## **ER Diagram**

The ER Diagram depicts the entity relationships between the data tables and attributes provided by our client.

#### MonEquip Entity Relationship Diagram ADDRESS SALES STAFF PK ADDRESS\_ID PK SALES\_ID PK STAFF\_ID STREET\_NUMBER SALES\_DATE FIRST\_NAME STREET\_NAME FK | EQUIPMENT\_ID LAST\_NAME SUBURB QUANTITY GENDER STATE UNIT\_SALES\_PRICE PHONE POSTCODE TOTAL\_SALES\_PRICE EMAIL CUSTOMER\_ID COMPANY\_BRANCH STAFF\_ID CUSTOMER PK CUSTOMER\_ID FK CUSTOMER\_TYPE\_ID HIRE\_ID EQUIPMENT\_ID NAME START\_DATE EQUIPMENT\_NAME GENDER END\_DATE EQUIPMENT\_PRICE ADDRESS\_ID EQUIPMENT\_ID MANUFACTURE\_YEAR QUANTITY MANUFACTURER EMAIL UNIT\_HIRE\_PRICE CATEGORY\_ID TOTAL\_HIRE\_PRICE FK CUSTOMER\_ID STAFF\_ID CATEGORY CUSTOMER\_TYPE PK CATEGORY\_ID PK CUSTOMER\_TYPE\_ID CATEGORY\_DESCRIPTION DESCRIPTION

Figure 1 MonEquip ERD

## Star Schema V1

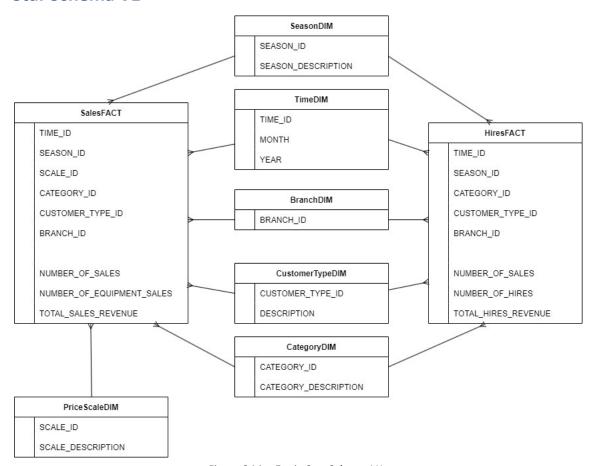


Figure 2 MonEquip Star Schema V1

### Star Schema V2

#### MonEquip Star Schema [Aggregation Level 0] CustomerTypeDIM CustomerDIM CUSTOMER\_TYPE\_ID SALES ID CUSTOMER\_ID DESCRIPTION SALES DATE CUSTOMER\_TYPE\_ID UNIT\_SALES\_PRICE NAME GENDER SalesFACT HireFACT StaffDIM SALES\_ID HIRE\_ID STAFF ID EQUIPMENT\_ID STAFF\_ID FIRST\_NAME CUSTOMER ID CUSTOMER\_ID LAST\_NAME STAFF\_ID EQUIPMENT\_ID GENDER PHONE NUMBER\_OF\_EQUIPMENT\_SOLD NUMBER\_OF\_EQUIPMENT\_HIRED EMAIL TOTAL\_SALES\_REVENUE TOTAL HIRING REVENUE COMPANY\_BRANCH HireDIM EquipmentDIM EQUIPMENT\_ID START\_DATE CATEGORY\_ID END DATE EQUIPMENT\_NAME CategoryDIM UNIT\_HIRE\_PRICE EQUIPMENT PRICE CATEGORY ID MANUFACTURE\_YEAR CATEGORY\_DESCRIPTION MANUFACTURER

Figure 3 MonEquip Star Schema VO

# **SCD Description**

After going through the requirements for the star schema it is decided that there are no cases that require the use of temporal dimensions or temporal data warehousing. Two specific instances that were analysed are the unit costs (unit\_sales\_price and unit\_hire\_price) and equipment\_price.

### **Unit Costs**

These values are recorded in the operational database when a transaction occurs. Since a given transaction (hire or sale) is fixed in time and includes a date, it is not something that would ever require changes to be tracked.

### **Equipment\_Price**

This value does not get used for the calculation of any of our fact measures. Additionally, it is explicitly stated that "When an equipment is purchased, the price of the equipment is kept in the equipment table" then it may require SCD 0.

# **Description of V1/V2 Differences**

The key difference between the two star schemas is that version 2 has no aggregation. To achieve this, we started with the high level star schema and reduced the aggregation by changing the dimensions linked to the fact table.

- Staff DIM was used instead of Branch DIM. Company branch was left as a variable in Staff dim.
- Customer DIM was added with Customer Type linking to Customer.
- Similarly, Equipment DIM was added with Category being linked to Equipment Dimension

To achieve no aggregation in the fact table we needed a way to uniquely identify each transaction in the operational database. In this case, the only way to do this was by using Sales\_ID and Hire\_ID. The version 2 star schema includes these. Since there is no aggregation, we removed Number\_Of\_Hires and Number\_Of\_Sales as this aggregation is a COUNT and will be equal to 1 for every row in both fact tables.