ADMT 2018 - Project report

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1 Introduction

The domain of our fictional company is the one of furniture production and retail. The company is located in the province of Bolzano and has several showrooms in the area and one production center.

1.1 Business processes

1.1.1 CRM - Showroom visit

One CRM process is the collection of data about visitors at the different showrooms. A visitor can either be one who is just looking around without intention of buying anything (Seeleute), a future potential customer or an already existing customer. A visit can lead to an order.

Business questions:

- Which is the best running showroom (most visitors, most orders, etc.)
- Where are the customers from (with different granularity)
- Which department are the customers the most interested in
- Compare the number of visitors to the number of customers for a time period and/or showroom

1.1.2 Production

The company logs every step in the production process, especially duration, defects and machine failures.

Business questions:

- What is the average time to produce a particular product
- Which is the product with the highest/lowest error rate
- How much effort/time is spent per order
- Which orders/products generated the most machine failures

2 Conceptual Design

Table 1: Fact table

Fact	Dimensions	Measures
Showroom visit	Date, Showroom, Visitor, Order, Detail, Department, Sales representative	Duration (AVG), Amount of people (SUM, AVG)
Production	Start Date, End date, Product, Production Stage, Machine, Quality control, Operator	Duration (AVG), Raw material cost (AVG)

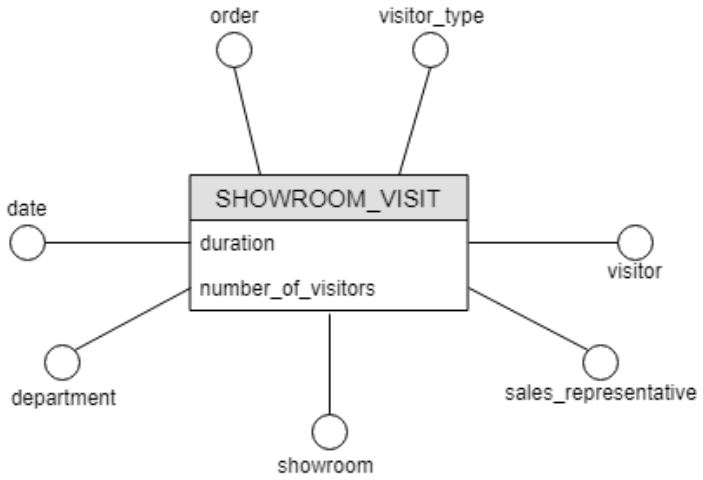

Figure 1: DFM of the showroom visit

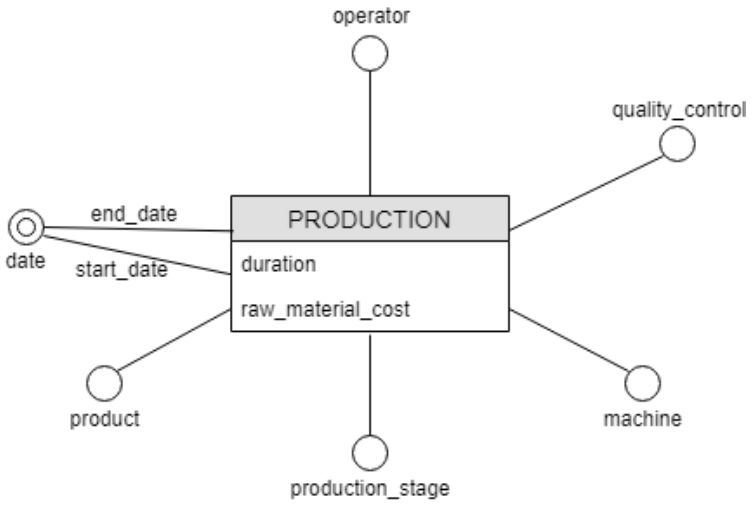

Figure 2: DFM of the production

2.1 Showroom visit

Table 2: Fact table

Dimension	Attributes
Date	Day, Month, Year, Quartal, Week, Day of Week, Season, Holiday
Showroom	Name, City, District, Province, Region, Country, Manager, Address, Telephone, Size
Visitor	Name, City, District, Province, Region, Country, Language, Telephone, E-Mail, Type, Sector, Gender, Customer number
Order	Order Number, Total Price, Discount
Order Detail	Quantity, Quantity Type, Product, Unit price, Total price
epartment	Name
Sales representative	Name, City, District, Province, Region, Country, Language, Telephone, E-Mail, Gender

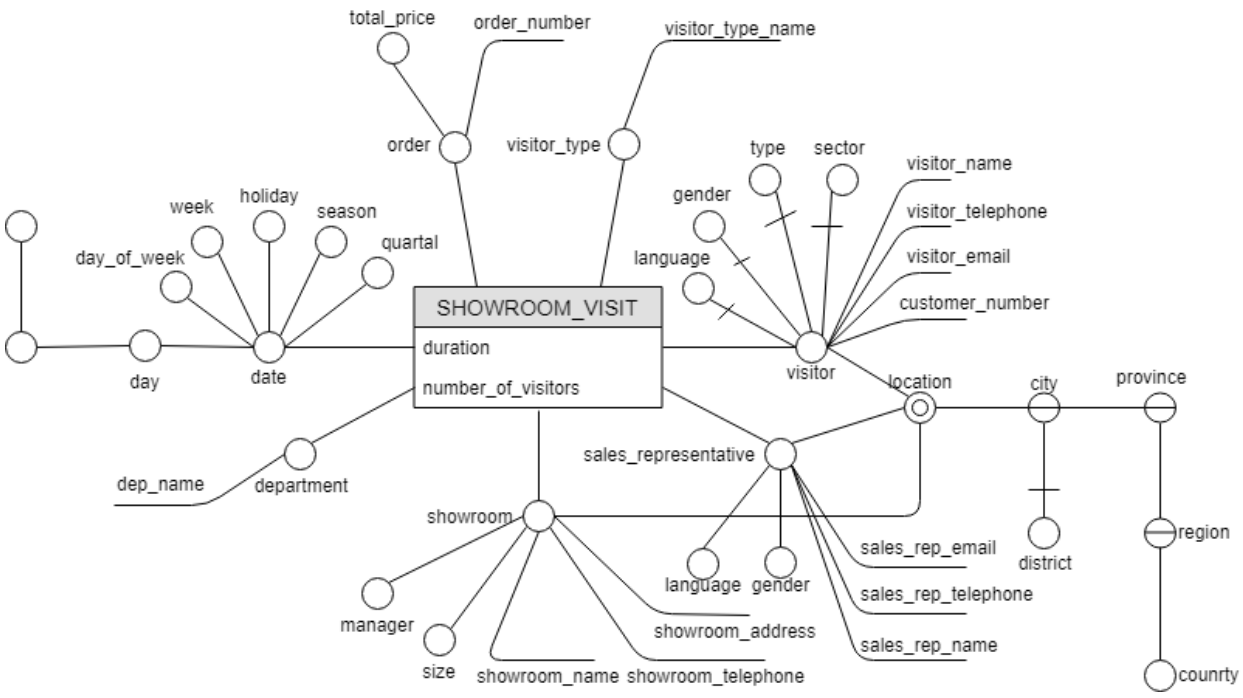

Figure 3: DFM of the showroom visit with attributes

2.2 Production

Table 3: Fact table

Dimension	Attributes
Start date	Day, Month, Year, Week
End date	Day, Month, Year, Week
Product	Product number, Name, Department, Category
Production stage	Name
Machine	Name, Purchasing year, Vendor
uality control	Grade
Operator	Name

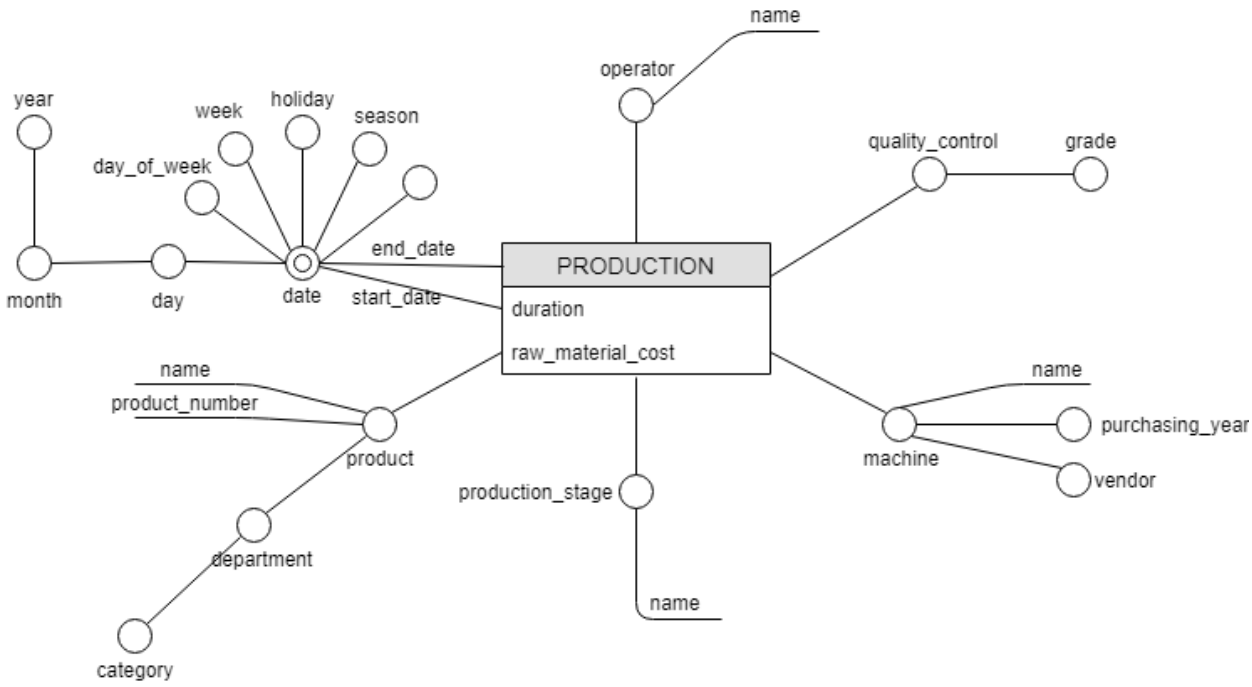

Figure 4: DFM of the production with attributes

3 Logical Design

3.1 Star schemas

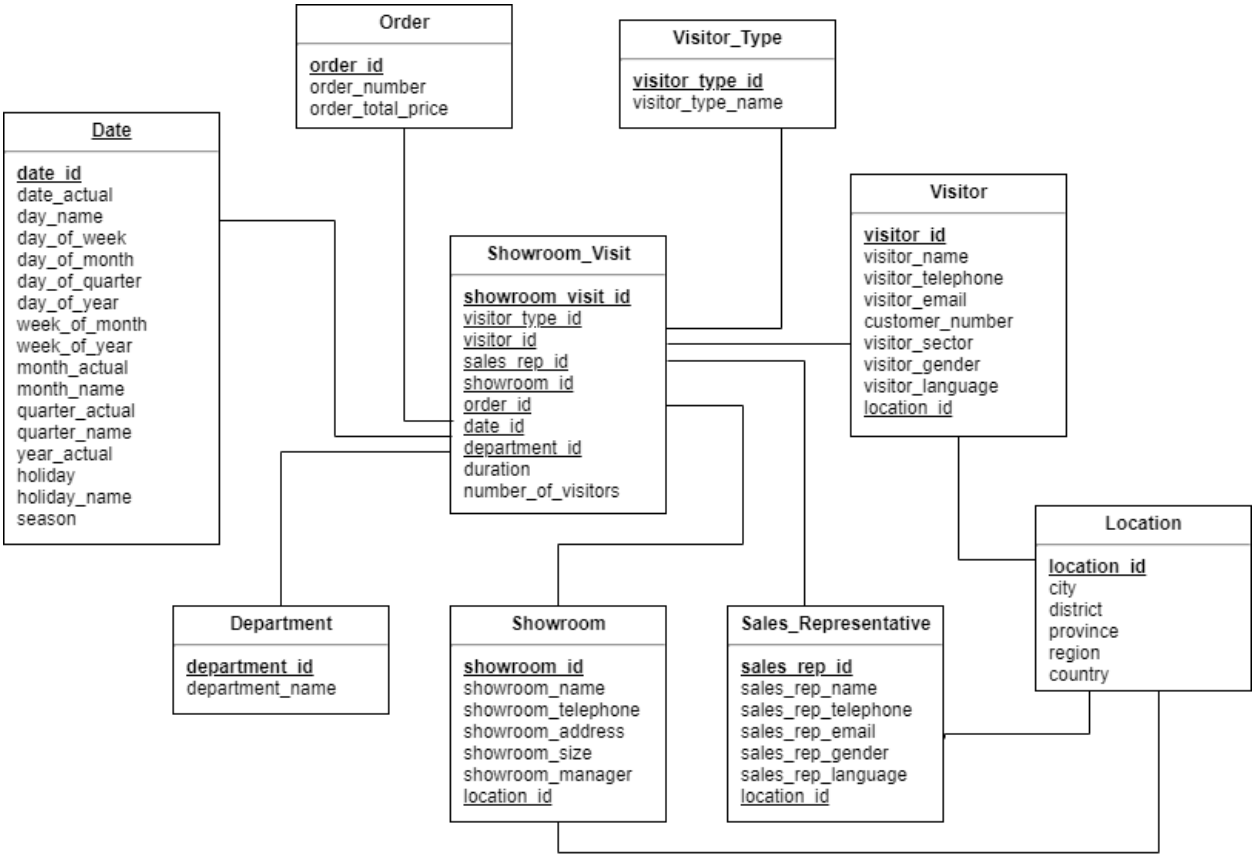

Figure 5: Star schema of the showroom visit

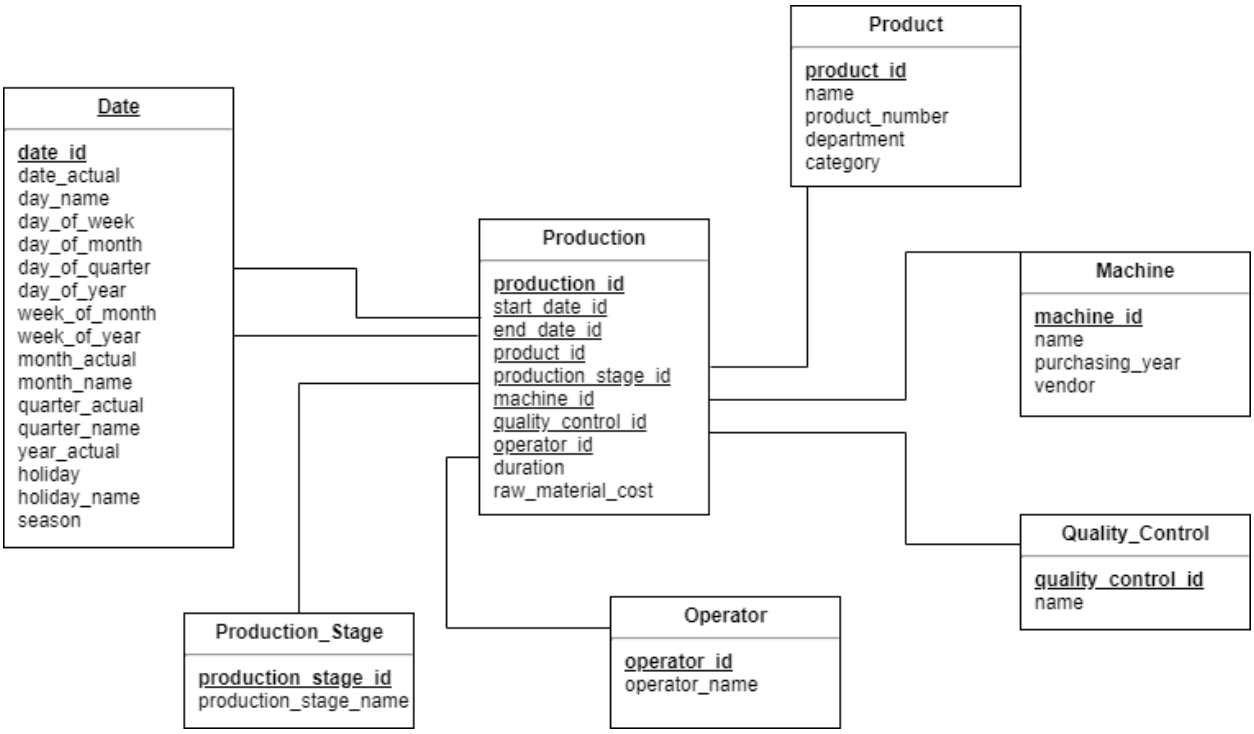

Figure 6: Star schema of the production

3.2 Two business questions

3.2.1 Fact: Showroom visit

In order to be able to make the right marketing decisions, it is very important for the management to know from which sector the various customers or interested parties of a particular showroom come from. So, for example the management wants to know, from which sectors the various customers of showroom "Showroom-Bozen" were coming in the last year.

SQL query:

```
SELECT v.visitor_sector, count(*)
FROM warehouse.visitor v
INNER JOIN warehouse.showroom_visit sv on v.visitor_id = sv.visitor_id
INNER JOIN warehouse.showroom s on sv.showroom_id = s.showroom_id
INNER JOIN warehouse.date d on sv.date_id = d.date_id
WHERE s.showroom_name = 'Showroom-BOZEN'
AND d.date_actual >= '2018-01-01' AND d.date_actual <= '2018-12-31'
GROUP by v.visitor_sector
```

Table 4: Showroom visit

ID	Visitor_id	Sales_rep_id	Showr._id	Depart._id	Date_id	Type_id	Duration	Nr._of_visit.
1282369	570822	6	5	4	20180323	2	90	2
1282370	570823	5	5	2	20160107	4	167	4
1282371	570823	7	5	1	20130526	3	173	6
1282372	570823	11	5	6	20150806	3	100	10
1282373	570823	7	5	1	20121116	4	169	5
1282374	570824	7	5	1	20171210	3	57	3
1282375	570824	18	5	2	20110212	3	166	7
1282376	570824	9	5	4	20130811	3	84	5
1282377	570825	11	5	6	20170507	3	184	10
1282378	570825	12	5	2	20111127	2	26	2
1282379	570825	7	5	1	20150425	3	141	10
1282380	570826	11	5	6	20130208	2	8	2
1282381	570826	12	5	1	20111214	3	61	8
1282382	570827	12	5	1	20170202	3	139	9
1282383	570827	12	5	2	20121012	3	71	7

3.2.2 Fact: Production