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Designing and Implementing a Performance Management Control System: Aligning Key Performance Indicators with Strategic Goals in Digital Operations

Joana Morais Ribeiro

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Joana Morais Ribeiro

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Adelaide Ferreira Leite Martins

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Abstract

Performance Management Control Systems (PMCS) and Key Performance Indicators (KPIs) are critical for aligning organisational activities with strategic goals. As digital solutions become increasingly central to business operations, the need for advanced PMCS tailored to specific business units is more pressing than ever. Despite their growing relevance, there remains a lack of practical evidence on how to adapt such systems to the unique needs of distinct operational contexts.

This study addressed this gap by designing and implementing a KPI-based management control system for the Digital Operations business unit at AxiansEU Digital Solutions S.A., developed through a five-month curricular internship. Adopting a qualitative case study approach, the research drew on semi-structured interviews, internal and external documentation, and direct and participant observation to gather rich, contextual insights.

The findings illustrate how a flexible, multi-level dashboard structure, supported by composite indicators such as the Customer Health Score (CHS) and the Client Performance Index (CPI), can enhance transparency, comparability, and strategic alignment across a diverse client portfolio. The project highlights the importance of co-creation, adaptability, and internal knowledge in building effective performance systems, offering both practical guidance and theoretical contribution to the PMCS literature.

Key words: Performance Management Control Systems; Key Performance Indicators; Digital Operations; Case Study

Resumo

Os Performance Management Control Systems (PMCS) e os Key Performance Indicators (KPIs) são fundamentais para alinhar as atividades organizacionais com os objetivos estratégicos. À medida que as soluções digitais assumem um papel cada vez mais central nas operações empresariais, torna-se mais urgente a necessidade de desenvolver estes sistemas mais avançados e adaptados a unidades de negócio específicas. Apesar da sua crescente relevância, continua a existir uma escassez de evidências práticas sobre como ajustar estes sistemas às particularidades de contextos operacionais distintos.

Este estudo procurou colmatar essa lacuna através do desenho e implementação de um sistema de controlo de gestão baseado em KPIs para a unidade de Digital Operations da AxiansEU Digital Solutions S.A., desenvolvido no âmbito de um estágio curricular com a duração de cinco meses. A investigação seguiu uma abordagem qualitativa de estudo de caso, recorrendo a entrevistas semiestruturadas, documentação interna e externa, e observação direta e participante para recolher insights contextuais aprofundados.

Os resultados ilustram como uma estrutura de dashboards flexível e multinível, apoiada por indicadores compostos como o Customer Health Score (CHS) e o Client Performance Index (CPI), pode melhorar a transparência, a comparação e o alinhamento estratégico num portefólio de clientes diversificado. O projeto evidencia a importância da cocriação, da adaptação e do conhecimento interno na construção de sistemas de desempenho eficazes, oferecendo um contributo prático e teórico para a literatura sobre PMCS.

Palavras-chave: Performance Management Control Systems; Key Performance Indicators; Digital Operations; Estudo de Caso.

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1. Introduction

Performance management control systems (PMCS) play a critical role in aligning organisational activities with their strategic goals (Senyo et al., 2018). These systems provide a framework for monitoring the overall performance, evaluating outcomes, and ensuring that operational efforts contribute to these long-term goals (Otley, 1999). Over the years, the literature on this matter has highlighted significant features and developments in this area, emphasising their adaptability to several organisational contexts (Otley, 1999).

In recent decades, the adoption of digital solutions has transformed the way organisations manage their performance (El-Haddadeh, 2020). Digital technologies have made it possible to connect different areas of the business, bringing advantages and disadvantages for effective performance management (Senyo et al., 2018). These advancements emphasise the need for advanced PMCS that can integrate digital tools and provide actionable insights for decision-makers (El-Haddadeh, 2020).

Within this context, Key Performance Indicators (KPIs) appeared as essential components of PMCS (Wohlers, 2020). KPIs are quantifiable metrics that establish target values to assess the operational performance of specific processes, playing a crucial role in any organisation's success (Wohlers, 2020) and their role has been widely recognised in the management literature as critical for aligning strategic goals with operational execution (Juran et al., 1999). Dashboards, which provide an accessible visualisation of these metrics, connect strategic intent and actionable insights (Peral et al., 2017). Nowadays dashboards are normally the tool chosen to monitor business performance and they typically are incorporated by several data visualisation techniques, with KPIs playing a central role (Peral et al.,2017). Among many other advantages, they enable decision-makers to quickly evaluate an organisation's performance by visualising data through various types of visual representations that make the data easy to read and to interpret (Peral et al., 2017).

Over the past decade, the development of these tools has gained attention from academics, managers, and institutions, who see them to simplify the complexities of performance evaluation and resource optimisation (Peral et al., 2017). The use of dashboards and KPI frameworks has expanded a lot, and their importance continues to grow in a world that is getting more and more driven by data and analytics (Peral et al., 2017). However, despite their growing recognition, their implementation in the organisational context remains limited.

Despite extensive literature on the topic, there is a gap in practical evidence on how PMCS and KPI systems can be tailored to meet the unique needs of specific business units and industries (Budayan et al., 2020). This challenge becomes even more evident when organisations serve clients with diverse operational models, contract scopes, and technological maturity, requiring a more flexible and comparative performance system.

This study aims to address these gaps in the literature by designing and implementing a KPI-based management control system (MCS) for the Digital Operations business unit at AxiansEU Digital Solutions S.A and give a practical perspective in this matter. To achieve this, a curricular internship was carried out and a case study based on this was made.

The system, referred to internally as the "Digital Operations Customer Framework", seeks to offer a structured yet adaptable way of comparing client performance and service quality across multiple contexts. This research will focus on creating a customised KPI system aligned with the company's strategic objectives, developing a dashboard solution to visualise performance metrics, and empowering teams through greater transparency and collaboration around evaluation criteria.

To achieve these aims, this study adopted a qualitative approach, using interviews as primary source of data engaging key stakeholders (managers, team leaders and employees) to obtain information on key requirements, characteristics of the current situation, expectations for the system and analyses. Internal and external documentation, such as performance reports and current KPIs, are also going to be used to identify operational issues and monitor compliance with technical targets. Furthermore, direct and participant observation will be conducted to gather information through first-hand contact. These observations were made during regular project meetings, dashboard reviews, and client specific KPI discussions.

As part of the project, three clients (Client 1, Client 2, and Client 3) were selected as the pilot group, allowing the development and validation of a dashboard capable of identifying client performance trends, SLA breaches, and key operational bottlenecks.

The results demonstrate the importance of KPI systems in improving operational performance. Additionally, the proposed Client Performance Index (CPI) (an aggregated and normalised score) will help overcome the comparability challenges among clients with different service levels and contractual conditions. Furthermore, the Customer Health Score (CHS) also plays a crucial role in understanding the position of each client and in giving a rapid general overview. However, some challenges appeared, and it was necessary to

configure these systems to meet business needs. Finally, the impact of implementing KPIs in promoting transparency and accountability within the organisation was proven.

This internship report consists of six chapters. The first introduces the topic of PMCS and examines the relevance and objectives of this study. The second chapter provides a literature review on important topics such as management control, performance indicators, and the role of business intelligence (BI) in performance management. Chapter 3 describes the research methodology used in this study, including data collection and analysis methods. Chapters 4 presents a brief company description, and chapter 5 presents and discusses the results of this research which provide new insights on the influence of these systems and their impact on AxiansEU's digital operations department Finally, the last chapter presents the conclusions as well as summarises the main findings, contributions, limitations and suggestions for future work.

2. Literature review

2.1 Foundations and evolution of PMCS

PMCS are the most important part of a management and governance system since the management of the organisation's activities is aligned with development objectives and effectively aligns strategies and activities (Otley, 2003). Traditionally, PMCS has focused on accounting practices, a concept developed by Anthony (2007), who emphasised the link between process planning and operational management. However, modern organisations face dynamic environments that require a different approach (Šljivić et al., 2015).

The balanced scorecard (BSC) is widely adopted in PMCS because it includes financial and non-financial performance measures to address strategic alignment issues while balancing short and long-term goals (Kaplan & Norton, 1996). Thus, the flexibility of the BSC allows companies to monitor multiple dimensions, such as customer satisfaction, internal processes, and learning and growth, increasing its relevance in modern conditions (Kaplan & Norton, 1996). Modern control frameworks emphasise the importance of combining traditional financial measures with cultural, administrative, and hybrid systems (Malmi & Brown, 2008). These guidelines suggest that the role of non-responsive governance will increase, which facilitates flexibility and innovation while meeting stakeholder expectations (Šljivić et al., 2015). Furthermore, Simons' (1994) framework emphasises belief systems and boundaries to guide behaviour and facilitate strategic coordination.

Despite progress, challenges remain, particularly the need for full integration and alignment across distributed organisations that can be addressed through multiple methods, including performance measurement, reward systems, and cultural values (Šljivić et al., 2015). Furthermore, Otley (2003) warns against the over-reliance on measurable outcomes and supports a holistic view that considers non-quantifiable management objectives. A similar argument is found in the methodological literature on organisational studies, which highlights the value of exploring behaviours and practices in context through interpretative, qualitative methods, especially in settings where control systems shape day-to-day decision-making (Teherani et al., 2015).

Overall, developing PMCS involves navigating complexity, ensuring strategic alignment, and demonstrating its critical role in driving sustainable performance across multiple organisational contexts (Malmi & Brown, 2008).

In this context, a PMCS is a system designed to guide and evaluate an organisation's activities to ensure they are aligned with its strategic objectives (Otley, 1999). According to Otley (1999), this system integrates information flows, performance measures, and control procedures to support better decision-making and organisational learning while maintaining efficiency. It also provides tools to monitor and ensure that organisational efforts contribute to the achievement of strategic objectives through KPIs, as a key component of this system, which provide measurable measures to assess organisational effectiveness (Peral et al., 2017).

A PMCS is more than just a tool to measure performance; it is a powerful framework that integrates strategy and performance and enables organisations to navigate complex environments effectively (Otley, 1999). It emphasises not only the completion of outcomes but also the processes and behaviours required to achieve them (Otley, 1999). Moreover, as Teherani et al. (2015) argue, research into such systems must be grounded in a philosophical framework that allows for the exploration of embedded, context-specific practices, especially when implementation requires organisational adaptation and learning.

To achieve an effective PMCS, it is important to have the right KPIs, meaning that they must be actionable and context-sensitive (Ante et al., 2018). Implementation ensures that metrics drive behaviour that directly contributes to achieving strategic outcomes (Ante et al., 2018). On the other hand, context-sensitiveness allows organisations to tailor KPIs to reflect the specific dynamics of their industry and operating environment (Otley, 1999). Organisations using KPIs should ensure that these metrics are simple yet comprehensive, avoiding unnecessary complexity in capturing key performance metrics (Kerzner, 2022).

While PMCS frameworks are traditionally grounded in quantitative metrics and financial controls, qualitative research has become increasingly valuable for understanding how these systems are interpreted and adapted in practice. Qualitative approaches enable a deeper exploration of organisational behaviours, cultural contexts, and stakeholder perspectives, which are especially relevant in dynamic service environments (Lim, 2024). This perspective complements the technical aspects of PMCS by revealing how managerial practices and control systems are experienced and enacted in real settings (Lim, 2024).

2.2 The role of BI and dashboards in PMCS

BI plays a key role in PMCS, acting as both a technology enabler and a wisdom tool (Richards et al., 2019). However, BI systems help integrate data sources, enabling organisations to connect their information to make better, more informed, and smarter

decisions (Hostmann et al., 2006). According to Martins et al. (2024), the implementation of BI systems goes beyond traditional reporting capabilities by incorporating advanced analytics, real-time insights, and interactive dashboards. This will significantly improve the efficiency and effectiveness of business management (Martins et al., 2024). BI is often implemented to eliminate inefficiencies and manual dependence on multiple technology and infrastructure systems (Hostmann et al., 2006). By using automated data collection and analysis, BI can not only reduce reporting time but also improve data accuracy and consistency (Richards et al., 2019). Martins et al. (2024) also emphasised that the impact of BI is not limited to achieving success. This is also confirmed by the article by Richards et al. (2019) who pointed out that BI promotes a data-driven culture by aligning management practices with strategic objectives and improving decision-making skills. BI systems support data exploration, allowing managers to explore multiple perspectives and identify potential outcomes without relying on static reports (Martins et al., 2024). This flexibility not only improves work efficiency but also strengthens the connection between management and the management level of the organisation.

Furthermore, promoting data literacy and a collaborative culture across departments will ensure the use of BI tools to drive business performance management (Hostmann et al., 2006). It provides a framework that supports data as an intellectual asset, helping companies navigate complex environments efficiently and accurately (Martins et al., 2024). This shift confirms the important role of BI in improving the management of new systems and adapting to the demands of digital transformation (Martins et al., 2024).

A key component of BI's effectiveness is its integration with dashboards, and they have become powerful tools for understanding and gaining insights from big data, enabling organisations to make informed decisions in complex environments (Sarikaya et al., 2018). They are not easy to design and implement, as they require a balance between complex data presentation and specific user needs (Vázquez-Ingelmo et al., 2019). Effective dashboards not only facilitate the analysis of data but also enhance user experience by tailoring visualisation solutions to individual requirements (Verbert et al., 2014). This shift is achieved through three main approaches: customisation, which allows users to manually adjust the dashboard features; personalisation, where configurations are inferred based on implicit user data; and adaptation, which enables dashboards to autonomously adjust in real-time based on user interactions and environmental changes. These tailored solutions address the

limitations of "one-size-fits-all" dashboards, which often fail to meet diverse user needs effectively (Vázquez-Ingelmo et al., 2019).

Better engagement with specific interests and areas of expertise helps improve knowledge discovery and decision-making outcomes (Verbert et al., 2014). The integration of technologies such as visualisation and artificial intelligence (AI) has also improved the functionality of dashboards, making it easier for users to search and obtain information (Sarikaya et al., 2018).

Dashboards that prioritize the flexibility, usability, and user interaction needed to provide useful information and support users in a knowledge-driven environment are essential for today's operations management (Vázquez-Ingelmo et al., 2019).

2.3 Desirable characteristics in KPIs and PMCS

A KPI is a metric that shows the success of a company, providing actionable insights for continuous improvement (Kerzner, 2022) and its effective use facilitates organisational learning and supports strategic decision-making processes (Peral et al., 2017).

KPIs are an important tool for monitoring and managing an organisation's performance, but their effectiveness depends on conditions that enhance their relevance and usability (Shahin & Mahbod, 2007). They must develop from the vision of top management, address real-world problems, and provide insights for executive decision-making and must be closely aligned with the organisation's needs and requirements (Domínguez et al., 2019).

If KPIs are not properly aligned with technical objectives, they can become redundant and ineffective (Shahin & Mahbod, 2007). In addition to being aligned with organisational goals, KPIs must be informative, providing meaningful insights rather than merely summarizing or repeating existing information (Collins et al., 2016). They must transform information into actionable insights, enabling leaders to uncover hidden insights and opportunities that would otherwise remain unknown (Shahin & Mahbod, 2007). KPIs that do not provide new insights reduce their potential as tools for business transformation (Collins et al., 2016).

Another important characteristic of effective KPIs is that they are based on rigorous research, which means they should be developed using data management and evidence-based methodologies to ensure their validity and reliability, thus eliminating the guesswork of hypothetical metrics and fostering trust among decision-makers (Dominguez et al., 2019). Furthermore, actionable KPIs are very important because they can guide users to act (Kang

et al., 2016). They should be designed to allow decomposition into smaller, manageable components, which helps decision-makers identify real problems and implement solutions (Kang et al., 2016).

In addition to showing current trends, KPIs should also be predictive. Effective KPIs use advanced analytics and big data to predict trends, which helps organisations adapt to dynamic events and remain competitive (Stefanović, 2014). These features ensure that KPIs not only measure performance but also help organisations act on the information, improve performance, and stay aligned with relevant goals, which is essential for alignment with current operational objectives and practices (Otley, 1999).

On the other hand, an effective PMCS has several key features that increase its impact on organisational and employee performance (Ferreira & Otley, 2009). One key element is an outcome-based approach, where the system emphasises, the results achieved by employees rather than focusing solely on outcomes (Ricci, 2016). This approach not only increases the efficiency of the system but also facilitates public participation (Bedford, 2015).

Another important aspect is performance appraisal, which evaluates employees based on their performance in specific situations rather than relying on general indicators (Ferreira & Otley, 2009). This shared appraisal increases the relevance and fairness of the system, making it more effective in eliciting desired behaviour (Ferreira & Otley, 2009).

Personalised development plans are also important to align individual growth with organisational goals (Ricci, 2016). These programs provide employees with clear career paths, help connect personal aspirations with corporate goals, and increase their overall engagement (Ferreira & Otley, 2009).

Furthermore, shared decision-making plays an important role in improving organisational performance (Broadbent & Laughlin, 2009). When employees participate in decision-making alongside their managers, it encourages them to commit to achieving shared goals (Bedford, 2015). Together, they create an effective PMCS that benefits both the organisation and its employees (Ricci, 2016).

2.4 KPIs in the digital operations sector

When talking about KPIs in the digital operations sector, it is crucial to talk about the industry 4.0. KPIs are crucial in this industry for measuring the effectiveness of implementing new technologies and quality management strategies, optimising processes within modern, data-driven production environments (Tambare et al., 2021). In this context,

managing quality and overall performance requires a robust assessment of KPIs, which help identify performance gaps by highlighting discrepancies between current operations and desired outcomes (Žižek et al., 2020). This enables organisations to track progress and address these disparities effectively (Žižek et al., 2020).

In digital operations, KPIs must address both technological and operational dimensions, encompassing metrics such as system reliability, process efficiency, and the adoption rate of digital tools (Braglia et al., 2022). Also, it is very important to design KPIs that not only measure current performance but also facilitate predictive and prescriptive insights (Stefanovic, 2014). This is achieved by integrating real-time data analytics and leveraging the interconnected nature of Industry 4.0 technologies (Ocran et al., 2024). Furthermore, there is a need for tailoring KPIs to the specific characteristics of digital operations, as the complexity and heterogeneity of Industry 4.0 environments require metrics that capture unique operational nuances (Sishi & Telukdarie, 2021). This ensures that KPIs remain relevant and actionable, fostering a continuous improvement cycle that supports technological innovation and operational excellence (Sishi & Telukdarie, 2021).

Overall, KPIs in the Digital Operations Sector serve as a cornerstone for navigating the challenges and opportunities of Industry 4.0, providing the insights necessary to drive efficiency, adaptability, and strategic alignment (Braglia et al., 2022).

Despite their benefits, KPI systems face significant challenges. According to Shaulska et al. (2021), these difficulties often arise from organisational and legal frameworks that affect the adoption and effectiveness of the system. One of the main problems is the disengagement of employees and managers, due to fear of change and distrust of new processes (Oreg, 2003). This resistance is accompanied by uncertain behaviour, as participants expressed a lack of acceptance of new behaviours resulting from the introduction of KPIs (Shaulska et al., 2021). In addition, the difficulty of accurately measuring performance through KPIs and aligning these indicators with organisational goals is often a concern (Shaulska et al., 2021).

Such challenges indicate that successful KPI implementation requires not only technical adjustments but also a cultural shift within the organisation to foster acceptance and ensure alignment between individual and organisational objectives (Lines et al., 2015).

To overcome these challenges, hiring KPI professionals and ensuring that KPI goals are clearly defined is fundamental (Khanzadi et al., 2018). These experts help guide the selection and implementation process, increasing the chances of successful KPI

implementation (Soubjaki & Coughri, 2019). Furthermore, training and awareness programs are necessary prior to implementing KPIs (Lines et al., 2015). The use of new data systems and technologies, such as customer relationship databases and employee performance management, can improve the relevance and effectiveness of KPIs (Khanzadi et al., 2018).

2.5 Challenges in implementing PMCS

Implementing a PMCS is far from a purely technical effort; rather, it involves navigating a complex interaction of organisational, cultural, and structural barriers (Rousseau, 2022). Resistance to change is a persistent obstacle, particularly when employees perceive performance monitoring systems as mechanisms of surveillance rather than support due to limited involvement in their design and implementation (Terlizzi et al., 2016). This perception is further reinforced when methodologies are applied rigidly or misaligned with day-to-day operations, leading to disengagement or superficial compliance (Pollard & Cater-Steel, 2009).

Challenges also emerge from insufficient training, lack of ownership, and poor communication. Employees often lack clarity about the value and application of performance systems, which reduces effective usage even when the tools are theoretically accepted (Rousseau, 2022). The implementation process frequently overlooks these behavioural dimensions, relying instead on formal structures and technical documentation that do not address the underlying cultural readiness or informal norms that influence adoption (Shen et al., 2018). In this context, trust plays a vital role in shaping implementation outcomes, especially in environments where cross-functional collaboration and coordination are essential (Li et al., 2023).

On the technical side, data fragmentation remains a significant limitation. Misaligned data sources, inconsistent classification standards, and the absence of integrated systems hinder the establishment of reliable and interpretable dashboards (Iden & Eikebrokk, 2013). Even in organisations with strong infrastructure, discrepancies in data entry and differing understandings of KPI definitions across departments can reduce the comparability and relevance of indicators (Mikušová & Janečková, 2010). This issue is particularly pronounced in multi-client environments, where balancing standardisation with contextual adaptation becomes critical. While standardised KPIs are essential for benchmarking and cross-client analysis, they must also be flexible enough to reflect service diversity and contractual nuances (Terlizzi et al., 2016).

Another key challenge is the risk of methodological stagnation. Once implemented, PMCSs often fail to evolve in response to organisational learning, process innovation, or shifts in strategy (Parmenter, 2019). Without ongoing review, KPI frameworks can become outdated, losing their diagnostic power and relevance. Effective performance systems must therefore be treated as dynamic structures—iteratively refined through feedback loops, stakeholder input, and operational feedback (Shaulska et al., 2021).

2.6 Co-creation and participatory design in PMCS implementation

Co-creation and participatory design have gained increasing recognition as effective approaches to implementing PMCS in organisational contexts, particularly where adaptability and stakeholder engagement are key (Vaughn et al., 2018). These approaches involve engaging internal stakeholders, such as service managers, support teams, and end users, throughout the phases of system planning, development, implementation, and evaluation (Jansen et al., 2024).

This level of engagement fosters a stronger sense of ownership, reduces resistance, and increases the likelihood of successful adoption and sustainability (de Silva et al., 2015). Participatory strategies are particularly useful in complex organisational environments where performance indicators must be adapted to different contractual arrangements and service delivery models (Greenhalgh et al., 2016).

Key elements of successful co-creation include early and continuous stakeholder involvement, comprehensive contextual analysis, and the creation of inclusive spaces that support open communication and shared decision-making (Jansen et al., 2024). These spaces allow individuals to express operational concerns, suggest improvements, and align their expectations with the broader goals of the PMCS (Vaughn et al., 2018). In practice, co-creation enables the development of indicators and dashboards that are both technically relevant and operationally meaningful, enhancing the usability of PMCS tools (Biddle et al., 2022).

While co-creation supports empowerment and collaboration, it is not without challenges (Greenhalgh et al., 2016). Issues such as power asymmetries between participants, unclear stakeholder roles, and conflicting expectations may arise during the design process (de Silva et al., 2015). For example, ethical concerns must also be addressed, particularly regarding inclusivity, consent, and the meaningful nature of engagement (Jansen et al., 2024). Therefore, to ensure integrity, roles should be well-defined, expectations managed

transparently, and all participants treated as legitimate contributors to the system (Biddle et al., 2022).

Distinguishing between co-design, co-creation, and co-production is also important, as each implies different levels and timings of participation (Greenhalgh et al., 2016). Co-design often refers to joint planning and prototyping, while co-production includes shared responsibilities in implementing and refining the system (Jansen et al., 2024). This clarity in terminology supports better coordination among stakeholders and allows the participatory process to remain systematic and reproducible (de Silva et al., 2015).

Participatory approaches also bring long-term value by embedding stakeholder knowledge into the system, improving tool alignment with user needs and increasing transparency in performance evaluation (Vaughn et al., 2018).

Furthermore, they promote a shared language for interpreting data, which supports strategic alignment and collaborative problem-solving (Biddle et al., 2022). In the context of PMCS, this leads to performance systems that are not only functional but also culturally accepted, ultimately enhancing their impact and sustainability (Greenhalgh et al., 2016).

2.7 The resource-based view theory

The RBV provides a foundational theoretical lens to understand how firms develop and sustain competitive advantage by leveraging their internal resources and capabilities (Assensoh-Kodua, 2019). This approach contrasts with traditional market-based perspectives that emphasise external industry positioning (Porter, 1985; Wernerfelt, 1984). Instead, the RBV posits that competitive advantage stems from the firm's unique bundle of resources, tangible and intangible, that are valuable, rare, inimitable, and non-substitutable (VRIN) (Barney, 1991; Madhani, 2010).

Resources in the RBV context are broadly defined to include assets, processes, information, knowledge, and capabilities controlled by the firm and used to conceive and implement strategies that enhance efficiency and effectiveness (Barney, 1991; Madhani, 2010). These may range from physical infrastructure and technological tools to human expertise and organisational culture (Amit & Schoemaker, 1993; Hall, 1992). However, only resources that meet the VRIN criteria are deemed strategic assets capable of generating sustained superior performance (Grant, 1996; Madhani, 2010; Peteraf, 1993).

Recent literature has refined and reinforced this perspective: Beamish and Chakravarty (2021) emphasise that RBV remains a vital framework in multinational contexts, especially where knowledge transfer and capability deployment across subsidiaries are key. Moreover, Nagano (2019) argues that intangible assets such as relational capital and organisational learning are increasingly critical in service-intensive industries, where traditional scale advantages may be less relevant. In alignment with this, Kumar and Kushwaha (2020) contend that firms capable of effectively combining and reconfiguring knowledge-based resources particularly through digitalisation, can better respond to market uncertainty.

The RBV has also evolved to incorporate the concept of dynamic capabilities, which acknowledges the need for firms to continuously adapt their resource base in response to environmental change (Teece et al., 1997). Dynamic capabilities reflect an organisation's ability to integrate, reconfigure, and renew its resources to maintain competitive relevance (Helfat & Peteraf, 2003; Madhani, 2010). This is particularly relevant for digital transformation projects, such as the implementation of a PMCS, which require firms to align their technological, human, and organisational capital around new routines and learning cycles (Nagano, 2019).

In this project, the RBV provides an appropriate theoretical framework for examining the development of a KPI-based PMCS within a knowledge-intensive digital operations context. The firm's ability to capture, analyse, and act upon performance data, through tools like dashboards, client tiering, and composite indicators, rests heavily on intangible resources such as information systems, internal know-how, and cross-functional coordination (Beamish & Chakravarty, 2021; Madhani, 2010). Furthermore, the tailoring of performance metrics to client profiles illustrates the firm's capacity to generate inimitable routines adapted to its strategic context, in line with the RBV's emphasis on resource heterogeneity and path dependence (Barney, 1991). Finally, the incorporation of stakeholder feedback into dashboard design reflects the firm's dynamic capabilities in action: adjusting and refining performance systems based on operational learning and emerging needs (Teece et al., 1997; Nagano, 2019). In sum, RBV not only explains the strategic relevance of internal resources in shaping PMCS implementation, but also frames the continuous adaptation and improvement efforts as a source of long-term organisational advantage.

3. Methodology

3.1. Research method and objectives

This study aims to address the gaps in the literature by designing and implementing a KPI-based PMCS for the Digital Operations business unit at AxiansEU Digital Solutions S.A, specifically within the scope of 3 key clients, Client 1 (Automotive Components), Client 2 (Telco & IT Services) and Client 3 (Automotive Manufacturing). The goal is to provide a structured and comparable KPI framework that enhances service management evaluation and facilitates decision-making. This study adopts a qualitative case study approach, that is defined as a systematic inquiry into social phenomena in natural settings, allowing researchers to explore how individuals experience, interpret, and respond to processes and structures within their organisational context (Teherani et al., 2015). The purpose of this study is to explore, through qualitative inquiry, the organisational and operational impact of defining KPIs and implementing a performance monitoring system within a complex multi-client service environment. By combining the practical implementation of the system with insights derived from direct interaction with team members, this research aims to understand not only measurable outcomes such as service efficiency, contract compliance, and customer satisfaction, but also the underlying experiences, interpretations, and behaviours of those involved (Lim, 2024). Such depth of understanding requires an approach capable of capturing how individuals perceive and respond to change in their natural work settings, a hallmark of qualitative research (Teherani et al., 2015). By evaluating this real-world application, the study aims to provide insights into the impact in customer relationship management, operational decision-making, and strategic alignment of IT service delivery.

The primary aim of this study was to develop a flexible yet comparable framework for evaluating client performance, with the goal of improving strategic alignment and decision-making. More specifically, the project set out to (i) map and assess the KPIs currently in use across the unit, (ii) identify inconsistencies in performance evaluation, (iii) propose a model that adjusts indicators according to the complexity and strategic value of each client, (iv) design and calculate a CPI and CHS, and (v) deliver dashboards tailored to strategic, operational, and client-level views.

The chosen approach enabled the capture of both technical and behavioural dimensions of change, including stakeholder perceptions, operational challenges, and user engagement.

The project involved continuous collaboration with service managers, business directors, and technical staff, enabling a co-creative process of indicator selection and dashboard refinement. By observing how performance data was used (or not used) in decision-making, and by analysing the organisational context in which this new system was introduced, the study aims to offer both a practical contribution to the company and an academic reflection on performance management practices in complex digital service environments.

3.2. Data sources, project planning, and execution timeline

The data collection strategy combined multiple sources to ensure a comprehensive understanding of the development and implementation of the PMCS. The approach collected information from interviews, internal and external documentation, direct and participant observation, and system-generated performance reports. This multi-source strategy allowed for a rich analysis of both formal structures and informal practices within the company.

Semi-structured interviews were conducted with key stakeholders, including business managers, service managers, team leaders, and technical staff (see Table 1). These interviews aimed to uncover strategic priorities, current performance monitoring practices, and expectations regarding the new KPI system. Particular attention was given to the variation in client contexts and service delivery models, which directly influenced the definition and relevance of performance indicators.

Table 1: Characterisation of the interviews

Interviewee	Position	Time in role (years)	Time in Axians (years)	Interview Duration (minutes)	Interview Date
E1	Business Unit Director	5	8	60	3 March 2024
E2	Business Manager	2	2	35	3 March 2024
E3	Business Manager	3	5	45	3 March 2024
E4	Business Manager	1	4	65	3 March 2024
E5	Service Manager	4	5	50	4 March 2024
E6	Service Manager	1	2	45	5 March 2024
E7	Service Manager	2	3	35	5 March 2024
E8	Service Manager	1	4	40	5 March 2024
E9	Team Leader	2	4	40	19 March 2024
E10	Project Manager	6	10	60	1 April 2024
E11	Backup Service Manager	8	12	60	15 April 2024
E12	LoB[1] Manager	4	7	50	9 May 2024
E13	LoB Manager	2	5	50	9 May 2024
E14	Lo Manager	2	3	50	9 May 2024

[1] LoB Manager: Line of Business Manager

A variety of internal sources, including SLA records, service performance reports, contractual documentation, and legacy dashboards, were reviewed to identify shortcomings in existing monitoring systems and assess their consistency with strategic objectives. Emphasis was placed on the historical progression of key indicators and their role in internal reporting routines. In parallel, external benchmarks and sectoral references were consulted to situate AxiansEU's practices within wider trends in IT service management and digital operations.

Operational insights were further drawn from real-time data obtained via EasyVista. Analysis of ticket flows, incident categories, and SLA compliance trends provided critical input for designing indicators that balance effort and outcome, reflecting both service delivery constraints and client expectations.

In addition to documentary analysis, the internship involved ongoing participant observation. This included active engagement in project meetings, dashboard reviews, and recurring client follow-up sessions. These moments offered first-hand exposure to data interpretation challenges, cross-departmental communication barriers, and real-world usage of performance reporting tools. The observational process also revealed softer elements such as resistance to change and behavioural responses to the introduction of the PMCS.

To support structured implementation, the internship began with a comprehensive project plan outlining major phases, deliverables, key contributors, and deadlines across the five-month period. This roadmap proved essential for managing scope, clarifying responsibilities, and synchronising expectations among the intern, academic supervisor, and company mentor.

Roles were clearly defined within the project governance model. The internship began with a comprehensive project plan of developing a PMCS, coordinated engagement with internal teams, and translated findings into dashboard prototypes. The academic advisor ensured methodological rigour and theoretical alignment, while the company supervisor played a facilitative role by enabling access to tools, data, and feedback from relevant stakeholders.

A month-by-month schedule was followed, with milestones including stakeholder interviews, KPI scoping workshops, prototype development, and iterative validations. The

project progressed through sequential stages, from initial diagnosis and information gathering to framework construction, testing, and final refinement.

Throughout the process, regular meetings with service managers, technical teams, and business unit leaders provided critical input. These sessions not only enriched the understanding of organisational complexity but also ensured that the system reflected real operational conditions. Notes and summaries from each session contributed to the continuous evolution of both metrics and dashboard design.

By sequencing activities logically and building on prior insights, the execution plan fostered a cumulative learning process. This iterative structure enabled early course corrections, strengthened stakeholder buy-in, and ultimately improved the relevance, usability, and sustainability of the implemented solution.

The five-month internship followed a phased project plan that structured the development and implementation of the PMCS. In Month 1, initial diagnostic activities were conducted, including meetings with Business Managers and Service Managers to survey existing metrics and identify performance gaps. This foundational work informed Month 2, which focused on the co-creation of KPIs with key stakeholders. During this phase, criteria and rating scales were defined, and preliminary indicators were reviewed and refined in collaboration with team leaders. The process culminated in the validation of proposed metrics by the Steering Committee.

Month 3 was dedicated to the technical development of the dashboard, including the creation of a working prototype, system testing, and iterative adjustments based on feedback from internal users. In Month 4, attention turned to team preparation, with training sessions on KPI interpretation and dashboard usage. This period also included the formal launch of the dashboard and the initial automation of data collection routines. Finally, in Month 5, the focus shifted to institutionalising the system, ensuring that automatic reporting processes were functional, and that comprehensive documentation of metrics and processes was completed to support long-term adoption and continuity.

4. The company

This next section is fully dedicated to understanding the background in which the internship was developed.[2] Understanding the company's broader mission and operational framework is essential for appreciating the significance of the PMCS project.

4.1. Introduction to Axians

Axians stands as a key brand of the VINCI Energies group, specifically dedicated to Information and Communication Technologies (ICT) and the dynamic challenges of digital transformation. This specialised brand was officially established in 2001 and has since developed a substantial global footprint, operating in 38 countries and employing 16,600 collaborators. Axians' significant presence in the global ICT sector is further highlighted by its reported revenue of €3.7 billion in 2024.

Recognising that the world is more connected than ever and undergoing disconcerting rates of change, Axians assists its diverse clientele across various sectors in navigating complex digital transformations. This support involves expertly conciliating the pace of technological evolution with successful adoption, thereby ensuring that technological advancements are not only integrated but also effectively utilised within client operations.

Axians positions itself as a versatile ICT service provider, adept at delivering differentiated solutions meticulously tailored to address a broad spectrum of technological needs. Its expansive expertise spans critical domains within ICT, encompassing Telecoms Infrastructures, Cloud & Datacenter Infrastructures, Enterprise Networks, Digital Workspace, and Business Applications & Data Analytics. Across all these areas, Cybersecurity is designated as a paramount priority. The company's service delivery model is notably comprehensive, extending support across the entire lifecycle of IT projects, from their initial conceptualisation to their ongoing operational phases. This full-cycle engagement ensures that clients are empowered to achieve their strategic objectives and significantly enhance their performance, benefiting from Axians' extensive portfolio of innovative and turn-key ICT solutions and services. The operational framework is often understood through the "build, plan, run" model, which encapsulates a full spectrum of services: including Consulting & Audits (such as Strategy Design, Planning, and Organisation), Design & Engineering (covering Selection, Integration, Configuration, Customization, and

[2] All information presented in this chapter is based on Axians (2024).

Development), Deployment (involving Installation, Planning, Integration, Logistics, and Storage), and Operations & IT Services (providing Operation, Supervision, Maintenance, and Support).

The company adopts a vertical approach to effectively address various business challenges, crafting innovative, multifaceted solutions that can be implemented either directly on-site or delivered through an "as-a-service" model. This inherent flexibility enables Axians to furnish clients with advanced analytics and real-time insights, thereby propelling digital transformation and enhancing operational efficiency, all while steadfastly upholding the highest safety standards.

Furthermore, Axians actively integrates and leverages cutting-edge technologies such as the Internet of Things (IoT), Artificial Intelligence & Machine Learning (AI & ML), Connectivity, and Cybersecurity to bolster its capabilities and deliver smart, forward-thinking solutions. Looking towards future technological horizons, Axians is also proactively exploring emerging advancements including 3D Printing, Extended Reality & Metaverse, Quantum Computing, Blockchain, Drones, Digital Twins, and Crypto & NFTs.

4.2. Sectoral involvement and societal impact

Axians' operations extend across a diverse array of sectors, consistently providing tailored ICT solutions that directly contribute to societal advancement and enhanced business efficiency. Among the key sectors where Axians exerts significant impact are Health, where it ensures the "continuous availability of technological resources" vital for guaranteeing excellent healthcare services in some of Portugal's leading hospitals; Public Administration, reflecting Axians' belief in the efficiency of public management by facilitating the digital transformation of public services, thereby enhancing the citizen experience towards a more inclusive and sustainable society; Telecoms, a sector where the company makes substantial investments in "cutting-edge communication networks and systems," serving to connect people, businesses, and cities to the digital society of the future; Transport, where Axians actively contributes to making transport infrastructures safer, more efficient, and sustainable through the application of innovative technologies aimed at improving urban mobility; and Education, where Axians promotes an interactive lifestyle and strengthens collaboration among students and teachers across some of Portugal's most relevant universities. Beyond these, Axians' involvement also encompasses other critical sectors such as finance, manufacturing, and logistics.

Axians' role within each of these sectors is inherently dynamic, meticulously adapting to the specific and often unique needs of its diverse clientele. This adaptability might manifest, for example, in enhancing system reliability within the manufacturing industry, supporting comprehensive digital transformation initiatives in the healthcare sector, or furnishing robust communication platforms for various public entities. This extensive and varied cross-sectoral involvement creates a rich and complex operational environment, which is crucial for fully understanding the implementation dynamics of internal systems, such as the PMCS explored in this study, particularly given the inherent diversity in operational models and service expectations encountered across these varied engagements.

4.3. The Context of the Internship

Within the broader Axians ecosystem, AxiansEU Digital Solutions S.A. dedicates a significant portion of its efforts to IT service management and infrastructure monitoring, particularly within its Portuguese operational sphere. The company extends its support to clients operating under a variety of diverse models, ranging from providing ticket-based support to deploying fully dedicated teams, with the specific approach contingent upon individual contracts and service scopes. Despite its capability in delivering complex IT services to a portfolio of high-profile clients across numerous sectors, including energy, banking, and public administration, a critical and persistent challenge remained: the absence of a well-standardised system for uniformly evaluating service performance across all clients. This significant gap severely hampered the company's capacity to conduct consistent comparisons of client performance and identify overarching cross-client operational patterns. The inherent diversity of service models—where some clients operate under clearly defined projects, others are engaged in ongoing service contracts, and a subset benefits from fully dedicated teams working exclusively on their systems—further compounded this issue, rendering comprehensive and cohesive performance oversight particularly challenging. To effectively manage its operations, AxiansEU Digital Solutions S.A. leverages EasyVista, an established IT service management platform that serves to centralise service requests, incidents, Service Level Agreements (SLAs), and pertinent performance data for the majority of its clients. Nevertheless, the existing deficiency in uniform KPIs and a robust, centralised performance framework meant that the full potential of this accumulated data for comprehensive performance comparison remained largely unutilised. It was precisely this strategic gap and the accompanying operational complexity that fundamentally motivated the

development and subsequent implementation of the PMCS during this internship. The overarching aim of this initiative was to introduce a structured and readily comparable KPI framework, specifically designed to enhance service management evaluation and facilitate more data-driven decision-making across the Digital Operations business unit

5. Findings and discussion

As it was mentioned before, this study aims to address the gaps in the literature by designing and implementing a KPI-based PMCS for the Digital Operations business unit at AxiansEU Digital Solutions S.A. Also, it is meant to give a practical perspective in this matter.

The primary aim of the project was to develop a flexible yet comparable framework for evaluating client performance, with the goal of improving strategic alignment and decision-making. More specifically, the project set out to (i) map and assess the KPIs currently in use across the unit, (ii) identify inconsistencies in performance evaluation, (iii) propose a model that adjusts indicators according to the complexity and strategic value of each client, (iv) design and calculate a CPI and CHS, and (v) deliver dashboards tailored to strategic, operational, and client-level views.

The CPI provides a structured way to assess the complexity and demands of each client, drawing on factors such as service scope, contractual volume, and governance level. Rather than offering a one-size-fits-all view, the CPI enables a more balanced and fair interpretation of performance by adjusting KPI expectations in line with each client's profile. In parallel, the CHS presents a snapshot of the client's current service health using indicators like SLA compliance, backlog levels, and customer satisfaction. These two elements, while distinct, work together: CPI informs the adjustment of KPIs feeding into the CHS, while the CHS offers real-time insight into risk and stability. Both tools were carefully designed to remain adaptable to different client contexts while preserving confidentiality and strategic sensitivity.

The implementation of the PMCS generated a series of operational, organisational, and strategic insights. By integrating quantitative performance indicators with the qualitative feedback of stakeholders, the findings show that the PMCS gave managers a shared set of KPIs, which replaced subjective judgments with comparable metrics when discussing client performance and risks.

5.1. The PMCS design

A central output of this internship was the design and implementation of a three-tiered dashboard structure, fully aligned with the first internship objective: "Develop dashboards with KPIs adapted to the diversity of clients". The architecture emerged through exploratory interviews, collaborative KPI mapping sessions, and iterative feedback loops with internal stakeholders.

The dashboards were tailored to three user groups: strategic managers, operational coordinators, and client stakeholders, addressing the contingency principle that management systems must be adapted to the specific needs of users within their contextual environment (Richards et al., 2019). This idea first emerged during one of the initial interviews, specifically with the Business Unit Director, who emphasised the need for a more tailored solution with more intuitive access. This design also aligns with the idea that an effective PMCS must integrate information flows and control mechanisms at multiple organisational levels (Otley, 1999; Ferreira & Otley, 2009).

At the strategic level, dashboards aggregate high-level indicators such as contract value, churn risk, profitability, customer health status, and SLA compliance (see Figure 1). Senior management used these aggregated metrics to classify clients into risk categories, guiding resource allocation and engagement strategies. This supports Otley's (2003) view that PMCS should facilitate strategic alignment by providing top management with timely, aggregated, and actionable data.

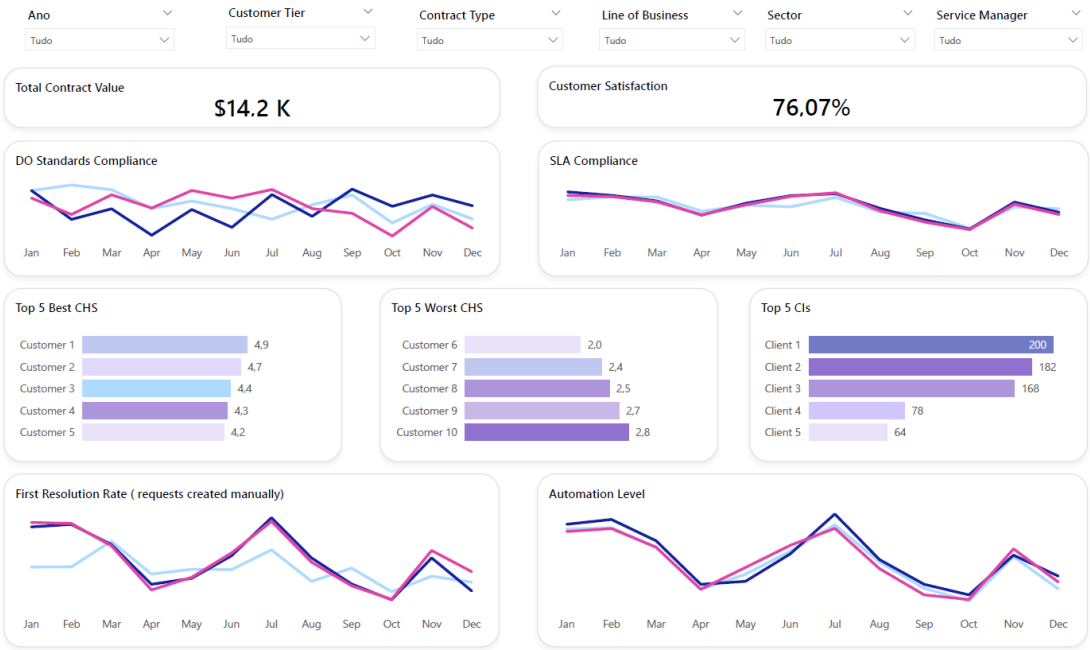

Figure 1: Strategic Level

The strategic dashboard consolidates key indicators, such as contract value, profitability, SLA compliance, and customer health, into a single view, giving senior management a clear basis to prioritise resources, classify clients by risk, and align engagement strategies with long-term objectives.

The operational dashboard (see Figure 2) provides real-time insights for service managers, including backlog evolution, average resolution times, workload distribution, and SLA trends. Managers reported an improved ability to detect bottlenecks, balance workloads, and intervene before problems escalate. This finding echoes the role of BI in enhancing decision-making efficiency (Martins et al., 2024; Richards et al., 2019). Moreover, as Kerzner (2022) and Mahbod and Shahin (2007) suggest, actionable KPIs should provide predictive insights that allow proactive intervention, which was reflected in managers' ability to anticipate service disruptions.

It is also important to distinguish between closed and ongoing service requests because ongoing requests require continuous follow-up, whereas closed ones serve primarily as historical records for performance tracking and audit purposes. For closed tickets, SLA compliance is evaluated retrospectively, enabling precise measurement of historical performance. For ongoing tickets, the dashboard indicates whether requests are still within the contractual response timeframe or have already breached SLA terms. This dual monitoring approach supports continuous oversight, allowing managers to address service risks before formal non-compliance occurs. Such differentiation enhances both retrospective learning and real-time decision-making, as recommended by Otley (1999) and Peral et al. (2017).

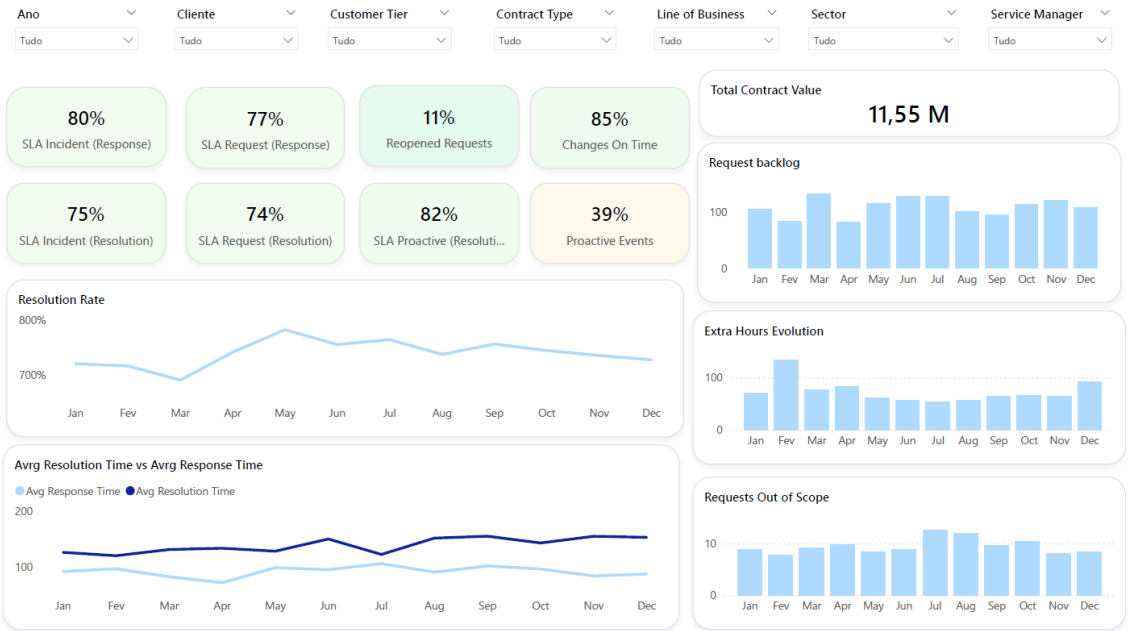

Figure 2: Operational Level

The operational dashboard captures the day-to-day flow of service activity, enabling managers to track workloads, resolution speeds, and SLA performance, while providing both historical insight and early warnings to address potential bottlenecks.

The client-facing dashboards (see Figure 3) were developed collaboratively with service teams and account managers, ensuring that the indicators reflected the unique contractual requirements of each client. This aligns with the literature emphasising that standardised KPIs often fail to capture operational nuances in service contexts (Sishi & Telukdarie, 2021; Terlizzi et al., 2016). Clients valued the selective depth of these dashboards, which offered transparency without overwhelming them with irrelevant data (Vázquez-Ingelmo et al., 2019; Verbert et al., 2014).

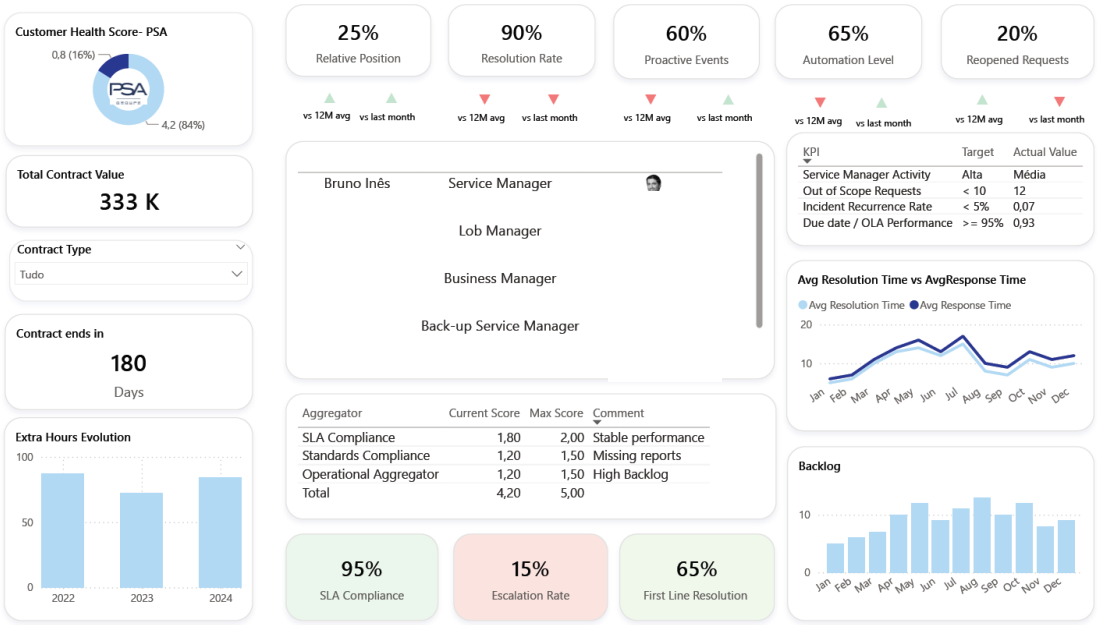

Figure 3: Client Level

The client-level dashboard translates the system into a tailored view that reflects contractual requirements. By limiting filters and focusing on historical performance, it enhances transparency while avoiding information overload, providing clients with clarity on service delivery without unnecessary technical detail.

Across all levels, dashboards were designed with interactive filters to enable dynamic analysis. The inclusion of universal filters (year, customer tier, contract type, sector, business line, and service manager) allowed for flexible, multi-dimensional analysis by internal users. The client-specific dashboards were intentionally restricted to time-based filtering to focus reporting on historical trends for individual accounts. This filtering architecture improved

user experience by balancing analytical power with interface simplicity (Martins et al., 2024; Sarikaya et al., 2018).

This dashboard architecture directly addresses the internship's core objective of increasing visibility into service performance across different client profiles and operational models. It illustrates Otley's (1999) idea that PMCS must connect different levels of decision-making, by linking contract-level dashboards with both operational detail and strategic overviews.

Another significant contribution of the project was the development of the CPI. This composite index combines contractual complexity, SLA compliance, profitability, and adherence to internal delivery standards into a single score. The CPI allows managers to categorise clients into strategic tiers (e.g., High Priority, Stable, Monitoring Needed), supporting risk assessment and portfolio management. To complement the CPI's strategic benchmarking function, the development of the CHS complemented the CPI by offering a real-time, client-level overview of service quality. The CHS aggregates performance dimensions such as SLA compliance, backlog volume, and satisfaction scores to highlight emerging risks or performance deterioration. Composite health indicators such as the CHS align with industry best practices for customer-centric service evaluation, particularly in service-intensive environments where proactive monitoring is essential (Braglia et al., 2022; Stefanović, 2014).

This initiative directly responds to the challenge of creating comparable performance indicators across diverse client contracts, as highlighted in the literature on multi-client service environments (Braglia et al., 2022). The CPI provides a valuable simplification mechanism, enabling top management to compare heterogeneous clients without oversimplifying contractual differences.

The use of composite indexes for decision support is widely recommended in the performance management literature (Peral et al., 2017; Stefanović, 2014). Moreover, the development of the CPI echoes the resource-based view's principle of leveraging internal knowledge to create unique organisational capabilities (Barney, 1991; Grant, 1996). The aggregation of various metrics into a single index reflects the organisation's deep understanding of its own service models, contractual variations, and operational risks.

The iterative refinement of the CPI model during pilot testing reflects dynamic capabilities theory, highlighting the importance of continuous learning and capability reconfiguration (Teece et al., 1997). Although the precise weighting remains confidential, the

approach aligns with multi-criteria decision-making models that balance multiple stakeholder priorities (Kang et al., 2016).

5.2. Lessons learned and strategic visualisation

The high adoption rates achieved were largely attributable to the co-creation approach adopted during the development of the PMCS, addressing Objectives 2 and 5. Early resistance from operational teams was reduced by actively involving them in the indicator design and visual mock-up evaluations. Participatory design aligns with the organisational change literature, which emphasises that involving end-users increases ownership, reduces anxiety, and improves system acceptance (Lines et al., 2015).

Workshops with representatives from operations, customer service, project management, and business management facilitated the definition of a KPI framework that balanced standardisation and contextualisation. As suggested by Mahbod and Shahin (2007), effective KPIs must be both aligned with strategic goals and actionable at the operational level. The participatory process allowed users to shape the indicators based on their operational realities, aligning with Ferreira and Otley's (2009) emphasis on decentralised control system design in complex organisations.

Survey results and interview data collected after implementation confirmed that the participatory process fostered a sense of shared accountability and shifted the perception of the PMCS from a control tool to a supportive management resource.

However, the PMCS implementation also revealed several organisational and technical challenges directly linked to the literature on PMCS barriers (Terlizzi et al., 2016; Shaulska et al., 2021), thus addressing the reflection on the difficulties anticipated in the internship motivation.

Data integration emerged as a persistent technical challenge. Despite the existence of EasyVista as a centralised platform, inconsistencies in data entry, ticket classification, and update frequencies between teams created discrepancies that required manual data cleansing (Iden & Eikebrokk, 2013; Mikušová & Janečková, 2010). This complexity reflects both the highly decentralised nature of the service models and the historical absence of a unified data governance framework.

Power BI, while user-friendly for visualisation, presented limitations for real-time integration. This restricted the use of dashboards for live service monitoring, particularly during fast-changing operational periods. The literature highlights that BI tools often struggle

to meet both real-time responsiveness and cross-client scalability simultaneously (Hostmann et al., 2006; Martins et al., 2024; Vázquez-Ingelmo et al., 2019).

A further structural challenge was the resource intensity of client-specific dashboard development. The tailoring of dashboards for different contractual models consumed approximately 30% more development time than initially anticipated. This resonates with the scalability issues described in PMCS and dashboard design literature (Sarikaya et al., 2018; Vázquez-Ingelmo et al., 2019), highlighting the trade-off between personalisation and sustainability. Future work could explore semi-automated template generation to balance standardisation and flexibility.

The iterative process of reconciling conflicting stakeholder expectations when defining KPIs also presented difficulties. As discussed in the literature, organisations often struggle to harmonise performance indicators across units with distinct objectives and historical practices (Chenhall, 2003; Shaulska et al., 2021). The co-creation process required multiple rounds of revision to ensure that the proposed indicators were operationally meaningful while maintaining comparability across clients.

Culturally, some resistance stemmed from concerns that the PMCS would introduce new layers of formal documentation, increase administrative burden, and expose performance gaps that had previously remained informal. These reactions are consistent with the behavioural barriers identified in PMCS adoption literature (Pollard & Cater-Steel, 2009; Rousseau, 2022; Terlizzi et al., 2016). The participatory design process was crucial in mitigating these concerns and fostering a culture of transparency and improvement rather than compliance policing.

An innovative element of the PMCS was the portfolio visualisation scatter plot presented on the initial dashboard page (see Figure 4). This graphical tool offers an intuitive overview of client performance across multiple dimensions, directly supporting Objective 4 related to client classification.

The scatter plot integrates four layers of information simultaneously: SLA compliance (X-axis), DO standards compliance (Y-axis), Customer Health Score (colour), and client invoicing (bubble size). This multidimensional visualisation enables rapid identification of clients who, despite generating significant revenue, may present performance risks in service delivery dimensions. This echoes the dashboard design principles advocated by Sarikaya et al. (2018), where complex datasets are transformed into accessible visual formats for managerial decision-making.

The ability to click on each bubble to access client-specific dashboards reflects the literature on dashboard interactivity and usability (Vázquez-Ingelmo et al., 2019; Verbert et al., 2014). This interactive link between portfolio-level assessment and detailed performance diagnostics empowers decision-makers to shift seamlessly from strategic overview to root-cause analysis, thereby enhancing organisational learning and agility (Martins et al., 2024).

The use of such visual decision-support tools reinforces the role of business intelligence not only as a reporting mechanism but as a strategic alignment tool (Martins et al., 2024; Richards et al., 2019). Several managers indicated that the scatter plot helped structure discussions that previously relied on subjective interpretations, supporting Otley's (2003) call for control systems that enhance dialogue and shared understanding.

Figure 4: Scatter Plot

5.3. Broader organisational impacts

Beyond the technical deliverables, the PMCS generated wider organisational impacts that extend into cultural, strategic, and knowledge management domains. These effects underscore the strategic value of performance management tools, particularly when they are tailored to organisational realities and co-created with stakeholders. In this sense, the initiative aligns with the RBV, which highlights how firm-specific resources and capabilities can be leveraged to develop sustainable competitive advantages (Barney, 1991; Grant, 1996). Firstly, the PMCS created a shared framework for structured performance conversations, replacing fragmented interpretations of service quality with objective, data-driven insights.

This shift encouraged departments to engage with each other based on common definitions and benchmarks, reducing ambiguity and improving mutual understanding. In doing so, the system helped overcome silos and fostered a more collaborative culture across service, technical, and business management teams. This aligns with Ferreira and Otley's (2009) notion of PMCS as sense-making devices that integrate diverse perspectives within complex organisations.

Secondly, the dashboards served as an onboarding and training resource, especially for new service managers or account owners unfamiliar with the historical dynamics of their contracts. This was a frequent piece of feedback during the tool's training sessions. By providing immediate access to contract-specific indicators, trends, and risk flags, the PMCS shortened the learning curve for new staff and facilitated knowledge transfer within teams. This function illustrates how performance systems can evolve into knowledge repositories, a capability that is particularly valuable in high-turnover environments or in organisations managing diverse client portfolios (Grant, 1996; Nagano, 2019).

Thirdly, the ability to visualise and link operational indicators with strategic and financial outcomes, such as profitability, customer retention, or contract execution status, helped bridge the gap between day-to-day operations and broader business goals. Senior managers used these insights to identify underperforming areas, reassess resource allocations, and strengthen client engagement strategies. This vertical integration of information flows supports the view that performance management systems play a vital role in translating strategy into action (Martins et al., 2024; Otley, 1999; Peral et al., 2017).

Additionally, the PMCS encouraged teams to use dashboards in weekly meetings, making gaps more visible and prompting discussions on how to improve service delivery. As indicators were co-developed with operational teams and refined through iterative feedback, resistance to performance measurement decreased and was replaced with a sense of ownership and relevance. This supports the dynamic capabilities perspective within RBV, which suggests that the true value of internal systems lies in their ability to adapt, learn, and evolve in response to organisational needs (Teece et al., 1997).

Finally, the process of building the PMCS itself generated new organisational routines and governance mechanisms, such as the regular validation of indicators, the scheduling of dashboard reviews, and the use of dashboards in steering committee reports. These institutionalised practices reflect the internalisation of the system within the organisational

structure, signalling a shift from ad hoc reporting to a more mature, continuous performance management process.

5.4. Feedback and iterative refinement

A critical component of the PMCS development process was the collection and incorporation of feedback from key internal stakeholders. This feedback provided essential insights for refining dashboard functionality, indicator structure, and overall system usability. Iterative consultation not only helped improve technical aspects but also strengthened user engagement and trust in the emerging system.

One of the most recurrent themes in the feedback was the perceived complexity of the CHS. Stakeholders noted that, while the CHS offered valuable visibility, it was difficult to interpret due to the number of contributing metrics. In response, the structure of the CHS was simplified by consolidating SLA compliance, DO standards compliance, and selected operational metrics into a new component termed DO Operational Compliance. This aggregation allowed for better transparency, reducing perceived opacity without compromising analytical value.

Another significant concern related to the heterogeneity of client contexts, which made it difficult to apply uniform performance benchmarks. During the interviews, several managers stressed that direct comparison between clients, particularly across managed services and project-based models, was not always meaningful. This led to the implementation of a tier-based differentiation logic, allowing KPIs to be adjusted according to client complexity, size, and strategic relevance. This solution preserved the comparative utility of the system while respecting contractual and operational asymmetries.

Further suggestions included refinements to visualisations and metrics. The "Top 5" sections, including top teams and top Customer Health Scores, were flagged as insufficiently strategic. As a result, their positioning and content were reconsidered to emphasise more actionable insights. Additionally, feedback pointed to the need for clearer communication of what influenced certain scores, particularly for the CHS. Planned improvements include the addition of hover-over explanations and tooltips to show the main contributors to each score and the gaps preventing improvement. These enhancements aim to make the system more intuitive for daily use.

In terms of dashboard structure, the top managers advocated for the ability to customise contract-level views based on role (e.g., service manager vs business manager).

There was also a desire to include financial execution metrics, such as turnover progress against expected contract value, which could link operational and financial performance more directly. This intersection was highlighted as particularly useful for strategic oversight and steering committees.

On a technical level, issues were raised about data interpretation in EasyVista, especially in cases where SLAs were not defined. Users highlighted that tickets without SLA metrics could not be validly assessed within the dashboards, limiting full visibility in some accounts. The resolution included clearer definitions and filters to isolate only the requests that could be meaningfully tracked.

Finally, the feedback cycle also underlined the importance of focusing on prototypes rather than real data in validation stages. Since real client data often includes inconsistencies or contractual exceptions, it was agreed that working with prototyped cases was more effective for initial testing and for ensuring stakeholder alignment.

Overall, the feedback process was fundamental in simplifying the CHS, introducing tier-based logic, and adding tooltips, which together made the PMCS easier to interpret and more relevant for daily use. It reinforced the importance of co-creation, clarity, and flexibility in performance management initiatives, particularly in complex service environments where standardisation must coexist with contract-specific nuances.

5.5. Opportunities for continuous improvement

While the implementation of the PMCS successfully addressed the initial objectives of improving performance visibility and strategic alignment, several opportunities for future enhancement were identified throughout the project. These suggestions reflect both user feedback and broader trends in performance management and digital transformation, and they serve to outline a roadmap for continuous improvement.

One area with considerable potential is the integration of real-time alerts and predictive monitoring capabilities. Although the current dashboards provide near real-time visualisation of service indicators, they do not yet trigger proactive notifications or warnings when performance thresholds are breached. The inclusion of automated alerts, particularly for SLA breaches, backlog surges, or client satisfaction drops, could enhance responsiveness and risk mitigation. Such features would transform the dashboards from primarily diagnostic tools into proactive management instruments, aligned with the concept of intelligent control systems (Martins et al., 2024).

Another promising direction lies in the incorporation of machine learning and advanced analytics. For instance, predictive models could forecast backlog accumulation or identify patterns leading to SLA non-compliance based on historical data. These insights would support data-driven planning and resourcing decisions and align with emerging best practices in service operations management (Terlizzi et al., 2016). While the current infrastructure is not yet fully equipped to support such models, the volume and structure of available data lay a solid foundation for future development.

Additionally, self-service dashboards for clients were frequently mentioned in interviews as a desirable future enhancement. While current client-facing dashboards are manually shared or presented during review meetings, an interactive portal could allow clients to access selected indicators on demand. This would improve transparency, reduce reporting overhead, and strengthen client engagement, particularly for long-term or high-value contracts.

Mobile accessibility is another aspect worth exploring. Currently, dashboards are designed primarily for desktop interfaces, limiting their usability in meetings or remote scenarios. Optimising the interface for tablets and smartphones would cater to evolving work practices and enhance real-time accessibility for decision-makers on the move.

Beyond technical features, the project also highlighted the importance of embedding a continuous feedback loop into the PMCS governance process. As users become more familiar with the dashboards, their feedback will be essential for identifying new indicators, refining existing definitions, and adjusting visualisations. Establishing regular review cycles, possibly quarterly, would ensure the system evolves in line with organisational priorities and avoids obsolescence.

Lastly, these reflections may offer valuable guidance to other organisations considering the implementation of a performance management system in multi-client, service-oriented environments. The importance of phased development, co-creation with end users, and iterative prototyping cannot be overstated. Moreover, the tension between standardisation and customisation will likely remain a central design challenge in any similar context. Future initiatives might benefit from modular frameworks or dynamic templates that allow for rapid replication across accounts without sacrificing contextual relevance.

Overall, while the PMCS has provided a robust foundation for performance monitoring and strategic dialogue, its true value will depend on the organisation's

commitment to maintaining it as a living system, one that evolves continuously with technological advances, operational shifts, and client expectations.

6. Conclusion

This internship project addressed long-standing visibility gaps in service performance within the Digital Operations business unit at AxiansEU Digital Solutions S.A. Prior to the initiative, the absence of a unified performance management framework represented a limit to the strategic oversight, difficulted risk detection, and limited the comparability of service delivery across a complex portfolio of client models.

Throughout the project, all core objectives were successfully addressed. The existing KPIs in use across the unit were systematically mapped and evaluated; key inconsistencies and measurement gaps between clients with diverse service models were identified; an index (CPI) was developed to adjust KPI expectations based on each client's complexity and strategic relevance; clients were categorised into tiers, reflecting their operational demands and strategic weight; the CHS was introduced to provide a real-time, aggregated view of each client's service performance; interactive dashboards were developed in Power BI enabling senior managers to track contract value and risk, service managers to monitor backlogs and SLA compliance, and clients to access tailored performance summaries in one integrated system. These dashboards were tested and validated with three pilot clients, incorporating real feedback from service teams; and finally, the system was designed to be scalable and adaptable for broader application across other clients and services within the business unit.

A central success factor was combining academic frameworks (such as RBV and dynamic capabilities) with hands-on input from service managers, ensuring that the system was both methodologically sound and practical for daily use. The PMCS was not only grounded in frameworks such as the Resource-Based View and dynamic capabilities theory, but also tailored to real-world conditions through co-creation with internal stakeholders. By involving service managers in the design of KPIs and visual interfaces, the system benefited from organisational knowledge, improved usability, and higher adoption rates. Tools like the CPI and CHS enabled managers to shift from intuition-led decisions to structured, data-informed performance assessments.

In parallel, the project fostered cross-functional dialogue, supported onboarding, and helped institutionalise performance governance mechanisms. This transition from fragmented reporting to a holistic, comparative view of service performance laid the groundwork for internal benchmarking, client tiering, and long-term planning. The

dashboards also became a shared reference point in meetings, replacing fragmented spreadsheets and emails, which reduced misunderstandings and made responsibilities clearer across teams.

Despite these achievements, the project faced contextual and technical constraints that should inform future improvements. Understanding the internal structure of the business, marked by multiple service layers and informal processes, required significant effort at the outset. Stakeholder availability was also uneven, limiting the depth of consultation during critical phases. Moreover, the diversity of operational perspectives made KPI alignment complex, often requiring multiple iterations and compromise. Technical limitations, particularly regarding Power BI's real-time capabilities and the integration of inconsistent data sources, also imposed constraints on the system's scalability and automation potential. These challenges were exacerbated by the learning curve associated with developing advanced dashboards and by the time-bound nature of the internship itself.

Still, these constraints did not undermine the project's core contributions. On the contrary, they highlight the realities of implementing management control systems in live environments and offer valuable learning for future development cycles. Going forward, opportunities exist to refine and expand the PMCS through greater automation, predictive capabilities, and broader deployment across business units. Integrating artificial intelligence and machine learning could enhance the system's ability to diagnose issues and forecast performance risks more accurately.

In conclusion, this project not only fulfilled its intended goals but also contributed to a broader organisational shift toward evidence-based management. It demonstrated that performance systems, when co-designed with users and embedded into daily routines, can move organisations from intuition-based decisions to evidence-based management, improving client service consistency and strengthening cross-team coordination.

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Appendix

Script for the interview

Managers and Team Leaders:

1. What are the strategic priorities for the Digital Operations unit at AxiansEU for the coming year?
2. How does the company currently evaluate the performance of the Digital Operations unit? What tools and metrics are used?
3. How do you currently align KPIs with strategic goals? Do you feel that the existing KPIs provide an accurate view of performance across different clients?
4. What challenges does the company face in managing the performance of the Digital Operations unit?
5. What do you think about the overall motivation of your workers? Do you feel them motivated or do you think that they could be more?
6. What positive impacts do you anticipate the new KPI system, and the associated dashboards, will have on the Digital Operations unit in terms of performance, team satisfaction, and our ability to meet SLAs?
7. How can KPIs be customized to meet the specific needs of your unit and how you think they can change performance and satisfaction?

Operational Staff:

1. How would you describe your role and responsibilities within the Digital Operations unit?
2. What are your main objectives and goals in your daily work?
3. What tools and information do you currently use to monitor your performance?
4. What challenges do you face in monitoring and improving your performance?
5. What suggestions do you have for improving the performance management system of the unit?
6. How do you envision that having clearly defined KPIs and accessible dashboards could help you in your day-to-day tasks, contribute to improved performance and job satisfaction, and enhance your understanding of how we are meeting client SLAs?

Additional Questions:

1. What are the key trends and developments in KPIs and dashboards for Digital Operations?

2. What are the potential risks and challenges in implementing a KPI-based performance control system?
3. How can the company ensure that the new system remains sustainable in the long term and adapts to future changes?

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