How to develop and grow SuperMarkets?

**Course Name: DATA STORYTELLING &
VISUALIZATION**
Matric NO: P-EM0384/22
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Background

In the Last 10 or 15 years ago the number of supermarkets are doubled or even pretty match to tripled But the successful supermarket is the one that focuses on every detail to be the processions of the era of Technology all the World is going towards Digitalism. [1]
I'm working on a dataset is one of the historical sales of supermarket company which has recorded in 3 different branches for 3 months data. [4]

If you asked why it's a very interesting question, this question leads us to the main purpose: how Technology be useful to supermarkets?
Digitalism is saving the most valuable thing in the world and it's time you don't have to wait in line to wait for your turn or be late cause there's no exchange available.
By using an e-payment application It takes a few minutes with a few clicks.
to do any process. [2]

Technology most probably will be faster than doing it manually. It's also easier and has fewer errors compared to the manual one. Also safer for the customer to walk on the street and he has a huge amount of money that could be stolen. [2]

All sides of e-payment have positive impacts and advantages for both sides whether on individual or business level both have benefited from using e-payment at the business level, which results in Increase process efficiency The financial supply chain is more visible because of e-payment systems. [3]

Making wise decisions is made possible by this. Additionally, it improves process effectiveness by making it simple to obtain snapshots, reports, and detailed financial history information. Better approvals and overall customer satisfaction result from more visibility into payment statuses, collections teams, and internal customer support departments. [3]

In addition to E-payments providing Data accuracy E-payment solutions not only offer correct data but also help businesses run more efficiently and spend less money on data input errors. [3]

Additionally, as it is now much simpler to monitor and analyze data, firms can better adhere to the complicated financial regulations that are relevant to their specific activity.

Digitalism is the main topic in this report, there are important topics we will be discussing the income we will evaluate the Income and how he being trendy in the First Quarter of 2019 of Supermarket sales company located in Mainamar Have 3 branches in three different cities and Also the rates and what factors affect the customer rate to reach Consumer satisfaction and see which category have the highest and lowest rate for each month in the quarter. analyze the sales during the quarter to see how it's going and what needs to improve. The highest category sales for each month and which are the most types of our Customer.

This report will answer about 19 Business questions distributed in four main topics to discuss and analyze them to see the Supermarket's performance in detail. The first topic is Digitalism and contains 11 Business questions to detect the source of this issue and how to solve it. The Second one is Customer satisfaction. It contains 2 Business questions to find the reason for the dissatisfaction rate and how to raise the satisfaction rate for customers. The Third topic Sales have 4 Business questions to analyze them and see how we can increase sales. The fourth topic is Income contains 2 Business questions to see the performance of our income and forecast it for the next month.

What Will be Answered:

- **Digitalism**
  - Which type of payment does the Customer pay the most?
  - What is the Highest payment Type for each month?
  - Does the invoice value affect the payment Type?
  - How many customers are using cash to pay their orders?
  - How many sales and Income did we get from the cash method?
  - What Quantity was sold using the cash payment?
  - What is the average rating on orders paid through cash?
  - What is the highest city(branch) that gets paid using the cash method?
  - What is the most customer type paying cash for each branch?
  - Which is the top category sold by cash method for each branch?
  - What's the most time over the first quarter that Customers use the cash method for each branch?

- **Satisfaction**
  - Which category has the highest rate for each month and overall?
  - Does the unit price affect the rate?

- **Sales**
  - Which City (branch) has the highest sales?
  - What is the rush time for each day in the week for each branch and overall?
  - Which is the top category sold for each month?
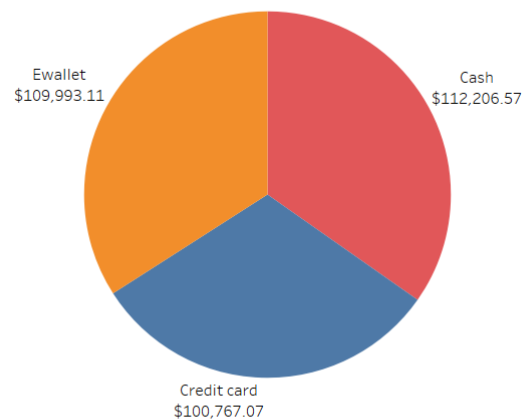 - What is the most common Customer type of sales?

- **Income**
  - Is the income line trendy compared to the income average?
  - Forecasting income for April?

Digitalism

Firstly we need to know the most used payment method in all the branches from the total sales

Payment Method

As shown the Cash is the most used payment method in all the branches by $112.206.57 and results that we have a problem here because we need customers to use E-payment rather than cash, there's something we need to work on here the Second place comes to the E-wallet by $109,993.11 and which is pretty close to the cash by around only 2K and Credit card placed Third by $100,767.07.
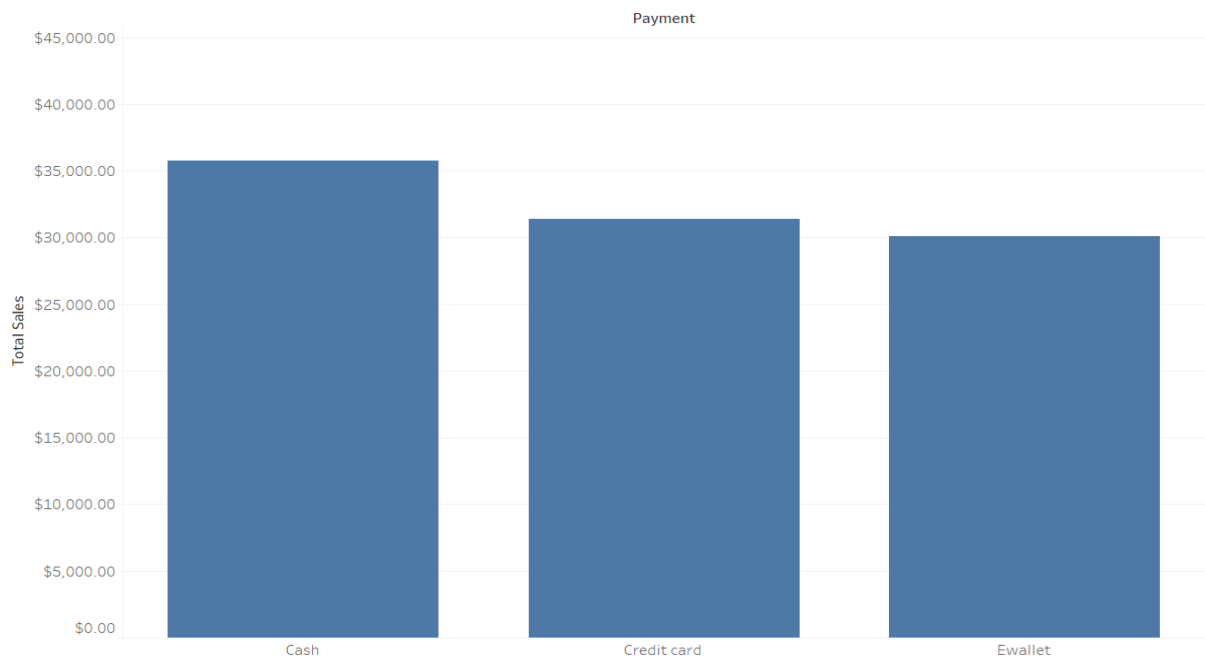
This Numbers on one quarter let's be specific for each month
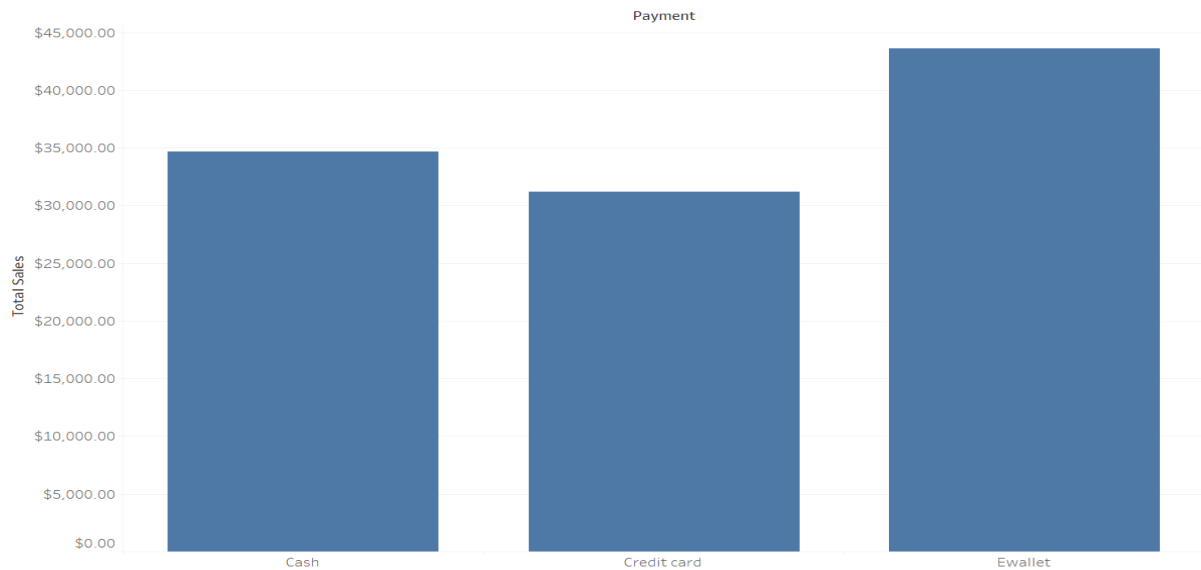
Payment Type in January
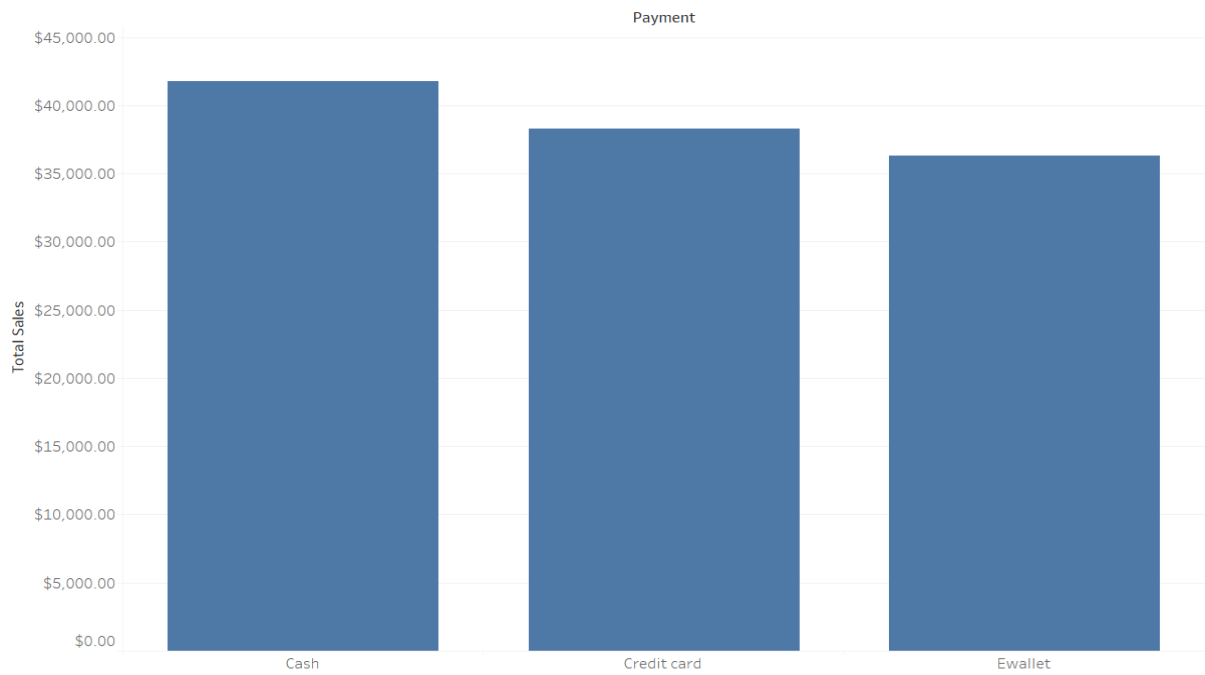
Payment

In Jan the E-wallet was the lowest Payment method used at around 36K and the cash the highest at around 42K. And a Credit card in the middle.

Payment Type in February

Payment

In Feb it's remaining cash the highest one and Ewallet the lowest one And Credit card in the middle.

Payment Type in March

But in March there was a huge difference and great progress to lowness the cash and raise the E-wallet and Credit card, Credit card still no progress yet but in the E-wallet, it's the only month get over the Cash which means some instructions were good enough and need to keep going

But let's analyze it more to see what factor has an impact on the payment method is the price amount for each invoice let's see the correlation between Sales and payment type.

Sales with the payment Type
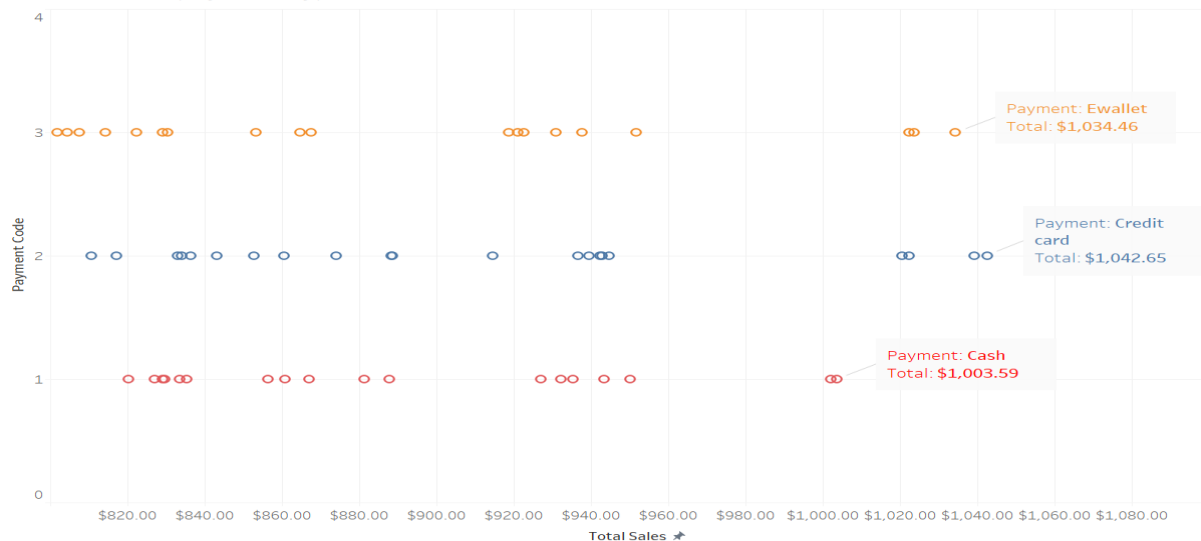
It's shown that when the Invoice price gets higher the payment changes to Ewallet and credit card, so it's not a huge difference. However, still, a difference and important detail like if we will focus on the orders cost more than one thousand only two of them were paid using cash method and the rest of the orders cost more than one thousand paid using the Ewallet and credit card the Highest order was paid using the credit card by $1,042.65.

That results that we got a high item price of more than 1000 thousand most probably doesn't pay using cash and all the expensive items are out of our target product to reduce the cash payment.

We need to know the cash performance, how many Customers used to pay cash for what quantity sold using cash, or the sales, Income, and Avg rating come from cash payment all the details are shown in the next visualization.

Cash Statues

$5,343.17	$112,206.57	1,896	344	7
Income	Sales	Quantity	# of Customers	Avg. Rating
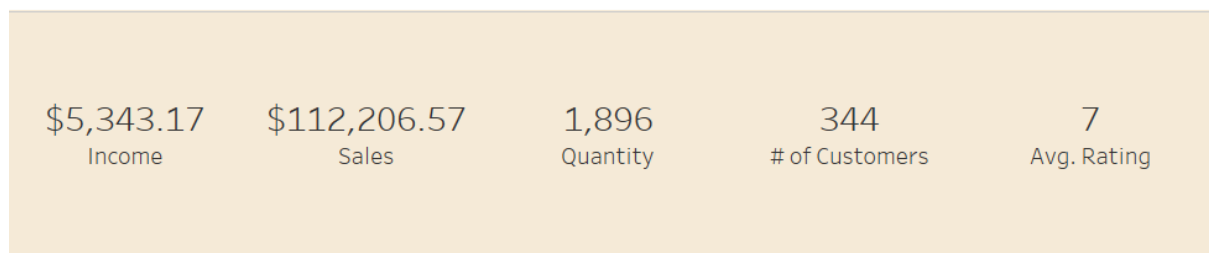
Now we need to focus on each branch to know who the highest one has customers paying cash
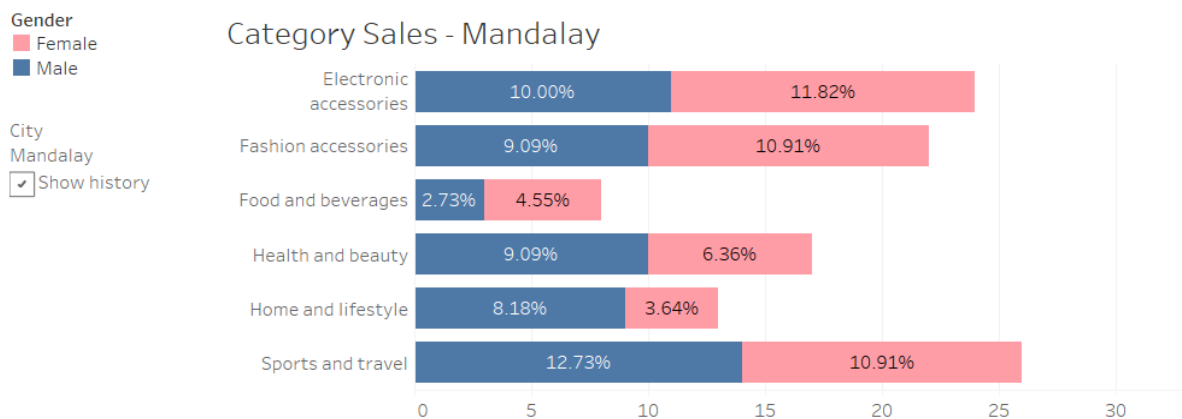

Highest city paying with cash
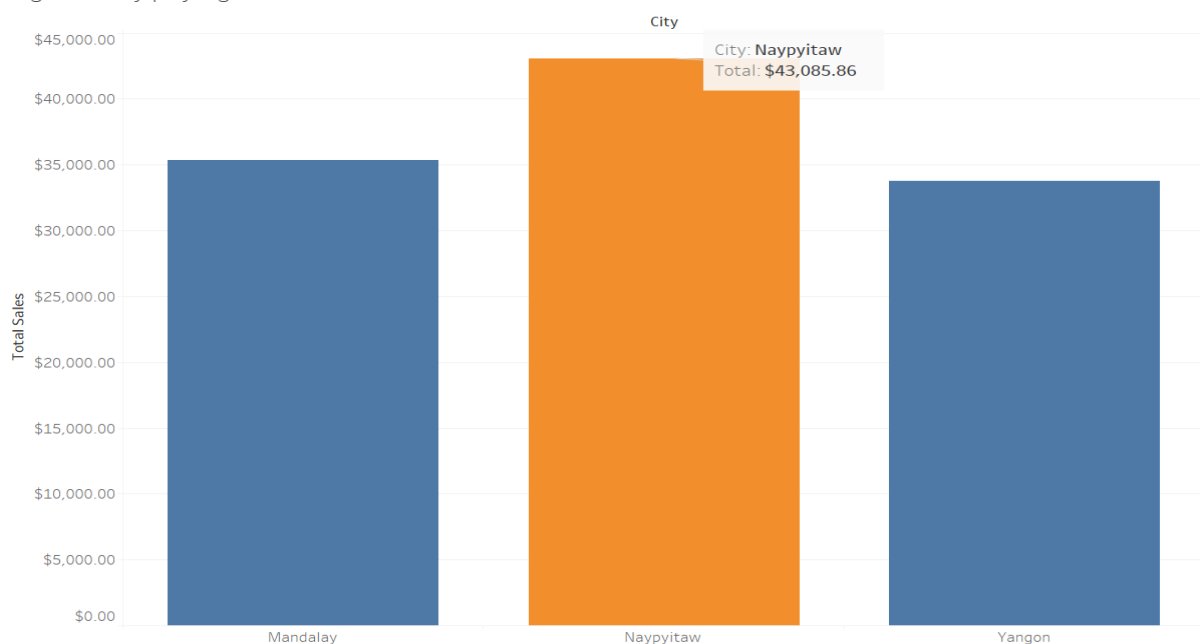
As shown, the Naypyitaw Branch is the most paid with cash by the customers by 43,085.86. That results that we will need to focus more on Naypyitaw to reduce the cash usage.
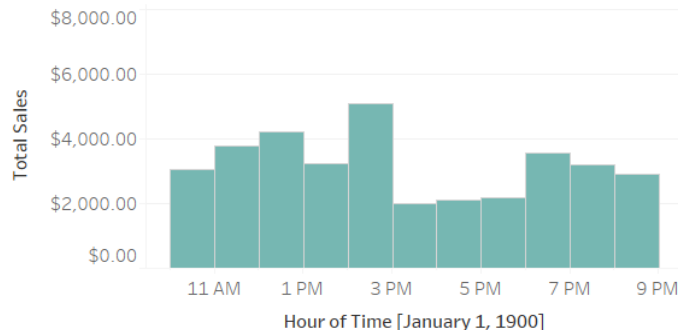
After this analysis, we will need to determine the specifications of our target Customer for each branch to come out with solutions. Specification like which customer type pays more cash for each branch and what Time-specific that Customers using the cash method for each branch, Also which is the highest category sold using cash method for each branch and most of them male or female.
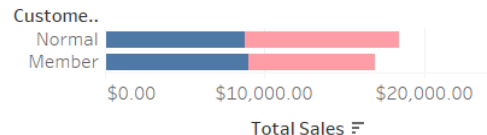
Mandalay Branch

Cash Perforamnce on each Branch

Category Sales - Mandalay

Gender
- Female
- Male

City
Mandalay
☑ Show history

Category	Male	Female
Electronic accessories	10.00%	11.82%
Fashion accessories	9.09%	10.91%
Food and beverages	2.73%	4.55%
Health and beauty	9.09%	6.36%
Home and lifestyle	8.18%	3.64%
Sports and travel	12.73%	10.91%

Paying time - Mandalay
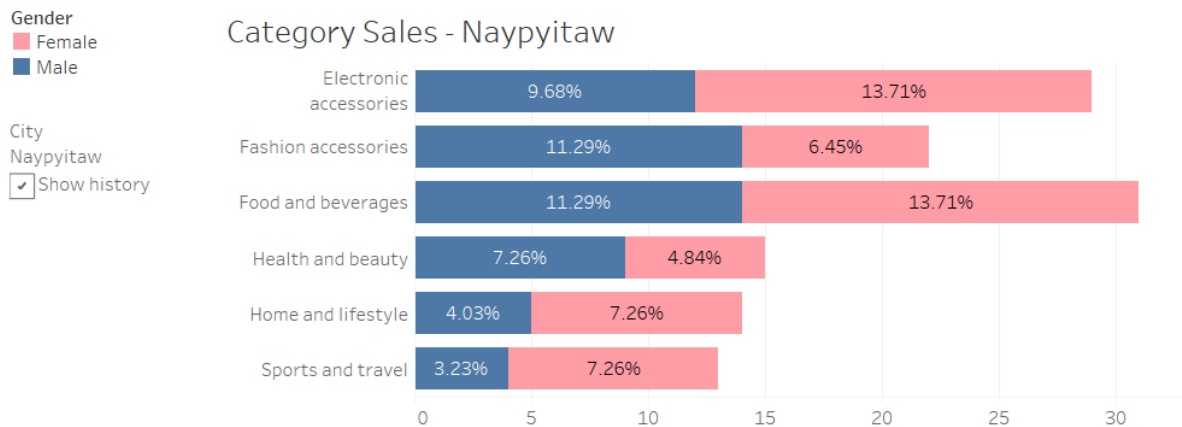
Customer Type - Mandalay

In the Mandalay branch the most customers who pay cash are the normal customers, The highest category sold using cash is Sports and Travel with 12.73% of males from the total sales using cash in all categories and 10.91% of Females and Electronic accessories place the Second one but the females are more than males which males represent 10% and females represent 11.82%. Many customers pay cash to the supermarket between 11 A.M and 3 P.M.

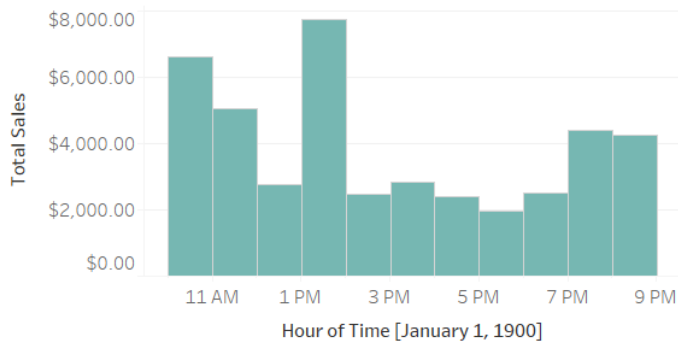**Result of our Target persona in the Mandalay branch:**

- Normal Customers
- Males interesting in the Sports and Travel category
- Females interesting in the Electronic accessories category
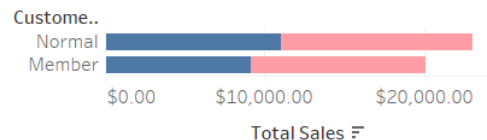- The time between 11 A.M and 3 P.M

Naypyitaw Branch:

Cash Perforamnce on each Branch

Category Sales - Naypyitaw

Gender
- Female
- Male

City
Naypyitaw
☑ Show history

Category	Male	Female
Electronic accessories	9.68%	13.71%
Fashion accessories	11.29%	6.45%
Food and beverages	11.29%	13.71%
Health and beauty	7.26%	4.84%
Home and lifestyle	4.03%	7.26%
Sports and travel	3.23%	7.26%

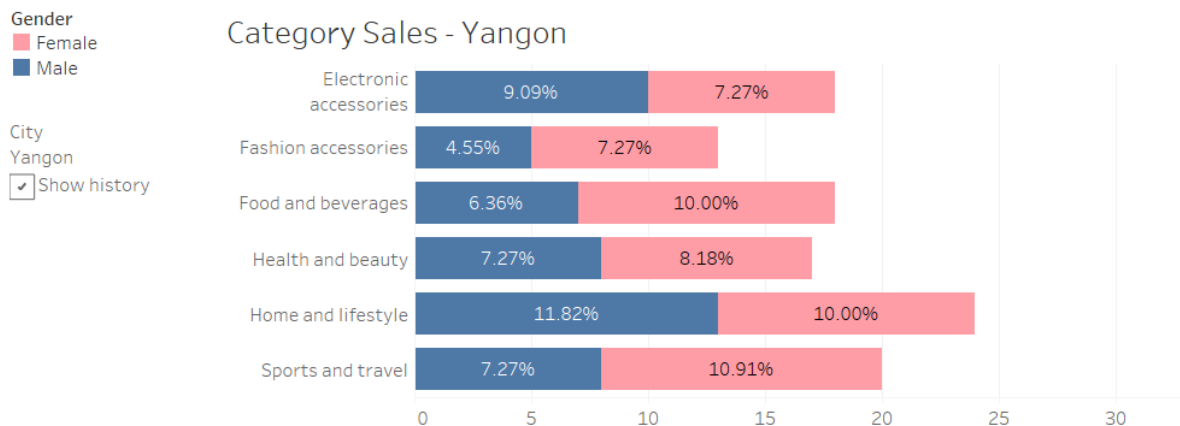### Paying time - Naypyitaw

Customer Type - Naypyitaw

In the Naypyitaw branch, most branch customers pay cash, and the most customers who pay cash are the normal customers too, The highest category sold using cash is Food and beverages with 13.71% of Females from the total sales using cash in all categories and 11.29% of Males. Electronic accessories place the Second one which females represent also 13.71% and Males represent only 9.68%. Many customers pay cash to the supermarket between 10 A.M and 2 P.M.

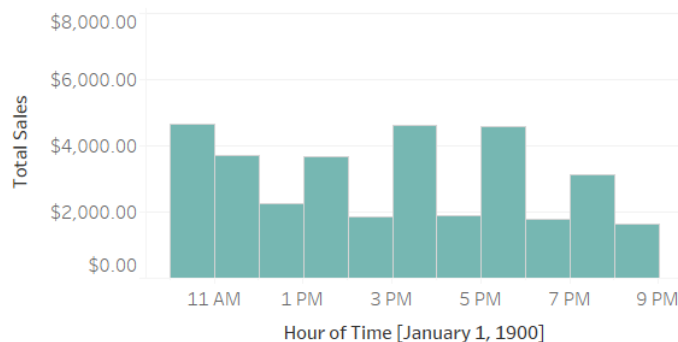**Result of our Target persona in the Naypyitaw branch:**

- Normal Customers
- Females are interested in the Electronic accessories and Food & beverages Categories.
- Males are interested in the fashion accessories and Food & beverages Categories.
- Food & beverages category
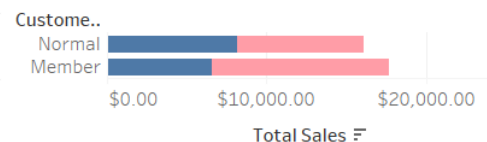- The time between 10 A.M and 2 P.M

Yangon Branch:

Cash Perforamnce on each Branch

Gender
- Female
- Male

City
Yangon
☑ Show history

Category Sales - Yangon

Category	Male	Female
Electronic accessories	9.09%	7.27%
Fashion accessories	4.55%	7.27%
Food and beverages	6.36%	10.00%
Health and beauty	7.27%	8.18%
Home and lifestyle	11.82%	10.00%
Sports and travel	7.27%	10.91%

(axis: 0, 5, 10, 15, 20, 25, 30)

Paying time - Yangon

Total Sales: $8,000.00 / $6,000.00 / $4,000.00 / $2,000.00 / $0.00

Hour of Time [January 1, 1900]: 11 AM, 1 PM, 3 PM, 5 PM, 7 PM, 9 PM

Customer Type - Yangon

Custome..
- Normal
- Member

Total Sales = : $0.00, $10,000.00, $20,000.00

In the Yangon branch, the most customers who pay cash are the Member customers, The highest category sold using cash is Home&lifestyle with 11.82% of males from the total sales using cash in all categories and 10% of Females. Sports and travel place the Second one which females represent also 10.91% and males represent only 7.27%. Many customers pay cash to visit the supermarket in fact, not at a specific time it's between an hour many customers pay cash, and the following hour the rate of paying cash decrease Then the next one increase.

Result of our Target persona in the Naypyitaw branch:

- Members Customers
- Males are Interested in the home and lifestyle category
- Females interesting in the Sports and travel category
- The time between every odd hour until starts at 11 A.m and ends at the ending of 7 P.M

Ratings

We don't know if our customers are dissatisfied with our units prices or not and we will see if they correlate as we need for each month or the whole quarter we will show the whole quarter
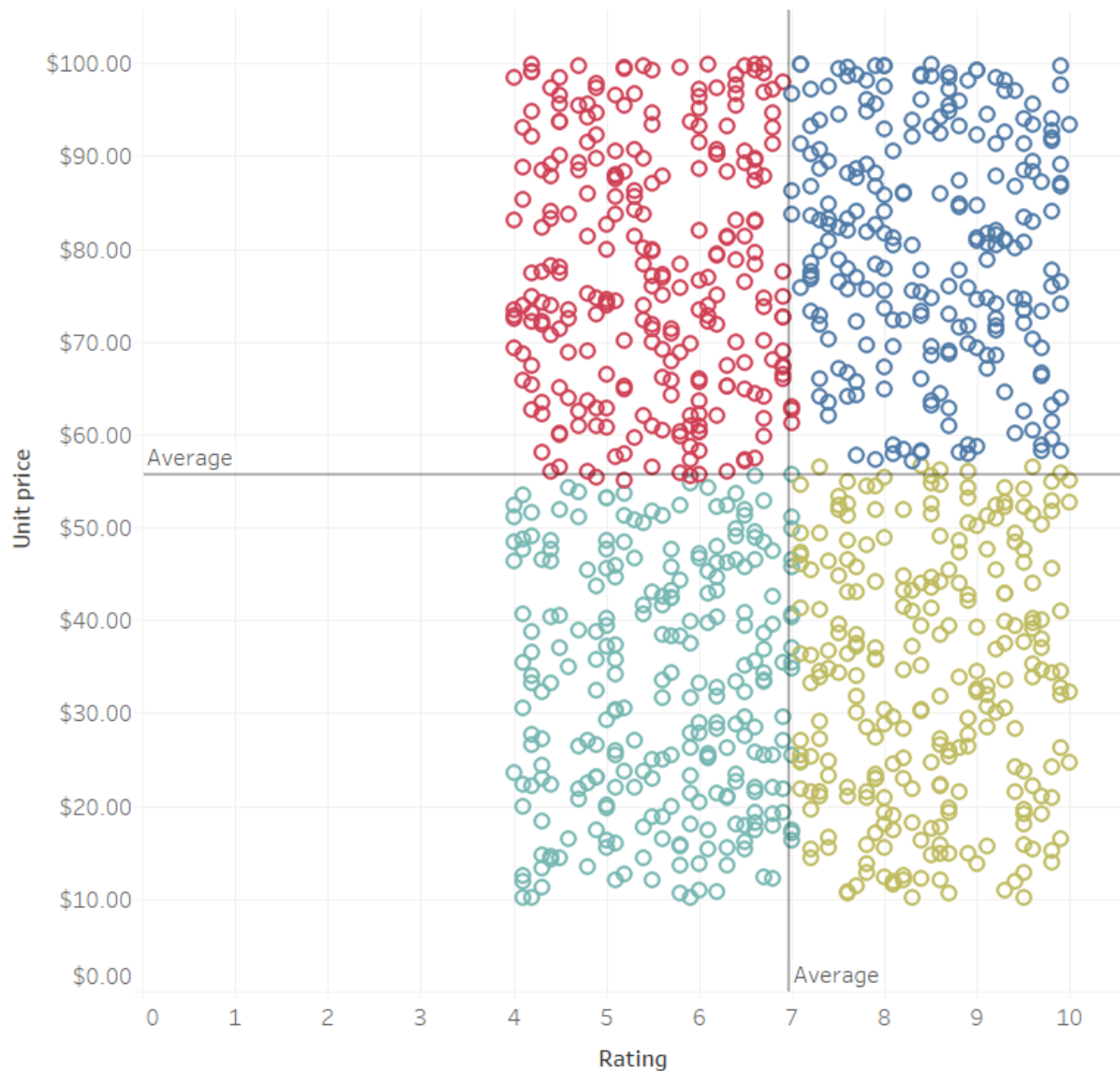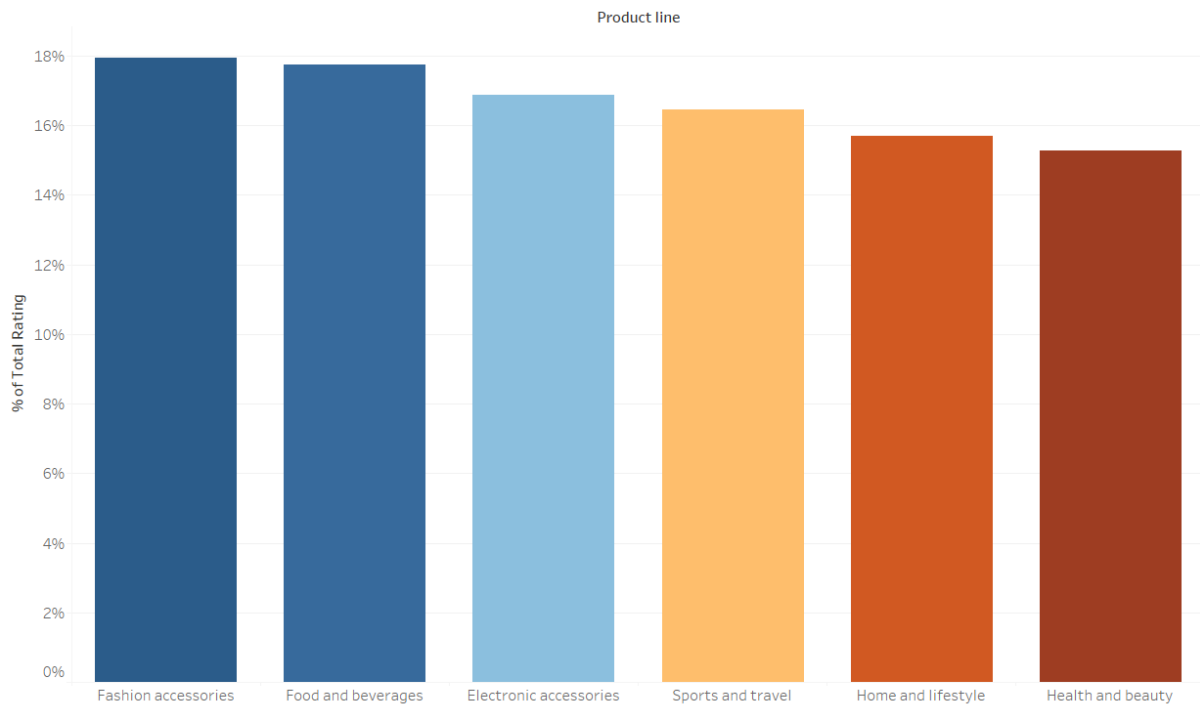

As shown the unit price factor doesn't affect the dissatisfaction rate no relation.

That Results in our price Remain cause changes in the price whether to increase or decrease will not impact the customer satisfaction level.

But we need to know the lowest rate category to focus and know the reasons and work to increase this ratio

Top rating per product line

The lowest two ratings are Health and beauty and Home and lifestyle for the entire quarter

We need to monitor these two categories carefully and double-check the items and quality of items even I recommend make a meeting with the suppliers of these two categories to find a solution also to send to all Customers give rate less than 7.5 about products from this category a survey why are they didn't satisfy from these products?

Sales:

We need to Raise our sales by determining the rush time or which time of every day in the week will be a huge number of customers for every single day on all the branches or each branch if you want to to know the exact time to make flash sales or special offers,

Rush time Tuesday

2019 Q1
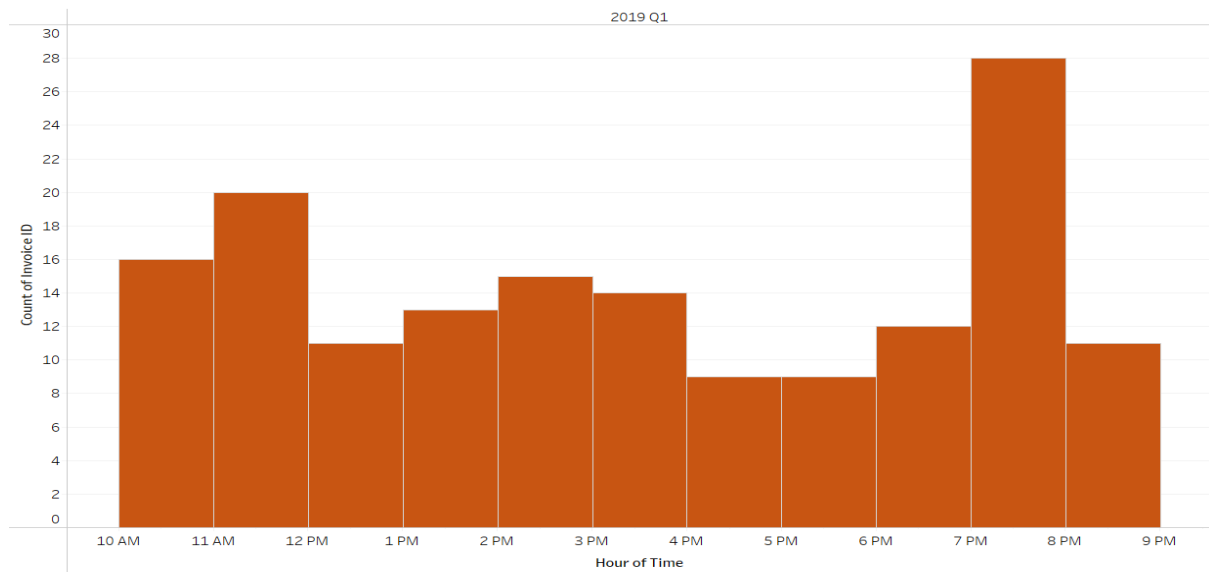
For Example, this is the rush time on Tuesday for all the branches you can easily change the day with the page on a tableau through a few clicks. But for Tuesday the rush hour is between 7 P.M and 8 P.M or from 10 A.M to 12 P.M.

That results that we can easily determine which time exactly which we can make flash sales and special offers for each day in the week

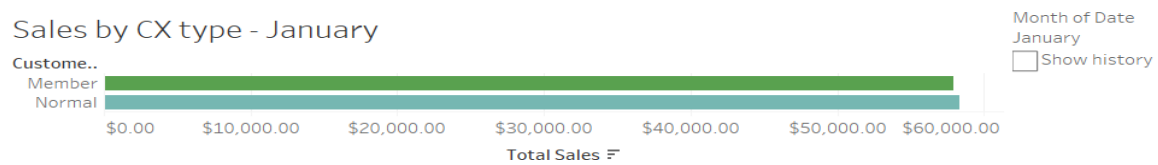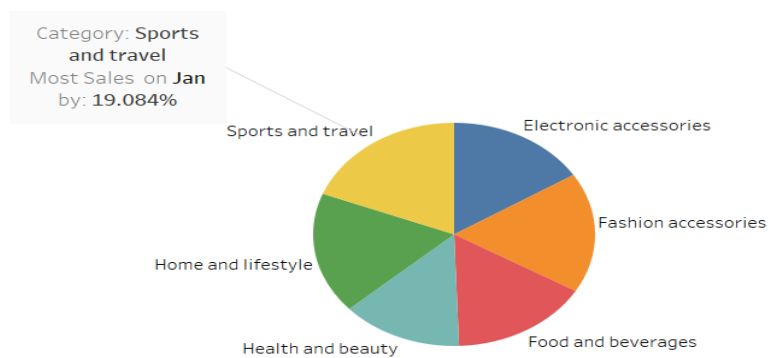But we want also to know which branch has the highest sales

Top sales
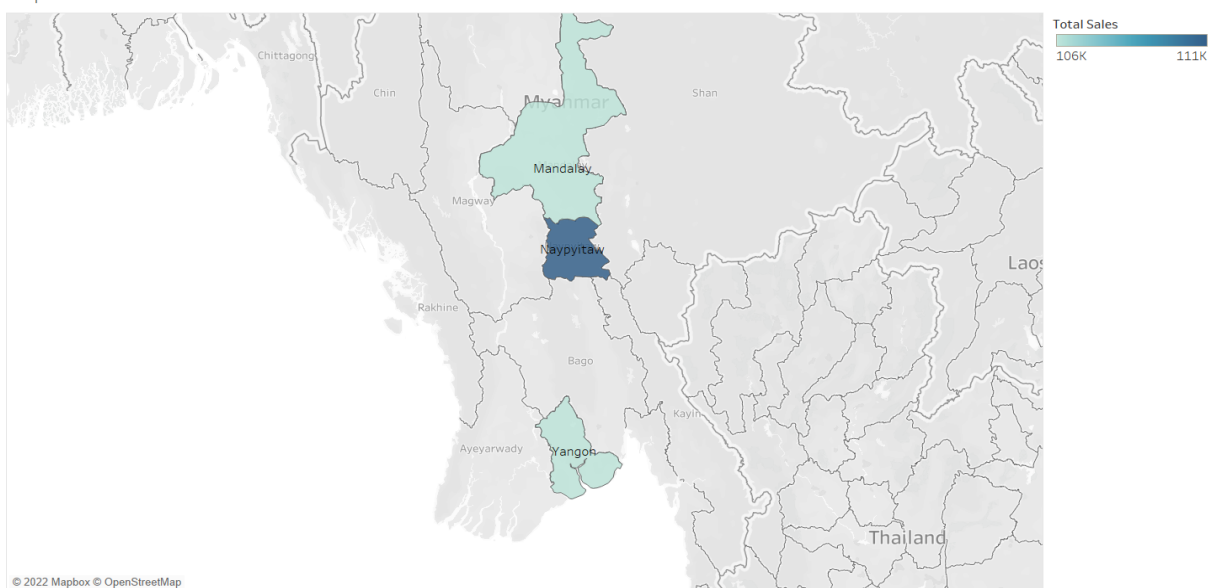
The tops sales branch is the Naypyitaw branch

We need to know for each month the top category sales and which Customer type buy more for each month

Sales by CX type - January

Custome..

Member

Normal

$0.00 $10,000.00 $20,000.00 $30,000.00 $40,000.00 $50,000.00 $60,000.00

Total Sales ⊟

Month of Date
January

☐ Show history

Sales per month per product line - January

Category: **Sports and travel**
Most Sales on **Jan** by: **19.084%**

Sports and travel

Electronic accessories

Fashion accessories

Home and lifestyle

Food and beverages

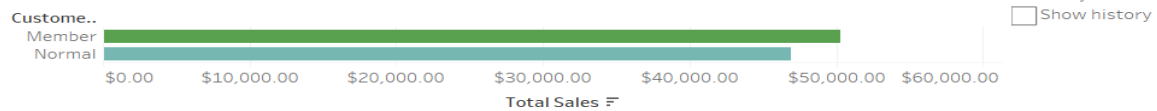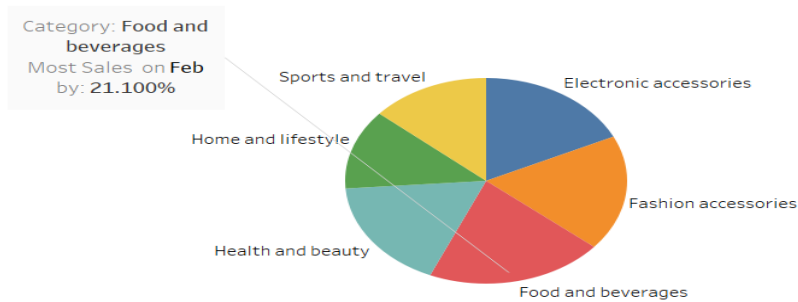Health and beauty

This visualization for January shows that the Normal customers are more than the member in sales and the most category sold in Jan is Sports and Travel with 19.084% of the total sales of Jan.
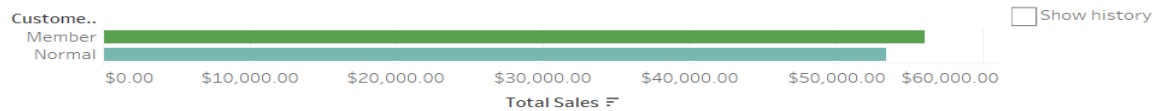
Sales by CX type - February

Custome..

Member
Normal

$0.00 $10,000.00 $20,000.00 $30,000.00 $40,000.00 $50,000.00 $60,000.00

Total Sales ⌐

Sales per month per product line - February

Category: **Food and beverages**
Most Sales on **Feb** by: **21.100%**

Sports and travel

Electronic accessories

Home and lifestyle

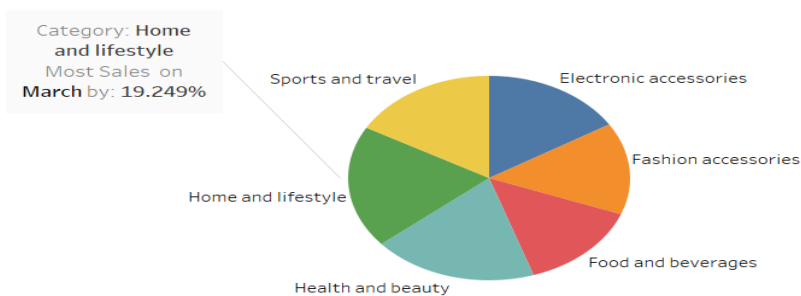Fashion accessories

Health and beauty

Food and beverages

This February visualization shows that the member customers getting over the normal in sales and the most category sold in Feb is Food & Beverages with 21.10% of the total sales of Feb.

Sales by CX type - March

Custome..

Member
Normal

$0.00 $10,000.00 $20,000.00 $30,000.00 $40,000.00 $50,000.00 $60,000.00

Total Sales ⌐

Sales per month per product line - March

Category: **Home and lifestyle**
Most Sales on **March** by: **19.249%**

Sports and travel

Electronic accessories

Fashion accessories

Home and lifestyle

Food and beverages

Health and beauty

The last month in the first quarter March visualization shows that the member customers Still more than the normal in sales and the most category sold in March is Home & lifestyle with around 19.25% of the total sales of March.

Income:

We need to take a look at the Income performance to see how the income is trendy compared to the average income and the lowest weeks in addition to forecasting income in April and make predictions to know and take any needed action to avoid any loss.
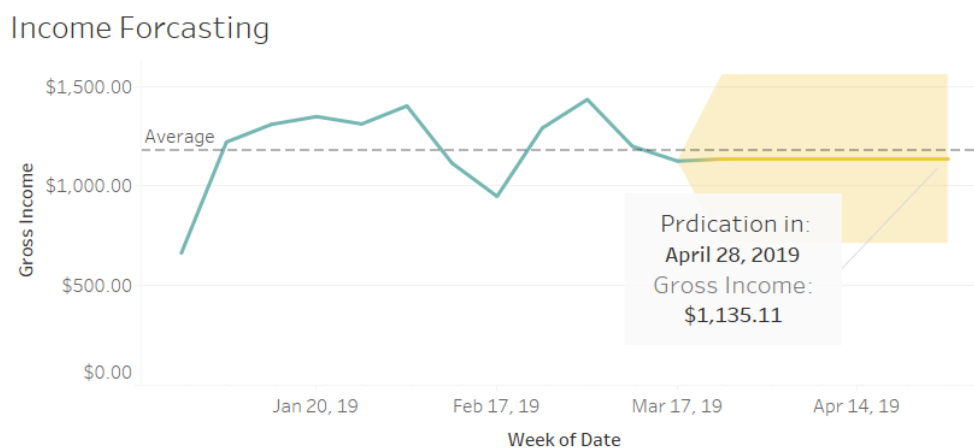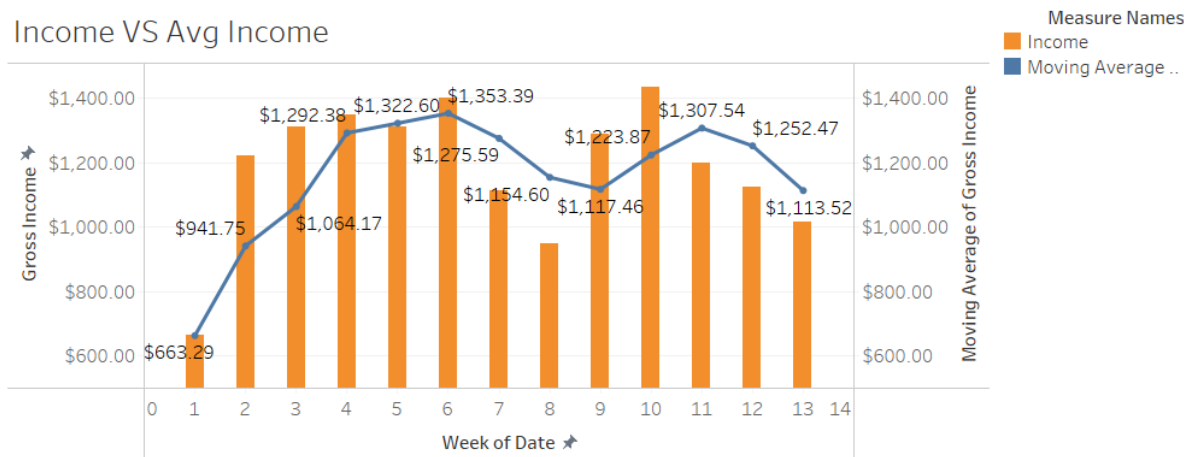
It's shown that the income compared to the income Average is not trendy so much only exceptions in the middle of February especially in weeks 7-8 and the last 3 weeks in march there's a drop in income by the end of march

Also, we have shown that the Forecasting of income for April is $1,135.11 which is less than the Average line which's an average line worth $1.176.28 which we are going to a loss and we need to act real quick

Conclusion

every city has a different target persona so every branch must work on their target persona and make them attracted to the E-payment however Ewallet or credit card

Naypyitaw and Mandalay Branchs should make an offer for Normal people like (get a 5% discount on the total invoice for your first order when using E-payment),

In Mandalay, I propose that they can make flash sales like 1 or 2 hours between 11 A.M and 3 P.M when you are using E-payment on males product in the Sports and Travel category and make interesting Installments on Females Products in the Electronic accessories category.

In Naypyitaw, I guess they make also make interesting Installments on Females Products in the Electronic accessories category. And flash sales for one or two hours between 10 A.M and 2 P.M on all categories cause being the highest branch receive customers paying cash but more focus on Males products in the fashion accessories Categories when using E-payment. And discounts continually in the Food & beverages category when using E-payments.

In the Yangon branch. I want to offer to send an SMS to members who used cash in their previous orders to give them a discount code to apply when they pay using E-payment in the next order. I recommend making only flash sales for an hour specifically the odd hours when they pay using the E-payment and sales in Males products in the home and lifestyle category When they pay using E-payment and sales on Females products in the Sports and travel category.

Our unit prices will Remain because changes in the price whether to increase or decrease will not impact the customer satisfaction level.

Monitor these two categories carefully and double-check the items and quality of items even I recommend make a meeting with the suppliers of these two categories to find a solution also to send to all Customers give rate less than 7.5 about products from this category a survey why are they didn't satisfied from these products?

The tops sales branch is the Naypyitaw branch

We can easily determine which time exactly we can make flash sales and special offers for each day in the week

The most category sold in Jan is Sports and Travel with 19.084% of the total sales in Jan. Normal sales are higher than the Member sales.

The most category sold in Feb is Food & Beverages with 21.10% of the total sales in Feb. Member sales are higher than the normal sales

The most category sold in March is Home & lifestyle with around 19.25% of the total sales in March. Member sales are higher than the normal sales

Their lowest month of income is February especially in weeks 7-8 and being widely from the average in these two weeks and the last 3 weeks in March the income shifts down

The income in April will be $1,135.11 less than the Average Depending on the predication made, it means that we need to Act quickly to Increase the income

Recommendations

My interesting observation is to resolve the income, sales, and cash issues is to launch your own shipping express company and provide delivery to home.

We can offer a delivery option on the prepaid orders and launch a new Website to increase sales and income. If the customer wants to pay with cash there is Cash On Delivery fees (COD) while the prepaid orders don't have any extra fee. For sure they will be a shipping fee But if the order is more than a certain amount then the order will have free shipping.

Reference

[1] Reardon, T., Timmer, C.P. and Berdegué, J.A., 2005. Supermarket Expansion in Latin America and Asia. New directions in global food markets, pp.47-61.
[2] Zimmerman, M.M., 1941. The supermarket and the changing retail structure. Journal of Marketing, 5(4), pp.402-409.
[3] Nasr, M.H., Farrag, M.H. and Nasr, M., 2020. E-Payment Systems Risks, Opportunities, and Challenges for Improved Results in E-Business. International Journal of Intelligent Computing and Information Sciences, 20(1), pp.16-27.
[4] Dataset link: Supermarket sales dataset