Dashboard Design for a Consultancy Firm within the Sustainability Sector

A Business Case for a New Data Platform

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kyden
a fast track to better

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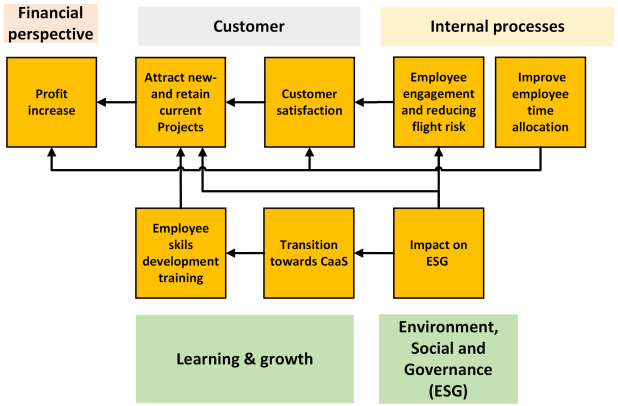
Management summary

This research has been conducted within the context of a Dutch consultancy firm within the sustainability sector. Our research has a dual commitment. First and foremost we are focused on enhancing the decision-making of the management team through a management dashboard. Secondly, we explore a business case for a new data platform. Kyden is a newly introduced Dutch consultancy firm with a focus on providing ESG (Environmental, Social, and Governance) related services. We have the following problem statement:

"**The current way of finding and analysing relevant data of the consultancy processes lacks in terms of identifying emerging trends and monitoring efficiency and effectiveness**".

To address this problem statement we conducted a systematic review of relevant literature. We started by comparing different Business Intelligence (BI) tools, delved into different management models and explored the distinction between OKRs and KPIs (Objectives and Key Results versus Key Performance Indicators).

We recommend the use of Microsoft PowerBI, a well-known BI tool which many of the internal consultants and external customers are familiar with. To provide meaningful visuals, we recommend strategy mapping to define objectives and key results (OKRs). The semi-structured interviews with the managers (practice leads) were valuable input for these OKRs. Figure 7 shows the formulated objectives, which is the "backbone" of the visuals we created on the dashboard.



The strategy map we created begins with an emphasis on the ESG perspective. By following Kyden's new vision to become a leading ESG full-service provider we believe that it is fundamentally important to increase the number of ESG-related projects. The impact on ESG provides an opportunity to further standardise Kyden's services in a "Consultancy as a Service" (CaaS) manner. This concept builds on the idea of as-a-service business models. As Kyden's experiences growth in terms of the number of consultants and experiences increased cross-collaboration between the (new) departments, we recommend mapping out the diverse skill sets possessed by the consultants. By doing so Kyden may effectively address areas of improvement. We suggest improving the time allocation of employees, we specifically address this objective by providing a new scheduling tool which combines pre- and post-calculation data (in the dashboard). We recommend that Kyden keeps track of

Employee Leave Risk light risk by monitoring the so-called Bradford factor. This factor focuses primarily on the number of sick leave instances instead of the total amount of sick leave time. Customer intimacy is considered important, thus we recommend the Net Promoter Score (NPS) to keep track of customer satisfaction. Attracting new projects and retaining current customers is considered essential for Kyden's business continuity. Therefore, we recommend tracking the sales funnel and activities through the new BI tool. Lastly, the strategy map ends in the profit increase category. In our new dashboard, we keep track of this objective by measuring revenue, costs and profit per consultant per hour. This granular approach allows for a more accurate examination of the processes.

The different objectives are tracked by the use of KRs, Table 1 shows the different BSC perspectives, the related objectives and finally the KRs to track these objectives.

Table 1: BSC perspective, objectives and key results.

BSC perspective	Main Objectives:	Key results:
Financial perspective	Profit increase	Revenue, costs and profit
		Averages (revenue, costs and profit)
		Revenue needed in order to hit target
		Days Sales Outstanding
		Weighted incomming revenue
		NC / VC
Customer perspective	Attract new- and retain current projects	Leads, oppurtunities, proposals and contracts signed
		Average Time Until Conversion
		Sales activities before a deal is won
		Churn Rate
		Relationship intimacy
Customer perspective	Customer satisfaction	NPS score
Internal processes	Improve employee time allocation	Bilability (bilable hours)
		Utilization (time spent on consulting work)
		Time spent on generating leads
		Deployement capacity
Internal processes	Employee engagement and reducing flight risk	Bradford Factor
Learning and growth	Employee skils development training	Skills overview
		Time spent on learning
Learning and growth	Transition towards CONaaS	Number and percentage CONaaS projects
ESG	Impact on ESG	Number and percentage "E", "S" and "G"

Subsequently, we provided Kyden with a dashboard MVP, which uses static datasets from several IT systems, and we generate data when needed in order to show all of the visuals. We created an adjustable formula to measure customer relationship intimacy depending on the number of projects and the average project duration. We provided the churn rate which tracks the number of customers leaving per month and provided sales-related results such as the number of leads and average conversion time. For our profit increase objective, we divide post-calculation hours by precalculation hours in order to determine the efficiency of the planned hours. We implemented the ability to track revenues based on our HubSpot dataset, which provides us with revenue over time in the future. We provide a formula for days sales outstanding and compare revenue targets with revenues on a monthly basis. Most of the work is computable over multiple dimensions such as departments, customers, consultants and dates.

Our findings strongly suggest that a data platform is a necessary solution for the long term. Within the data platform, separate data silos can be created allowing Kyden to create separate environments for different customers and projects. The main benefits consist of enhanced data security, backups, the ability to build dashboards, SaaS applications and the capacity to analyse industry trends. This is particularly important due to the regulatory CSRD landscape, which poses unique challenges to Kyden's customers. In order to realise a data platform, Kyden needs to consider its existing technical infrastructure, in-house tech team size and expertise. There are currently no data engineers available, making it advisable for Kyden to enter a strategic partnership. We recommend collaboration with Fourco since this company offers the highest Net Present Value over time (the NPV over 4 years is €155.940,79). Furthermore, Fourco has a dedicated tenant model, which has additional benefits in terms of security and customisation.

Preface

Before you lay the master thesis: "Dashboard Design for a Consultancy Firm within the Sustainability Sector - A Business Case for a New Data Platform". We explored the intriguing world of business intelligence and data visualisations which is the result of extensive research conducted within the context of the management team of a consultancy company. It also marks the finish line for my master's in "Industrial engineering and management" at the University of Twente. I was engaged in researching and writing this thesis from March to August 2023.

First and foremost, I would like to express my gratitude to my company supervisor, Sander Kloppenburg. His guidance, support and valuable insights have been extremely helpful during my research. His meticulous attention to detail has enabled me to make efficient strides in my thesis journey.

Furthermore, I extend my appreciation to my primary supervisor at the University of Twente, Reinoud Joosten. I always enjoyed our discussions about the research and learned a lot from his insights. Additionally, I would like to acknowledge the contributions of my colleagues and peers, whose diverse perspectives and helpful spirits have made the process far more enjoyable.

Finally, I want to thank my family and friends for being there for me. I would also like to thank you, my reader: I wish you a pleasant reading experience.
- Irmak Samur

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List of Acronyms

AFAS - A Dutch software company specializing in ERP, HRM, and CRM solutions
API - Application Programming Interface
AWS - Amazon Web Services
BSC - Balanced Scorecard
BI - Business Intelligence
CaaS - Consultancy as a Service
CRM - Customer Relationship Management
CSRD - Corporate Sustainability Reporting Directive
CX - Customer Excellence
DAX - Data Analysis Expressions
DSO - Days Sales Outstanding
DX - Data Experience
ERP - Enterprise Resource Planning
ESG - Environmental, Social, and Governance
ETL - Extract, Transform, Load
HR - Human Resource
HR&EX - HR and Employee Experience
IBCS - International Business Communication Standards
KC - Kirkman Company
KPI - Key Performance Indicator
KSF - Key Success Factors
M - The programming language used within Power Query
MT - Management Team
MVP - Most Viable Product
NLP - Natural Language Processing
NPS - Net Promoter Score
NPV - Net Present Value
OKR - Objective and Key Result
PPE - Public Private Ecosystems
PLs - Practice Leads
PoV - Proof of Value
RQ - Research Question
SaaS - Software as a Service
SQ - Sub Research Question
T360 - Transform 360
VC - Pre Calculation
YTD - Year To Date

Glossary

Agile Approach - A flexible iterative project management approach
Amazon Web Services (AWS) - Cloud provider
Asana - A collaboration and project management tool
Billability - Proportion of a consultant's time that can be directly charged to the customer
Celonis - Process mining software
Data Consolidation - The process of combining data from various sources
Data platform - Centralised infrastructure to collect, store, and analyse data
Effectiveness - The ability to achieve a desired result or outcome
Efficiency - Produce a desired outcome with minimal waste of resources such as time, money, or effort
Fact table - Table containing numeric values
Foreign key - Establish relationships between tables by referencing the primary key of another table
Gartner Magic Quadrants - A framework from Gartner assessing technology vendors
Generative AI - Uses NLP to enable human-like responses from chatbots
Google Cloud Platform - Cloud provider
HubSpot - Customer relationship software
Kanban - A project management methodology
Microsoft Azure - Cloud provider
Multi-tenant - A single instance serves multiple users
Primary Key - Unique identifiers for each record in a data model
Sales Funnel - A visual of the customer stages before becoming a definitive customer
Shared tenant - Multiple users share a common infrastructure
Strategy map - A graphical representation of an organisation's strategic objectives
Utilisation - Measures the amount of time a consultant spends working on projects

1 Introduction

Section 1 starts by focusing on Kirkman Company (KC), the merger between KC, YSE and Dialogue and the research context. Section 2 delves into the existing state of the company and in doing so, specifically evaluates the current challenges and limitations. Section 3 focuses on literature related to our research topic. Section 4 focuses on the desired situation of the dashboard. Our business case is located in Section 5. We evaluate our performance in Section 6. Lastly, we describe the conclusions and recommendations in Section 7.

1.1 Merger of Kirkman Company, YSE and Dialogue: becoming Kyden

Kirkman Company (KC) is a Dutch consultancy firm specialising in sustainable business and organisational transformations. KC was founded in 2000 and operates in various sectors, such as finance, energy and government. KC's primary focus is transformation processes. KC has a total of 55 employees including three individuals who hold the position of partner. The organisation has a flat structure, shown in the following figure:

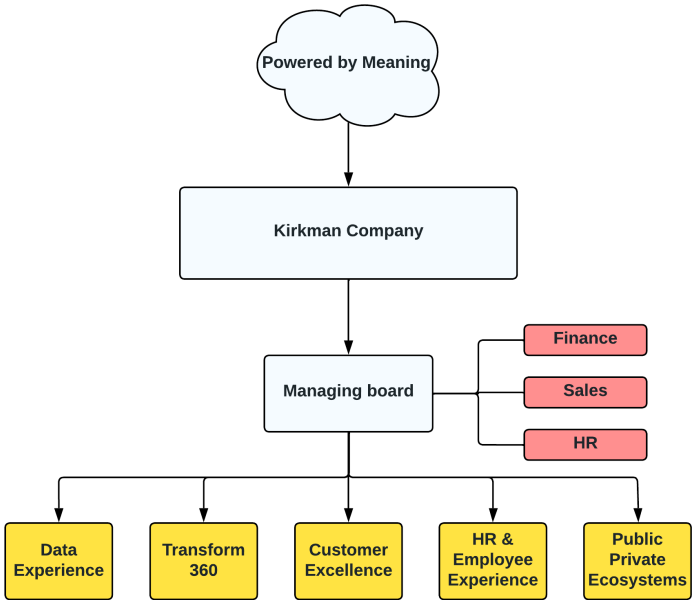


Figure 1: organisational chart Kirkman Company.

As can be seen at the top of Figure 1, KC has a parent company called Powered by Meaning. The various companies that fall under the Powered by Meaning network are active in various fields, from consultancy (Kirkman Company) and developing young talent (YSE) to software (TruQu). They all have one thing in common: they contribute to the circular economy. As can be seen in the bottom part of Figure 1, there are five business practices, within KC:

Data Experience (DX) focuses on adding value through the application of data science, AI, Machine Learning and platform technology. The team specifically focuses on what added value data has for the organisation and how it can be incorporated into the business processes.

Transform 360 (T360) has a focus on helping CEOs and their leadership teams to sharpen, design and execute their transformation, across and in co-creation with the entire organisation. KC consults by providing cross-departmental insights into internal- and external challenges.

Customer Excellence (CX) focuses on helping organisations improve the Customer Experience. The focus lies on developing a customer-oriented culture throughout the organisation and ensuring that the customer experience is recognized consistently across all channels. By doing so, CX aims to increase the loyalty of customers.

HR and Employee Experience (HR&EX) has a similar function as Customer Excellence, but the focus lies on the employee instead of the customer.

Public Private Ecosystems (PPE) has a focus on public-private ecosystems. KC does this by converting the competencies of different organisations into partnerships.

During the research period, Kirkman Company has gained a specific interest in becoming an ESG (Environmental, Social, and Governance) full-service provider. The idea is to help organisations with the challenges posed by societal and environmental boundaries. To do this more efficiently, Kirkman Company decided to enter into a corporate merger, with the YSE and Dialogue. YSE (Young Sustainability Experts) is a company that extensively focuses on sustainable business practices. YSE offers similar services compared to Kirkman Company in terms of sustainability consulting, project management and training programs to support company transitions. Next, we have Dialogue, which focuses mainly on stakeholder engagement, coaching and legal training. By combining the expertise and resources of the partner companies YSE and Dialogue, Kirkman Company has been re-branded and continues to operate under the new name Kyden. Note that there are now three primary business lines, each specialised in a specific proposition:

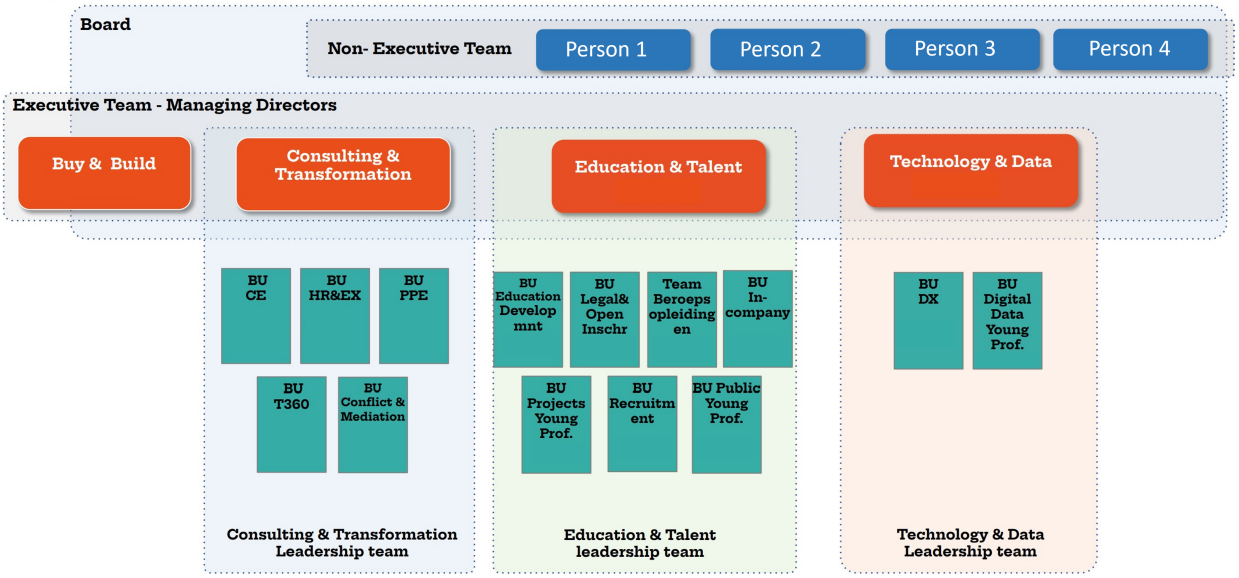


Figure 2: New organisational chart Kyden.

We see that the practices of Kirkman Company are mainly located within the Consulting & Transformation Leadership team and the Technology & Data Leadership team (see Figure 2). While Kirkman Company consisted of 55 employees, Kyden now has a combined total of approximately 150 employees.

1.2 Research relevance and motivation

Knowing the ins and outs of an organisation, and applying the right measures is important for effective decision-making and ensuring organisational continuity. A real-time performance dashboard helps to present data in a user-friendly manner, providing a snapshot of performance across various departments and functions. This dashboard must give the correct information, intuitively to the right people in time, while maintaining focus on eliminating the risk of information overflow. We hypothesise that generic dashboarding practices fall short in the context of sustainability consulting. This research aims to uncover and address the unique challenges and measurements specifically relevant to this type of organisation.

1.3 Problem statement and -cluster

Currently, the IT architecture lacks full alignment with the business needs. Several applications are being used in a decentralised matter. The Management Team (MT) uses several means to find information about consultancy performances and forecasting. There are multiple IT applications in use and there is an incomplete malfunctioning dashboard. This sometimes creates conflicting information since one application might have updated data while the others are not yet up to speed, see Figure 3. Furthermore, there currently is no data platform in place. This absence makes it challenging to consolidate data (within industries) and affects the ability to efficiently repeat standardised projects.

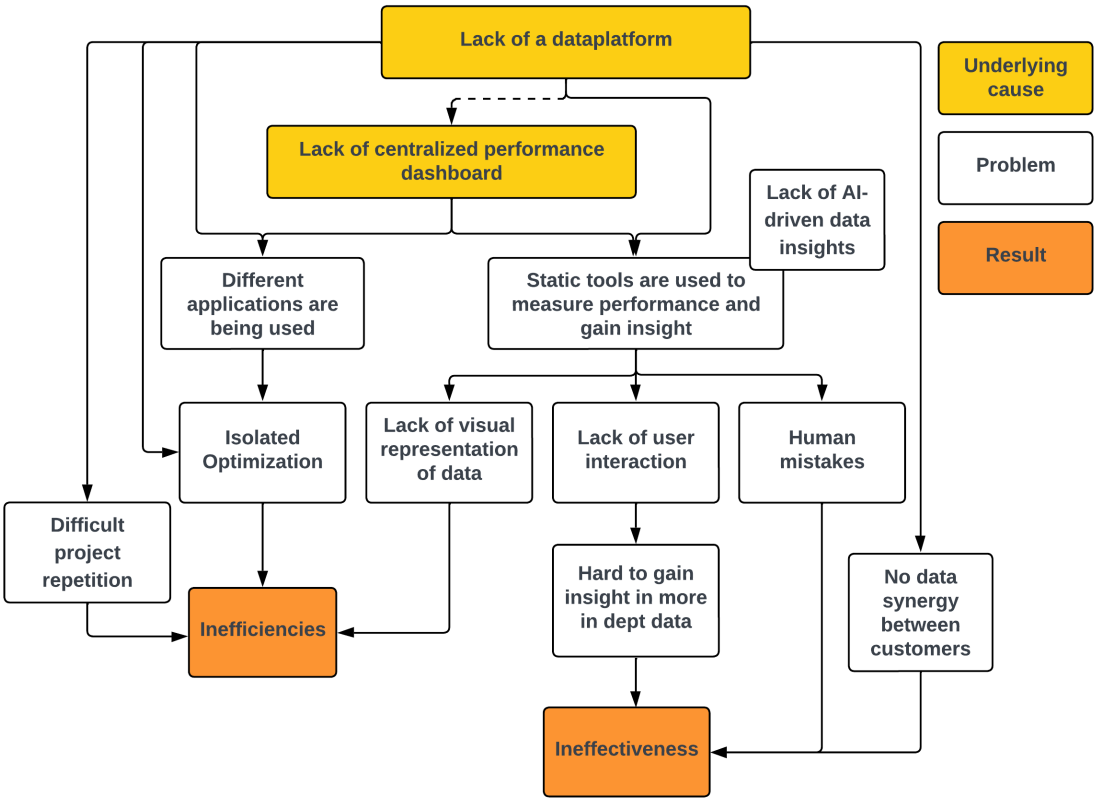


Figure 3: Problem Cluster Kyden.

We define the following problem statement:

"**The current way of finding and analysing relevant data of the consultancy processes lacks in terms of identifying emerging trends and monitoring efficiency and effectiveness**".

1.4 Research Objective

Our objective is to design a performance dashboard tailored for the management team of a sustainability consultancy firm. By doing so we aim to improve the efficiency and effectiveness of the MT. Furthermore, we aim to explore the possibility of implementing a data platform. To accomplish the research objective, we define several research questions in Section 1.6. The research questions are structured with additional sub-research questions. Each chapter answers a main research question and each sub-research question is answered in sections within a chapter.

Our research has a dual commitment. First and foremost we are focused on enhancing the decision-making of the management team within a sustainability consultancy firm (MT). Secondly, we are committed to explore the benefits, costs and potential profits over time resulting from a data platform.

1.5 Scope of the research and research methodology

Scope
Our focus is on understanding the needs of the MT and meeting these needs by designing, implementing and evaluating a working MT dashboard or a Most Viable Product (MVP). The research starts with the identification of business objectives, this could include improving revenue, reducing cost, or having more general insight. We cover limitations or challenges such as data privacy and user adoption issues. Our research does not focus on the pros and cons of either AFAS or HUBSPOT. Furthermore, we do not focus on the pros and cons of hourly time tracking of the consultants. Additionally, a mobile version of the dashboard is not within our scope.

We provide a comprehensive cost and revenue analysis of a data platform. However, our scope is guided by the parameters set by Kyden. Therefore, we did not focus on the pros and cons of different types of data platforms, nor did we explore additional potential outsourcing candidates.

Methodology
In order to gather information about the current- and desired situation we conducted semi-structured interviews. In our case, most of the questions asked in the semi-structured interviews are predetermined in advance of the session. Respondents are encouraged to give comprehensive answers. Based on the responses, the interviewer can potentially ask follow-up questions to get more details. We performed a literature review to increase our knowledge of the subjects.

1.6 Research questions and approach

We start by defining a central research question:

"**How can a data analytics tool enhance the effectiveness and efficiency of MT's decision-making process?**"

To answer the central research question, we use a systematic approach as shown by Table 2. We start by analysing the current situation (RQ1). Next, we analyse the literature to learn more about the subject (RQ2). We delve into the needs of the MT to gain a better understanding of the desired situation for the dashboard (RQ3). Next, we provide Kyden with a business case for a data platform (RQ4). Lastly, we conduct a performance evaluation check whether the dashboard solved the underlying problems (RQ5).

Table 2: Research questions.

RQ1: What is the current situation?	
Sub questions:	**Approach:**
SQ1 What are the short- and long-term goals of the MT? SQ2 What is the current way of providing management information? • Where are the data located? • Which tools are being used for this? • Which insights are gained by using these tools? SQ3 What is the current way of working within the Tech and Data team? SQ4 What are the success factors of the MT & PL's?	Survey and internal training on current applications.
RQ2: What can we learn from literature on designing, implementing, and evaluating (real-time) performance dashboards for consultancy firms?	
Sub questions:	**Approach:**
SQ5 What are suitable dashboarding tools for a consultancy firm within the sustainability sector? SQ6 What is a suitable methodology for the implementation of a BI dashboard? SQ7 What are KPIs and OKRs and how can they be used? SQ8 How can we ensure the clarity and effectiveness of the BI dashboard?	Literature review.
RQ3: What is the desired situation for the dashboard?	
Sub questions:	**Approach:**
SQ9 Which dashboarding tool do we choose? SQ10 Which metrics should be tracked and which dimensions should be used? SQ11 How do we ensure responsiveness through efficient data modelling?	In person semi-structured interviews.
RQ4: What is the business case for a data platform?	
	Approach:
SQ12 What are the benefits of a data platform? SQ13 What are the projected revenues, costs and profits? SQ14 How do Den of Data and Fourco differ in their infrastructure approaches? SQ15 What are the risks?	Interview potential partners and desk research.
RQ5: What is the performance of the dashboard?	
Sub questions:	**Approach:**
SQ16 How can the impact on effectiveness and efficiency be evaluated? SQ17 How can the users be effectively trained with the new dashboard?	Survey.

2 Current situation

> If you torture data long enough, it will confess to anything.
>
> - Ronald Coase

Section 2 focuses on the first research question: "What is the current situation?"

2.1 Short- and long-term goals of Kyden

This subsection focuses on SQ1: "What are the short- and long-term goals of the MT?"

Kyden
Kyden aims to make an external impact on sustainability through a broad range of ESG-related projects. The market demands ESG-focused initiatives due to increased regulations in terms of the Corporate Sustainability Reporting Directive (CSRD).

Consultancy as a service through a data platform
Kyden plans to extend its services in a Consultancy as a Service (CaaS) manner. This is similar to other service models, such as Software as a Service (SaaS). In these service models, businesses pay for a specific service or solution rather than having to invest in the resources to develop and maintain it themselves. In Section 5 we dive into the concept of CaaS, through a data platform. The idea is to step into the As-a-service economy by leveraging more subscription-based business models.

2.2 The IT application ecosystem

This subsection aims to answer SQ2: "What is the current way of providing management information?" The management information is currently primarily provided via AFAS, Hubspot and Google Sheets. Additionally, Asana is being used as a collaboration tool.

AFAS
Afas is an enterprise resource planning (ERP) software which is primarily used for finance, human resources, and Project administration, and AFAS Pure is used for time registration.

Hubspot
Hubspot is being used for customer relationship management and the sales process. It offers a range of tools for marketing, sales and customer service in order to streamline the sales process.

Asana
Recently, Asana was introduced as a "kanban" style teamwork collaboration tool. Within Asana, milestones can be created and these are periodically evaluated by the practice leads.

Google sheets
Google Sheets is a well-known web-based spreadsheet tool. Within Google Sheets, the MT and PLs use a specific file called "Totaal budget", within this sheet information is combined to calculate profits. Furthermore, targets are formulated and evaluated after each month.

2.3 Resource planning and the sales process explained

This subsection continues to answer SQ2: "What is the current way of providing management information?" We specifically dive into important examples of gained insights in terms of resource planning and the sales funnel.

Resource planning
The data in the pre-calculation of an AFAS project form the input for Pure (time registration). The project name and related practice lead are also determined via AFAS. realised hours are written in Pure, but in AFAS the project leader receives a request to approve hours from all project members.

Sales funnel with AFAS and Hubspot
AFAS and HubSpot are being used for the sales process, the sales process is visualised in figure 4.

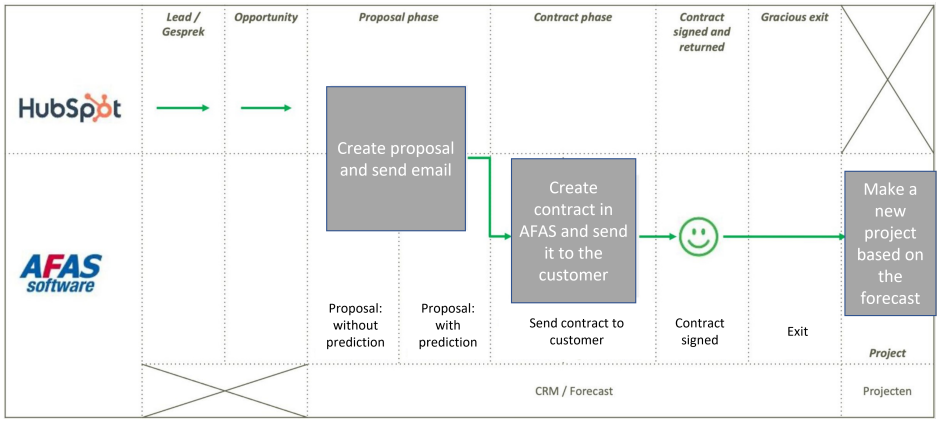


Figure 4: The sales process.

2.4 Current way of working

This subsection answers SQ3: "What is the current way of working within the Tech & Data team?" Since the company merger, the data team of Kirkman Company has been expanded by approximately six new employees, primarily coming from YSE. While analysing the way of working of the data team a few important aspects should be mentioned. In the current situation, the customer provides consultants separate data files, or the consultants dive into customer databases, to find the relevant files themselves. In doing so the consultants conduct their analysis and then finish the project. There is an absence of a customer environment in a centralised data platform. This raises the possibility of data breaches and may result in the lack of consolidated knowledge due to the absence of repositories. Furthermore, there is an absence of reusing or replicating analysis for similar projects, this carries a risk of inefficiency and potential duplications of efforts. Additionally, there may be missed opportunities to leverage past insights and build on previous work.

2.5 Successfactors of the MT and current way of forecasting

This subsection aims to answer SQ4: "What are the success factors of the MT?"

Succesfactors MT & PL's
To determine what contributes to a successful MT we asked the MT and PLs the following question "What does it mean to be in control?" Almost all the answers include elements such as a high level of engagement of the consultants, achieving revenue targets and high levels of customer satisfaction.

Current status regarding forecasting methods
Currently, there is no forecasting method in place. In the current situation, the PLs multiply probabilities with prospected revenues to get an idea of whether they are going to be able to reach the revenue targets.

3 Literature study

> Research is what I'm doing when I don't know what I'm doing.
>
> - Wernher von Braun

This section provides an overview of the literature related to our research topic. By synthesising and analysing the existing literature, we aim to identify gaps in the current understanding of the topic, and we answer the sub-questions related to RQ2.

3.1 Business intelligence (BI) tools

This subsection aims to answer SQ5: "What are suitable dashboarding tools for a consultancy firm within the sustainability sector?" There are many tools which are applicable for dashboard building, in order to filter the number of options we use the Gartner analysis of BI tools. Gartner, Inc. is a technological research and consultancy firm. Over 1.300 technologies and vendors are covered by Gartner Magic Quadrants™ [Kronz et al., 2022]. In terms of business intelligence tools, Gartner focuses on two main aspects (see figure Figure 5).

Completeness of Vision:
The X-axis of the Gartner analysis measures a company's ability to comprehend the direction of the market and its ability to plan accordingly. Companies with a comprehensive vision are able to explain their goals to stakeholders and customers, and they have a clear grasp of how their product or service fits in the market.

Ability to Execute:
The Y-axis of the Gartner analysis focuses on a company's capacity to successfully introduce its product or service to the market while satisfying consumer demands and expectations. Strong products or services, a proven track record of keeping promises, and the capacity to carry out their business plan are all characteristics of companies with a high ability to execute.

Figure 5: Gartner BI tools.

More than 90% of the BI tools offer basic features: data analysis, ad-hoc reports, dashboards, data visualisation, performance metrics, ad-hoc query, ad-hoc analysis, and key performance indicators [Pribisalić, Jugo & Martinčić-Ipšić, 2019]. We see this visualised in Figure 6:

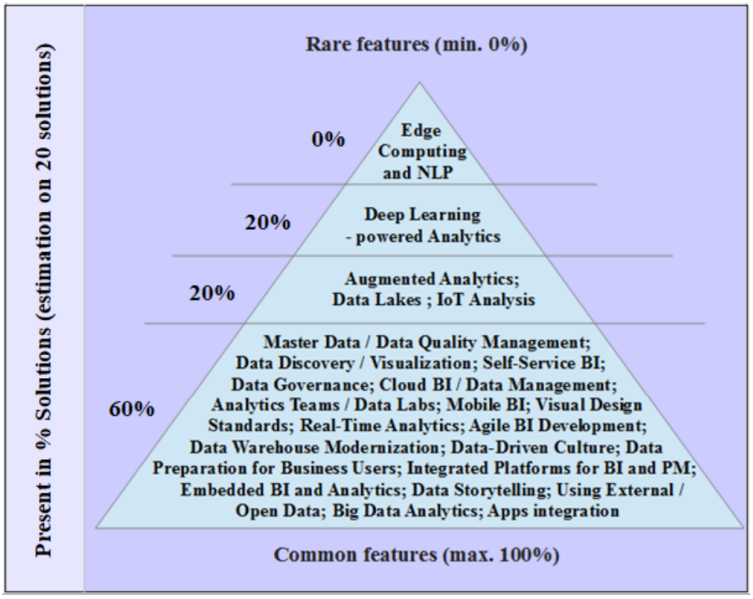


Figure 6: BI pyramid of features.

Currently, the trend of generative AI (i.e. chat-bots with the use of natural language processing (NLP)) is at an all-time high, we already see the implications predicted by Pribisalić et al. happening within BI tools. The confluence of BI and AI allows businesses to implement more advanced and sophisticated analysis. Specifically in terms of predictive analytics. Considering that volumes of data, structured- and unstructured are ever increasing and growing to the levels of Big Data. These technologies allow us to put data in perspective, rather than overwhelming us with its sheer volume [Zohuri & Moghaddam, 2020]. This is why it is important to consider these technologies when choosing a BI tool, specifically for a consultancy firm which re-uses the tool for customer projects.

3.2 The Balanced Scorecard

This subsection aims to answer SQ6: "What is a suitable methodology for the implementation of a BI dashboard?" In 1990 the balanced scorecard (BSC) was created by two men, Robert Kaplan, an accounting professor at Harvard University, and David Norton, a consultant from Boston. The belief behind the study is that a primary focus on financial measures for companies was insufficient. In order to effectively create value one should focus on capturing activities throughout the organisation, including Customer issues, internal business processes, employee activities, and, of course, shareholder concerns [Kaplan & Norton, 1992].

The BSC is a tool to assist organisations with selecting quantifiable measures. These measurements can be used by managers and leaders to communicate progress and change with employees and other stakeholders. In short, the BSC is a communication tool, a measurement system and a strategic management system [Niven, (2006)]. We use the balanced scorecard as a guideline to develop the performance measurement system. In the following sections, we delve into the most commonly used quadrants of the BSC.

3.2.1 The BSC quadrants

The balanced scorecard contains multiple quadrants, each of which serves as a different perspective of organisational performance. Kaplan and Norton suggest that the four perspectives should be considered a template. Meaning that the choice of perspectives should be based on what is necessary to tell the story of your strategy. If the organisation gains a competitive advantage due to another quadrant, then the organisation should include this [Niven (2006)]. Let us first elaborate on the traditional four perspectives:

Customer perspective: How do customers see us?
The customer perspective focuses on the value proposition with respect to the customers. The customer perspective answers the question: "How do customers see us?" customer's concern tends to fall within the four categories: time, quality, performance and costs [Kaplan & Norton, 1992]. A lack of differentiation hinders an organisation from distinguishing itself from its competitors. An often used theory to articulate different ways to differentiate is the "Treacy and Wiersma disciplines of market leaders". Treacy and Wiersma formulated the following disciplines:

- Operational Excellence:
  Companies pursuing operational excellence are indefatigable in seeking ways to minimise overhead costs, eliminate intermediate production steps, reduce transaction and other "friction" costs, and optimise business processes across functional and organisational boundaries [Treacy & Wiersema, 1993]. The objective of a company following operational excellence is to lead its industry in price and convenience.
- Customer Intimacy:
  Customer intimacy focuses on tailoring and shaping products and services to fit an increasingly fine definition of the customer. customer-intimate companies spend their resources to build customer loyalty for the long term [Treacy & Wiersema, 1993].
- Product Leadership:
  Companies that implement a product leadership discipline strive to produce state-of-the-art products and services. Product leaders must continuously pursue new solutions to problems, technology innovation and fine-tuning quality levels [Treacy & Wiersema, 1993].

Internal processes: What Must We Excel at?
The internal processes perspective focuses on: "What Must We Excel at?" Customer-based measures need to be translated into what the company must do internally to meet its customer's expectations. Customer performances derive from processes and actions throughout the organisation [Kaplan & Norton, 1992].

Innovation and Learning Perspective: Can We Continue to Improve and Create Value?
The Innovation and Learning Perspective focuses on how we can continue to improve and create value. Continual improvement to existing products and processes combined with the ability to expand is key for organisational continuity [Kaplan & Norton, 1992].

Financial Perspective: How Do We Look to Shareholders?
Typical financial goals are related to profitability. Companies should focus on how precisely improvements in terms of internal processes lead to financial impact (e.g. higher market share, operation margins and asset turnover or reduced operating expenses). The challenge lies in learning how to make this connection between operations and finance [Kaplan & Norton, 1992].

3.2.2 Strategy maps

We define strategy maps as a graphical representation of which objectives must be achieved in each of the perspectives. A strategy map intends to decrease value loss due to vague and extensively written strategic plans. In strategy mapping, we use arrows to illustrate the causal relationship between objectives. This helps viewers quickly understand which objectives are prerequisites for others.

3.3 KPIs and OKR

This subsection aims to answer SQ7: "What are KPIs and OKR and how can they be used?"

Key performance indicators (KPIs)
Many businesses make use of the so-called KPIs (Key performance indicators). KPIs are metrics which measure (critical) success factors. The critical success factors determine the business success of an organisation. KPIs can be either strategic, operational or functional. They help the management team with identifying problems in a data-driven manner. many organisations struggle with devising a useful performance measurement system. A balance must be struck between having a few measures which are straightforward (But may not reflect the full range of objectives). Or having many detailed measures (which have a higher degree of complexity and are difficult to manage, but might be more capable of conveying the many nuances of performance) [Slack, Brandon & Johnston, 2016].

Objective and Key Results (OKR)
OKRs are defined as a management methodology that helps to ensure that the company focuses efforts on important issues across the organisation. The objectives are clear statements and function as a source of inspiration. The key results are more metric-driven. They typically include quantitative aspects (e.g. revenue, growth, active users etc.) Together the objectives and key results find a balance between setting goals and achieving them. While three to five KRs are considered adequate to reach a well-framed objective, it is important to acknowledge that in some cases additional KRs may be required (e.g. financial objective). Too many KRs or objectives make it difficult to apply focus [Doerr, 2018].

3.4 International Business Communication Standards (IBCS)

This subsection aims to answer SQ8: "How can we ensure the clarity and effectiveness of the BI dashboard?" The IBCS are useful recommendations for the design of business communication. IBCS is designed to help the organisation create precise and effective communication through visualisation. IBCS comply with the rules of the seven areas from the acronym "SUCCESS" [IBCS Media, 2022]. By following these rules we aim to ensure the clarity and effectiveness of the BI dashboards. The rules of the seven areas from the acronym "SUCCESS" are as follows:

(S)AY
Convey a message: Every report should convey a message, as compared to just providing data collection.

(U)NIFY
Apply semantic notation: things that carry the same meaning, should look the same. This rule should carry through all content, terminology, measurements, analysis and highlighting.

(C)ONDENSE
Increase information density: All information necessary to understand the content should, if possible, be on one page.

(C)HECK
Ensure visual integrity: The information should be presented truthfully and should be easy to interpret. This means that we should avoid improper scaling, manipulated representations and misleading visuals.

(E)XPRESS
Choose proper visualisation: e.g. diagrams, tables and graphs should convey the desired message with underlying facts effectively.

(S)IMPLIFY
Avoid clutter: Avoid complicated, redundant or distracting components.

(S)TRUCTURE
Organise content: Follow a logical structure.

4 Desired situation dashboard

> Perfection is achieved not when there is nothing more to add, but when there is nothing left to take away
>
> - Antoine de Saint-Exupéry

Section 4 focuses on the third research question: "What is the desired situation?"

4.1 Chosen BI tool & measurement technique

This subsection focuses on SQ9: "Which dashboarding tool do we choose?" We focus on the top right corner of the Gartner's analysis, these are the BI tool leaders in terms of ability to execute and completeness of vision, see figure 5. This includes the following BI tools:

- Microsoft: Power BI.
- Salesforce: Tableau.
- Qlick: Qlick sense.

We recommend Microsoft Power BI, this has several reasons. First off, Power BI is the best performer in terms of the Gartners analysis. Furthermore, a significant portion of Kyden's customers use Power BI as a BI tool. Given that Kyden is a consultancy firm, this provides us with the additional benefit of internal training on this tool and selling BI services, specifically focusing on Power BI. Notably, Power BI starts with a free-to-use application, and once a dashboard has been released, the additional costs to share reporting are very manageable (€16.90 per user per month). Lastly, Power BI utilises AI insight effectively (e.g., text analytics, vision and Azure Machine learning), providing additional benefits.

4.2 BSC Strategy mapping with OKR list

In this subsection, we answer SQ10: "Which metrics should be tracked and on what basis?" We choose to use the OKR theory instead of the more traditional KPIs. The reasoning is that we want to embrace an agile approach to goal setting and performance management, this is especially relevant due to the current merger. OKR allows for refinements as circumstances evolve, this provides an additional level of flexibility. Figure 7 shows the strategy map within BSC, with an additional perspective: ESG.

The need for the "impact on ESG" objective is twofold. Firstly, the market demands ESG-focused initiatives due to increased regulations in terms of the Corporate Sustainability Reporting Directive (CSRD). Secondly, the desire for these projects stems from the intrinsic motivation of Kyden's consultants to contribute to a better future in terms of sustainability. The increase in the number of ESG-related projects presents additional opportunities to shift toward "Consultancy As A Service" projects (CaaS). This is due to the fact that a lot of CSRD reporting involves repetitive tasks and standardised data collection. By engaging in an increased number of ESG & CaaS projects, consultants have the chance to acquire additional specialised knowledge and expertise. Moreover, as Kyden experiences growth, there is an increasing need for a precise overview of the skills within the workforce. It can be considered reasonable to assume that a high degree of consultant engagement can positively influence customer satisfaction and that a high degree of customer satisfaction leads to an increased potential to generate more project leads and thus additional revenue.

Another important objective is the need for the PLs to have a better understanding of how the hours of the consultants are spent. By having these insights in combination with forecasting, PLs can make more informed decisions regarding resource allocation. During an interview, a point was made that high utilisation percentages during high market demands might not always be optimal. This means that there is less time spent on lead generation, which in turn can lead to even fewer projects during low market demands. The suggestion of declining certain projects indicates the importance of resource prioritisation and in order to do this effectively, more insight into the time spent is needed.

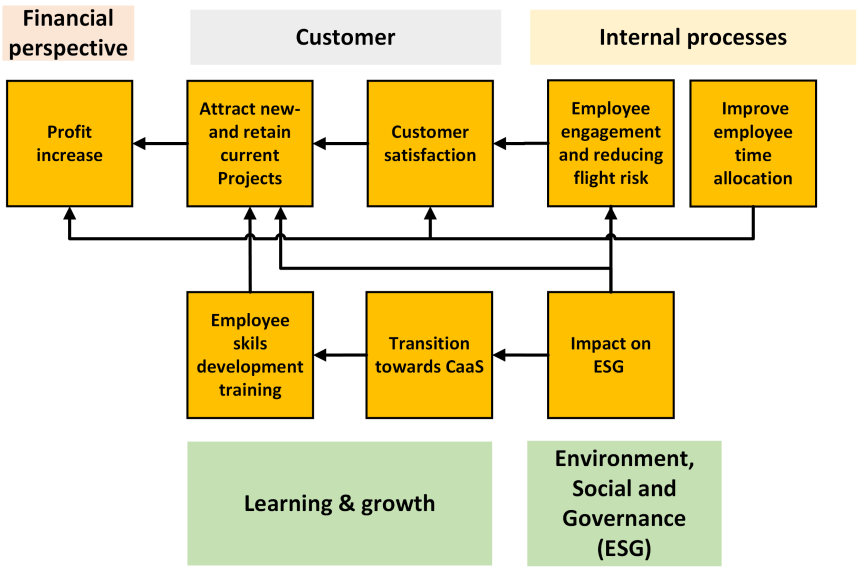


Figure 7: BSC strategy mapping.

Chosen OKR

The recommended OKR list has been formulated by analysing the requirements identified during semi-structured interviews with key stakeholders. We conducted these interviews with the PLs and the finance department. We were not able to conduct an interview with HR since this employee was on administrative leave. Furthermore, note that we did not conduct interviews with new Kyden employees after the merger. The conducted interviews provided us with a deeper understanding of what a PL needs in order to be more "in control". We recommend the following OKR list:

Table 3: BSC perspective, objectives and key results.

BSC perspective	Main Objectives:	Key results:	Dimensions	in the MVP?
Financial perspective	Profit increase	Revenue, costs and profit	Department / project / customer / proposition / date	Yes
		Averages (revenue, costs and profit)	Department / project / customer / proposition / date	Yes
		Revenue needed in order to hit target	Department / date	Yes
		Days Sales Outstanding	Department / date	Partly
		Weighted incomming revenue	Department / project / customer / proposition / date	Yes
		NC / VC	Department / project / customer / proposition / date	Yes
Customer perspective	Attract new- and retain current projects	Leads, oppurtunities, proposals and contracts signed	Department / project / customer / date	Yes
		Average Time Until Conversion	Department / project / customer / date	Yes
		Sales activities before a deal is won	Department / project / customer / date	Yes
		Churn Rate	Department / date	Yes
		Relationship intimacy	Department / customer / date	Yes
Customer perspective	Customer satisfaction	NPS score	Department / customer / date	Yes
Internal processes	Improve employee time allocation	Bilability (bilable hours)	Department / proposition / date / consultant	Yes
		Utilization (time spent on consulting work)	Department / proposition / date / consultant	Yes
		Time spent on generating leads	Department / proposition / date / consultant	No
		Deployement capacity	Department / proposition / date / consultant	Yes
Internal processes	Employee engagement and reducing flight risk	Bradford Factor	Department / date / consultant	Yes
Learning and growth	Employee skils development training	Skills overview	Department / consultant	Yes
		Time spent on learning	Department / consultant	No
Learning and growth	Transition towards CONaaS	Number and percentage CONaaS projects	Department / date / project	Yes
ESG	Impact on ESG	Number and percentage "E", "S" and "G"	Department / date / project	Yes

We continue to delve into each OKR in Section 4.5. We were not able to compute some of the OKRs because the required data are not available (yet).

4.3 Responsiveness through efficient data modelling

This subsection aims to answer SQ11: "How do we ensure responsiveness through efficient data modelling?" Responsiveness within the context of PowerBI and data modelling is about ensuring that the load and run times for the (sub)dashboards are manageable. We first focus on the workflow of Power BI, then we elaborate on some important topics we encountered during this workflow.

Power BI workflow
Step 1: Data is loaded & transformed in the Power Query Editor.
We initiate our Power BI process by importing data into Power BI via the so-called Power Query editor. This is where data cleaning operations are performed. Common operations include filtering, merging of tables, renaming of columns and handling missing data. Lastly, we add index columns.

Step 2: Configure the data model.
A data model is a logical representation of how the data are structured within Power BI. It is a collection of tables from (several) data sources, Data modelling has a major role in terms of the performance of the reports. We define relationships between different tables, these relationships are based on keys which we created in the first step (index columns). Note that by defining relationships on these keys we allow Power BI to search and retrieve data efficiently.

Step 3: Add table feature & calculation within the data view.
In this step, we create calculated columns and tables using DAX functions. In this step, we also create measures, which calculate values such as sums, averages, or ratios. We use the calculated columns, tables and measures in our visuals.

Step 4: Visuals & reports are designed in the Report View.
Once the data model is ready we move to the report view. This is where we design the visuals and reports that make the final dashboard. We also add interactivity features such as slicers and filters.

This is a brief description of the steps involved. Let us elaborate on some important aspects:

Data Normalisation
Data normalisation focuses on organising tables in a relational manner. In doing so we aim to reduce redundant data and preserve the integrity of the data by minimising errors, anomalies and simplifying queries. During Step 2, we use data normalisation practices to form a data model. By forming relationships based on keys we allow for faster searching and data retrieval.

Fact & Dimension tables
A data model generally contains two types of tables. fact- and dimension tables.

- Fact tables have numeric values used for summarization (e.g. sales, order, transactions etc.)
- Dimension tables contain descriptive attributes (e.g. customer name, employee, dates, store info etc.)

Primary & Foreign Keys
Primary keys are unique keys in Lookup tables, Foreign keys contain multiple instances and relate to primary keys in look-up tables.

Cardinality
When managing the relationship between tables, we have to establish cardinality. This refers to the way tables are connected in terms of the number of records related to each other.

- One-to-many (1:N)
  Each record in one table has many records in another table. We use this form of cardinality the most.
- One-to-one (1:1)
  Each record in one table has a single corresponding record in another table.
- Many-to-many (N:M)
  Multiple records in one table correspond to multiple in another table. This type of relationship is best solved using junction tables (sometimes referred to as join tables).

Junction tables
Also known as join- or bridge tables. Junction tables are an important concept in relational database design. These tables serve as intermediary tables used to establish many-to-many relationships between two or more tables. We created junction tables in our data model.

Filter flow
Within Power BI "filter flow" refers to the order in which filters are applied. In the data model we generally only used Keys and dates to file. Since we mainly use one-to-many relationships, the filter context flows downstream through tables. Starting at the highest table, often referred to as the Lookup or dimension table.

Ambiguity
Ambiguity in the context of data modelling happens when there is uncertainty in the data model. In a model, we use relationships to propagate filters between tables. This path needs to be well-defined. When a conflict filter occurs we call this ambiguity. We tried to primarily use one-way filters and 1:N cardinality unless more complex relationships are necessary.

Power Query (M) versus Power BI DAX
Within the power BI workflow, our first step uses the power query editor. This editor facilitates data transformations and manipulation tasks and is the graphical interface of power query. Power Query is an ETL tool used within several Microsoft platforms such as Excel, Azure Data Lake and Dataverse. M is the programming language used within power query. Next, we have Power BI DAX. DAX is used for analysis rather than ETL. We can use DAX to create calculated tables, columns and measures.

Cost considerations in terms of per-query costs (APIs)
Many APIs, specifically the ones providing real-time data, charge for access. These costs are based on factors such as the data volume and the frequency in which the API is used. By creating a data model, we enable ourselves to import specific pieces of data via APIs. This means we can choose which data we want to change often and leave the rest of the data. By doing so we are working in an efficient manner in terms of per-query costs.

4.4 Datafiles used and the data model

This subsection goes into each separate data file used. All files are Excel files (xlsx.). Note that we do not describe the calculated tables yet (except the calendar table). The calculated tables are explained in Section 4.5 since they are related to our chosen OKR.

Employees and weekly schedule
Our first file is an employee file containing information about the employees. It contains columns such as Employee name, EmployeeKey, FunctioKey, DepartmentKey, start date, and birth date. Furthermore, it contains the hourly schedule on a daily basis. i.e. schedule per day from Monday to Friday.

Employee Skills and the first junction table
Our second file contains all the possible employee skills, with a description. There is a N:M type of relationship between employees and skills. Since each employee can have multiple skills and each skill can be linked to multiple employees. In order to effectively map these skills to the employees we need a junction table.

Departments, location and functions
We have departments containing department names and keys linked to our employee table. Furthermore, we have a location and functions table linked in the same manner as well. All use a 1:N relationship to the employee table, i.e. an employee can have a single department, location and function.

Calendar
Our calendar is dynamically generated (by using DAX), it has dates ranging from the present day to a decade ago and a decade into the future. Within the calendar table, we added columns for the year number, month numbers and more. By doing so we enable ourselves to create a date hierarchy. By adding a data hierarchy to the visuals we allow users to drill down the data at various levels (years, quarters, months, weeks or days).

Employee-projects
Each employee can be attributed to many projects and each project to many employees, i.e. a N:M relationship. To address this, we employed another junction table.

Projects
Our project table contains information about the projects, i.e. we have Project-, Department-, and CustomerKeys. Furthermore, we have a project description, project leader and the related proposition. We added two generated columns called “CaaS” and “ESG”. These columns randomly generated data which we want to measure for the OKRs in the next chapter. Lastly, each project has a start and planning date.

Customers
This file contains customer information and keys.

HubSpot CRM data
This data extract originates from HubSpot, it contains customer relationship information. Our keys are CustomerKey, DepartmentKey and EmployeeKey. Furthermore, we have probabilities and deal amounts. When combined this gives us estimated revenues.

Omzet budget
This data originates from the “Totaalbudget” file. Essentially it gives us revenue targets and departments.

Pre- and post-calculations
In order to keep track of the business processes Kyden uses pre- and post calculations. Let us elaborate on the exact difference between both. In the final stages of the sales funnel, PLs start by inserting data into AFAS. When a new project is created there is an estimated total amount of hours determined. These hours are then distributed over different functions, most of the time within a single department. At this stage, the specific consultants who will do the work are not yet determined. After some time, the PLs start to assign specific work schedules to the consultants. Once these assignments are made the consultants and/or the PLs record the actual hours worked in AFAS. Actual hours worked implies the past. However, this entry point

is also used to outline the most definitive future schedule. This means that while post calculations are used to record hours that have already been worked, it is also utilised to insert future hours per customer per project per day.

AFAS essentially has all the data we need to form a better understanding in terms of both retrospective and prospective work schedules. In terms of data rows there is another difference between pre- and post-calculation. Within the pre-calculation row, there is a start and finish date and a specific amount of hours summed up for a specific function. The post-calculation row is assigned to a specific consultant for a specific day. There can be scenarios in which there are multiple post calculations for the same consultant on the same day (e.g. someone who works on two different projects). Our completed datamodel is shown in Figure 8.

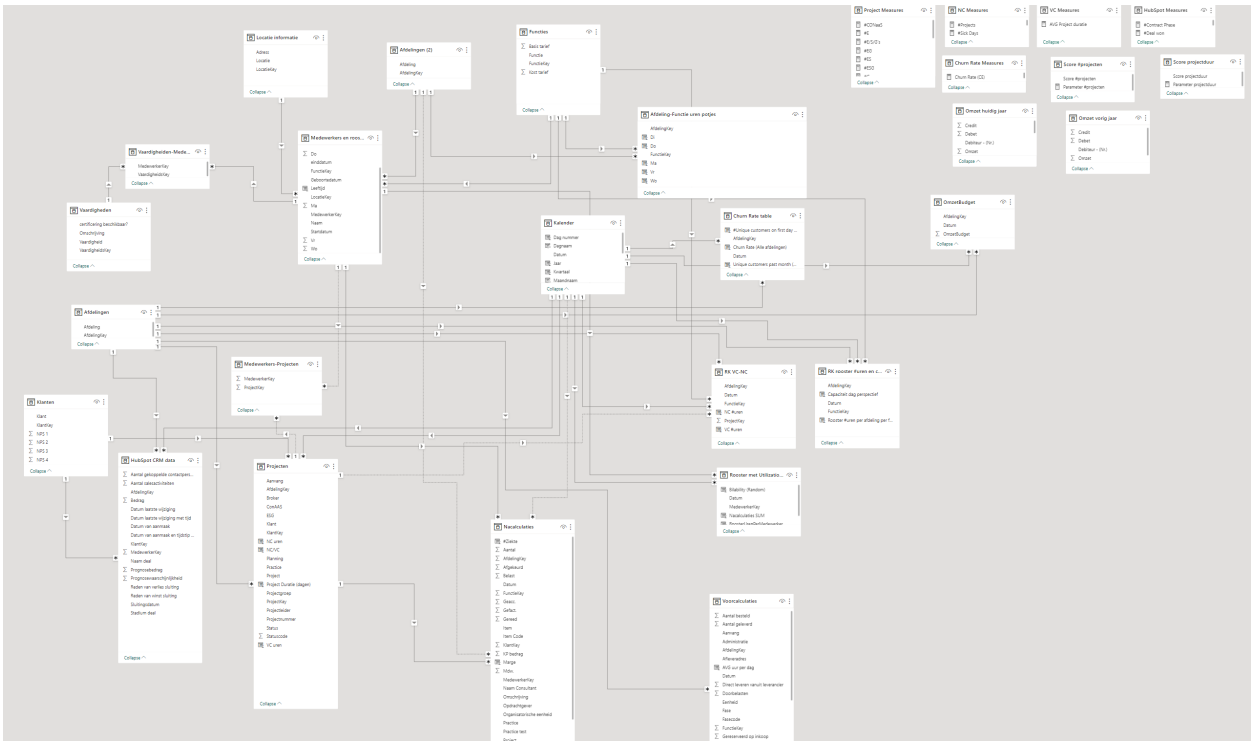


Figure 8: Screenshot designed datamodel

4.5 OKR in a Power BI Dashboard MVP

A power BI MVP essentially serves as a prototype. Due to the uncertainty surrounding system changes during (and after) the company merger. We have developed this prototype as a reference point for future production development.

Sub-dashboard 1: Impact ESG & transition CaaS
Let us start with the ESG perspective. Our related objective is to make an external positive impact on ESG. This impact is measured in two ways: We measure the total number (#) of projects that have a relationship with ESG by using a count function, and we measure the proportions (%) per category within ESG simply by dividing the counts over the total number of projects. In terms of dimensions, we want this information per department, customer, proposition, project and date. Furthermore, we added the "Transition towards CaaS objective" from the learning and growth perspective. We are using calculated measures, for the DAX code and a visual of the dashboard see Appendix C.1.

Sub-dashboard 2: Customer relationship
Next, we have the customer relationship dashboard. Here, we calculate the weighted score for customer relationships based on the number of projects and average project duration. The PL can determine their weights by using the input fields "Score #Projecten" and "Score projectduur". We are interested in this information for the department, customer en date dimensions. Furthermore, we display the Net Promoter Score (NPS). Again, we are using calculated measures, for the code and a visual see Appendix C.2.

Sub-dashboard 3: Days Sales Outstanding (DSO)
Days Sales Outstanding is a measurement related to the financial perspective. It measures the average number of days it takes to collect payment after sales. This metric is essential since it directly impacts cash flow. In our specific data analysis context we use separate data sets that are not directly linked to the rest of our model by keys. This means that we are not able to calculate DSO over different dimensions. We use the data sets "Omzet huidig jaar" and "Omzet vorig jaar". First, we calculate the average accounts year-to-date (YTD) receivable. Next, we divide this by the average daily sales (YTD) as follows:

$$DSO = \frac{\text{Average Accounts Receivable YTD}}{\text{Average Daily Sales YTD}}. \tag{1}$$

Where:

$$\begin{aligned} \textit{Average Accounts Receivable } YTD &: \text{Average amount accounts receivable over the course of the year} \\ \textit{Average Daily Sales } YTD &: \text{Average daily sales over the course of the year} \end{aligned}$$

Each term is calculated using DAX and the code is provided within Appendix C.3.

Sub-dashboard 4: Employee insights
The fourth dashboard focuses on employee insights, we mapped the skills of each employee and are able to filter on specific Skills and departments. This is valuable because it allows the PLs to leverage the skills of the workforce more effectively and provide training programs where it is needed the most. Furthermore, we calculated the Bradford factor which has the following formula:

$$BF = S^2 \times D. \tag{2}$$

Where:

$$\begin{aligned} BF &: \text{Bradford Factor} \\ S &: \text{Number of instances of absence} \\ D &: \text{Number of days absent} \end{aligned}$$

This formula is used by organisations to analyse employee absenteeism. It specifically focuses on the identification of employees with frequent short-term unplanned absences. The reason for this formula is that

short-term unplanned absences are considered more important than long absences. Not only does this lead to a higher administrative burden, but it is also an indicator of the underlying health and well-being issues [Mikulec & Špačková, 2017]. For the specific DAX programming used, see Appendix C.4.

Sub-dashboard 5: Churn rate
Next, we have the sub-dashboard for the Churn rate. The Churn rate has the following formula.

$$\text{Churn Rate} = \frac{\text{Customers lost}}{\text{Total customers at the beginning of the period}}. \tag{3}$$

In essence, the churn rate provides us with a number which represents how well Kyden is at retaining customers. We are interested in comparing this number per department and over the date dimension. There are multiple steps involved in order to calculate the Churn Rate, for a visual representation and the DAX code used see Appendix C.5.

Sub-dashboard 6: Sales funnel
A sales funnel is a visual representation of the stages a potential customer goes through before becoming a definitive customer. The sales funnel enables the business to understand where potential customers drop off and identifies areas of improvement for the conversion rate. In our MVP, we are able to filter on departments, and customers and check per stage how many potential customers exist. Furthermore, we calculate the average and median conversion time in days which automatically adjusts depending on the filter context (note that we use the median in order to handle outliers). Lastly, we calculate the number of sales activities related to "Deal Won" and "Gracious Exit". For a visual representation and DAX code, see Appendix C.6.

Sub-dashboard 7: NC/VC & Marge per uur
Next, we have NC/VC which stands for post-calculation divided by pre-calculation. This key result represents a ratio between the actual time spent on a project and the initial estimate. If the result of NC/VC is greater than 100%, it indicates that fewer hours were spent than originally planned (under-utilisation) and vice versa. Analysing this ratio helps the PLs to assess the accuracy of time estimates, furthermore, it is useful to determine areas where time- or resource allocation can be improved. This dashboard also shows the average hourly margin. We can use the department, proposition and datum range as dimensions. For a visual representation and DAX code, see Appendix C.7.

Sub-dashboard 8: Utilisation & Billability
Utilisation and billability are critical key results for consultants. Utilisation measures the amount of time a consultant spends working on projects and billability measures how much of that time a consultant gets paid the hourly rate. Both key results are expressed as a percentage. We are interested in the department, proposition and date dimensions. Furthermore, we want to be able to analyse these key results on the individual consultant level. There are a few steps involved in order to calculate this key result. Some of these steps are of relevance for the next Sub-dashboard as well.

8.1: A table with the consultant's daily working hours (Mon-Fri).
We have a total of 75 consultants and for each consultant, we use generated data. Total weekly hours range between 16 and 40. Most often the total number of hours is 40. Each consultant has an EmployeeKey, a corresponding FunctionKey (i.e. Junior-, regular-, senior- and principal consultant) and a DepartmentKey. This allows us to go to Step 2.

8.2: Calculate the available amount of hours per day per department per function.
We are interested in knowing for each day of the week how many hours are available. We want to know this per department and per function. In order to calculate this using Step 1 we use the DAX code provided in the first listing in Appendix C.8.

8.3: Calculated dynamic table with dates and EmployeeKeys.
In the next listing, we generate combinations of dates and employees. We do this using a calculated table that provides us with a dynamic calendar. This calendar starts today and spans 365 days into the past and

future. Since we have 731 days (730 + 1; which is today) and 75 employees we generate a total of 54.825 combinations.

8.4: Calculate columns for roster hours and post-calculation hours.
Using a calculated column, we compute the available working hours for each combination of date and EmployeeKey. Secondly, we calculate the post-calculation hours on the same date. These post-calculation hours are summed up from the "Nacalculaties" file. Note that a consultant may have multiple post-calculation rows on the same date for the same or different projects, which leads us to choose this approach.

8.5: Post-calculation(NC) divided by the roster hours.
The final step is relatively easy since we now have all the information we need. We simply divide the post-calculation hours with the roster hours per row, and place this in a new column.

8.6: Billability.
We randomly generated this part since there is no data available in the post-calculations. We multiply the utilisation with a randomly generated number between 0 and 1. These values are displayed in the final calculated column of this table and are available per combination.

Sub-dashboard 9: Scheduling
The next dashboard aims to help PLs have a better understanding of their future capacity in terms of hours per department per function per day. In the current situation, AFAS/Pure does not provide integrated capacity planning. This results in PLs running their files to keep track of their scheduling. In the new dashboard, we provide PLs with improved schedule insights.

9.1: A newly generated table which provides a new dynamic calendar.
The dynamic calendar created is similar compared to the dynamic calendar created in sub-dashboard 8. However, this time we generated more combinations. Again we have a span of 720 days, for each day we have combinations with the DepartmentKey, FunctionKey and ProjectKey. This gives a total of 3,976,40 rows to start with. We need the additional Projectkey in our combinations because we need to be able to drill down to the project level each day and compare whether there are pre- or post-calculation hours.

9.2: Insert two calculated columns in the pre-calculation table.
Each row in the precalculation contains a FunctionKey, a start date and a finish date. Also, there is an hour amount added. We add our first column which calculates the number of working days between the start- and finish date. Next, we calculate the average hours per day by dividing the hour amount by the project duration.

9.3: Check if there are pre-calculations available for the specific combination.
In our calculated table from Step 1, we check for each combination if this combination exists in the precalculation table. If this is the case we sum these hours up per row. Note that it can be the case that per combination multiple pre-calculations are available.

9.4: check if there are post-calculations available for the specific combinations.
We check for each combination if this combination exists in the post-calculation table. If there is a match we sum these hours up over all the matches per combination.

9.5: We generated another table with a reduced amount of combinations to do the last steps.
In this new table we only have Date, DepartmentKey and FunctionKey combinations. This leaves us with a reduced amount of 14620 rows. For each combination, we similarly check the roster hours compared to sub-dashboard 8. Lastly, we calculate the capacity for each combination. We do this by subtracting the pre-calculation or post-calculation. If there is no post-calculation data we use the pre-calculation data.

This leaves us with a daily overview which can be used hierarchically in the report view. Meaning that a PL can choose year, quarter, month, week or day as a filter. The DAX code and a visual are provided in Appendix C.9.

Sub-dashboard 10: Projected revenue
Using the sales funnel from Sub-dashboard 6, we are able to determine the projected revenue. Each row in our "HubSpot CRM data" contains a probability and has a corresponding revenue. We can use these values to calculate the projected revenues for the date, proposition, department, customer and project dimensions. We did not need any calculated measures since the projected revenue was already in a column. Since these files are linked with keys, we can simply drag and drop them in order to create our visuals, see Appendix C.10.

Sub-dashboard 11: Revenue compared to targets
In order to create this dashboard we use a separate data file containing the revenue targets per month. We are interested in the department and datum dimensions. Note that we only include the years and months as filter context as dimensions, in order to create effective visuals. We subtract the summed project revenue from our budgets, the budget contains the department keys so we can drag and drop again to create the visuals. For the visual see Appendix C.11.

Sub-dashboards 12, 13, 14, and 15: Revenues, costs, and profits and averages
Our last dashboard contains the revenues, costs, profits and respective averages. We are interested in the department, date, proposition, project and customer dimensions. In order to determine the revenue we sum "Verkoopbedrag" columns within a filtered table of the post calculations. We use filters to solely focus on the post calculation with the type "Wst", and take out the rows containing sick-leave days. This provides us with the relevant rows. We do the same for cost calculation, summing the "KP bedrag" column. In order to calculate the profit, we added an additional column in the post calculations which subtracts the costs of sales. In order to calculate the averages we didn't need any extra DAX code. Instead, we used the aggregation level "average". For the visuals see Appendix C.12.

5 Business Case for a data platform

This subsection aims to answer RQ4: "What is the business case for a data platform?" As mentioned in subsection Section 2.1 Kyden's vision includes providing service in an "as a service" manner. A data platform is a centralised infrastructure that enables data storage, management, processes and analysis.

5.1 Benefits

We start by focusing on the benefits, in doing so we aim to provide an answer for SQ12: "What are the benefits of a data platform?" By leveraging a data platform, Kyden can provide an extended range of benefits to its customers. Think of crucial aspects such as data privacy, security, backups and authorizations. Furthermore, project repetitions become easier. Data of multiple customers can be combined enabling a more comprehensive and holistic analysis. This leads to increased value in terms of trends and patterns across industries and can be particularly valuable for data-driven location strategy (DLS). For DLS more data will lead to better predictive power. This enables the concept of coopetition, where competitors can collaborate for mutual benefit. Different layers can be built each representing either a customer- or project-based environment, as visualised by Figure 9. Different business intelligence tools can be used (e.g. Power BI and Google Looker) to provide customers with dashboards. Or the DLS service and Process mining (Celonis), can be connected to these environments. Furthermore, several web applications can be connected depending on the customer's needs. One example of such a web application is the application where customers can find an overview of the skills of their employees (HR application).

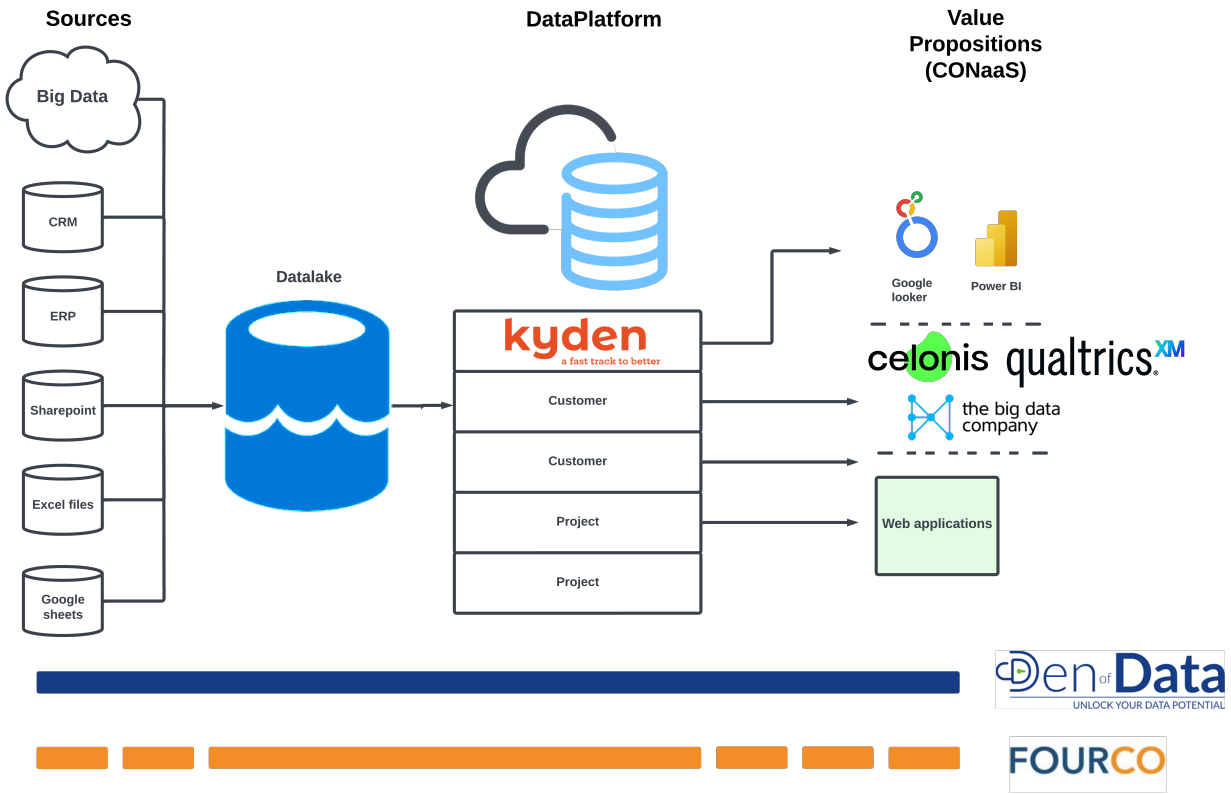


Figure 9: Data platform Kyden visualised.

5.2 Projected costs

Our next subsection focuses on SQ13: "What are the projected revenues, costs and profits?" In order to realise "Consultancy as a service" through a data platform Kyden needs to consider its existing technical infrastructure, in-house tech team size and -expertise. Note that Kyden currently has a small Tech & Data team (i.e. eight members) and that there are currently no data (infrastructure) engineers available. For Kyden building its own data platform should therefore be out of the question. We recommend Kyden to leverage the service of cloud providers such as Amazon Web Services (AWS), Google Cloud platform or Microsoft Azure. In order to leverage these services effectively, Kyden needs the assistance of a partner company that specialises in API integration. Within this business case, we compare two providers:

- Den of Data, this organisation uses Microsoft Azure.
- Fourco, this organisation uses AWS.

The scope of the business case is concentrated solely on these two companies as potential outsourcing partners, this decision is driven by Kyden's previous experiences with these companies. Note that in Figure 9 the extent of service provided is visualised at the bottom. Den of Data offers additional ready-to-use Power BI dashboards and Fourco does not. We have the following comparison in terms of fixed- and variable costs (Table 4).

Table 4: Cost comparison data platform.

Costs inputs	**Data Platform:**		**Explanation:**
Fixed costs:	**Den of Data**	**Fourco**	
Proof of value (PoV)	€ 22.500	€ 26.000	Pilot project
Afas, Hubspot (use case 1), Third API (use case 2)	€ 0	€ 3.000	Costs initial API's
Variable costs per month per existing enviroment	**Den of Data**	**Fourco**	
Hosting	€ 250	€ 250	Hosting costs per enviroment
Service & monitoring (0-4)	€ 799	€ 300	Service & monitoring
Service & monitoring (5-20 +150,- per enviroment)	€ 150	€ 300	Service & monitoring
Service & monitoring (>20 +100,- per enviroment)	€ 100	€ 300	Service & monitoring
Variable costs for new enviroments	**Den of Data**	**Fourco**	
New customer enviroment existing APIs	€ 3.078	**Not available**	
New customer enviroment with new & existing APIs	€ 5.130	**Not available**	
New customer enviroment new APIs	€ 7.182	**Not available**	
Costs per day	€ 1.026	**Not available**	1 day concultancy
#days needed new enviroment existing APIs	3	**Not available**	Days needed
#days needed new enviroment with new & existing APIs	5	**Not available**	Days needed
#days needed new enviroment new APIs	7	**Not available**	Days needed
New API	**Not available**	€ 250	New API costs
New customer enviroment	**Not available**	€ 267	New enviroment costs
Additional license costs	**Den of Data**	**Fourco**	
Power BI Costs for Kyden	€ 254	€ 254	License costs

Note that we have the following cost categories for fixed costs:

- Proof of Value (Pov): A pilot project that aims to validate the value and feasibility of the data platform.
- Use Case 1 & 2: Costs initial APIs: Den of Data includes all three APIs in the PoV while Fourco charges an additional 3000€.

Next, we have variable costs per month per existing environment:

- Hosting costs per environment, these are the Azure or AWS costs.
- Service & monitoring, these are activities such as system updates, bug fixes, and performance optimisations. Note that these costs develop in a decreasing manner for Den of Data depending on the number of environments.
  - for 0-4 environments, Den of Data charges 799€ in total.
  - for 5-20 environments, Den of Data charges +150€ per additional environment, i.e, for five environments, they charge 950€, for six 1100€ and so on.
  - for 21+ environment, Den of Data charges 100€ per additional environment.

Next, we have variable costs for new environments:

- Implementation of a new environment, meaning an additional customer- or project environment. Note that the cost calculated method differs for both companies. Den of Data provides costs based on required consultancy days, while Fourco provides costs based on new environments and new APIs.

Lastly, we have additional licence costs:

- The Power BI licence expenses are calculated by multiplying the individual Pro licence cost of €16.90 by an estimated 15 Pro users within Kyden.

The costs mentioned earlier have been distributed over five years, accompanied by the average costs per environment (Avg. costs p.e.). This is shown in Table 5.

Table 5: Cost Comparison over Five Years.

	Year 1	**Year 2**	**Year 3**	**Year 4**
Den of Data	€ 40,078	€ 34,230	€ 122,280	€ 249.720
Avg. costs p.e.	€ 20,039	€ 5,705	€ 7,643	€ 6.937
Fourco	€ 44,168	€ 36.403	€ 70,292	€ 130.853
Avg. costs p.e.	€ 22,084	€ 6.067	€ 4,393	€ 3.635

5.3 The Net Present Value

Our next subsection continues with SQ13: "What are the projected revenues, costs and profits?" We try to determine Kyden's revenue depending on some assumptions. These assumptions have been made through expert consultation within Kyden and are as placed in Table 6. Note that if these assumptions were to change, the values can be changed in the input fields of the file: "Den of Data versus Fourco [Final]".

Table 6: Number of customer environments in the data platform.

	Year 1	**Year 2**	**Year 3**	**Year 4**
Customer environments	1	5	15	35
Revenue per environment per month	€ 1500	€ 1500	€ 1500	€ 1500

In order to analyse the projected revenue in terms of today's fund, we apply the Net Present Value (NPV) methodology, see eq. (4). The Net Present Value represents the current value of the future cash flows. The main advantage of using NPV is that it takes the time value of money into account, i.e. a euro today is worth more than a euro tomorrow (due to its earning capacity) [Brealey, Myers & Allen (2017)].

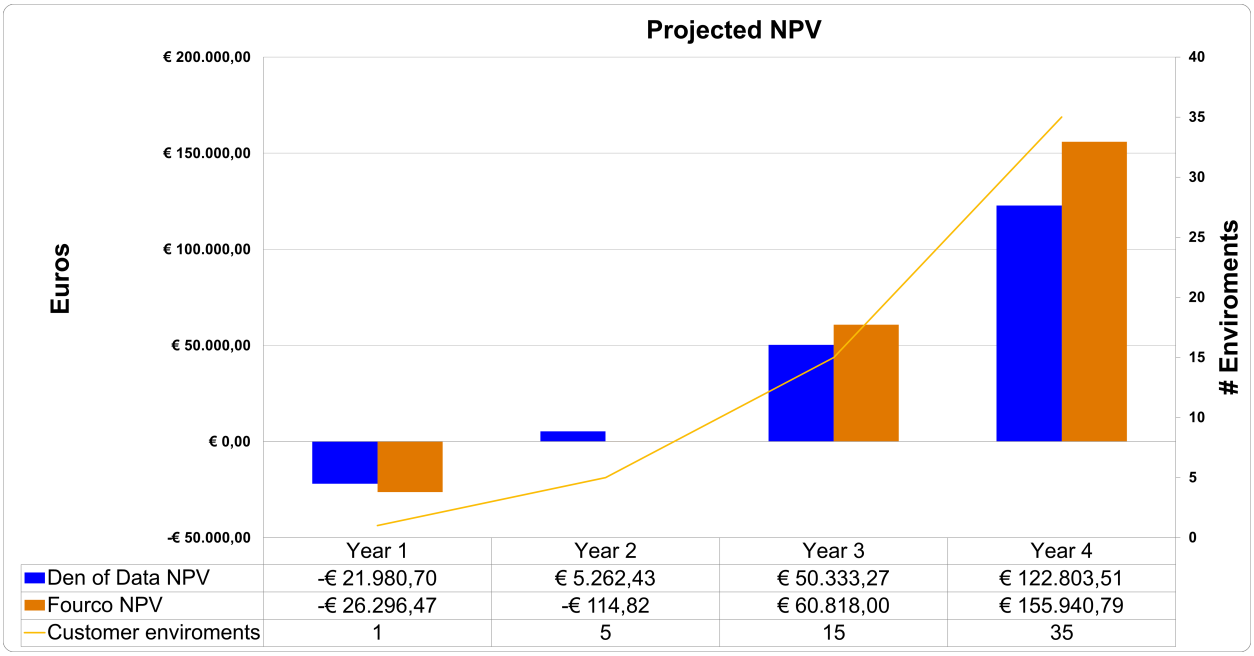
The NPV has the following formula:

$$NPV = C_0 + \sum_{t=1}^{n} \frac{C_n}{(1+i)^n}. \tag{4}$$

where:

NPV is the Net Present Value,
C_0 is the initial investment (Proof of value),
C_n is the future net cash in- our outflow,
r is the discount rate,
n is the number of periods.

Using the NPV we discount the net cash inflows. In order to use the NPV we need to determine a discount rate. Conceptually, the discount rate estimates the risks and returns of an investment. We chose a discount rate of 4% and applied the formula for each month over the years, e.g. year 4 month 12 is period 48. Our decision of 4% is based on the risk-free rates used by the European Central Bank and represents the perceived risk. Figure 10 shows that for the initial two years, Den of data has a higher NPV. When we extend our evaluation beyond this initial period, it becomes evident that Fourco yields a higher NPV over time (the NPV over 4 years is €155.940,79). As time progresses, the Net Present Value (NPV) will consistently rise, and the distinction between Den of Data and Fourco will continue to widen, favoring Fourco. For an extensive overview of the tables used to calculate the NPV, see: Appendix B.



	Year 1	Year 2	Year 3	Year 4
Den of Data NPV	-€ 21.980,70	€ 5.262,43	€ 50.333,27	€ 122.803,51
Fourco NPV	-€ 26.296,47	-€ 114,82	€ 60.818,00	€ 155.940,79
Customer enviroments	1	5	15	35

Figure 10: NPV comparison Den of Data and Fourcol.

5.4 Further comparison

This subsection focuses on a general answer to SQ14: "How do Den of Data and Fourco differ in their infrastructure approaches?"

Single Tenant vs Multi-Tenant

The comparison between Den of Data and Fourco reveals a significant difference in terms of how the environments are created for the customers. Den of Data provides a shared tenant model. Meaning that a single tenant is created and multiple customer environments are hosted within. The underlying infrastructure, resources and database are shared. However, the customer data and configurations can be isolated. Fourco follows a dedicated tenant model, meaning that a new tenant is created for each new environment. This way it ensures that customers get their own isolated environments with their own infrastructure, resources and database. A shared tenancy environment offers advantages such as resource sharing and cost efficiency whereas a single tenant provides enhanced data security and customisation.

5.5 Risk assessment

The risk assessment focuses on SQ15: "What are the risks?" In order to evaluate the business case effectively, we mapped the risks involved. First of all we have integration challenges. This refers to the issues and obstacles which can be encountered during the implementation of the data platform. The likelihood that there will be some challenges is high. However, since there are many trained data professionals who are great problem solvers, it is also likely that they are able to find solutions. Therefore the impact and risk level is moderate. Next, we have data security. This is the part we outsourced to the data platform provider. Since these are well-established companies with a high degree of expertise the likelihood of failure is low. However, if there is a breach the impact can potentially be extremely high. As previously mentioned, the implementation of the data platform necessitates a strategic partnership. Since our relationship and experience with the candidates stand strong we assess the likelihood of encountering issues as low. The impact resulting from these issues could be high. Next, we have the risk of additional costs. We evaluate the risk as Moderate in terms of both likelihood and impact. To mitigate this risk, we plan to establish and maintain a close relationship and transparency in terms of contracting. Platform issues refer to potential glitches, disruption and server downtime to the data platform itself. Despite the low likelihood of such issues, the impact would be very high. In order to mitigate this risk, we will rely on our chosen partnership to monitor and address issues. Intellectual property refers to potential challenges in terms of rights or usage of intellectual property assets. This has a low likelihood and a high impact. The scaling of the data platform refers to difficulties related to expansion. Scaling challenges are minimal since it will be relatively easy to duplicate environments. Therefore, we set the likelihood to low. However, the Impact can be relatively high. By assessing future requirements and planning we will mitigate this risk. Data loss refers to the potential loss or corruption of the stored data. Due to regular backups, we assess the likelihood as low. The impact is potentially very high. Our last risk is the resistance to change. Ironically we find ourselves in a change consultancy organisation where the concept of change is central in terms of our expertise. Even though this is the case, change within the organisation can still present a significant challenge, as noted by multiple individuals during the interviews. By offering training, providing clear communication and addressing the strategic importance we will mitigate this risk. Table 7 provides an overview of the risk assessment.

Table 7: Risk Assessment Matrix

Risk	**Likelihood**	**Impact**	**Risk Level**	**Mitigation**
Integration Challenges	High	Moderate	Moderate	Implement training programs, or provide courses.
Data Security	Low	High	Low	Focus on data security during training and hire a dedicated cyber security specialist
Partnership failure	Low	High	Low	Regular check-ins.
Cost Overruns	Moderate	Moderate	Moderate	Transparent contracting
Platform issues	Low	High	Low	Partnership reliance
Intellectual Property	Low	High	Low	Carefully review licensing agreements.
Scaling Challenges	Low	moderate	moderate	Plan for scalability in advance.
Data Loss	Low	High	High	Regularly back up data.
Resistance to Change	Moderate	Moderate	Moderate	Provide comprehensive training and change management support.
Lower market demand than expected	Low	High	Low	Implement strategies for diversification of the product and building strong relationships with current and new customers.

5.6 Conclusion business case

In conclusion, the business case for a Data platform holds significant potential for bettering Kyden's abilities. By implementing a data platform, Kyden can provide improved data security, backups and the ability to analyse industry trends through the combination of data from different customers. This is particularly important in light of the evolving regulatory CSRD landscape, and its accompanying challenges for many of Kyden's customers. The projected costs and -revenue are critical in considering a partnership. We recommend collaboration with Fourco since this company offers the highest Net Present Value over time (the NPV over 4 years is €155.940,79).. Furthermore, Fourco has a dedicated tenant model, which has additional benefits in terms of Security and customisation. We strongly recommend that Kyden proceed with the data platform as soon as merger-related organisational tasks are completed, because this is a crucial step for the company's future success.

6 Performance evaluation

> The purpose of visualisation is insight, not pictures
>
> - Ben Shneiderman

Section 6 focuses on the last research question: "What is the performance of the dashboard?"

6.1 Impact on effectiveness and efficiency

This subsection focuses on SQ16: "How can the impact on effectiveness and efficiency be evaluated?" Before fully embracing the changes Kyden should start with a baseline measurement of the current effectiveness, efficiency and OKR performances. While the changes are being implemented, data should be collected on the performance and Kyden should gather qualitative feedback from the relevant stakeholders. This can be done through additional surveys or interviews. The collected feedback can be used to identify areas for improvement. It is essential to continuously collect data on the achievement of OKRs.

6.2 User training

This subsection focuses on SQ17: "How can the users be effectively trained with the new dashboard?" First, we provided a kick-off presentation to introduce the dashboard and explain basic functionalities. Next, training or video tutorials are a great way to be helpful to the users.

7 Conclusion and research recommendations

7.1 Conclusion

Our central research question was: "How can a data analytics tool enhance the effectiveness and efficiency of MT's decision-making process?" This thesis demonstrated the potential of optimising the dashboard design in Power BI. By using the balanced scorecard and strategy mapping we were able to provide a number of OKRs which will help Kyden's PLs decision-making. Using the balanced scorecard combined with strategy mapping, we recommended the following Objective and Key Results:

Table 8: BSC perspective, objectives and key results.

BSC perspective	Main Objectives:	Key results:
Financial perspective	Profit increase	Revenue, costs and profit
		Averages (revenue, costs and profit)
		Revenue needed in order to hit target
		Days Sales Outstanding
		Weighted incomming revenue
		NC / VC
Customer perspective	Attract new- and retain current projects	Leads, oppurtunities, proposals and contracts signed
		Average Time Until Conversion
		Sales activities before a deal is won
		Churn Rate
		Relationship intimacy
Customer perspective	Customer satisfaction	NPS score
Internal processes	Improve employee time allocation	Bilability (bilable hours)
		Utilization (time spent on consulting work)
		Time spent on generating leads
		Deployement capacity
Internal processes	Employee engagement and reducing flight risk	Bradford Factor
Learning and growth	Employee skils development training	Skills overview
		Time spent on learning
Learning and growth	Transition towards CONaaS	Number and percentage CONaaS projects
ESG	Impact on ESG	Number and percentage "E", "S" and "G"

Furthermore, our findings strongly suggest that a data platform is a necessary solution for the long term. Within the data platform, separate data silos can be created allowing Kyden to create separate environments for different customers and projects. The main benefits consist of enhanced data security, backups, the ability to build dashboards and SaaS applications and the capacity to analyse industry trends. This is particularly important due to the regulatory CSRD landscape, which poses unique challenges to Kyden's customers. In order to realise a data platform, Kyden should consider its existing technical infrastructure, in-house tech team size and expertise. There are currently no data engineers available, making it advisable for Kyden to enter a strategic partnership.

For this strategic partnership, we compared two potential companies:

- **Den of Data** This company offers expertise on the backend of Microsoft Azure.
- **Fourco** This company offers expertise on the backend of Amazon Web Services.

Den of Data adopts a shared tenant model i.e., a single tenant is used to establish multiple environments. Fourco follows a dedicated tenant model i.e., for each new customer a separate environment is created. This approach ensures that the customer receives their own isolated environment with their own infrastructure, resources and database. To maximise returns and ensure an efficient data platform implementation, we strongly recommend a strategic partnership with Fourco. This organisation offers the highest return on investment in terms of NPV and employs a dedicated tenant model that aligns well with Kyden's objectives. Furthermore, we recommend that Kyden proceeds with the data platform implementation as soon as the merger is fully completed and recommend assigning this project a high priority.

7.2 Limitations

First of all, let us focus on the limitations of the MVP dashboard. The most important limitation is that the current Power BI file uses static data sources (i.e. Excel files). Once the merger is fully completed Kyden should prioritise decisions concerning the new IT landscape in combination with the data platform and then look into APIs for these systems. Furthermore, the use of generated data in some of the files makes a huge impact in terms of usability. In terms of CSRD, this research lacks recommendations in terms of OKRs related to the internal performance of Kyden. We did not conduct interviews with new Kyden employees, specifically related to the management, after the merger. We relied mainly on the input of the PLs and finance department for the dashboard.

Secondly, let us focus on the limitations concerning the business case for a data platform. We did not focus on the differences between AWS, Google Cloud Platform and Microsoft Azure in relation to the customers of Kyden. Furthermore, we only compared two potential companies as strategic partners. While this approach is driven by the parameters set by Kyden's management, it could be beneficial for Kyden to analyse other potential candidates as well. Furthermore, the projected number of environments is based on expert consultations and may be subject to change. The appropriateness of the discount rate may change as well, due to shifts in the economic and risk conditions of the project.

7.3 Recommendations for further research

There are many possibilities in terms of further research, the most important one being API integration and system optimisation. Enhancing data connectivity and real-time synchronisation between Kyden's (new) system is key for the future continuity of the dashboard. Next, an important addition is to expand on the scheduling system in the created MVP sub-dashboard 9 (scheduling). During the evaluation phase, a PL highlighted the scheduling dashboard's potential to predict revenue as well. Therefore researching the scheduling system's predictive capabilities can provide Kyden with additional valuable insights.

We have the following (additional) recommendations in terms of further research for the dashboard:

1. Research related to the choices regarding keeping or changing the IT systems.
2. API integration within those systems.
3. Scheduling dashboard's potential for revenue predictions.
4. An additional OKR related to the spread of hourly rates agreed and hourly rates actually sold.
5. Research concerning advanced predictive analytics through machine learning.
6. The linkage of the sales dashboard to the new Kyden website, specifically concerning the integration of leads and website traffic.
7. An internal CSRD performance dashboard, measuring specific CSRD-related performances.
8. Assessing the pros and cons of hourly time tracking of the consultants.

In terms of the data platform we have the following recommendations:

1. Cross-departmental collaborations within the platform.
2. Optimisation of standardised dashboard to use for the new CSRD regulations (internal and external).
3. Standardising of other projects through the data platform.
4. SaaS applications to build on top of the platform.

These recommendations provide a road map for further research efforts within Kyden, specifically aimed at further utilising the MVP dashboard and the data platform.

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A Systematic literature review

Appendix A gives the used approach to conduct the systematic literature review:

Step 1: channels for literature search
During the research, the literature review is conducted by using the databases of Researchgate and ScienceDirect.

Step 2: exclusion criteria and search strings
For the search string, we consider a broad range of results to be more important than being precise. Furthermore, we document the search date, string and procedure. We use the following exclusion criteria:

- Non-English articles, because these are difficult to read.
- Articles before 1990, because these articles may not be relevant to the current state of knowledge.
- Documents that are not accessible
- Subjects unrelated to dashboarding, data science and business engineering

We use the following strings for relevant BI tools.

- "Business intelligence tools" OR "BI comparisons"
- "Data analytics tools" or "Data analytics software"

We use the following search strings for a management model:

- "Balanced scorecard" AND "Strategy Mapping"
- "Best Practices" AND "Management Dashboarding"

We use the following strings for KPI and OKR comparison:

- "OKR" AND "Objective and Key Results"
- "KPI" AND "Key Performance Indicator"
- "KPI and OKR"

B NPV per year

Den of Data
In the case of choosing Den of Data, We start with an initial investment of € -22.500,00.

Table 9: Discounted net cash flows per year per month Den of Data.

Months	Year 1	Year 2	Year 3	Year 4
1	€ 961,54	€ 2.791,17	€ 4.617,69	€ 7.424,87
2	€ -48,54	€ 2.683,82	€ 4.440,08	€ 7.139,30
3	€ -46,67	€ 2.580,59	€ 4.269,31	€ 6.864,71
4	€ -44,88	€ 2.481,34	€ 4.105,11	€ 6.600,68
5	€ -43,15	€ 2.385,90	€ 3.947,22	€ 6.346,81
6	€ -41,49	€ 2.294,14	€ 3.795,40	€ 6.102,70
7	€ -39,90	€ 2.205,90	€ 3.649,43	€ 5.867,98
8	€ -38,36	€ 2.121,06	€ 3.509,06	€ 5.642,29
9	€ -36,89	€ 2.039,48	€ 3.374,10	€ 5.425,28
10	€ -35,47	€ 1.961,04	€ 3.244,33	€ 5.216,61
11	€ -34,10	€ 1.885,61	€ 3.119,54	€ 5.015,97
12	€ -32,79	€ 1.813,09	€ 2.999,56	€ 4.823,05
Net Present Value	€ -21.980,70	€ 5.262,43	€ 50.333,27	€ 122.803,51

Fourco
In the case of choosing Fourco, We start with an initial investment of € -29.000,00.

Table 10: Discounted net cash flows per year per month Fourco

Months	Year 1	Year 2	Year 3	Year 4
1	€ 1.442,31	€ 2.682,42	€ 6.242,81	€ 9.745,71
2	€ 1.386,83	€ 2.579,25	€ 6.002,70	€ 9.370,88
3	€ -14,89	€ 2.480,04	€ 5.771,83	€ 9.010,46
4	€ -14,32	€ 2.384,66	€ 5.549,84	€ 8.663,90
5	€ -13,77	€ 2.292,94	€ 5.336,38	€ 8.330,68
6	€ -13,24	€ 2.204,75	€ 5.131,14	€ 8.010,27
7	€ -12,73	€ 2.119,95	€ 4.933,78	€ 7.702,18
8	€ -12,24	€ 2.038,41	€ 4.744,02	€ 7.405,94
9	€ -11,77	€ 1.960,01	€ 4.561,56	€ 7.121,10
10	€ -11,32	€ 1.884,63	€ 4.386,12	€ 6.847,21
11	€ -10,88	€ 1.812,14	€ 4.217,42	€ 6.583,85
12	€ -10,46	€ 1.742,45	€ 4.055,21	€ 6.330,63
Net Present Value	€ -26.296,47	€ -114,82	€ 60.818,00	€ 155.940,79

C Dashboards created in power BI

This appendix section dives into the visuals and DAX code from each dashboard.

C.1 Sub-dashboard 1: Impact ESG & transition CaaS

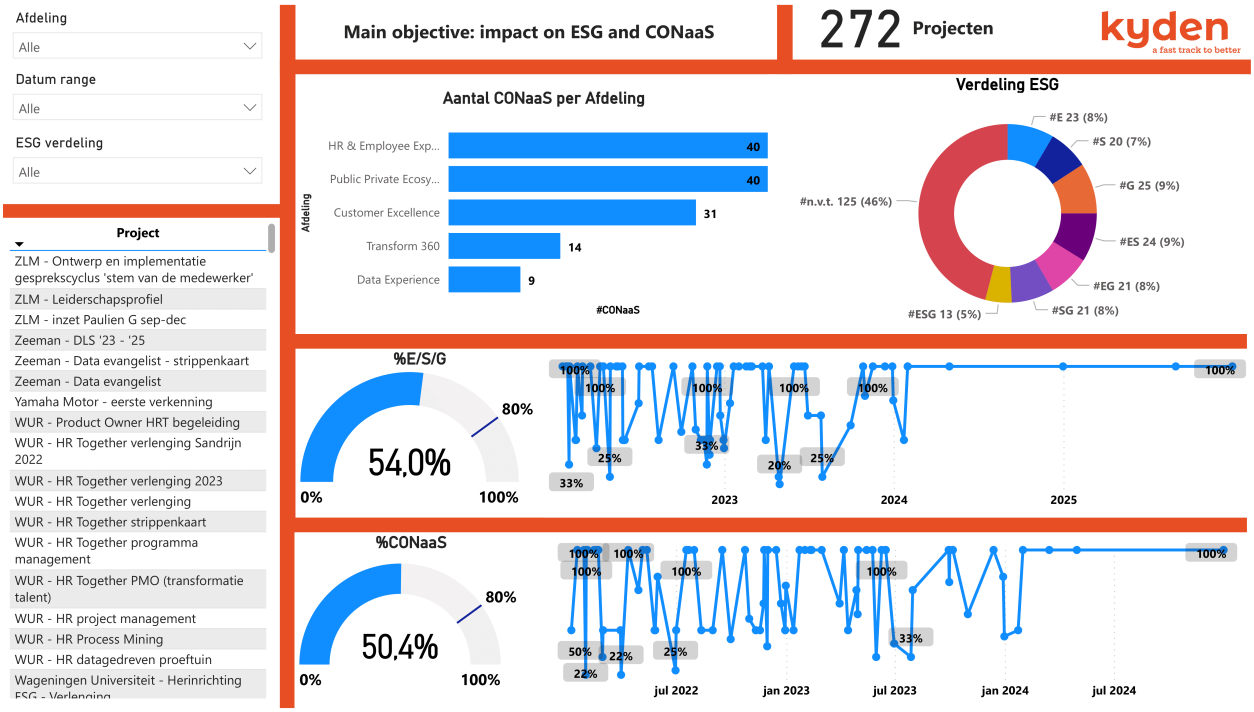


Figure 11: ESG measurements

```
#E =
COUNTROWS(
    FILTER(
        Projecten, Projecten[ESG]="E"
    )
)
```

Listing 1: E.g. Number of E projects (similar for S / G / ES / etc.)

```
#E/S/G's =
COUNTROWS(
    FILTER(
        Projecten, Projecten[ESG] <> "n.v.t."
    )
)
```

Listing 2: Count all ESG related projectas

```
%E/S/G = [#E/S/G's] / [#Projecten]
```

Listing 3: Percentage ESG

```
#CaaS =
COUNTROWS(
    FILTER(
        Projecten, Projecten[CaaS] = "Ja"
    )
)
```

Listing 4: Count CaaS projects

C.2 Sub-dashboard 2: Customer relationship

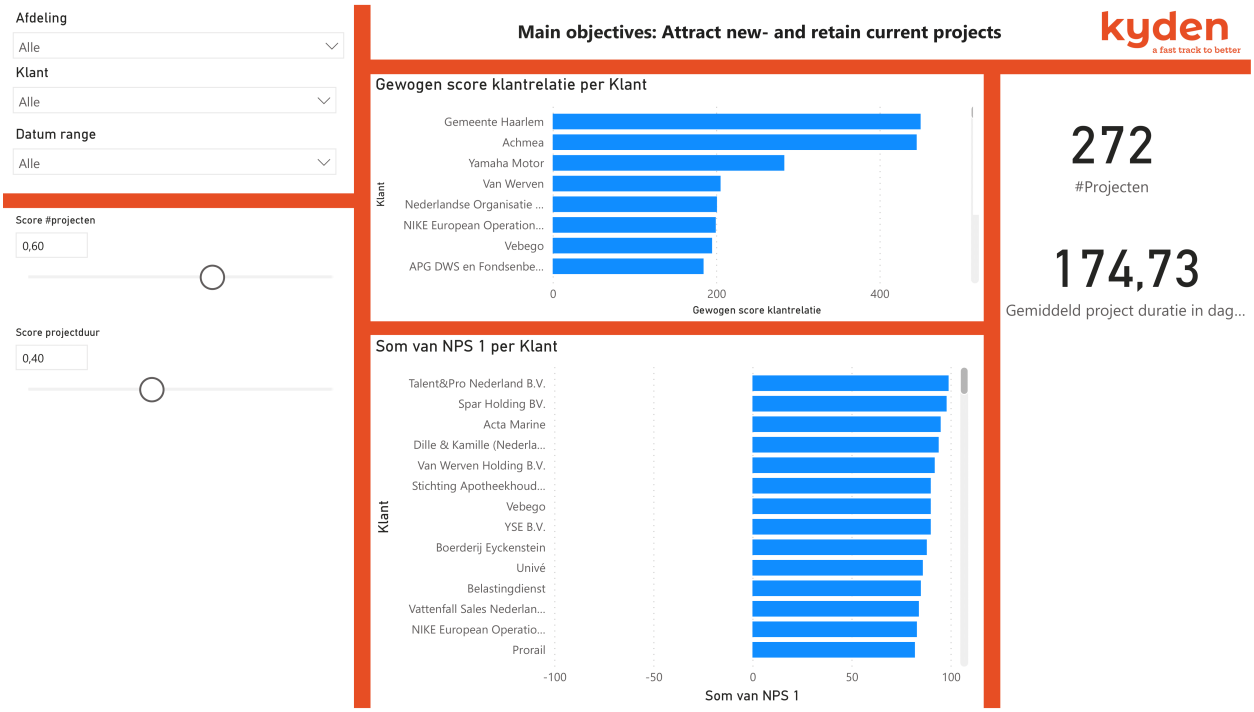


Figure 12: Customer relationship dashboard

```
#Projecten = COUNTROWS(Projecten)
```

```
Gemiddeld project duratie in dagen = AVERAGE(Projecten[Project Duratie (dagen)])
```

```
Gewogen score klantrelatie =
'Score projectduur'[Parameter projectduur] * [Gemiddeld project duratie in dagen]
+
'Score #projecten'[Parameter #projecten] * [#Projecten]
```

Listing 5: Weighted CR score

C.3 Sub-dashboard 3: Days Sales Outstanding (DSO)

No visual representation was added since there were only formula results on this sub-dashboard.

```
Debiteuren YTD = SUM('Omzet huidig jaar'[Debet])

Debiteuren eindstand (vorig jaar) = SUM('Omzet vorig jaar'[Debet])

Omzet YTD = SUM('Omzet huidig jaar'[Omzet])

DaysBetweenTodayAndStartOfYear = ABS(DATEDIFF(DATE(YEAR(TODAY()), 1, 1), TODAY(), DAY))

Average Accounts receivable YTD =
([Debiteuren eindstand (vorig jaar)] + [Debiteuren YTD]) / 2

Average Daily Sales YTD = 'Omzet huidig jaar'[Omzet YTD] / [DaysBetweenTodayAndStartOfYear]

DSO 1 = ((([Debiteuren eindstand (vorig jaar)]+[Debiteuren YTD])/2)/'Omzet huidig jaar'[
    Omzet YTD])*[DaysBetweenTodayAndStartOfYear]

DSO 2 = [Average Accounts receivable YTD] / [Average Daily Sales YTD]
```

Listing 6: DSO

An alternative way to calculate DSO is provided at DSO 2:

$$DSO = \frac{\text{Average Accounts Receivable YTD}}{\text{Revenue current year YTD}} * DaysBetweenTodayAndStartOfYear. \tag{5}$$

C.4 Sub-dashboard 4: Employee insights

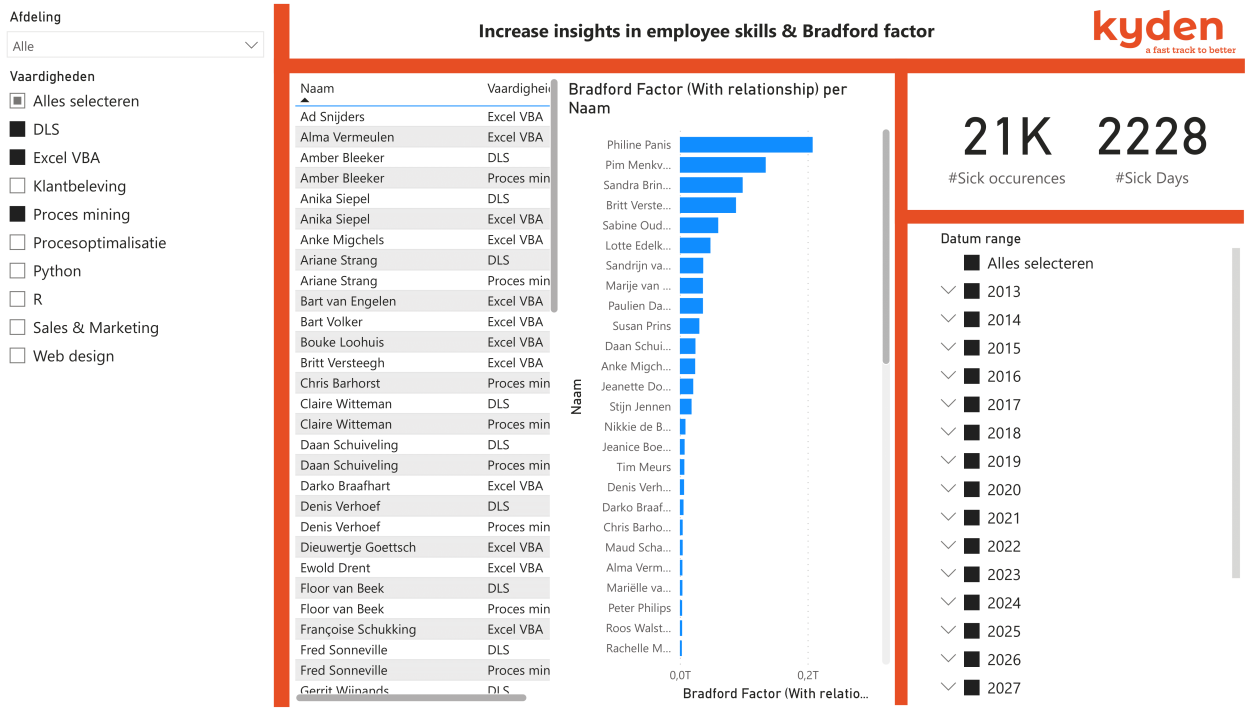


Figure 13: Employee insights

```
#Sick Days =
CALCULATE(
    COUNTROWS(Nacalculaties),
    FILTER(
        Nacalculaties,
        Nacalculaties[Item] = "Verzuim"
    )
)
```

```
    #Sick occurences = COUNT(Nacalculaties[#Ziekte])
```

We added a calculated column which flags new periods of absenteeism. The Dax code for this is as follows:

```
#Ziekte =
VAR CurrentRow = Nacalculaties[Datum]
VAR PreviousRow =
CALCULATE(
    MAX(Nacalculaties[Datum]),

    FILTER(Nacalculaties,
    Nacalculaties[Item] = "Verzuim" &&
    Nacalculaties[MedewerkerKey] = EARLIER(Nacalculaties[MedewerkerKey]) &&
    Nacalculaties[Datum] < EARLIER(Nacalculaties[Datum])
    )
)
Return
   IF(CurrentRow - PreviousRow = 1, 0,1)
```

```
Bradford Factor (With relationship) =
VAR SickOccurrences = [#Sick occurences]
VAR SickDays =
    CALCULATE(
        COUNTROWS(Nacalculaties),
        Nacalculaties[Item] = "Verzuim",
        USERELATIONSHIP(Nacalculaties[MedewerkerKey], 'Medewerkers en rooster'[MedewerkerKey
    ])
    )
RETURN SickOccurrences^2 * SickDays
```

Listing 7: Bradford Factor

C.5 Sub-dashboard 5: Churn rate

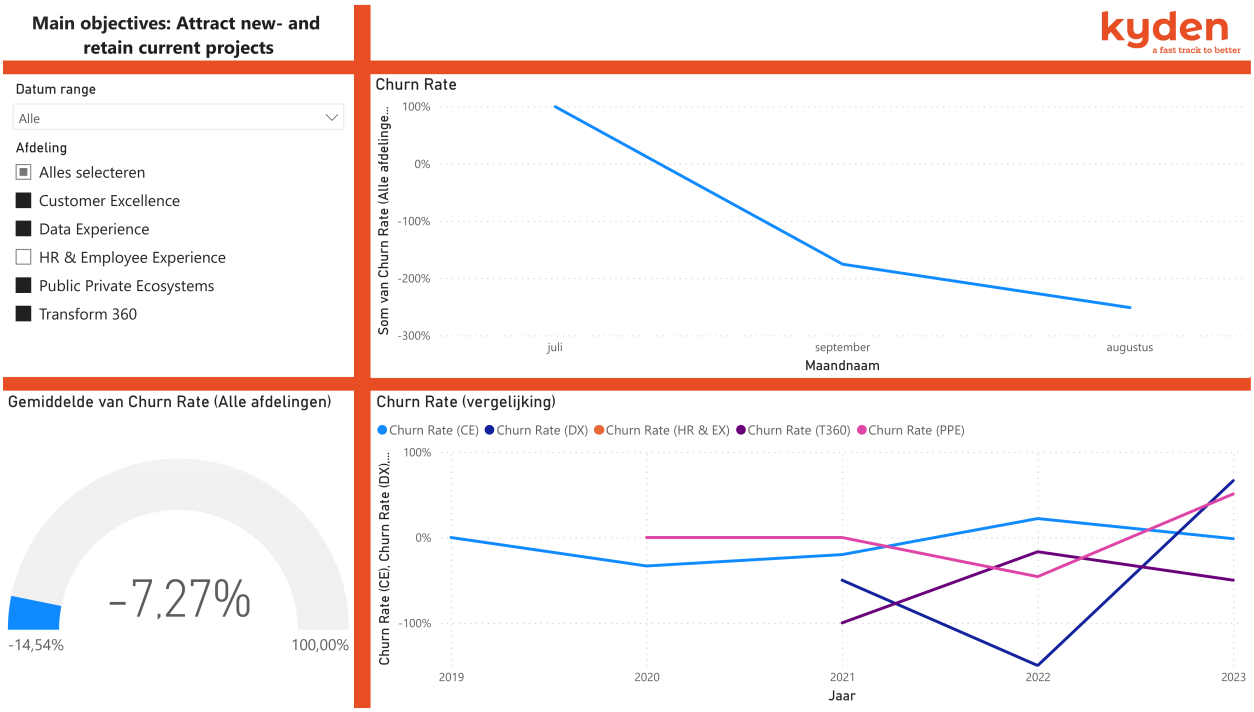


Figure 14: Churn Rate

In order to realise this sub-dashboard there are multiple steps involved, first, we create a calculated table:

```
Churn Rate table =
VAR StartDate = TODAY() - (5*365)
VAR EndDate = TODAY()

VAR DatesTable =
    FILTER(
        CALENDAR(StartDate, EndDate),
        DAY([Date]) = 1                    //Only add first day of the month
    )

RETURN
    GENERATE(
        DatesTable,
        SELECTCOLUMNS(
            ADDCOLUMNS(
                GENERATESERIES(1, 5, 1),  // Create a series from 1 to 5, per date
                "AfdelingKey", [Value]
            ),
            "AfdelingKey", [AfdelingKey]
        )
    )
```

In this table, we generated multiple combinations of the first day of the month dates and department Keys. We then added calculated columns, the first -column identifies the number of unique customers on the first day of the month.

```
#Unique customers on the first day of the month =
VAR ChurnDate = 'Churn Rate table'[Datum]
VAR AfdelingKey = 'Churn Rate table'[AfdelingKey]

```

```
VAR UniqueCustomers =
    COUNTROWS(
        SUMMARIZE(
            FILTER(
                'Projecten',
                Projecten[AfdelingKey] = AfdelingKey &&
                ChurnDate >= 'Projecten'[Aanvang] &&
                ChurnDate <= 'Projecten'[Planning]
            ),
            'Projecten'[KlantKey]
        )
    )
RETURN UniqueCustomers
```

Next, we have per row the unique customers of the month before:

```
Unique customers past month (alle afdelingen) =
VAR ChurnDate = 'Churn Rate table'[Datum]
VAR AfdelingKey = 'Churn Rate table'[AfdelingKey]

VAR UniqueCustomersPastMonth =
    LOOKUPVALUE(
        'Churn Rate table'[#Unique customers on first day of the month],
        'Churn Rate table'[Datum], EDATE(ChurnDate, -1),
        'Churn Rate table'[AfdelingKey], AfdelingKey
    )

RETURN UniqueCustomersPastMonth
```

Then we can calculate the churn rate as follows:

```
Churn Rate (Alle afdelingen) =
VAR NrCustomersCurrentMonth = 'Churn Rate table'[#Unique customers on first day of the month
    ]
VAR NrCustomerPastMonth = 'Churn Rate table'[Unique customers past month (alle afdelingen)]

RETURN
    IF(
        NrCustomerPastMonth = 0 || ISBLANK(NrCustomerPastMonth),
        BLANK(),
        (NrCustomerPastMonth - NrCustomersCurrentMonth) / NrCustomerPastMonth
    )
```

Listing 8: Churn Rate

C.6 Sub-dashboard 6: Sales funnel

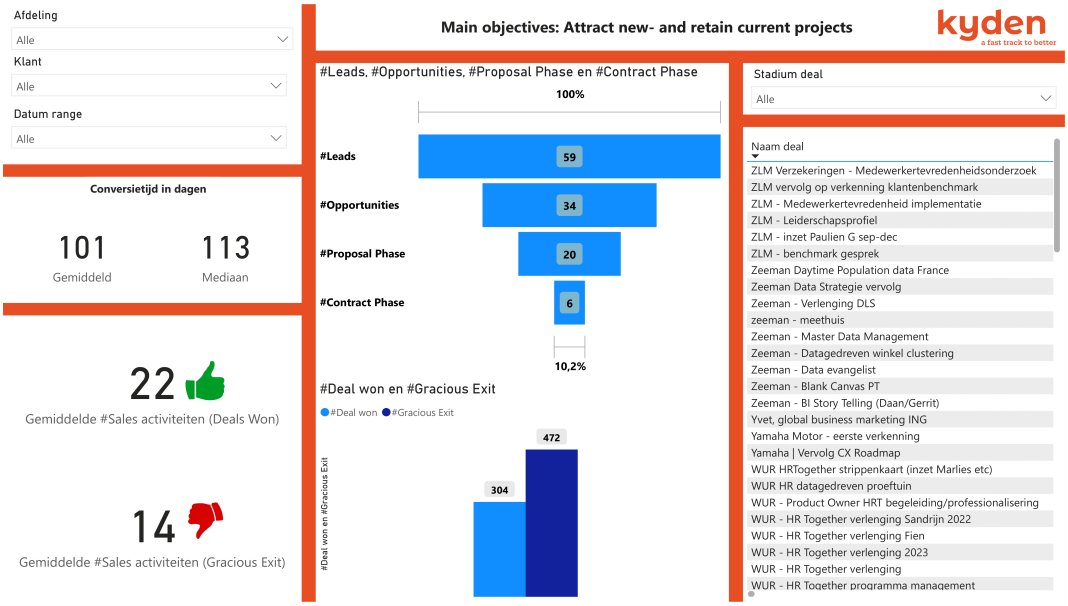


Figure 15: Sales funnel

```
#Leads =
COUNTROWS(
    FILTER(
        'HubSpot CRM data', 'HubSpot CRM data'[Stadium deal]="Lead / gesprek"
    )
)
```

Listing 9: Leads, similar for opportunities, proposal phase and contract phase

```
Mediaan =
MEDIANX(
    FILTER('HubSpot CRM data', 'HubSpot CRM data'[Stadium deal] = "Deal won, project created
     in AFAS"),
    'HubSpot CRM data'[Sluitingsdatum] - 'HubSpot CRM data'[Datum van aanmaak]
)
```

```
Gemiddeld =
AVERAGEX(
    FILTER('HubSpot CRM data', 'HubSpot CRM data'[Stadium deal] = "Deal won, project created
     in AFAS"),
    'HubSpot CRM data'[Sluitingsdatum] - 'HubSpot CRM data'[Datum van aanmaak]
)
```

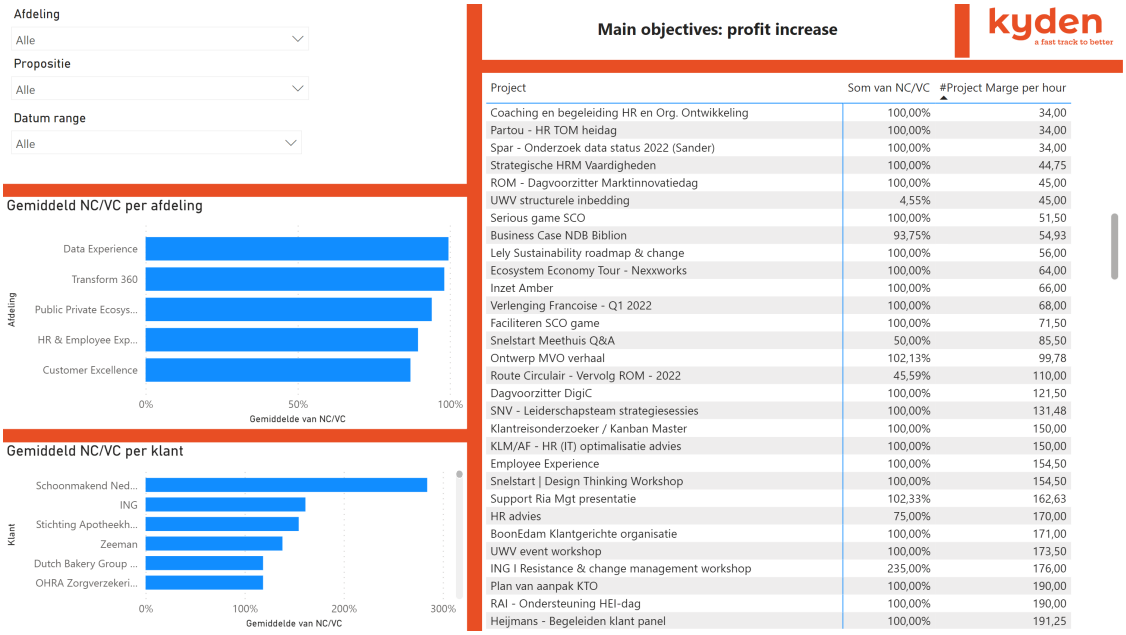
Listing 10: Average and median conversion time in days

```
Gemiddelde #Sales activiteiten (Deals Won) =
AVERAGEX(
    FILTER('HubSpot CRM data', 'HubSpot CRM data'[Stadium deal] = "Deal won, project created
     in AFAS"),
    'HubSpot CRM data'[Aantal salesactiviteiten]
)
```

```
Gemiddelde #Sales activiteiten (Gracious Exit) =
AVERAGEX(
    FILTER('HubSpot CRM data', 'HubSpot CRM data'[Stadium deal] ="Gracious Exit" ),
    'HubSpot CRM data'[Aantal salesactiviteiten]
)
```

Listing 11: Number of sales activities for deals won and gracious exit

C.7 Sub-dashboard 7: NC/VC & Marge per uur



Project	Som van NC/VC	#Project Marge per hour
Coaching en begeleiding HR en Org. Ontwikkeling	100,00%	34,00
Partou - HR TOM heidag	100,00%	34,00
Spar - Onderzoek data status 2022 (Sander)	100,00%	34,00
Strategische HRM Vaardigheden	100,00%	44,75
ROM - Dagvoorzitter Marktinnovatiedag	100,00%	45,00
UWV structurele inbedding	4,55%	45,00
Serious game SCO	100,00%	51,50
Business Case NDB Biblion	93,75%	54,93
Lely Sustainability roadmap & change	100,00%	56,00
Ecosystem Economy Tour - Nexxworks	100,00%	64,00
Inzet Amber	100,00%	66,00
Verlenging Francoise - Q1 2022	100,00%	68,00
Faciliteren SCO game	100,00%	71,50
Snelstart Meethuis Q&A	50,00%	85,50
Ontwerp MVO verhaal	102,13%	99,78
Route Circulair - Vervolg ROM - 2022	45,59%	110,00
Dagvoorzitter DigiC	100,00%	121,50
SNV - Leiderschapsteam strategiesessies	100,00%	131,48
Klantreisonderzoeker / Kanban Master	100,00%	150,00
KLM/AF - HR (IT) optimalisatie advies	100,00%	150,00
Employee Experience	100,00%	154,50
Snelstart | Design Thinking Workshop	100,00%	154,50
Support Ria Mgt presentatie	102,33%	162,63
HR advies	75,00%	170,00
BoonEdam Klantgerichte organisatie	100,00%	171,00
UWV event workshop	100,00%	173,50
ING I Resistance & change management workshop	235,00%	176,00
Plan van aanpak KTO	100,00%	190,00
RAI - Ondersteuning HEI-dag	100,00%	190,00
Heijmans - Begeleiden klant panel	100,00%	191,25

Figure 16: NC/VC & hourly margin

We added a calculated column to the projects data table, with the following calculation:

```
NC/VC =
    IF(
        NOT(ISBLANK(Projecten[NC uren])) && NOT(ISBLANK(Projecten[VC uren])) && Projecten[VC uren] <> 0 && Projecten[NC uren] <> 0,
        Projecten[NC uren] / Projecten[VC uren],
        BLANK()
    )
```

Listing 12: NC/VC

In order to get the averages we can simply change the aggregation field in the “per afdeling” and “per klant” matrices. The hourly margin is calculated in the following manner:

```
Project Marge per hour =
SUMX(
    FILTER(
        Nacalculaties,
        Nacalculaties[Type item code] = "Wst" &&
        Nacalculaties[Item] <> "Verlof" &&
        Nacalculaties[Item] <> "Verzuim" &&
        Nacalculaties[Item] <> "Feestdag"
    ),
    Nacalculaties[Marge] / Nacalculaties[Aantal]
)
```

Listing 13: Project margin

C.8 Sub-dashboard 8: Utilisation & Billability

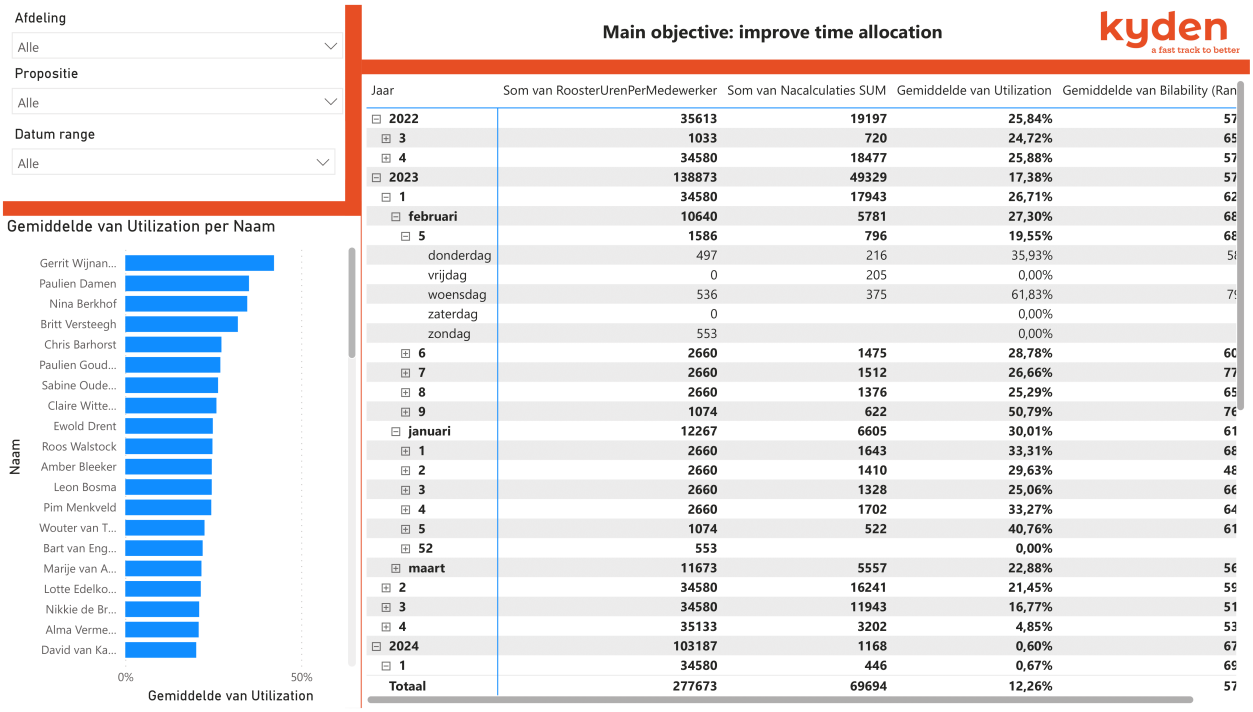


Figure 17: Utilisation & Bilability

Step 1: A table with the consultant's daily working hours (Mon-Fri).
This is an inserted dataset.

Step 2: Calculate the available amount of hours per day per First, we SUM per department, per function the hours available per day.

```
Ma =
SUMX(
    FILTER(
        'Medewerkers en rooster',
        'Medewerkers en rooster'[AfdelingKey] = 'Afdeling-Functie uren potjes'[AfdelingKey]
    &&
        'Medewerkers en rooster'[FunctieKey] = 'Afdeling-Functie uren potjes'[FunctieKey]
    ),
    'Medewerkers en rooster'[Ma]
)
```

Listing 14: Available hours on Monday (similar code for each day of the week)

Step 3: Calculated dynamic table with dates and EmployeeKeys.

```
Rooster met Utilisation en Bilability =
VAR StartDate = TODAY() - 365
VAR EndDate = TODAY() + 365
VAR DatesTable = CALENDAR(StartDate, EndDate)
VAR MedewerkersCount = COUNTROWS('Medewerkers en rooster')

RETURN
    GENERATE(
        DatesTable,
        SELECTCOLUMNS(
            ADDCOLUMNS(
                GENERATESERIES(1, MedewerkersCount, 1),  // Create a series from 1 to MedewerkersCount, per date (we now have MedewerkersCount rows per date)
                "MedewerkerKey", [Value]
            ),
            "MedewerkerKey", [MedewerkerKey]
        )
    )
```

Listing 15: A generated table with dates and EmployeeKeys

Step 4: Calculate columns for roster hours and post-calculation hours.

```
Nacalculaties SUM =
SUMX(
    FILTER(
        Nacalculaties,
        Nacalculaties[MedewerkerKey] = 'Rooster met utilisation en Bilability'[MedewerkerKey] &&
        Nacalculaties[Datum] = 'Rooster met utilisation en Bilability'[Datum]),
        Nacalculaties[Aantal]
)
```

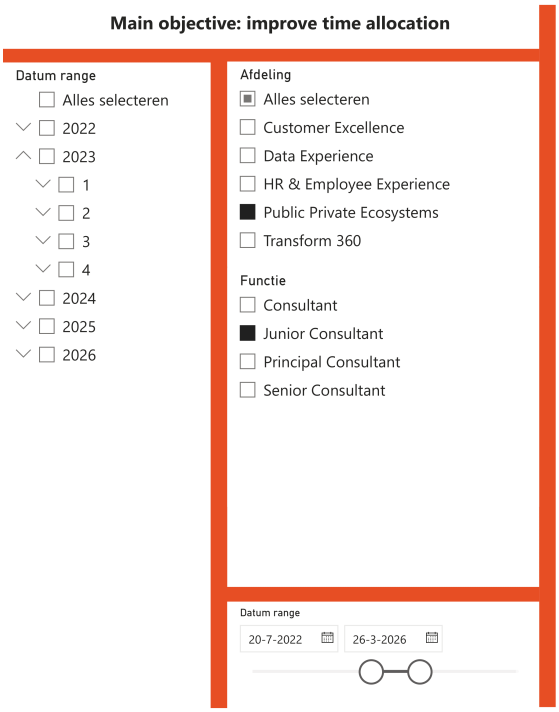
Step 5: Post-calculation(NC) divided by the roster hours.

```
utilisation =
VAR RosterHours = 'Rooster met utilisation en Bilability'[RoosterUrenPerMedewerker]
VAR TotalHoursNC = 'Rooster met utilisation en Bilability'[Nacalculaties SUM]

RETURN
    IF(
        NOT ISBLANK(RosterHours) && NOT ISBLANK(TotalHoursNC) && TotalHoursNC <> 0 && RosterHours <> 0,
         TotalHoursNC / RosterHours,
         0
    )
```

Step 6: Billability.

```
Bilability (Random) =
VAR RosterHours = 'Rooster met utilisation en Bilability'[RoosterUrenPerMedewerker]
VAR TotalHoursNC = 'Rooster met utilisation en Bilability'[Nacalculaties SUM]

RETURN
    IF(
        NOT ISBLANK(RosterHours) && NOT ISBLANK(TotalHoursNC) && TotalHoursNC <> 0 && RosterHours <> 0,
         TotalHoursNC / RosterHours * RAND(),
        BLANK()
    )
```

C.9 Sub-dashboard 9: Scheduling



Jaar	Som van Rooster #uren per afdeling per functie	Som van Capaciteit dag perspectief
2024	**5896**	**5896,00**
2023	**7936**	**4710,08**
4	**2008**	**1868,91**
3	**1976**	**1356,65**
2	**1976**	**681,74**
mei	**704**	**321,45**
22	**96**	**64,63**
21	**152**	**48,45**
20	**152**	**97,45**
19	**152**	**70,45**
zondag	32	29,64
zaterdag	0	-2,36
woensdag	32	13,64
vrijdag	0	-10,36
maandag	32	19,64
donderdag	24	21,64
dinsdag	32	-1,36
18	**152**	**40,45**
juni	**632**	**88,88**
april	**640**	**271,40**
1	**1976**	**802,78**
2022	**2032**	**-109,25**
Totaal	**15864**	**10496,83**

Figure 18: Scheduling

Step 1: A newly generated table which provides a new dynamic calendar

```
RK VC-NC =
VAR StartDate = TODAY() - 365
VAR EndDate = TODAY() + 365
VAR DatesTable = CALENDAR(StartDate, EndDate)

VAR MaxProjectKey =
    MAXX(
        UNION(
            VALUES('Nacalculaties'[ProjectKey]),
            VALUES('Voorcalculaties'[ProjectKey])
        ),
        [ProjectKey]
    )

RETURN
    GENERATE(
        DatesTable,
        GENERATE(
            SELECTCOLUMNS(
                ADDCOLUMNS(
                    GENERATESERIES(1, 5, 1),  // Create a series from 1 to 5, per date (we now have 5 rows per date)
                    "AfdelingKey", [Value]
                ),
                "AfdelingKey", [AfdelingKey]
            ),
            GENERATE(
                SELECTCOLUMNS(
                    ADDCOLUMNS(
                        GENERATESERIES(1, 4, 1),  // Create a series from 1 to 4, per AfdelingKey (we now have 20 rows per date)
                        "FunctieKey", [Value]
                    ),
                    "FunctieKey", [FunctieKey]
                ),
                SELECTCOLUMNS(
                    ADDCOLUMNS(
                        GENERATESERIES(1, MaxProjectKey, 1),  // Create a series from 1 to XXX, per FunctieKey (we now have XXX rows per date), Potentiele verbetring: alleen ProjectKeys per datum die in VC/NC bestaan
                        "ProjectKey", [Value]
                    ),
                    "ProjectKey", [ProjectKey]
                )
            )
        )
    )
```

Step 2: Insert two calculated columns in the pre-calculation table.

```
Project Duratie =
VAR StartDate = 'Voorcalculaties'[Aanvang]
VAR EndDate = 'Voorcalculaties'[Planning]
VAR TotalDays = NETWORKDAYS(StartDate, EndDate) --Excludes saturday and sunday

RETURN
TotalDays
```

```
AVG uur per dag = 'Voorcalculaties'[Aantal besteld] / 'Voorcalculaties'[Project Duratie]
```

Step 3: Check if there are pre-calculations available for the specific combination.

```
VC #uren =
VAR AfdelingKey = 'RK VC-NC'[AfdelingKey]
VAR FunctieKey = 'RK VC-NC'[FunctieKey]
VAR ProjectKey = 'RK VC-NC'[ProjectKey]
VAR Datum = 'RK VC-NC'[Datum]

RETURN
SUMX(
    FILTER(
        'Voorcalculaties',
        'Voorcalculaties'[AfdelingKey] = AfdelingKey &&
        'Voorcalculaties'[FunctieKey] = FunctieKey &&
        'Voorcalculaties'[ProjectKey] = ProjectKey &&
        'Voorcalculaties'[Planning] >= Datum &&
        'Voorcalculaties'[Aanvang] <= Datum
    ),
    'Voorcalculaties'[AVG uur per dag]
)
```

Step 4: check if there are post-calculations available for the specific combinations.

```
NC #uren =
VAR AfdelingKey = 'RK VC-NC'[AfdelingKey]
VAR FunctieKeys = 'RK VC-NC'[FunctieKey]
VAR ProjectKeys = 'RK VC-NC'[ProjectKey]

RETURN
SUMX(
    FILTER(
        'Nacalculaties',
        'Nacalculaties'[AfdelingKey] = AfdelingKey &&
        'Nacalculaties'[FunctieKey] = FunctieKeys &&
        'Nacalculaties'[FunctieKey] = ProjectKeys &&
        'Nacalculaties'[Datum] = 'RK VC-NC'[Datum]
    ),
    'Nacalculaties'[Aantal]
)
```

Step 5: We generated another table with a reduced amount of combinations to do the last steps.

```
RK rooster #uren en capaciteit =
VAR StartDate = TODAY() - 365
VAR EndDate = TODAY() + 365
VAR DatesTable = CALENDAR(StartDate, EndDate)

RETURN
    GENERATE(
        DatesTable,
        GENERATE(
            SELECTCOLUMNS(
                ADDCOLUMNS(
                    GENERATESERIES(1, 5, 1),  // Create a series from 1 to 5, per date
                    "AfdelingKey", [Value]
                ),
                "AfdelingKey", [AfdelingKey]
            ),
            SELECTCOLUMNS(
                ADDCOLUMNS(
                    GENERATESERIES(1, 4, 1),  // Create a series from 1 to 4, per
    AfdelingKey
                    "FunctieKey", [Value]
                ),
                "FunctieKey", [FunctieKey]
            )
        )
    )
```

```
Rooster #uren per afdeling per functie =
VAR AfdelingKey = 'RK rooster #uren en capaciteit'[AfdelingKey]
VAR FunctieKeys = 'RK rooster #uren en capaciteit'[FunctieKey]
VAR WeekDay = WEEKDAY('RK rooster #uren en capaciteit'[Datum])

VAR FilteredData =
FILTER(
    'Afdeling-Functie uren potjes',
    'Afdeling-Functie uren potjes'[AfdelingKey] = AfdelingKey &&
    'Afdeling-Functie uren potjes'[FunctieKey] = FunctieKeys
)

VAR Result =
    SUMX(
        FilteredData,
            SWITCH(
                 WeekDay,
                 1, 'Afdeling-Functie uren potjes'[Ma],
                 2, 'Afdeling-Functie uren potjes'[Di],
                 3, 'Afdeling-Functie uren potjes'[Wo],
                 4, 'Afdeling-Functie uren potjes'[Do],
                 5, 'Afdeling-Functie uren potjes'[Vr],
                0
    )
)
RETURN Result
```

```
Capaciteit dag perspectief =
VAR SUMHOURS =
SUMX(
    FILTER(
        'RK VC-NC',
        'RK rooster #uren en capaciteit'[AfdelingKey] = 'RK VC-NC'[AfdelingKey] &&
        'RK rooster #uren en capaciteit'[FunctieKey] = 'RK VC-NC'[FunctieKey] &&
        'RK rooster #uren en capaciteit'[Datum] = 'RK VC-NC'[Datum]
    ),
    IF(
        NOT(ISBLANK('RK VC-NC'[NC #uren])),     //IF NC is not empty
        'RK VC-NC'[NC #uren],                   //Return NC
        'RK VC-NC'[VC #uren]                    //Otherwise Return VC
    )
)

RETURN
'RK rooster #uren en capaciteit'[Rooster #uren per afdeling per functie] - SUMHOURS
```

Step 5: We generated another table with a reduced amount of combinations to do the last steps.

```
RK rooster #uren en capaciteit =
VAR StartDate = TODAY() - 365
VAR EndDate = TODAY() + 365
VAR DatesTable = CALENDAR(StartDate, EndDate)

RETURN
    GENERATE(
        DatesTable,
        GENERATE(
            SELECTCOLUMNS(
                ADDCOLUMNS(
                    GENERATESERIES(1, 5, 1),  // Create a series from 1 to 5, per date
                    "AfdelingKey", [Value]
                ),
                "AfdelingKey", [AfdelingKey]
            ),
            SELECTCOLUMNS(
                ADDCOLUMNS(
                    GENERATESERIES(1, 4, 1),  // Create a series from 1 to 4, per
    AfdelingKey
                    "FunctieKey", [Value]
                ),
                "FunctieKey", [FunctieKey]
            )
        )
    )
```

Check the roster hours:

```
Rooster #uren per afdeling per functie =
VAR AfdelingKey = 'RK rooster #uren en capaciteit'[AfdelingKey]
VAR FunctieKeys = 'RK rooster #uren en capaciteit'[FunctieKey]
VAR WeekDay = WEEKDAY('RK rooster #uren en capaciteit'[Datum])

VAR FilteredData =
FILTER(
    'Afdeling-Functie uren potjes',
    'Afdeling-Functie uren potjes'[AfdelingKey] = AfdelingKey &&
    'Afdeling-Functie uren potjes'[FunctieKey] = FunctieKeys
)

VAR Result =
    SUMX(
        FilteredData,
            SWITCH(
                 WeekDay,
```

```
                    1, 'Afdeling-Functie uren potjes'[Ma],
                    2, 'Afdeling-Functie uren potjes'[Di],
                    3, 'Afdeling-Functie uren potjes'[Wo],
                    4, 'Afdeling-Functie uren potjes'[Do],
                    5, 'Afdeling-Functie uren potjes'[Vr],
                   0
    )
)
RETURN Result
```

Lastly, determine the daily capacity:

```
Capaciteit dag perspectief =
VAR SUMHOURS =
SUMX(
    FILTER(
        'RK VC-NC',
        'RK rooster #uren en capaciteit'[AfdelingKey] = 'RK VC-NC'[AfdelingKey] &&
        'RK rooster #uren en capaciteit'[FunctieKey] = 'RK VC-NC'[FunctieKey] &&
        'RK rooster #uren en capaciteit'[Datum] = 'RK VC-NC'[Datum]
    ),
    IF(
        NOT(ISBLANK('RK VC-NC'[NC #uren])),     //IF NC is not empty
        'RK VC-NC'[NC #uren],                   //Return NC
        'RK VC-NC'[VC #uren]                    //Otherwise Return VC
    )
)

RETURN
'RK rooster #uren en capaciteit'[Rooster #uren per afdeling per functie] - SUMHOURS
```

C.10 Sub-dashboard 10: Projected revenue

This figure shows the projected revenue based on the sales funnel:

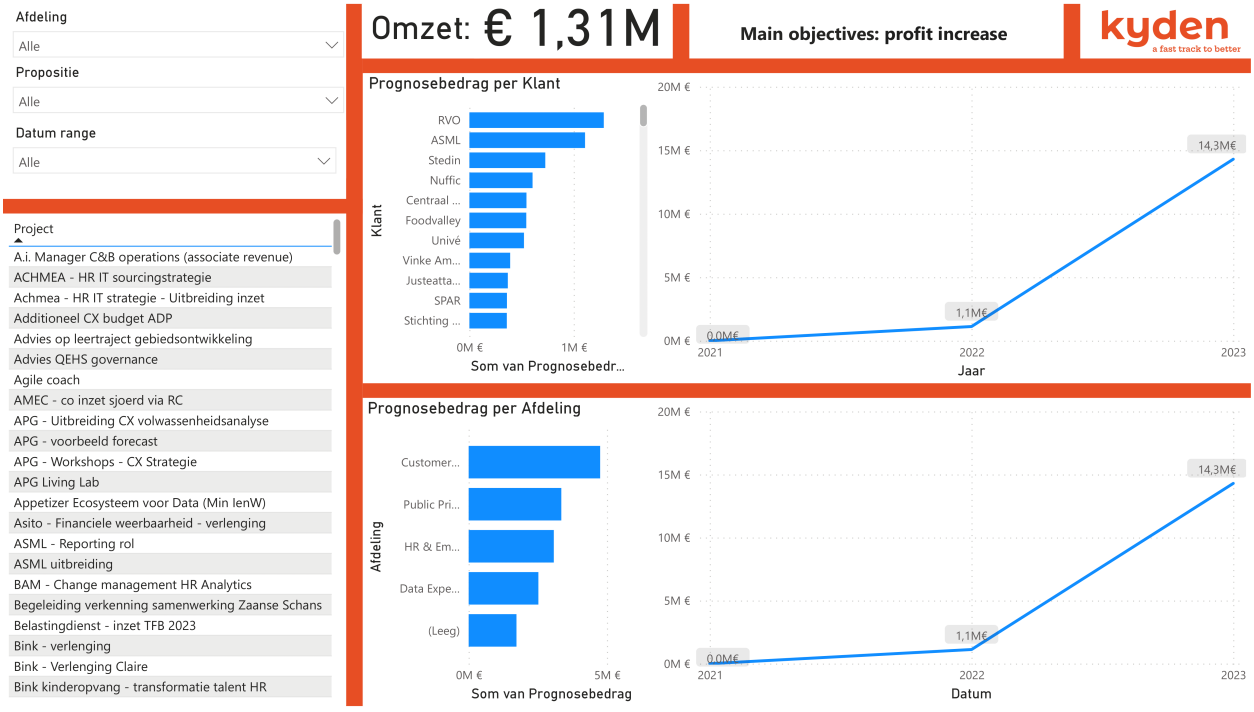
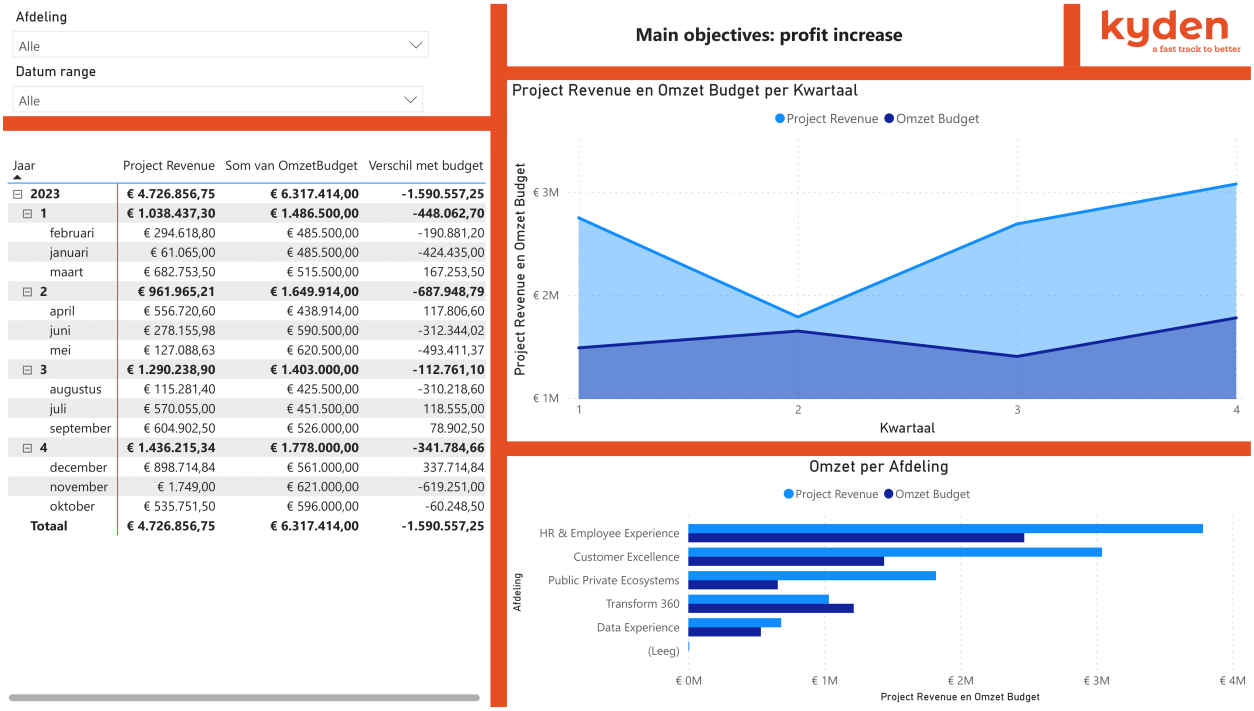


Figure 19: Projected revenue

C.11 Sub-dashboard 11: Revenue compared to targets

This dashboard compares the revenue to the revenue targets:



Jaar	Project Revenue	Som van OmzetBudget	Verschil met budget
2023	**€ 4.726.856,75**	**€ 6.317.414,00**	**-1.590.557,25**
1	**€ 1.038.437,30**	**€ 1.486.500,00**	**-448.062,70**
februari	€ 294.618,80	€ 485.500,00	-190.881,20
januari	€ 61.065,00	€ 485.500,00	-424.435,00
maart	€ 682.753,50	€ 515.500,00	167.253,50
2	**€ 961.965,21**	**€ 1.649.914,00**	**-687.948,79**
april	€ 556.720,60	€ 438.914,00	117.806,60
juni	€ 278.155,98	€ 590.500,00	-312.344,02
mei	€ 127.088,63	€ 620.500,00	-493.411,37
3	**€ 1.290.238,90**	**€ 1.403.000,00**	**-112.761,10**
augustus	€ 115.281,40	€ 425.500,00	-310.218,60
juli	€ 570.055,00	€ 451.500,00	118.555,00
september	€ 604.902,50	€ 526.000,00	78.902,50
4	**€ 1.436.215,34**	**€ 1.778.000,00**	**-341.784,66**
december	€ 898.714,84	€ 561.000,00	337.714,84
november	€ 1.749,00	€ 621.000,00	-619.251,00
oktober	€ 535.751,50	€ 596.000,00	-60.248,50
Totaal	**€ 4.726.856,75**	**€ 6.317.414,00**	**-1.590.557,25**

Figure 20: Revenue compared to targets

C.12 Sub-dashboard 12, 13, 14, and 15: Revenues, costs, and profits and averages

This figure shows our profits, we have a similar dashboard with the exact same layout for revenue and costs, (in blue and red respectively):

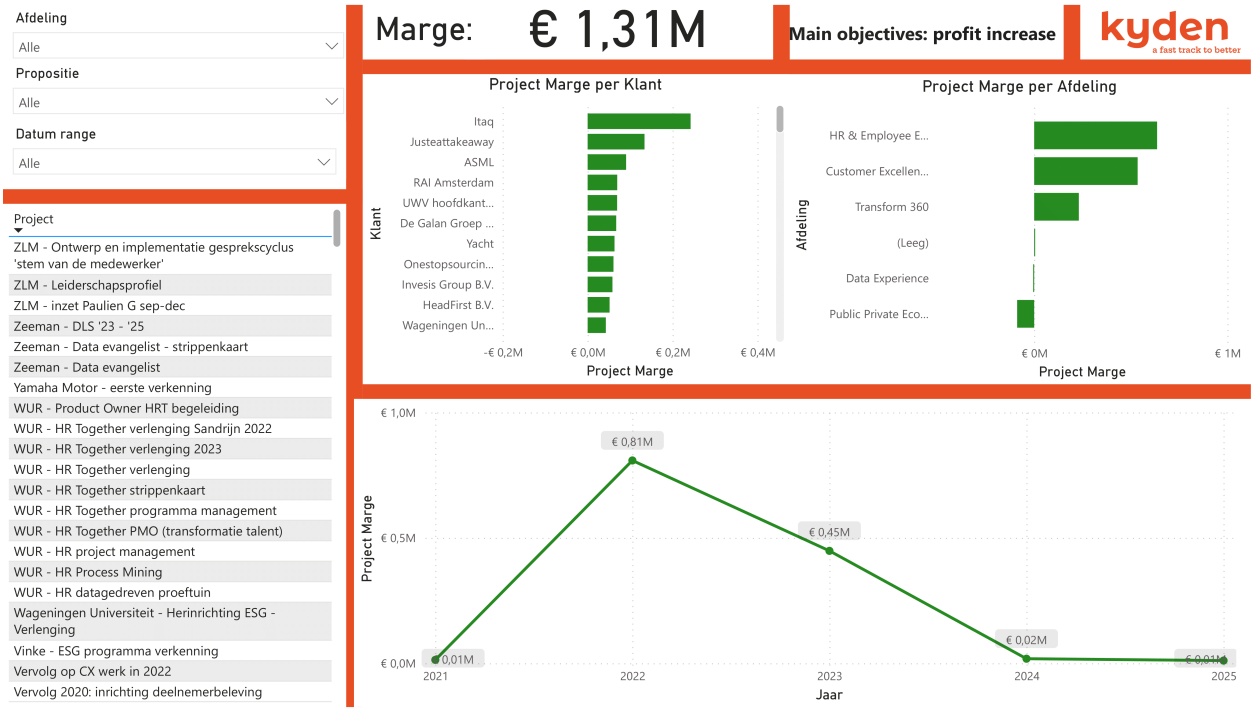


Figure 21: Profits

The following DAX codes calculate the revenue, we use similar code to calculate the costs. For profit, we simply subtract the former of the latter.

```
Project Revenue =
SUMX(
    FILTER(
        Nacalculaties,
        Nacalculaties[Type item code] = "Wst" &&
        Nacalculaties[Item] <> "Verlof" &&
        Nacalculaties[Item] <> "Verzuim" &&
        Nacalculaties[Item] <> "Feestdag"
    ),
    Nacalculaties[Verkoopbedrag]
)
```

Furthermore, we also have the averages, for revenue, marge and costs. The figure below shows the visuals when the PL presses the “Marge”, button:

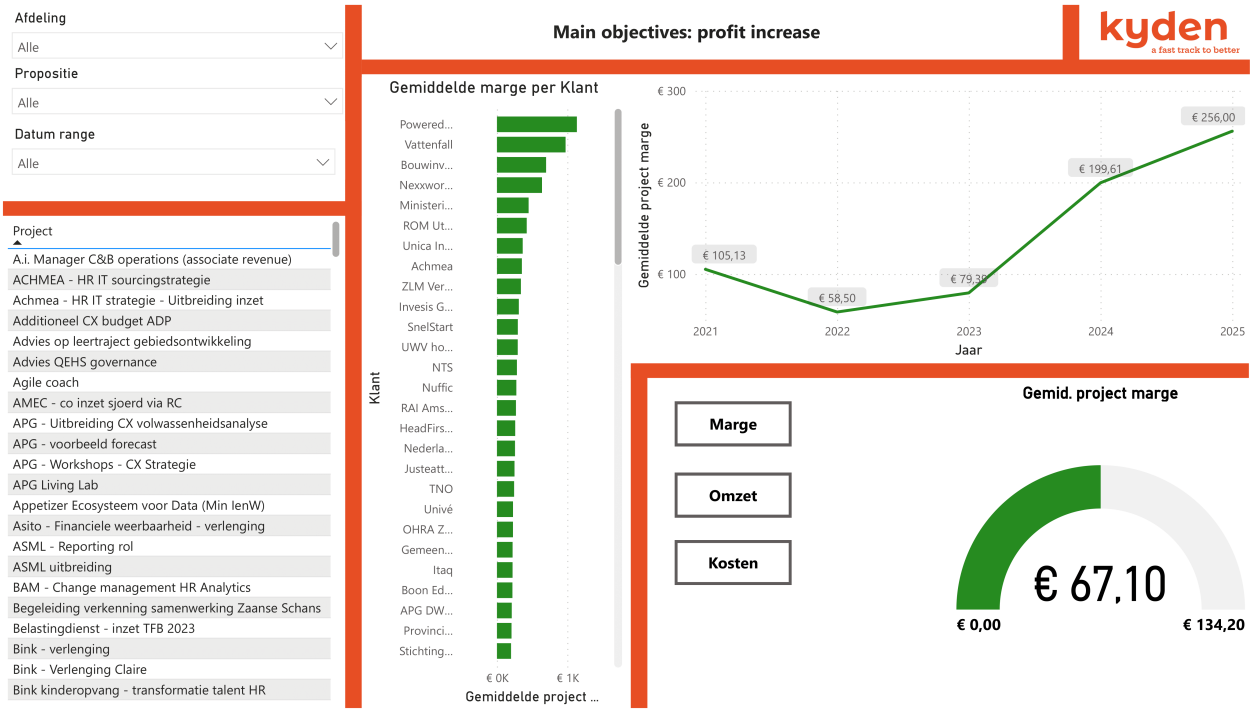


Figure 22: Average profit