Avengers Group

Data Warehouse Design and Implementation

Data analysis

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Data Warehouse Design

Let's roughly see our design

BUS MATRIX

Business Process / Common Dimension	Account Dim	Account to Member Bridge	Company Dim	Date Dim	Discount Master Dim	Member Dim	Member Demographic Dim	Month Dim	Payment Type Dim	Product Dim	Salesline Dim	Store Dim	Store Retail Dim	Store Tenant Dim	Store Tenant Area Dim	Store Tenant Status Dim	Time Dim	Transaction Type Dim	Vendor Dim
Promotion Fact				✔	✔	✔				✔	✔		✔				✔	✔	✔
Product Fact				✔						✔	✔		✔				✔	✔	✔
Aggregate Product Fact						✔		✔		✔			✔						✔
Member Fact	✔	✔	✔	✔		✔	✔		✔			✔					✔		
Store Fact				✔										✔	✔	✔			

Store Fact

Business Process: Tenant Store Analysis
Granularity: 1 row per 1 sales summary in each store per day
Dimensions: Store, Date
Measures: Sales, Points

Why?

- Which tenant stores sell the highest?
- What is the highest tenant store sell?
- How many tenant store are active or inactive?
- Which mall contains the most tenant store?
- How much point does the member get from tenant store?
- Does the tenant sell better in weekend?
- Does the tenant sell better in holiday?
- Does the area affects the sale for tenant store?

Product Fact

Business Process: Product Transaction Analysis
Granularity: 1 row per 1 item in a receipt
Dimensions: Product, Date, Time, SalesLine, Vendor, Store_Retail, Transaction Type

Measures: Quantity, Total Cost, Net Sales Amount, Net Sales Amount Excluding Tax, Gross Profit, Net Profit

Why?

- Which products are frequently sold in a particular store?

- Are profits from selling products being generated more on weekends or holidays?

- Which product generated the most revenue in a particular store?

- Which product generated the most profit in a particular store?

- What is the best selling product?

- Which products are frequently bought from a particular vendor?

Aggregated Product Fact

Business Process: Monthly Product Sale Analysis
Granularity: 1 row per 1 product sale in each month
Dimensions: Product, Vendor, Store Retail, Month
Measures: Total Quantity, Total Cost, Net Sales Amount, Net Profit, Net Sales Amount Excluding Tax, Gross Profit

Why?

- What kind of product sell the highest in each month?
- What kind of product makes the most profit in each month?
- What retail store makes the best profit in each month?
- What vendor does we depend on the most?
- What item group makes the most profit?
- Does the retail store makes profit in each year?
- Can we make an annual or monthly report on product sales?

Member Fact

Business Process: Member Analysis
Granularity: 1 row per 1 receipt per payment type
Dimensions: Account, Member, Company, Payment Type, Date, Time, Store
Measures: Payment Amount, Earn Point

Why?

- Which types of member spend the most?
- Payment behavior of members, which type of payment (cash/credits/debits/points) using with which store or company?
- What type of occupation/nationality/gender/age spends with which store/company the most?
- Which type of store that each type spends money on the most?

Promotion Fact

Business Process: Promotion Analysis
Granularity: 1 row per 1 promotion used for 1 item on the receipt
Dimensions: Product, Vendor, Store Retail, Date, Time, Discount, Transaction Type, Member, SalesLine

Measures: Quantity, Discount

Why?

- What promotion is frequently use?
- On what day and time is the promotion redeem by the customer?
- Is the promotion become more popular during weekend or holiday?
- Which promotion on this product can increase sales the most?
- Which group of customers often use this promotion?
- Which retail store customer mostly redeem this promotion when they purchase the product?

Dashboard

Reports and Fact Findings

Retail Sales Analysis

Tenant Store Analysis

Member Analysis

Promotion Analysis

Retail Sales Analysis

From Product Fact

Tenant Store Analysis

Member Analysis

Promotion Analysis

฿20,502M — Lifestyles
฿0M — Fashion
฿193M — Food & Beverage
฿0M — Babies & Kids
฿72M — Services

2,188.09M
Total Gross Profit

832M
Total Net Profit

Fuji Standard Photo 6x4
Best Selling Product

Year
- [ ] 2016
- [ ] 2017
- [ ] 2018

Quarter
- [ ] Qtr 1
- [ ] Qtr 2
- [ ] Qtr 3

Store
- [ ] PM 4PM
- [ ] PM Bangsan
- [ ] PM Head Quarter

Weekend
- [ ] Weekday
- [ ] Weekend

Holiday
- [ ] Holiday
- [ ] Non-Holiday

Cost, Sales, & Profit Analysis

● Total Cost ● Net Sales Amount ● Net Profit

328M
421M
83M
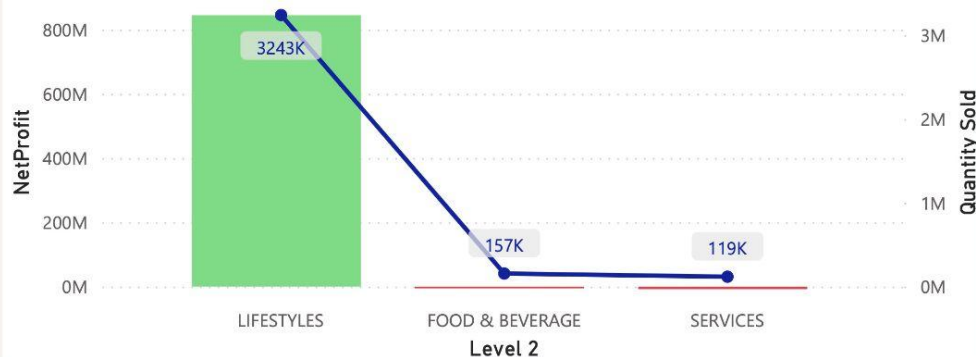
Store Category Analysis

Store Categ... ● PM

2018

Vendor Name

🔍 scout
- [ ] Linens Scouts Co.
- [ ] Scout Forms Ltd.

Best Seller According to Product Hierarchy

● NetProfit ● Quantity Sold

3243K
157K
119K

LIFESTYLES | FOOD & BEVERAGE | SERVICES
Level 2

Vendor	QTY Sold	Net Profit
Scout Forms Ltd.	337308	-701993478
Solo Printwize Ltd.	227422	-26800199
Sercery Brooksbank Co.	164011	-23779201
Alcan Hellermann Co.	142409	-215025079
Oceanics Videowall Ltd.	119182	16470643
Hinbest Registers Inc.	107616	-15747159

Transaction Type

100%

Buy
Return   1.03%
Full Discount
Error   0%

0%
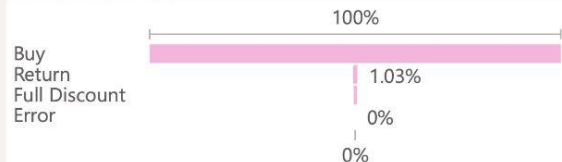
Retail Sales Analysis

Tenant Store Analysis

From Store Fact

(Cube)

Member Analysis

Promotion Analysis

Tenant Store Report

27/04/2021
Last Refresh Date

MUJI ฿29,775M
4PM Top Seller

CPS Chaps ฿2,655M
4AM Top Seller

Hermes ฿820M
4PLUS Top Seller

฿97,949M
Total Sales Amount

77.61M
Total Points Given

Area
- ☐ 4AM
- ☐ 4PL
- ☐ 4PM

Year
- ☐ 2016
- ☐ 2017
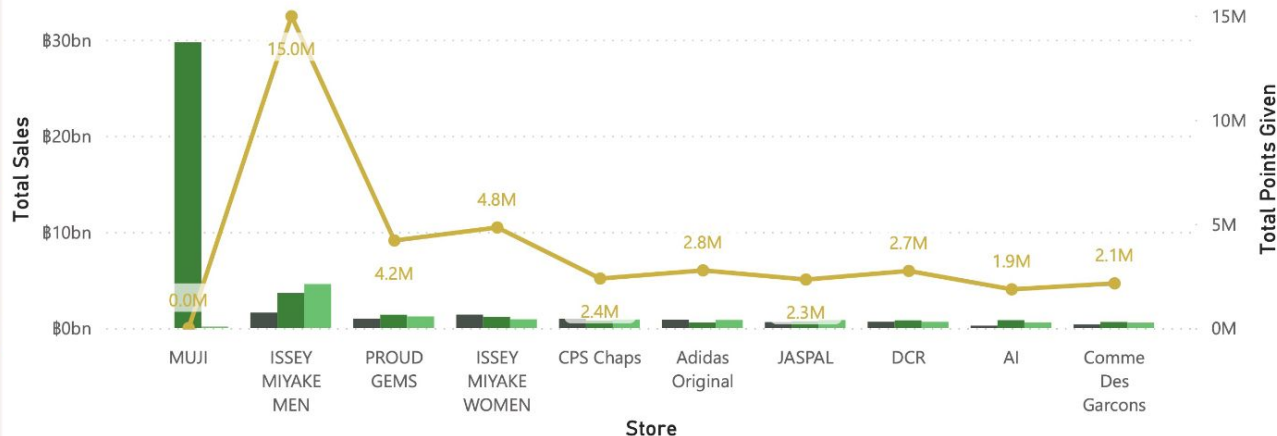- ☐ 2018

Quarter
- ☐ Q1
- ☐ Q2
- ☐ Q3
- ☐ Q4

Weekend
- ☐ Weekday
- ☐ Weekend

Holiday
- ☐ Holiday
- ☐ Non-Holiday

Top 10 Total Sales and Points

Year ● 2016 ● 2017 ● 2018 ● Total Points Given

15.0M · 4.2M · 4.8M · 2.4M · 2.8M · 2.3M · 2.7M · 1.9M · 2.1M · 0.0M

Total Sales: ฿30bn / ฿20bn / ฿10bn / ฿0bn

Total Points Given: 15M / 10M / 5M / 0M

Stores: MUJI, ISSEY MIYAKE MEN, PROUD GEMS, ISSEY MIYAKE WOMEN, CPS Chaps, Adidas Original, JASPAL, DCR, AI, Comme Des Garcons
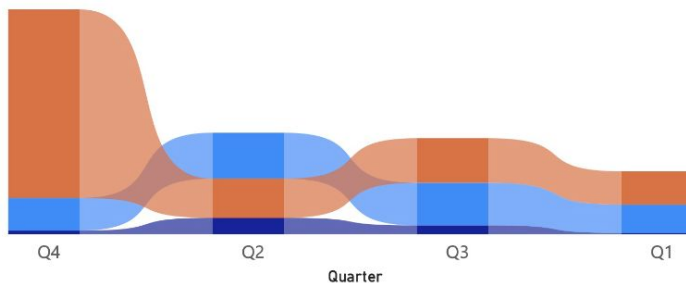
X-axis: Store

Store Name

🔍 Search
- ☐ Select all
- ☐ .LIFE
- ☐ @Shop
- ☐ 3D Copy Machine
- ☐ 4F
- ☐ 5CM
- ☐ 77th เซเว่นตี้เซเว่น
- ☐ 8 1/2 (eight and a h...
- ☐ A/X Armani Exchange
- ☐ AB-NORMAL
- ☐ Accessorize
- ☐ ADHOC
- ☐ Adidas
- ☐ Adidas Original
- ☐ ADLER GALERIE
- ☐ ADUL COLLECTION

Total Sales in Each Area

Area ● 4AM ● 4PL ● 4PM

Quarters: Q4, Q2, Q3, Q1

X-axis: Quarter

Store Total Sales

Store	Total Sales
MUJI	฿29,775M
ISSEY MIYAKE M...	฿9,861M
PROUD GEMS	฿3,588M
ISSEY MIYAKE W...	฿3,497M
CPS Chaps	฿2,655M
Adidas Original	฿2,305M
JASPAL	฿2,188M
DCR	฿2,114M
AI	฿1,671M

฿0bn · ฿20bn

Total Sales

Retail Sales Analysis

Tenant Store Analysis

Member Analysis

From Member Fact

Promotion Analysis

Member Analysis
27/04/2021
Last Refresh Date

| retail | tenant |

👷 <22 **25.74K** # of Students
🧑 23-35 **143.06K** # of Adults
👴 36-55 **219.66K** # of Middlle Ages
🧑‍🦳 56+ **251.78K** # of Older Adulthood

| **18:00** High Traffic | **22:00** Low Traffic |

Gender
- ☐ Female
- ☐ Male
- ☐ Prefer Not to Say

Maritial Status
- ☐ Divorced
- ☐ Married
- ☐ Prefer Not to Say
- ☐ Single
- ☐ Widowhood

Source
- ☐ Application
- ☐ Counter
- ☐ Event
- ☐ Mobile
- ☐ Website

Payment Type
- ☐ Cash
- ☐ Coupon
- ☐ Credit/Debit Card
- ☐ Internet Banking
- ☐ Others
- ☐ Redemption
- ☐ Voucher
- ☐ Withholding

฿127,306M
Total Payment Amount

640.24K
Number of Cards

MUJI
Top Store Sales

Top Spending Occupations	Payment Amount	Earn Point
Supervisor	฿480,810,204	136889
Staff Project Engineer	฿328,300,664	-152179
Investment Analyst	฿375,834,833	249424
Dog Breeder	฿373,070,774	235246
Assistant Superintendent Material	฿1,221,050,448	620606

PaymentAmount by Year and Card

Card ● AM AZURE ● AM EMERALD ● AM SCARLET ● PM
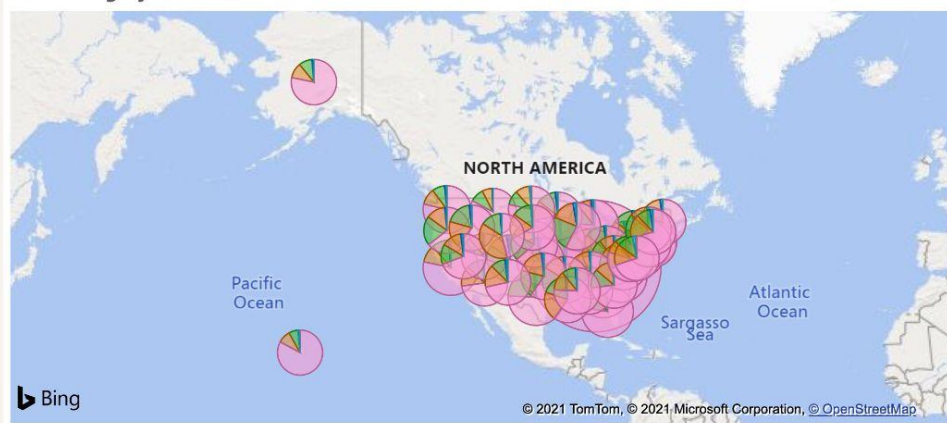

Payment Amount by Area and Age

Age ● Adults ● Middle Age ● Older Adulthood ● Students
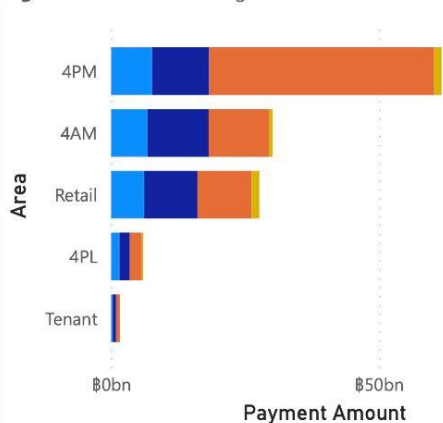
Payment Amount by State and Store Category

Store Category ● EPR ● PM ● PPL ● Tenant ● TGR

Store Name
- 🔍 Search
- ☐ Select all
- ☐ 1628
- ☐ 1629
- ☐ 1630
- ☐ 1631
- ☐ 1632
- ☐ 1635
- ☐ 1637
- ☐ 1638
- ☐ 4F
- ☐ 4P Signature
- ☐ 8 1/2 (eight and a h...

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Retail Sales Analysis

Tenant Store Analysis

Member Analysis

Promotion Analysis

From Promotion Fact

Promotion Analysis

27/04/2021
Last Refresh Date

EPR	PM	PPL	TGR

฿5,365M Lifestyles
฿14,578M Fashion
฿13M Food & Bevera...
฿107M Babies & Kids
฿6M Services

Year
- [ ] 2016
- [ ] 2017
- [ ] 2018

Quarter
- [ ] Q1
- [ ] Q2
- [ ] Q3
- [ ] Q4

Month
- [ ] April
- [ ] August
- [ ] December
- [ ] February
- [ ] January

Day of Week
- [ ] Friday
- [ ] Monday
- [ ] Saturday
- [ ] Sunday
- [ ] Thursday
- [ ] Tuesday
- [ ] Wednesday

Weekend
- [ ] Weekday
- [ ] Weekend

Holiday
- [ ] Holiday
- [ ] Non-Holiday

Discount Analysis by Store

● Discount Amount ● Redeem #

Discount Amo...
฿10bn
฿0bn

822K   876K   388K   275K   80K   255K   25K   14K   10K   47K

Redeem #
0.5M
0.0M

Explorer Retail,Ltd. | PM 4PM | PM The Park | PM Bangsan | FAND | PM ZPELL | The Wonder ... | Gin & Milk | Cazh | The Selected

Store Name

Discount Used by Member in Each Product Category

Age ● Adults ● Middle Age ● Older Adulthood ● Students

Discount A...
฿2bn
฿0bn

WO... LIFES... MEN'... ECO UNIS... BABI... FOO... SERV...
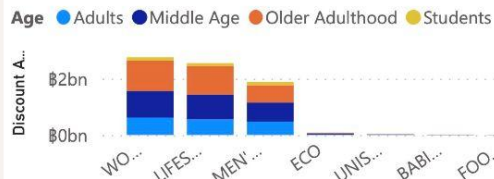
Discount Name	Redeem #
PM Member	515506
PM x Jamies coupon get free pizza	72671
AM AZURE at PM	58190
2018 PM MEMBER 10%	52965
Tourist 5%	52695

Total Discount Proportion

Bill 0.82%
Vendor 34.1%
Company 58.16%
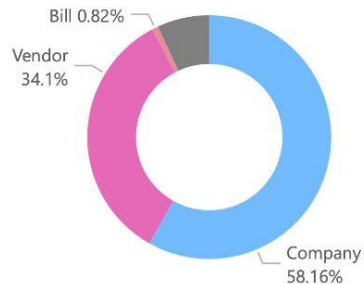
Promotion Time Usage Analysis

Discount Name ● 2018 PM MEMBER 10% ● AM AZURE at PM ● PM Member ● PM x Jamies coupon get free pizza ● Tourist 5%

# of Promotion Used
60K
40K
20K
0K

10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00

Time
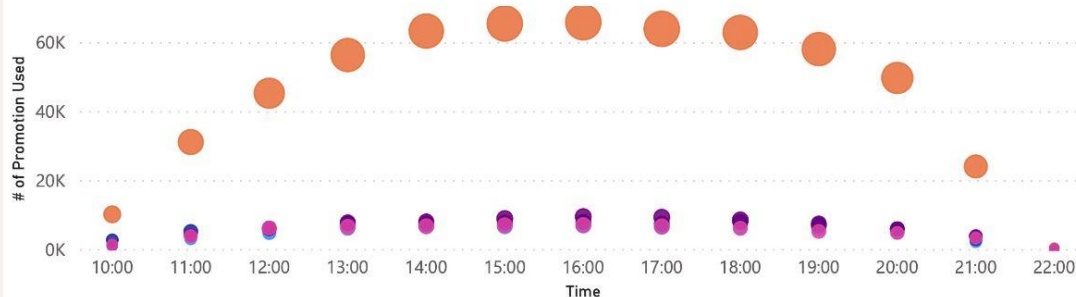
PM 4PM
Store with Highest Redeem #

Explorer Retail,Ltd.
Store with Highest Discount Value Given

฿20,239M
Total Discount Amount

Photographer Novo Ltd.
Top Collaborated Discount Vendor

Older Adulthood
Top Member Redeemer

Thank you for listening!

Hope that our analysis is useful for you!

By Avengers

Additional Findings

1 What type of promotion convince customers to buy?

In promotion analysis, we see that the majority of customers use PM Member, so we assume that the majority of customers use member discount.

2 Why customer buy from the same store but in different building?

We can see this answer more clearly by filtering data on Member Analysis Dashboard.

3 What is the segment of customers in each buildings?

We can see this answer more clearly by filtering data on Member Analysis Dashboard.

[As business analyst] Video (max 10 minutes) to open in the class showing
(1) roughly idea of your DW design and
(2) dashboard report along with some fact findings (if any) – think of you presenting to CEO
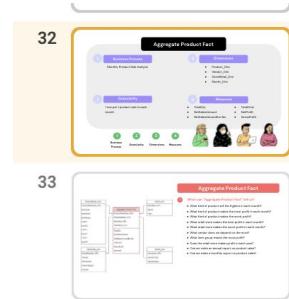
1. Recap

    - Bus Matrix
    - Each fact -- Why?

2. Dashboard
    - Overview: 4 dashboard
    - Each
                - For: what?
                - Source: what?
                - Start from dashboard
                    - What question does this dashboard answer?