditions	• Users have a valid account on the system.Sales data is ready in the system.
Post-conditions	• User is able to generate the most popular sale.
Normal Flow	1 Users are able to see the report page. 2 Users are able to see the sales of the top 5 dates displayed .

References

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Github Repository

https://github.com/hemareddy123/SOEN_6611_Summer2023/tree/main