INTERNSHIP REPORT AT ALTANA AG

by

Nchang Larissa Chifu, 30701

from Bamenda

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Internship Submitted in Partial Fulfillment of the

Requirements for the Degree of

INDUSTRIAL ENGINEERING

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in the

Faculty of Technology and Bionics

27.02.2025, Kleve, Germany

1st examiner: Prof. Dr.-Ing. S. Danjou

Declaration of Authorship

I, Nchang Larissa Chifu, declare that this report entitled 30701 internship, and the work presented in it are my own and have been generated by me as the result of my own original research without any unauthorised third-party support.

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I confirm that

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- Where I have consulted the published or unpublished work of others, this is always clearly attributed, with an accurate and complete reference.
- Where I have quoted from the work of others, the source is always given.
- I have acknowledged all main sources of help and funding.
- Where the internship is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.
- I have fully declared and documented any use of AI-based software tool. I am aware that I will take full responsibility for any erroneous or distorted content generated by the AI (including erroneous references), violations of the data protection law or the copyright law, as well as any kind of plagiarism.
- I utilized various tools and resources to assist in research and drafting. Specifically, I leveraged AI-powered tools such as ChatGPT to help structure and refine certain sections of the report. This assistance was invaluable in ensuring clarity and coherence throughout the document.

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kleve, 27th February 2025 Nchang Larissa Chifu

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1 Introduction

An internship is an integral part of the degree program that provides students with practical insights into the professional world and important experience for their future career plans. A twenty-week mandatory internship is required as part of the bachelor´s program in Industrial Engineering at the Rhine-Waal University of Kleve. In the summer semester of 2024, I already completed courses that are interesting for my internship such as accounting, Production and Logistics, International Business and law, Project Management, and Global Economics. Based on this, I decided to do a twenty-week internship at the ALTANA AG in the division Taunus Treuhandgesellschafte mbH (internal tax department of ALTANA). As an industrial engineering student, I completed an internship at a company where my primary role was to enhance the efficiency of their work processes through digitalization. My tasks involved using Microsoft tools such as Power BI, Power Automate, Microsoft Lists, Excel, Confluence, Workflows, and SharePoint to transition the firm's existing document management system to a more integrated and automated SharePoint-based system.

This report details Taunus Treuhangesellschaft (TTG) 's initial problem, the methodology used to address it, and the steps taken to implement a digital solution. It also discusses how the skills and knowledge gained from my industrial engineering studies were applied during this internship.

1.1 Introduction of the Company

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ALTANA Group is headed by ALTANA AG with its headquarters in Wesel, Germany located in 26 countries with 8000 employees. The key information concerning ALTANA Group and its four divisions is summarized by the following overview:

Figure 1-ALTANA Group and its four divisions.

Source: ALTANA annual report 2021

Figure 2- Geographical overview of ALTANA's Group

Source: Annual Press Conference of ALTANA AG, Report on the 2021 Fiscal Year

The roots of ALTANA AG go back to the year 1873, when Dr. Heinrich Byk began producing chemicals. In 1941, Dr. Günther Quandt acquired the majority of shares in the subsequent BYK-Chemie. In 1977, the company became part of the newly formed ALTANA AG. ALTANA Group

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as known from 1977 grew over the decades by organic growth but especially by acquisitions of several group companies, which became part of the divisions. Since January 2007, after the divestment of the pharmaceutical activities, ALTANA has focused on its specialty chemicals business (Corporate Report 2021 – ALTANA AG). Today the ALTANA Group is organized into four divisions:

- BYK Additives & Instruments,
- ECKART Effect Pigments,
- ELANTAS Electrical Insulation
- ACTEGA Coatings & Sealants

and is globally represented in the area of specialty chemicals with around 48 production sites. ALTANA is a global specialty chemicals company with employees and sites all over the world. Working under the ALTANA umbrella are four business divisions that offer their customers worldwide high-quality products and solutions. Each division acts under its name. At the same time, ALTANA strives to maximize the benefits of collective knowledge and skills. The company's sites are generally run by local management and typically have a fully-fledged business organization. This ensures cultural integration, market proximity, and fast decision-making processes. ALTANA's shareholder structure facilitates long-term corporate success and provides commitment as well as continuity for its employees and customers. At the same time, it enables ALTANA to act quickly to take advantage of business opportunities.

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1.2 Description of the Divisions and their Products

i. BYK Additives & Instruments

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The BYK Additives & Instruments division is one of the leading international suppliers of special-purpose ingredients, so-called additives, used in coatings and paints, plastics, gas and oil exploration, and other industrial applications. The division's products, most of which are used in only very small amounts, have a decisive influence on the properties of their customers' end products or enable customers to improve their manufacturing and industrial processes. The division also manufactures measuring and testing instruments that are used to determine surface properties, color shades, and optical effects. BYK-Chemie GmbH, based in Wesel, Germany, is the management company of the division. In addition,

it is the division's biggest production and development site for additives and the ALTANA group company with the highest sales.

ii. ECKART Effective Pigments

ALTANA concentrates the development, production, and sale of effect pigments in the ECKART Effect Pigments division. Customers use these products to achieve visual and functional effects, primarily in coatings, plastics, printing inks, cosmetics, and construction materials. The principal raw materials are aluminum, copper, and zinc. Aside from metallic effect pigments, other pigments are offered based on artificial substrates. Effect printing inks and services supplement the division's portfolio. Aluminum-based effect pigments comprise the largest part of ECKART's business. Customers use them particularly to achieve silver metallic effects, for example, for car paints or graphic arts products.

iii. ELANTAS Electrical Insulation

The companies in the ELANTAS Electrical Insulation division offer their customers a high level of expertise in the field of electrical insulation materials. As one of the world's leading suppliers of such products, the division's portfolio concentrates on coatings for insulating magnet wires as well as special resins and coatings for impregnating and protecting electrical and electronic components. ELANTAS has its holding structure under the management of ELANTAS GmbH, based in Wesel, Germany. The latter controls the division's activities and supports its operating subsidiaries, which develop and produce insulating materials in Germany, Italy, China, India, the U.S., Brazil, and Malaysia.

iv. ACTEGA Coatings and Sealants

The ACTEGA Coatings & Sealants division's portfolio is tailored to the needs of the packaging and graphic arts industries. It produces specialty coatings, printing inks, adhesives, and sealants used by customers to achieve functional and visual effects. ACTEGA is managed by the holding company ACTEGA GmbH, based in Wesel, Germany. Subsidiaries in Germany, France, Spain, China, the U.S., Brazil, Canada, and Chile manufacture and sell the division's products. Its research and development activities are also decentralized, and oriented to the competencies of the individual companies in the relevant application area.

1.3 Structure of the Report

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The structure of this report is designed to walk the reader through the entire journey and learnings during the course of the internship. The report starts by outlining the company's old system and the need for digitalization. It also outlines the challenges faced during this transition and how my know-how as an industrial engineering student helped in valuable contributions during certain situations and challenges. The report continues with explaining the methodology applied during the project and what outcomes and impacts are gotten by this transformation.

In general, we began by immersing ourselves in the firm's day-to-day operations, engaging in extensive discussions with staff members across various departments. This initial phase was crucial in understanding existing workflows and identifying key areas ripe for improvement. By observing firsthand how tasks were performed and analyzing current data management practices, we gained valuable insights that would shape our interventions. Throughout the project, flexibility remained a cornerstone of our approach. We recognized that implementing technological changes in a traditional legal environment would present unique challenges. As such, we remained adaptable, ready to adjust our plans as new obstacles or opportunities emerged or as the company grows.

Our structural approach also included regular checkpoints and progress reviews. These sessions served multiple purposes: they kept stakeholders informed, allowed for timely adjustments to our strategy, and helped maintain enthusiasm for the project. By celebrating small victories along the way, we fostered a positive atmosphere of innovation and continuous improvement

2 Project Overview and Initial problem

Industrial engineering is primarily concerned with optimizing complex processes and systems, ensuring efficiency, and minimizing waste. My internship tasks align with industrial engineering principles, as I applied process improvement techniques, analytical thinking, workflow automation, data management, and systems integration. During my internship, I was assigned various tasks and had to do some research in order to participate considerably and to be able to learn from the journey. The primary goal of the project was to enhance the efficiency, security, and effectiveness of the firm's workflow by:

1. **Streamlining Document Management:** Transitioning from Microsoft Excel to Sharepoint
2. **Improving Task Tracking:** Utilizing Power BI and Power Automate to monitor task progress and automate routine processes.
3. **Enhancing Data Security:** Implementing access controls and restrictions in Confluence to manage sensitive data.
4. **Reducing Manual Work:** Automating reminders and workflows using Power Automate to save time and reduce human error.

   The project focused on digitalizing the firm's core administrative processes, including document management, task tracking, and communication. The tools chosen were fully integrated to create a seamless workflow that improved overall efficiency.

This previous setup had several drawbacks like:

Repeated File Storage**:** Files were saved repeatedly in different locations, leading to confusion and inefficient access.

Disorganized Data Structure**:** The lack of a well-organized file structure made it difficult for employees to retrieve documents quickly.

Manual Processes**:** Critical processes like task tracking, document management, and communication were largely manual, resulting in delays and potential human errors.

Security Concerns**:** There was limited control over who could access sensitive files, raising concerns about data security and compliance.

2.1 Project Objectives

The primary objective of the digitalization project was to enhance the efficiency and effectiveness of the law firm's core processes by implementing automation and modernizing document management systems. This goal aimed to address the specific needs of the firm by streamlining administrative workflows, reducing the manual workload, and increasing accuracy in information handling. By leveraging Microsoft 365 tools such as Power Automate, Power BI, and SharePoint, the project sought to create an automated and integrated environment where repetitive tasks could be simplified, allowing employees to focus more on critical, value-adding tasks.

In addition to document management, the project aimed to enhance workflow efficiency and transparency through task tracking and reporting. To achieve this, I created a Power BI dashboard that visually displayed key metrics such as pending contracts, responsible personnel, and approaching deadlines. This dashboard provided team members with an at-a-glance overview of ongoing tasks, helping them prioritize effectively and stay updated on project statuses. Automated reminders were also set up in Power Automate to ensure that team members received timely notifications for approaching deadlines, helping reduce delays and increasing accountability.

Lastly, a core objective was to improve data accessibility and centralization. By consolidating information in Confluence and creating organized, linked pages, the project sought to provide a single source of truth for all project-related data. This approach was designed to improve navigation between documents and resources, allowing team members to access relevant files and links from one central hub. This centralization aimed to minimize the risk of data silos, enhance collaboration, and ensure that all team members had immediate access to the information they needed to perform their roles effectively. Through these objectives, the project focused on creating a streamlined, efficient, and user-friendly environment that met the firm’s operational and compliance needs.

2.2 Foundational Tools and Technologies

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The digitalization project for the law firm leveraged several key Microsoft 365 tools and technologies, each selected for its unique ability to enhance workflow efficiency, automate routine tasks, and support better document management practices. These tools included Power Automate, Power BI, SharePoint, and MS Lists, all developed by Microsoft to integrate seamlessly within the Microsoft 365 ecosystem. Additionally, Confluence, developed by Atlassian, was used to create a centralized knowledge-sharing platform for enhanced data accessibility and collaboration.

Lean Six Sigma Principles

The project incorporated Lean Six Sigma methods learned in school to identify and eliminate inefficiencies in the firm's workflows. This involved identifying the

1. Muda: This is the waste not adding any value to the company.
2. Mura: The unevenness in the processes.
3. Muri: The overburdening of people and equipments.

By identifying and addressing these things, it streamlines the processes and improves overall inefficiency. Also the DMAIC (Define, Measure, Analyze, Improve, Control) framework to structure the optimization efforts method was used.

Agile Project Management

The project adopted an Agile methodology to ensure flexibility and responsiveness to the firm's evolving needs. This includes conducting regular reviews of and power point presentations every Friday to show the progress and gather feedback.

Data -Driven Decision Making

The development of the Power I utilized various tools and resources to assist in research and drafting. Specifically, I leveraged AI-powered tools such as ChatGPT to help structure and refine certain sections of the report. This assistance was invaluable in ensuring clarity and coherence throughout the document.BI dashboards was supported by a commitment to data-driven decision making. This approach involved identifying the indicators (KPIs) relevant to legal processes and designing visualizations that effectively communicate complex data relationships

Continuous Improvement Framework

A framework for continuous improvement was established to ensure the ongoing optimization of processes post-implementation. This encompassed:

- Setting up mechanisms for regular performance reviews of automated processes
- Establishing channels for user feedback and suggestion collection
- Developing a roadmap for future enhancements based on emerging technologies and best practices.

Also regular interviews were conducted with co-workers to understand the pain points and preferences and also prototypes were created for testing before full implementation.

Systems Thinking

Systems-thinking approach was applied to ensure that improvements in one area did not negatively impact others. This involved conducting stakeholder analysis to understand interdependencies of the between the various departments and mapping information flows to optimize data intergration across these systems. A very important factor was to consider the long term scalability of solutions to accompany growth of the company in the nearest future.

Lastly a framework for continuous improvement was established to ensure the ongoing optimization of processes post-implementation. This encompassed the Setting up mechanisms for regular performance reviews of automated processes, the establishing channels for user feedback and suggestion collection and the development of a roadmap for future enhancements based on emerging technologies and best practices. So all my work was documented and shared on powerpoint so that a new employee can understand what I did and where I ended incase there needed to be an adjustment in the future as the company grows. Videos too were made explaining every step taken to build the various power bi dashboards and the DAX functions used for complicated stuff.

By leveraging these foundational methodologies throughout the internship project yielded significant benefits for the company. By blending industrial engineering concepts with modern data analytics tools, we were able to create solutions that were both innovative and practical. From Lean Six Sigma to data-driven decision-making, these approaches have proven invaluable in optimizing processes and enhancing operational efficiency. However, the true power of these tools

lies in how they were practically implemented and adapted to the unique needs of a legal environment. This brings us to our next crucial topic: the specific methodologies employed to translate these foundational concepts into tangible and effective solutions.

3 Methodology

During my internship, a range of Microsoft 365 tools to design automated solutions that addressed critical challenges in the law firm's workflow were used. One of the first steps was developing automated workflows using Power Automate, which was essential in reducing manual tasks that consumed time and left room for human error. Workflows were created to automatically send reminders to colleagues for various tasks, ensuring that critical deadlines weren't missed. This automation saved time on routine follow-ups and kept team members consistently informed. Also implemented an automation where emails containing attachments in PDF format would automatically save those files to designated folders in SharePoint, organizing them according to their relevance. This eliminated the need for manual sorting, freeing up time for employees to focus on higher-priority tasks and allowing them to access documents quickly and efficiently.

The first step involved analyzing the existing file management and workflow processes. Through discussions with employees and process observation, key issues were identified such as redundant data storage, delayed task completion, and security risks. Tools and Technologies selected to solve these problems were.

3.1 Confluence

Confluence is a collaborative workspace developed by Atlassian that allows teams to create, share, and manage their work in a centralized location. It is commonly used for knowledge management, documentation, and project collaboration, providing a single source of truth for teams. With Confluence, users can create pages and spaces to document procedures, share project updates, collaborate on content, and store important information. With Confluence, access and permission to some documents, rooms and pages can be restricted thereby making it a safe space. A series of interconnected pages were created in Confluence. Confluence's macro function helped in the linkageof these pages and to create a streamlined network of resources that team members could navigate with ease. Confluence is good because of its ability to limit accessibility to a certain page and restrict others from seeing private content. Four main pages were created so that with a click

you could see every worker's name and all the files related to this person and also the different areas the company worked on. By setting up a central overview page with links to relevant files and tasks, I provided a one-click solution to access important documents and responsibilities across the firm. This structure not only facilitated quick access to data but also supported a well-organized digital workspace

3.2 Power Automate

Formerly known as Microsoft flow, is a cloud-based service where users can create automated workflows between different applications and services. Users are able to do time-saving tasks and automate business processes. As a reminder, Power Automate can be used to send automatic reminders, system data movement, file synchronization, and data collection. It works with Microsoft 365 applications like SharePoint, Outlook, and Microsoft Teams, as well as third-party apps like Twitter, Dropbox, and more. Businesses can develop unique workflows that are tailored to their operations thanks to the use of triggers, conditions, and actions. Power Automate is an excellent tool that allows companies to be more productive, eliminate human errors, and ensure task consistency.

I created reminders that came in weekly as emails with the links of the Powerbi dashboard created automatically updated so that the workers can have a look of the remaining audits available and who oversees what.

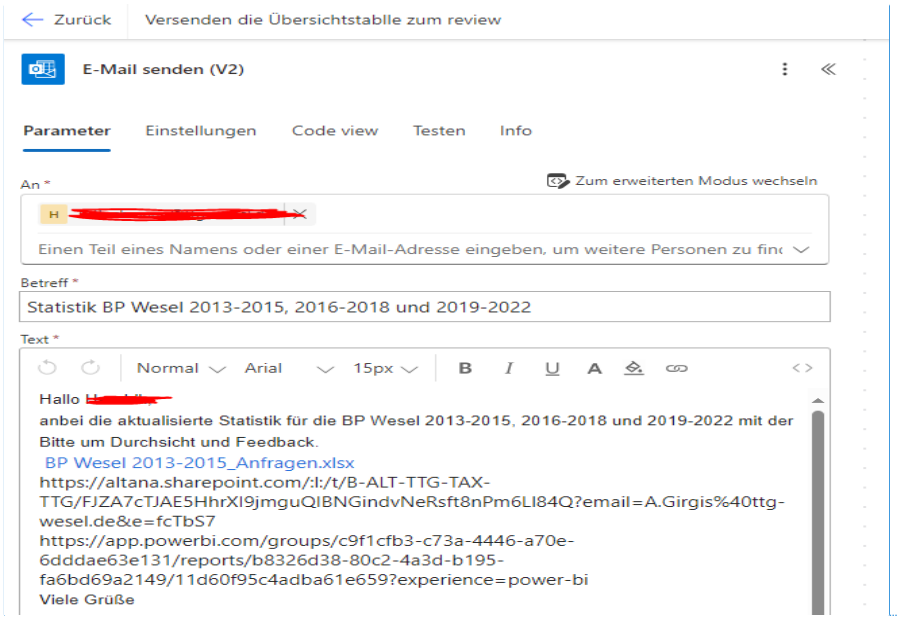

Figure 3-Automated Email with Powerbi dashboard

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3.3 Power Bi

Power BI is a business analytics tool which is a product of Microsoft that allows users to visualize data, create interactive reports, and share insights across an organization. It helps the users to connect to different data sources such as Excel, SQL Server, cloud services, and APIs, in order to build live dashboards and detailed reports. Power BI also offers data sharing and collaboration features, allowing teams to share insights and make data-driven decisions. The tool is widely used in businesses to track key performance indicators (KPIs) and drive strategic decision-making.

3.4 Microsoft Excel

Microsoft Excel is a widely used spreadsheet application that offers powerful features for data analysis, calculation, graphing, and automation. Excel allows users to organize, manipulate, and analyze large sets of data using formulas, functions, and pivot tables. Excel's charting tools enable

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users to create visual representations of data, such as bar charts, line graphs, and scatter plots, which help in identifying patterns and trends. With its advanced features like macros and integration with other Microsoft 365 applications, Excel can automate repetitive tasks and streamline workflows. Excel is used across industries for budgeting, forecasting, project management, and more, making it an essential tool for data-driven decision-making

3.5 Microsoft Lists

Microsoft Lists is a productivity app in Microsoft 365 that helps users track information, organize workflows, and manage tasks in a structured manner. Lists provide a simple way to create, manage, and share structured data such as tasks, projects, inventories, and issue tracking. The tool offers various templates for different use cases and allows for customization to fit specific needs, including adding columns, setting rules, and configuring views. Microsoft Lists integrates well with SharePoint, Microsoft Teams, and Power Automate, making it a versatile tool for team collaboration and process automation. With features like conditional formatting, comments, and alerts, users can manage their data more effectively and stay informed about updates. Microsoft Lists enhances productivity by providing an easy-to-use interface for managing and tracking information across projects and teams.

To improve accessibility and centralize information, I created a series of interconnected pages in Confluence. Confluence's macros function enabled me to link these pages and create a streamlined network of resources that team members could navigate with ease. By setting up a central overview page with links to relevant files and tasks, I provided a one-click solution to access important documents and responsibilities across the firm. This structure not only facilitated quick access to data but also supported a well-organized digital workspace where employees could find all the necessary resources in one place. This setup in Confluence significantly improved the team's workflow by reducing the time spent searching for files or asking for updates on project progress.

An essential part of implementing these new processes involved creating detailed documentation and training materials to ensure that the team could transition smoothly to the digitalized systems. A step-by-step PowerPoint presentations to explain each process was developed, providing clear instructions on how to use the new tools and workflows. These presentations included screenshots and annotated guides, making it easy for both new and existing employees to understand and operate the systems effectively. Also a detailed process descriptions was written, offering a reference

guide that employees could consult if they encountered any difficulties. This approach was particularly helpful in familiarizing the team with new automation tools, especially those who had limited experience with Power Automate, Power BI, and Confluence.

Recognizing the potential learning curve for team members unfamiliar with these technologies, training sessions to reinforce the documentation and offer hands-on guidance were coonducted. During these sessions, I demonstrated the key functionalities of each tool, explaining how automation would reduce their workload and improve efficiency. These sessions encouraged questions, allowing team members to address concerns and gain confidence in using the new systems. Through ongoing support and open communication, I helped the team build their skills, adapt to the new technologies, and fully leverage the benefits of the digitalized workflows. This gradual, supported transition proved effective in reducing resistance and fostering a collaborative, digitally adept team. The integration of Microsoft 365 tools and the structured methodology I employed helped the law firm overcome its initial inefficiencies, enhanced data accessibility, and optimized document management. The automation workflows, data migration, and visual tracking dashboard made processes more reliable, secure, and user-friendly. By establishing a strong digital foundation, I contributed to creating a more organized, transparent, and responsive workflow, which has lasting value for the firm's ongoing projects and future development.

4 Results

Through the implementation of the Microsoft 365 tools, an observation of significant improvements in both task completion times and data accessibility across the law firm. Each tool brought distinct advantages, collectively transforming the firm's workflow into a more organized, and efficient process. These improvements weren't just about efficiency; they represented a cultural shift towards embracing technology in a traditionally conservative field. The firm's staff, initially hesitant, gradually became enthusiastic adopters of these new tools, recognizing their potential to simplify complex tasks and free up time for more valuable work. While the learning curve was steep at times, the collaborative effort to overcome challenges fostered a sense of shared accomplishment.

4.1 Power Automate

Power Automate proved to be a game-changer in reducing the manual work that previously consumed much of the staff's time. By creating automated workflows, such as task reminders and email-to-PDF file routing, we eliminated the need for routine manual interventions. This reminder sends an email when the deadline of the audit request is left with four days to expire. It was integrated with Sharepoint for document-based reminders. Powersutomate also was intergarted with Power BI to send weekly emails to all employees with the updated powerbi dashboard and its actual stand.

- Power Automate is to connected with Power BI by selecting the "Get tiles" action. This allows you to access the latest data from your dashboard.
- A new step is added in Power Automate and search for "Outlook" or "Office 365 Outlook". Select the "Send an email (V2)" action to configure the email details, including the recipient's email addresses, subject line, and email body.
- Include the Power BI dashboard link in the email body using dynamic content or by manually entering the URL link. Once configured, save the flow and test it to ensure it works correctly. Finally, enable the flow to automate the weekly email process, ensuring that workers receive timely updates with the latest dashboard insights.

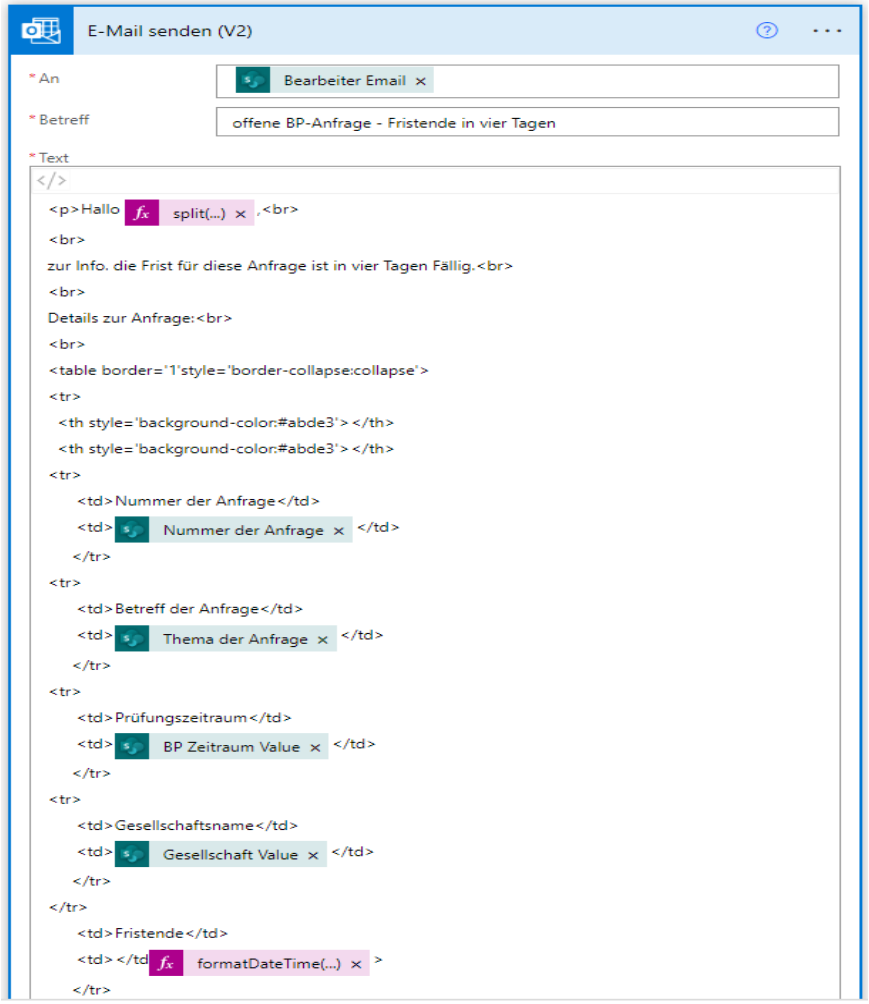

Figure 4-Automated Reminder of Audit requests with due dateline

Also, the creation of flows which automatically keeps the pdfs or attachments from an email in the correct Folder in Sharepoint. The automated email filing system based on the company and email subject also improved document organization by instantly placing incoming documents in the correct SharePoint folders, making them immediately accessible. The flow is created for every company using the following steps.

- If the email comes in with the name of the company plus Anfrage(Request) included in

the subject of the email, the email is exported .

- The email plus its attachment is exported to a SharePoint File. In share point it is kept in the folder which has the same company name as it was in the email subject.
- If the email subject doesn't have Anfrage in the subject of the email, then it is kept in SharePoint but in the Antwort(answer) folder as seen below.

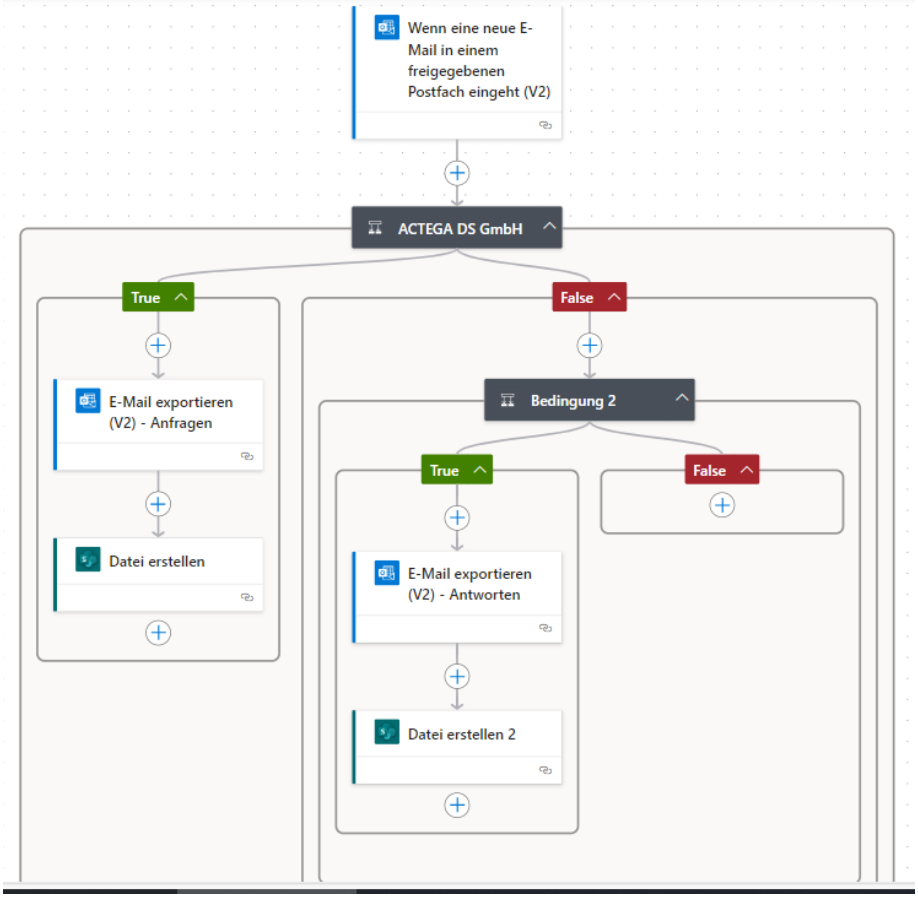

Figure 5- Automatic upload of email attachment in Sharepoint

4.2 MS Lists

The migration from Excel to MS Lists yielded substantial benefits in data organization and accessibility. The data was systematically migrated, restructuring it to fit the List format and ensuring that relevant metadata was preserved. MS Lists offered more robust organization and sorting capabilities compared to Excel, enabling users to apply multiple filters to find specific data efficiently. Initially, the firm's reliance on Excel for data management was inefficient, especially in searching and filtering large datasets. MS Lists, with its advanced filtering and search capabilities, streamlined data management by allowing users to quickly find and categorize information. This shift led to fewer delays in accessing records, as the team could instantly apply filters to pinpoint relevant entries without manually scrolling through extensive spreadsheets. MS Lists also offered enhanced data integrity, as users could now edit records in a controlled environment, reducing instances of duplicate or erroneous data entries. The structured format of MS Lists improved data retrieval times, minimized errors, and significantly simplified data management for the firm, making it easier to access, update, and track information.

- The intercompany contracts is one of the major tasks and the contracts had to be saved with the datelines of validity and a summary of what it spoke about was entered into excel. The new change was the migration to Microsoft Lists as is more advanced when it comes to linking it with SharePoint. In Lists new colums were added which will contain the links of the contract scanned and uploaded in sharepoint. This is a really good thing as it helped the visualization of everthing when linked in powerbi.

4.3 Power BI

For tracking Audit requests, a Power BI dashboard was developed that provided a clear visual representation of ongoing projects and deadlines. This dashboard showed the number of incomplete requests, the person responsible for each of them, and the time remaining before deadlines. This visual representation of data allowed team members to identify which audits required immediate attention, who was responsible for them, and how much time remained before deadlines. Power BI's interactive features enabled the team to sort contracts by priority, facilitating better time management and resource allocation. The dashboard also contributed to greater accountability, as it clearly indicated individual responsibilities, making it easy for team leaders to follow up on specific tasks. The improved transparency provided by Power BI not only enhanced task management but also encouraged proactive completion of tasks by employees. By centralizing contract

data in one place, the Power BI dashboard promoted a more organized and accountable work environment, effectively reducing bottlenecks in contract processing.

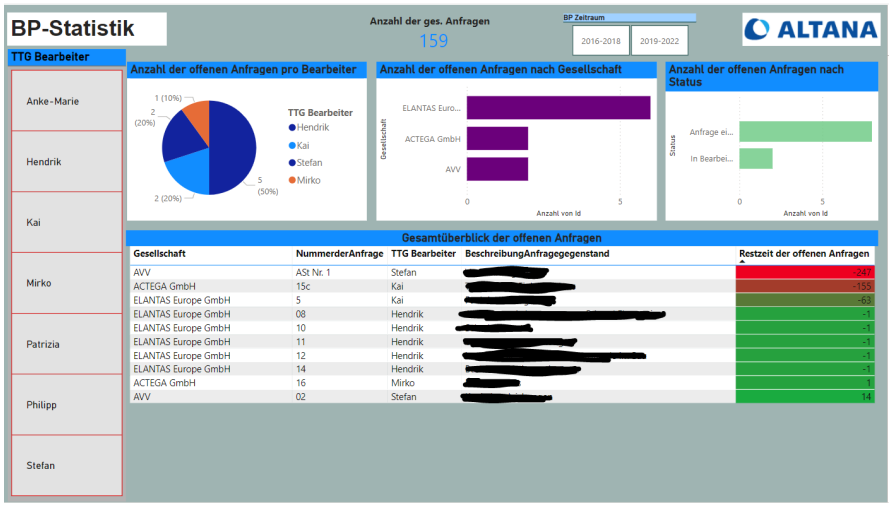

Figure 6-Powerbi Dashboard showing open Audit requests

- As seen on the Left-hand side of the above dashboard are the names of all the coworkers. When a specific name is clicked, an overview of all the person's files (Betreibsprüfung anfragen) are shown. A filter can also be chosen to show a specific year. A pie chart also show who has the highest amount of opened files and which company has the highest amount of Requests.
- The amount of time left to finish an open request is also highlighted as its one of the most important features when dealing with deadlines. So when it's left three days to the date line or has passed the dateline, the dateline column displays a shiny red colour to signify danger. When its green then it means enough time is still left before for the dateline. This major switch to List helps to facilitate the whole process.

4.4 Confluence

Integrating Confluence as a central document management system improved accessibility and collaboration among team members. By creating an organized network of linked pages through Confluence's macros Page tree, I enabled a one-click solution for accessing essential documents and resources. Previously, the team had to navigate multiple directories or request assistance to find relevant files, which slowed down their work and disrupted focus. With Confluence, all resources

were neatly organized and interlinked, enabling employees to access any required document instantly. This new structure not only reduced search times but also improved inter-departmental communication, as all project information was available and updated in real time. By offering a centralized hub for document sharing, Confluence made it easier for team members to stay informed, align on objectives, and manage project details effectively, fostering a more cohesive and collaborative environment.

- As shown on the picture below, the company is divided into eleven sectors. All the different subpages are created with the different names of the workers. Responsible for each sector. All the pages are interlinked. So the files and documents from Sharepoint, Powerbi , Microsoft word and Lists are all linked on different pages. So the confluence space is built in a way that with just one click, you are taken to the names of the employees. From that page you can see all the files thatb has to do with a specific coworker.

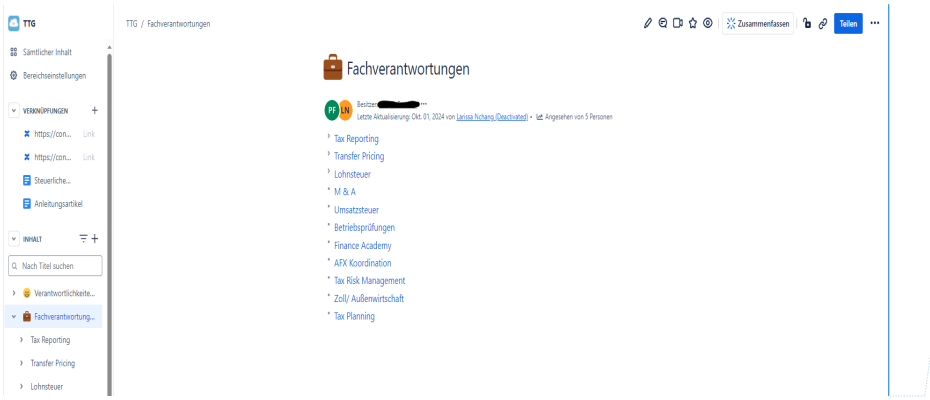

Figure 7- Overview of Confluence dashboard showing the different sectors

4.5 Documentation and Training Materials

The process documentation and training materials I created provided a strong foundation for the team to understand and adapt to the new digital tools. Detailed PowerPoint presentations and step-by-step guides reduced the learning curve, allowing employees to quickly become proficient with the newly implemented systems. As a result, team members experienced fewer difficulties adapting to Power Automate, Power BI, MS Lists, and Confluence, even if they were initially unfamiliar with these platforms. The training materials proved particularly useful for onboarding new staff, as the documentation allowed them to familiarize themselves with the firm's digital workflow

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independently. This enhanced team readiness and confidence, leading to smoother transitions and ultimately increasing the effectiveness of each tool within the firm's daily operations. These resources serve multiple purposes, from onboarding new team members to providing reference materials for experienced users.

User Manual Guides and Manuals

Developed detailed user manuals for each analytics tool implemented during the internship. These manuals should include:

- Step-by-step instructions for common tasks
- Explanations of key features and functionalities
- Troubleshooting guides for potential issues
- Best practices for data input and analysis

Feedback Mechnisms: Design Interactive e-learning modules that allows the users to practice using these tools, take quizzes to test understanding of the key concepts, also giving feedbacks

Interactive Training modules: Design interactive e-learning modules that allow users to practice using the tools in a simulated environment.

Create a series of video tutorials demonstrating the use of various analytics tools. These tutorials can cover:

- Basic navigation of the software interface
- Advanced features and techniques
- Real-world examples of data analysis in legal contexts

4.6 Comparison with Initial Expectations

The digitalization project not only met but exceeded the initial expectations set out at the beginning of my internship. While the primary objectives were to streamline document management, enhance workflow efficiency, and improve data accessibility, the solutions implemented achieved these goals with more extensive benefits than anticipated. For instance, Power Automate's impact on

reducing manual work was more pronounced than expected, as routine tasks were completely automated, allowing employees to focus on higher-value tasks. Similarly, the move to MS Lists went beyond just improved organization; it fundamentally enhanced data accuracy and user experience. Power BI's role in contract tracking provided unexpected insights into team performance, fostering accountability and productivity. Confluence, which was initially intended to organize files, also promoted greater collaboration and transparency across teams. Altogether, the outcomes of each solution aligned with and expanded upon the initial objectives, delivering sustainable improvements that significantly enhanced the firm's operational efficiency and accessibility.

At the outset of the internship project at this company, initial expectations were centered around implementing modest efficiency improvements in a traditional legal environment. The anticipated scope included reorganizing existing filing systems and suggesting minor adjustments to established workflows, potentially dealing with paper-based systems common in many companies.

However, the actual project scope and outcomes significantly exceeded these initial projections. The internship evolved into a comprehensive digital transformation initiative, leveraging advanced tools such as Microsoft 365, Power Platform, and Power Automate. This technological integration opened up possibilities that were not initially considered in the project planning phase.

The impact of the implemented changes was far-reaching, extending beyond a single department to optimize workflows across multiple areas of the firm. The project touched upon various aspects of the firm's operations, including audit processes, task management, and internal communications, resulting in a more substantial impact than initially anticipated.

Notably, the law firm demonstrated a surprising level of receptiveness to technological change, countering the common perception of the legal field as resistant to innovation. This openness facilitated a more comprehensive implementation of new systems than was originally envisioned.

The diagram illustrates the transition from a manual document management system to an automated workflow using Power Automate, SharePoint, and Power BI.

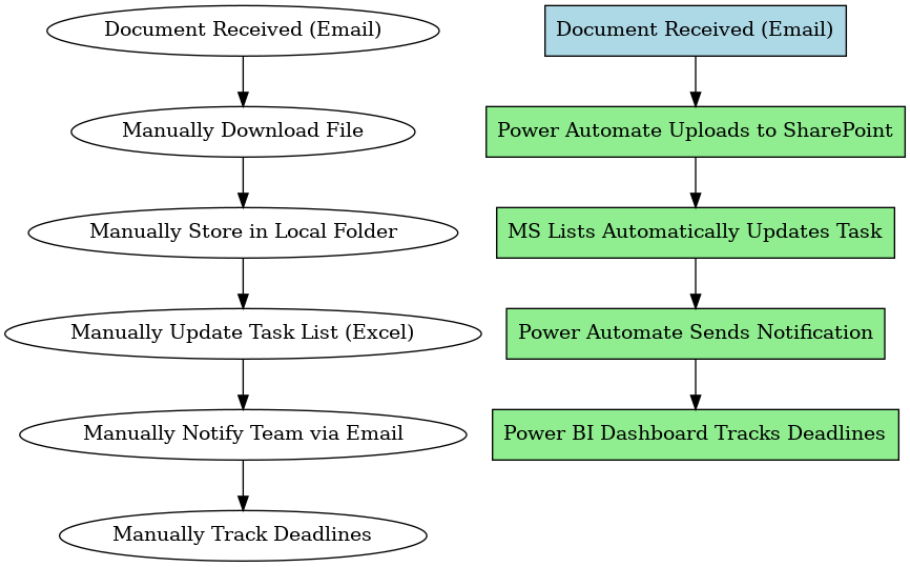

Figure 8: Workflow Comparison – Before and After Automation

5 Discussion

During my internship, I gained valuable professional skills that will serve me well in my career. My proficiency in Microsoft 365 tools, particularly Power Automate, Power BI, Confluence, SharePoint, and MS Lists, grew tremendously as these applications were used to address real-world challenges in a legal environment. I learned how to design, implement, and troubleshoot workflows and dashboards, enabling me to automate repetitive tasks, enhance data visualization, and streamline document management effectively. Through these hands-on experiences, I also developed a stronger grasp of project management, as I coordinated with team members to identify inefficiencies and adapt solutions that could be seamlessly integrated into their daily operations. Additionally, I trained my technical problem-solving skills by overcoming challenges related to data migration, user adoption, and system integration, skills which will be vital as I advance in industrial engineering and other complex project settings.

Applying industrial engineering principles required me to think creatively about workflow optimization, resource allocation, and process efficiency—core aspects of industrial engineering but applied in a unique way within this non-engineering setting. My background in industrial engineering allowed me to view the firm's administrative processes through a lens of efficiency and continuous improvement, helping me identify bottlenecks and inefficiencies in existing systems. For example, the application of lean principles to eliminate redundant steps in document handling, enhanced data accessibility with organized digital structures, and used automation to reduce delays in routine tasks. These experiences underscored how industrial engineering principles of system optimization and waste minimization can be applied beyond traditional manufacturing or production settings, broadening my perspective on the versatility of my field.

The team had limited experience with automation and digital data management, so we had to ensure that the solutions we developed were intuitive and didn't disrupt their existing workflows. This experience reinforced the importance of communication and adaptability, as the explanation of complex processes was needed in clear, straightforward terms and actively listen to the team's feedback to make continuous adjustments. Working with professionals outside my own field of study allowed me to develop a deeper understanding of how industrial engineering can enhance

operations in diverse sectors and strengthened my ability to bridge the gap between technical solutions and user needs.

Reflecting on this experience, I am more confident in my ability to bring structured, process-oriented solutions to any work environment, regardless of its specific industry focus. The internship helped me appreciate the importance of adaptability and continuous learning, as each new environment will present unique challenges that require innovative solutions. Furthermore, seeing the tangible impact of my work on the firm's efficiency and productivity deepened my commitment to using my engineering skills to bring meaningful, practical improvements to organizations.

5.1 Challenges and Problem Analysis

In the initial stages of the digitalization project, several inefficiencies were observed in the law firm's existing document management and task tracking systems. The previous setup relied heavily on manual processes, which led to redundant storage, delayed access, missing of deadlines and a lack of structure in document organization. Documents were often duplicated across multiple folders, resulting in confusion and wasted time as employees searched for the correct files.

One of the primary challenges encountered during the implementation of these digital solutions was managing the technical limitations associated with the firm's pre-existing infrastructure. Many of the employees were unfamiliar with advanced Microsoft 365 tools like Power Automate and Power BI, and while these tools offered significant advantages, they also required considerable customization to fit the firm's unique needs. Technical configurations, such as setting up automated workflows and customizing dashboards, were complex and had to be adjusted frequently to address unforeseen needs or limitations. This required extensive troubleshooting and ongoing adjustments to ensure that the new systems could seamlessly integrate with existing processes without causing disruption.

- Before this project, a backup storage plan was a remote storage called DATEV. Imagine a company that has relied on a remote desktop system for years. This system, while familiar and dependable, often required significant IT resources to maintain and update. Employees would connect to their work computers from home or while traveling, accessing all their files and applications as if they were sitting at their office desk. However, this setup came with its own set of challenges. It could be slow, especially for those with poor internet connections, and it often required complex VPN setups that could frustrate

less tech-savvy staff members. Entering SharePoint, Microsoft's cloud-based collaboration and document management platform. The transition to SharePoint represents a paradigm shift in how companies approach file storage, sharing, and backup. This shift brings numerous advantages. For one, it dramatically improves accessibility. No longer do employees need to be tconnected to a specific machine to work. They can access their work files from their smartphones, tablets, or any computer, making remote work more seamless than ever before. This accessibility extends to collaboration as well. Despite these challenges, the benefits of moving to SharePoint often outweigh the drawbacks for many organizations. The platform's integration with other Microsoft 365 tools creates a cohesive ecosystem that can streamline workflows and improve overall efficiency. Furthermore, the reduced need for on-premises hardware and maintenance can lead to significant cost savings in the long run.

Another significant challenge involved data migration, particularly transitioning from traditional Excel-based storage to SharePoint and MS Lists. Migrating a large volume of files while maintaining data integrity was a meticulous process that required careful planning. File structures had to be redefined, metadata preserved, and access permissions carefully configured to prevent any potential security risks. The migration process also raised issues of data accuracy, as duplicate files or inconsistent data structures from the old system needed to be cleaned and standardized. Ensuring that files were correctly organized and accessible post-migration was time-consuming but critical for maintaining operational continuity and minimizing disruption.

The adjustment period for employees was also a notable challenge, as many colleagues were accustomed to manual workflows and faced a learning curve with the automated systems. Transitioning from familiar, routine practices to using automated workflows required a shift in mindset, as well as additional training and support. Some employees were initially hesitant to rely on automated reminders or dashboards, preferring manual checks to monitor tasks. Additionally, adapting to a centralized system in Confluence for data accessibility required changes in work habits. To address these challenges, training sessions and comprehensive documentation were provided, but even with these resources, the adjustment took time as employees gradually built confidence in the new digital processes. Despite these challenges, the team’s willingness to adapt and the eventual improvement in efficiency underscored the project’s value in transforming the firm’s workflow.

6 Conclusion

Throughout my internship, I successfully contributed to the digital transformation of the company by addressing inefficiencies in document management, task tracking, and communication. By implementing automated workflows using Power Automate, migrating data to MS Lists for improved accessibility, creating a Power BI dashboard to track audit requests progress, and developing Confluence pages for centralized information access, I aided in streamlining the firm's administrative processes. These improvements led to enhanced operational efficiency, reduced manual work, and more secure document management, ultimately making the workflow smoother and more effective. The project not only aligned with my academic focus on industrial engineering but also provided a real-world opportunity to apply my skills, making a tangible impact on the firm’s daily operations.

In conclusion, this internship experience has been an invaluable stepping stone towards a career in data analysis which I want to pursue. This experience has underscored the critical role that data and technology play in modernizing traditional industries, including the legal sector.

The successful implementation of Microsoft 365, Power Platform, and Power Automate not only streamlined the firm's processes but also provided a wealth of data insights that were previously untapped. This project has demonstrated the power of turning raw data into actionable intelligence, a skill that will be crucial in future data analysis roles. Working alongside the firm's dedicated staff was particularly enlightening. Their openness to change and willingness to embrace new technologies were instrumental in the project's success. The collaborative environment fostered a mutual learning experience, where technical expertise met legal understanding, resulting in solutions that were both innovative and practical.The challenges encountered, particularly in mastering complex tools and adapting them to the specific needs of a law firm, have been instrumental in developing problem-solving skills and adaptability. These experiences have reinforced the importance of continuous learning in the ever-evolving field of data analysis.

Moreover, the project has highlighted the significance of effective communication in translating technical concepts to non-technical stakeholders. The ability to convey complex data insights in an understandable manner proved to be as crucial as the technical skills themselves.

This experience has solidified the conviction that a career in data analysis offers not just professional growth, but also the opportunity to make a meaningful difference in how organizations operate and make decisions.

6.1 Future Recommendations

Looking ahead, there are several opportunities to further enhance the digitalization efforts within the company. One potential improvement would be to integrate advanced analytics into the Power BI dashboard, allowing for deeper insights into task performance, resource allocation, and process bottlenecks. Incorporating predictive analytics could help forecast project timelines and identify potential delays before they occur. Additionally, a deeper integration of other Microsoft 365 tools, such as Microsoft Teams for communication and collaboration, could be explored to create a fully integrated ecosystem that improves team interaction and knowledge sharing. These enhancements would not only continue to streamline operations but also foster a more collaborative and data-driven work environment, further increasing the firm's overall productivity and effectiveness. Some future recommendations are:

- Investing in Advanced Analytic Tools like exploring and implementing more sophisticated analytics tools could significantly boost the company’s data analysis capabilities. Tools that offer advanced features like predictive modeling, machine learning integration, and real-time data processing could provide deeper insights and more accurate forecasts.
- Enhance the data literacy across cross-departments like developing a comprehensive data literacy program for all employees could foster a more data-driven culture within the organization. This would enable staff across various departments to better understand and utilize data in their decision-making processes, leading to more informed choices at all levels.

7 Summary and Outlook

As part of the Industrial Engineering curriculum at Rhine-Waal University of Kleve, an internship is a mandatory component designed to provide students with practical insights and hands-on experience in real-world professional settings. This opportunity allowed me to apply the theoretical concepts and skills developed throughout my studies in a professional environment. This digitalization effort aligned with core industrial engineering principles, as I was tasked with eliminating waste, reducing inefficiencies, and optimizing workflows within a professional context quite different from typical engineering-focused environments.

During the internship, I engaged deeply with various Microsoft 365 tools, including Power BI, Power Automate, SharePoint, and MS Lists, to implement automated solutions that addressed the firm's specific challenges. My projects centered on creating efficient and user-friendly workflows for document management, task assignment, and data security. For instance, by transitioning from Microsoft Excel to SharePoint for document storage and creating automated workflows in Power Automate, I was able to streamline processes and improve accessibility for team members. Additionally, by using Power BI to track project progress and automate reminders, I helped optimize the firm's task management system, which previously relied heavily on manual updates and lacked centralized visibility. These solutions were designed to ensure that employees could retrieve data quickly, track task completion, and collaborate effectively—all essential outcomes in a fast-paced, information-sensitive field like law.

One of the most valuable aspects of this internship was the exposure it provided to the interplay between technical optimization and compliance within a legal context. Working in the legal sector required me to consider not only process efficiency but also strict data security and confidentiality requirements. This added a layer of complexity to my work, as the tools and workflows I implemented needed to meet both operational and regulatory standards. For instance, while implementing automated document management solutions, I had to ensure that access controls and permissions were carefully managed in SharePoint and Confluence. This requirement helped me appreciate the importance of risk management and regulatory compliance in system design, as well as the need to balance accessibility with security—an insight that will be invaluable in my future career. The internship proved to be an enriching experience that expanded my understanding of industrial engineering applications beyond traditional sectors, highlighting the versatility and relevance of engineering principles in diverse professional fields.

List of references

[Aga07] AGATHOS, A. et al.: *3D Mesh Segmentation Methodologies for CAD Applications.* In: Computer-Aided Design and Applications, Bd. 4 (2007), Nr. 6, S. 827-841

[AAD98] ALEXANDER, P.; ALLEN, S.; DUTTA, D.: *Part Orientation and Build Cost Determination in Layered Manufacturing*. In: Computer-Aided Design, Bd. 30 (1998), S. 343-356

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