FINANCIAL DATA MART

BI System Specifications Document

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Contents

1. General

1.1. Project Objectives

The purpose of the project is to create a BI solution for the HR and Finance departments of Experis and to facilitate report generation for the purpose of deriving business and financial insights.

The data mart will include summarized data tables derived from the billing operational system database (ExperisOperationalDB), focusing mainly on the company's customers and employees.

Additionally, the BI solution will include reports on employee payroll and customer billing, as well as an executive dashboard. These reports will have a financial focus, aiming to provide a comprehensive view of Experis' current and past financial performance. Furthermore, these reports will aim to uncover financial insights to help reduce expenses and enable efficient future financial decisions.

1.2. Project Contents

1.2.1 The financial Data Mart will include 2 fact tables, 4 dimension tables and 2 history tables:

FactInvoices – Information about the invoices of company's customers, the employees that work with the customer, customers information, and the total billing hours and billing amount.

FactReportedHours – Information about employee's working hours and whether the time was reported and approved. Additionally, the table includes role specific salaries and work dates.

DimEmployees – Detailed Information about each employee in the company. It includes personal information, seniority, information about the method of payment (global salary or hourly salary) and more.

DimRoles – Information about each role and department in the company, and role-oriented employee and customer rate.

DimAbsence – Information about the cause for leave.

DimCustomers – Detailed Information about each customer working with the company.

DimCustomersHistory – Historic data regarding company's clients.
DimEmployeesHistory – Historic data regarding company's employees.

The ERD is shown in the following link: ERD Link

1.2.2. The project will meet its objectives through data visualizations and provide periodic data for analysis regarding company employees, customers, salaries, and invoices.

1. Customer Billing Analysis:
   Customers billing report will include customer billing data segregated by date, company, billing method, department, and role. The report aims to deliver data about company's revenue through different perspectives (company, billing method, etc.).

2. Employee Payroll Analysis:
   Employee payroll report will include payroll data such as working hours, absence days, and work-related information segregated by date, company, paying method, department, and role. The report aims to highlight different areas of interest that might have an influence on the company's financials.

3. Employee Overview Report:
   This report generates a personal report for each employee in the company including work-related information.

4. Executive Dashboard:
   The dashboard will include key elements and measures from customer and employee analysis reports. The dashboard will provide an overview of company's current and past financial performance through different contexts.

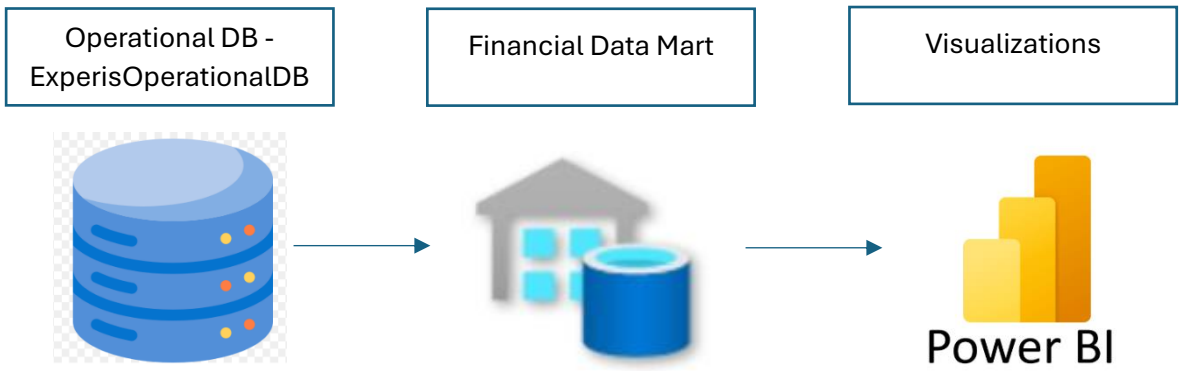
2. Technical Specifications

2.1 Prerequisites

SQL Server	Operational DB – tables and data
Data refresh processes	Definition of JOBS in SSMS
Power BI	Reports and dashboard generation

2.2 Solution Architecture

2.2.1 High Level Design



2.2.2 Power BI Reports and Dashboard

2.2.2.1 Customer billing report will include the following information:

- Average billing rate
- Total invoices issued
- Total invoice amount
- Average invoice amount
- Revenue break by department, role, company and date
- Month over Month revenue difference
- Total profit trend during the last year

2.2.2.2 Employee payroll report will include the following information:

- Total payroll amount
- Total employees
- Average employee rate
- Average seniority
- Average age
- Active employees breakdown by department
- Total absence days segregated by the cause of leave
- Total reported days vs. total approved days
- Total working hours and average salary breakdown by month
- Approval rate (total approved days/total reported attendance)

2.2.2.3 Employee overview report will include the following information:

A summarized table of employee data at customer's site, including customer and employee rate, seniority, yearly salary and billing, role and department.

2.2.2.4 Executive dashboard will consist of the following information:

- Total invoices issued
- Total revenue
- Average invoice amount
- Average employee rate and billing rate
- Total employee salary breakdown by department
- Absence days out of total working days
- Revenue and profit QoQ% change
- Rank of role profitability
- Revenue distribution by customer and city
- Month over month revenue difference

3. Functional Specifications

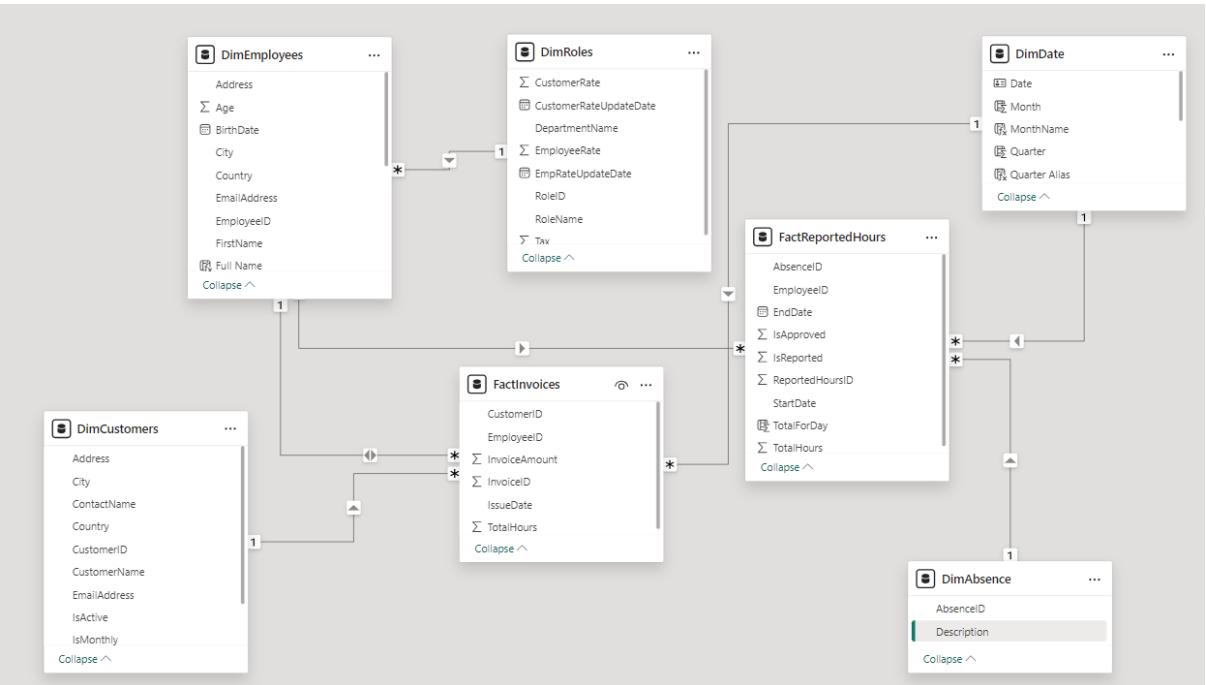
3.1. ERD Model

ERD link

3.2. Visualization in Power BI:

3.2.1. ERD Model in Power BI:

The reports and dashboard were created using Power BI Desktop and were later published to Power BI Service. The model generated in Power BI includes 2 Fact tables and 4 dimension tables. The history tables were not included in the Power BI model. Furthermore, a DimDate table was added to the model and was connected to the Fact tables.



3.2.2. Measures:

The measures were calculated with DAX to be later utilized in creating the visualizations:

Totals

- Total Active Employees = CALCULATE(SUM(DimEmployees[IsActive]), FactInvoices)
- Revenue = SUM(FactInvoices[InvoiceAmount])
- Total Employee Salary = SUM(FactReportedHours[TotalForDay])
- Total Working Hours = SUMX(FILTER(FactReportedHours, FactReportedHours[IsReported] = 1),FactReportedHours[TotalHours])
- Total Reported Days = COUNTX(FILTER(FactReportedHours, FactReportedHours[IsReported] = 1), FactReportedHours[ReportedHoursID])
- Total Approved Days = COUNTX(FILTER(FactReportedHours, FactReportedHours[IsApproved] = 1), FactReportedHours[ReportedHoursID])
- Total Active Employees = CALCULATE(SUM(DimEmployees[IsActive]), FactInvoices))
- Count Absence Days = COUNTX(FILTER(FactReportedHours, FactReportedHours[AbsenceID] <> 1), FactReportedHours[AbsenceID])
- Cumulative Total Revenue = CALCULATE(SUM(FactInvoices[InvoiceAmount]), DATESBETWEEN(DimDate[Date], MIN(DimDate[Date]), MAX(DimDate[Date])), REMOVEFILTERS(DimRoles))
- Total Employee Count = COUNT(DimEmployees[EmployeeID])
- Total Working Days = NETWORKDAYS(MIN(FactReportedHours[StartDate]), MAX(FactReportedHours[StartDate]), 7)*COUNT(DimEmployees[EmployeeID])
- Invoice Count = COUNT(FactInvoices[InvoiceID])

Averages

- Average Customer Rate = CALCULATE(AVERAGE(DimRoles[CustomerRate]), FactInvoices)
- Average Employee Rate = CALCULATE(AVERAGE(DimRoles[EmployeeRate]), FactInvoices)
- Average Salary = SUM(FactReportedHours[TotalForDay])/DISTINCTCOUNT(FactReportedHours[EmployeeID])
- Avg Age = AVERAGE(DimEmployees[Age])
- Average Seniority = CALCULATE(AVERAGE('DimEmployees'[Seniority]), FactInvoices)

- Avg EmployeeRate = CALCULATE(AVERAGE(DimRoles[EmployeeRate]), FactInvoices)
- Avg Invoice Amount = AVERAGE(FactInvoices[InvoiceAmount])
- Avg Billing Rate = CALCULATE(AVERAGEX(DimEmployees, RELATED(DimRoles[CustomerRate])),FactInvoices)
- Avg Employee Seniority = CALCULATE(AVERAGE('DimEmployees'[Seniority]), FactInvoices)

QoQ, MoM and Variation calculations

- Revenue QoQ% =

```
VAR PREV_QUARTER = CALCULATE([Revenue],
DATEADD('DimDate'[Date], -1, QUARTER))
RETURN
    DIVIDE([Revenue] - PREV_QUARTER, PREV_QUARTER)
```

- Profit QoQ% =

```
VAR PREV_QUARTER = CALCULATE([Profit],
DATEADD('DimDate'[Date], -1, QUARTER))
RETURN
    DIVIDE([Profit] - PREV_QUARTER, PREV_QUARTER)
```

- Previous Month Invoice Amount = CALCULATE([Revenue], DATEADD(DimDate[Date], -1, MONTH))
- MoM Invoice Amount variance = [Revenue] - [Previous Month Invoice Amount]
- Profit = [Revenue] - CALCULATE([Employee Salary], FactInvoices)

Rate and Percentages

- Approval Rate % = DIVIDE([Total Approved Days], [Total Reported Days])
- Revenue/Total Cumulative Rev % = DIVIDE([Revenue], [Cumulative Total Revenue], 0)*100

Maximums

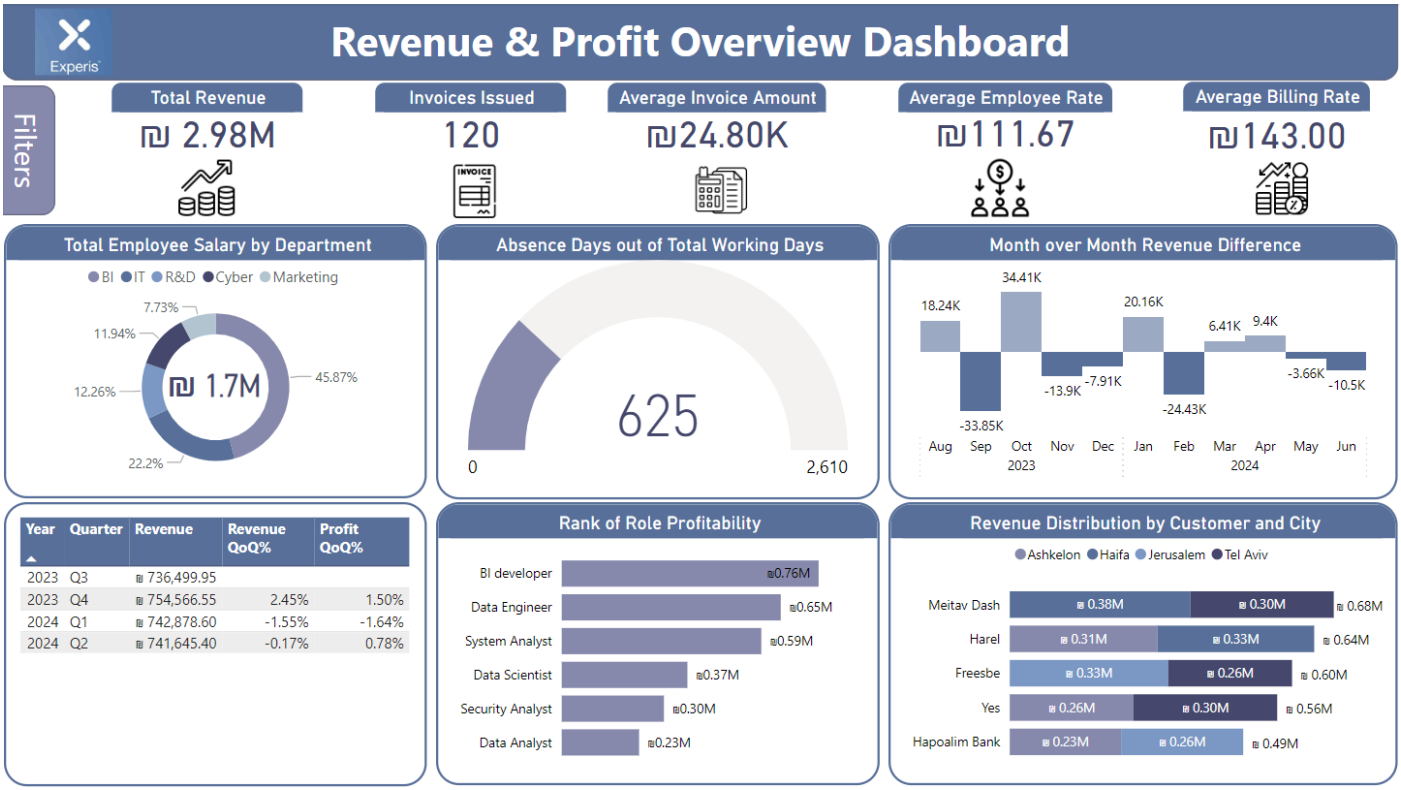
- Last Customer Rate Update Date = CALCULATE(MAX(DimRoles[CustomerRateUpdateDate]), FactInvoices)
- Last Employee Rate Update Date = CALCULATE(MAX(DimRoles[EmpRateUpdateDate]), FactInvoices)

3.2.3. Reports:

The project includes 4 reports: Employee Overview Report, Employee Payroll Report, Customer Billing Report, Revenue & Profit Overview Dashboard. The project includes data for the last year (Jul 2023 – Jun 2024).

3.2.3.1 Revenue and Profit Overview Dashboard:

This report provides key information regarding revenue and profit through different contexts. Also, it includes elements that influence revenue and profit directly or indirectly (such as absence days).



KPI Cards:

- Total Revenue
- Invoices Issued
- Average Invoice Amount
- Average Employee Rate
- Average Billing Rate

Charts:

- Total Employee Salary by Department
- Absence Days out of Total Working Days
- Month over Month Revenue Difference

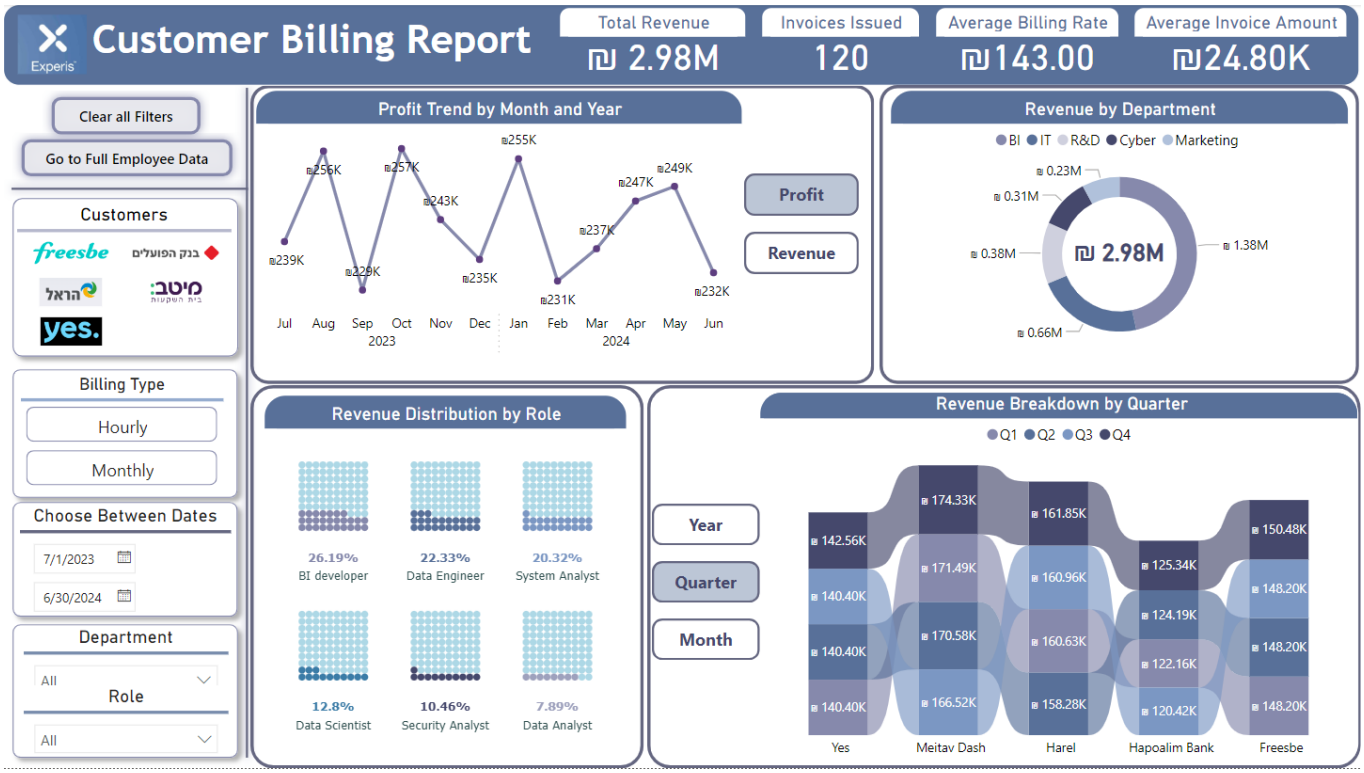
- Revenue Distribution by Customer and City
- Rank of Role Profitability Jul 2023 – Jun 2024
- Revenue & Profit Quarter over Quarter % Change

Slicers:

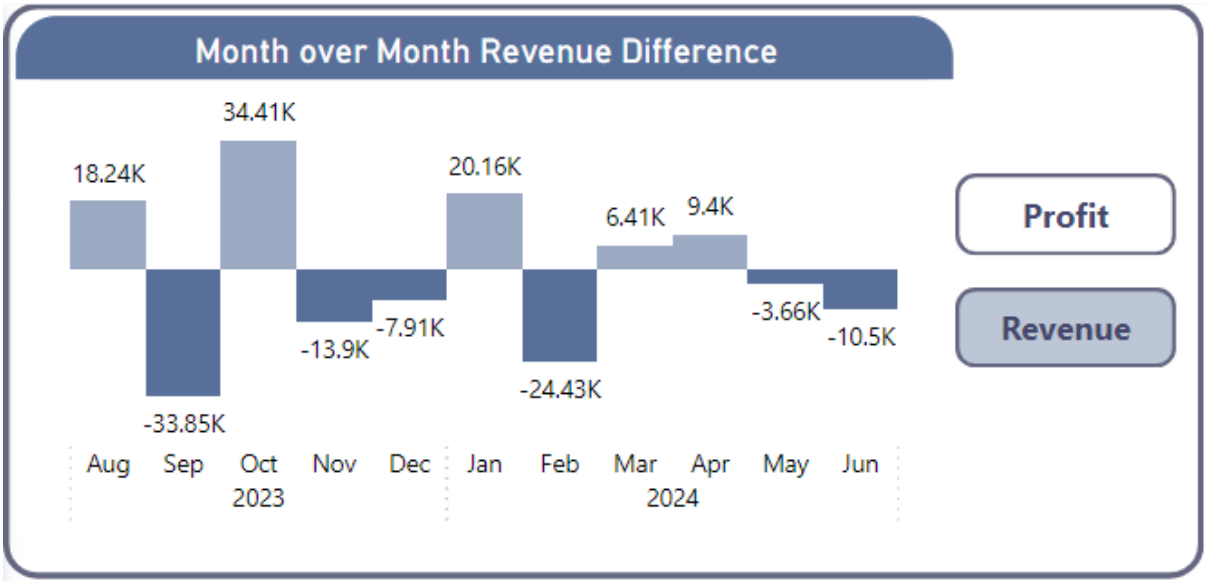
- Customers
- Billing Type
- Salary Type
- Date Range
- Department
- Role

3.2.3.2 Customer Billing Report

This report provides the current revenue status of the company. The report provides a view over revenue breakdown by different time periods, role, department and month over month recorded change. Also, it provides a look at the profit change during the analyzed year.



With the use of Bookmark feature, an additional chart is provided as part of the Customer Billing Report.



KPI Cards:

- Total Revenue
- Invoices Issued
- Average Billing Rate
- Average Invoice Amount

Charts:

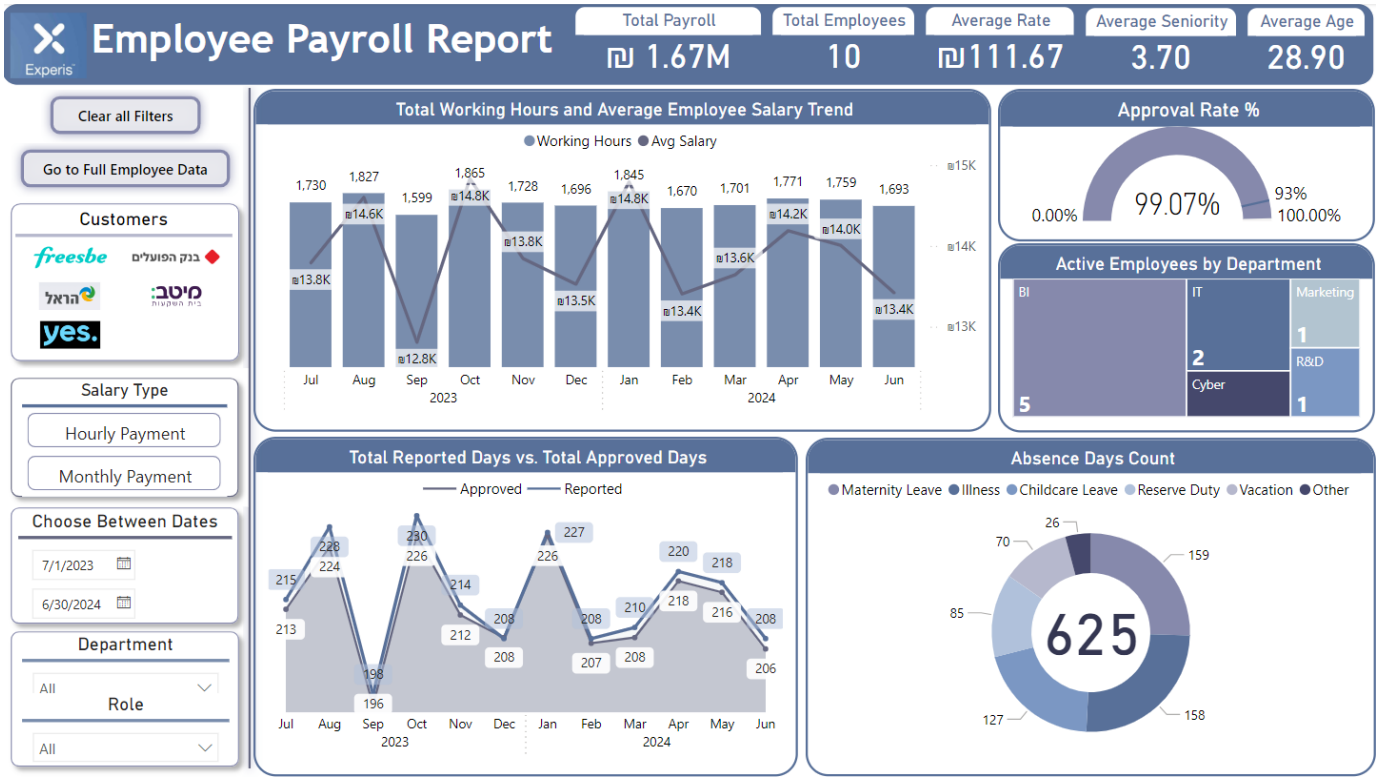
- Month over Month Revenue Difference
- Profit Trend by Month and Year
- Revenue by Department
- Revenue Distribution by Role
- Revenue Breakdown by Year, Quarter, Moth

Slicers:

- Customers
- Billing Type
- Date Range
- Department
- Role

3.2.3.3 Employee Payroll Report

This report reflects key payroll elements such as total working hours, total absence day count and more. Each chart focuses on different areas of interest that might affect company's financials directly or indirectly.



KPI Cards:

- Total Payroll
- Total Employees
- Average Rate
- Average Seniority
- Average Age

Charts:

- Total Working Hours and Average Salary Trend
- Total Reported Days vs. Total Approved Days
- Approval Rate %
- Active Employees by Department
- Absence Days Count

Slicers:

- Customers
- Salary Type
- Date Range
- Department
- Role

Both in Customer Billing Report and Employee Payroll Report there is a navigation button to the Employee Overview Report:

3.2.3.4 Employee Overview Report

This report delivers data regarding each employee placed at a specific customers' site. The report creates a list with different role oriented financial information.

Employee	Customer	Department	Employee Role	Employee Seniority	Customer Rate	Last Customer Rate Update Date	Employee Rate	Last Employee Rate Update	Active Employees	Total Client Billing	Total Employee Salary
Hodaya Bilya	Freesbe	IT	Data Engineer	3	₪160	01/01/2024	₪130	05/01/2024	1	₪ 334,080.00	₪ 185,140.80
Noa Finkelstein	Freesbe	BI	BI developer	4	₪125	28/02/2024	₪90	05/03/2024	1	₪ 261,000.00	₪ 149,320.08
Hagai Izchaki	Hapoalim Bank	BI	BI developer	1	₪125	28/02/2024	₪90	05/03/2024	1	₪ 257,402.50	₪ 146,304.00
Omer Barmoha	Hapoalim Bank	Marketing	Data Analyst	6	₪115	02/02/2024	₪80	10/02/2024	1	₪ 234,696.60	₪ 129,024.00
Tomer Avish	Harel	IT	Data Engineer	6	₪160	01/01/2024	₪130	05/01/2024	1	₪ 330,467.20	₪ 185,268.17
Yuly Tayar	Harel	Cyber	Security Analyst	1	₪150	02/01/2024	₪120	07/01/2024	1	₪ 311,257.50	₪ 199,204.80
Romina Boltaks	Meitav Dash	R&D	Data Scientist	4	₪180	15/01/2024	₪140	01/02/2024	1	₪ 381,022.20	₪ 204,481.91
Yanai Bardos	Meitav Dash	BI	System Analyst	5	₪145	02/01/2024	₪110	07/01/2024	1	₪ 301,904.50	₪ 158,031.39
Gil Emanuel	Yes	BI	BI developer	2	₪125	28/02/2024	₪90	05/03/2024	1	₪ 261,000.00	₪ 148,032.00
Odelia Hochman	Yes	BI	System Analyst	5	₪145	02/01/2024	₪110	07/01/2024	1	₪ 302,760.00	₪ 163,748.94

The table includes the following information:

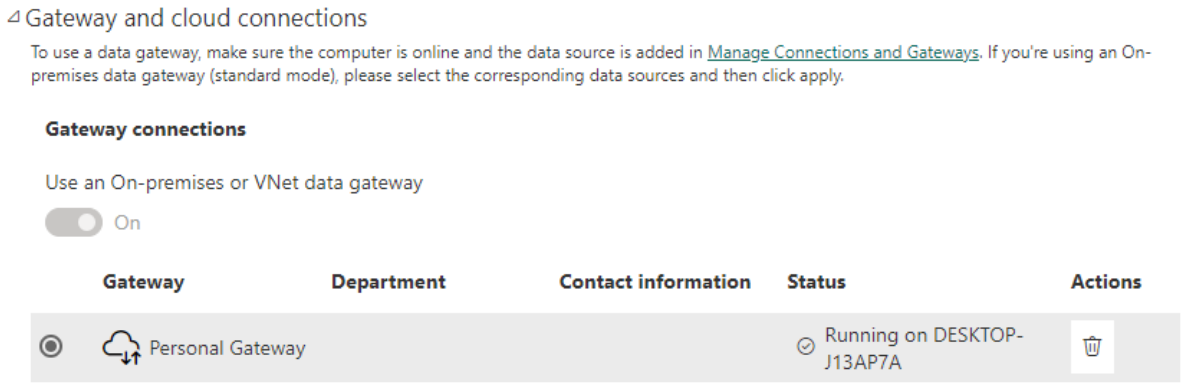
- Employee full name
- Customer
- Department affiliation

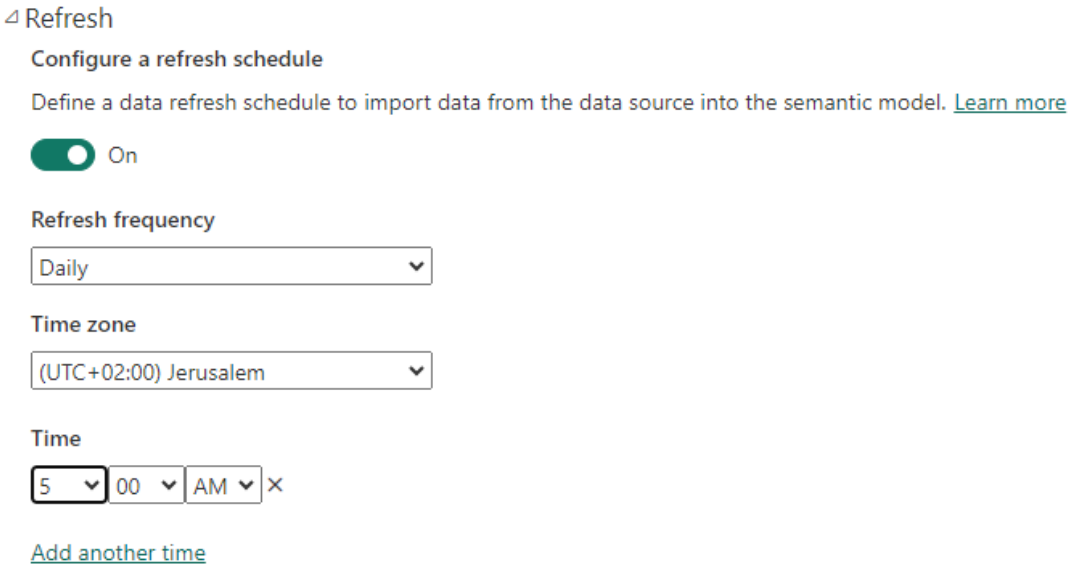
- Role
- Employee's seniority
- Customer rate
- Last update date of customer rate
- Employee rate
- Last update date of employee rate
- Count of active employees
- Total client billing
- Total employee salary

Slicers:

- Employees
- Customers
- Billing type
- Date Range
- Department
- Role

3.2.3.5 The data will be refreshed automatically daily at 5 am through Gateway connection in Power BI Service:

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Time zone
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5
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