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DIGITAL TRANSFORMATION IN IT CONSULTING

Maria Ana Magalhães e Menezes de Sacadura Botte

Relatório de Estágio apresentado no âmbito do programa de
Mestrado em Estatística e Gestão de Informação,
Especialização em Business Intelligence

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DEDICATION

I dedicate this report to God, Who with His Grace and through the intercession of Mary, helped me to accomplish this project.

ABSTRACT

As IT Consulting market revenue increases year after year, more and more digital transformation projects are being sold. Yet, the deep change IT consultants sell to their clients in this type of projects, which translates into the digitalisation of practices accompanied by a change in mentalities, is not usually the reality that we find in their same consultancy firms. For Creative Management, the company that hosted the internship, the problem recurs: there is a general desire of evolving into a digital company, with some disconnected digital tools already implemented but without planning or coordination. Literature shows that a Digital Transformations requires several premises to develop into a successful project such as the definition of a plan, the knowledge and support of leaders, investment, etc. My project, within the internship, aimed to address Digital Transformation at Creative Management by coordinating an internal digital strategy that materialized in new technological tools. The key takeaway is the fact that an IT Consulting firm is probably better prepared for this type of change than non-IT consultancies.

KEYWORDS

IT Consulting; Project Management; Agile; Performance Management; Dashboard; Digital Culture; Digital Natives; Mindset Change

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
BI	Business Intelligence
CARG	Compounded Annual Growth Rate
CM	Creative Management
DT	Digital Transformation
ERP	Enterprise Resource Planning
HR	Human Resources
IoT	Internet of Things
IT	Information Technology
KPI	Key Performance Indicator
PM	Project Manager
YTD	Year to date

1 INTRODUCTION

1.1 CREATIVE MANAGEMENT

Creative Management was founded in 2013 and currently has 9 employees. It is positioned as a boutique consulting firm that provides mainly Consulting and Technology services. Within the Consulting service, the projects can vary from strategic to Project Management or IT Management and outsourcing. Also included in the Consulting umbrella is the fastest-growing area of Analytics & Business Intelligence where mainly dashboarding projects are undertaken. Under the Technology practice, projects include Custom Software Development and Technology consulting and integration.

In 2021, the company announced a joint venture with the technological Hexastep, which is specialized in software solutions and integration services. With this partnership, the two companies desire that by sharing knowledge, leveraging on strong synergies, and covering several areas of industries, while offering a wider range of services from business management to technology, they can generate superior results.

1.2 INTERNSHIP

To carry out an internship report, after a set of interviews, I joined the company in September 2020 and the internship had the duration of nine months. Beyond my thesis project, I was assigned to 4 projects in total, having the opportunity to work with different industries and business problems.

2 BACKGROUND

2.1 IT CONSULTING

IT Consulting can be perceived as an area in the consulting industry in which services are designed to help clients' utilization of Information Technology and Digital Tools to best achieve their business goals. (Consulting.org, 2009)

2.1.1 IT Consulting disciplines

One can segment IT Consulting services into 8 main areas of action. These are IT Strategy, IT Architecture, IT Implementation, IT Security, ERP Services, Systems Integration, Software Management and Data Analytics.

IT Strategy is generally the first stage in any IT undertaking as it defines a corporate vision for any IT efforts in the future. The IT Architecture is a more technical field which involves longer investigations to design methodical information technology specifications, models, and guidelines to with that obtain cost and/or productivity efficiencies. ERP Services and Systems Integration usually come hand in hand as the implementation of an ERP normally claims for system integration. IT Security - a hot topic at the moment - encloses compliance with privacy regulations, risk, and security issues. Further on, IT Implementation entails a new technology to be set. Software Management refers to optimizing or maintaining a software aligning it with the business goals. Lastly, Data Analytics – an area in rapid growth - consists in services that point to a full exploration of data to extract meaningful insights that support decision making. (Communication, 2009)

Disciplines	Services	Example	Average project duration
IT Strategy	Defining corporate IT strategy to help achieve a particular goal, may include formulating a business case for adopting specific technology.	Designing a set of robust cybersecurity mechanisms.	6 weeks-6 months
IT Architecture	Longer projects which tackle existing IT architecture may include outlining efficiency-oriented changes.	Overseeing outsourcing to the third party	6-12 months
Enterprise Resource Planning (ERP)	Supporting clients with the choice, design, and establishment of ERP systems.	Implementing SAP services.	
Systems Integration	Maximizing efficiency by linking separate systems together to create a holistic whole.	Tinkering with ERP systems to ensure easy interaction.	
IT Security	Provision of expertise on questions of IT risk, security, and compliance demands.	Ensuring clients' IT systems comply with privacy regulations.	
IT Implementation	Designing and implementing projects based on new technologies.	Implementing digital transformation of HR department.	
Software Management	Managing, maintaining, and deploying software applications to achieve business targets.	Optimizing software procurement process.	
Data Analytics	Leveraging technology to transform data into information that supports client's decision making	Using Big Data to help the client understand new market.	

Table 1- IT Disciplines. (Source:Consulting.org, 2009)

2.1.2 IT Consulting Market

The market for IT and technology consulting is estimated to represent around 20% of the overall consulting market (Linchpin, 2021) and, since 2016, it has globally seen year-on-year growth, with the rates between 3% and 7% (Statista, 2019).

In 2018, it was estimated that this figure would grow 11,8% by 2025 (Grand View Research, 2018) having most of projects in the Digital Transformation domain (Consulting.org, 2017).

IT-consulting & implementation services market size in the World 2016-2021

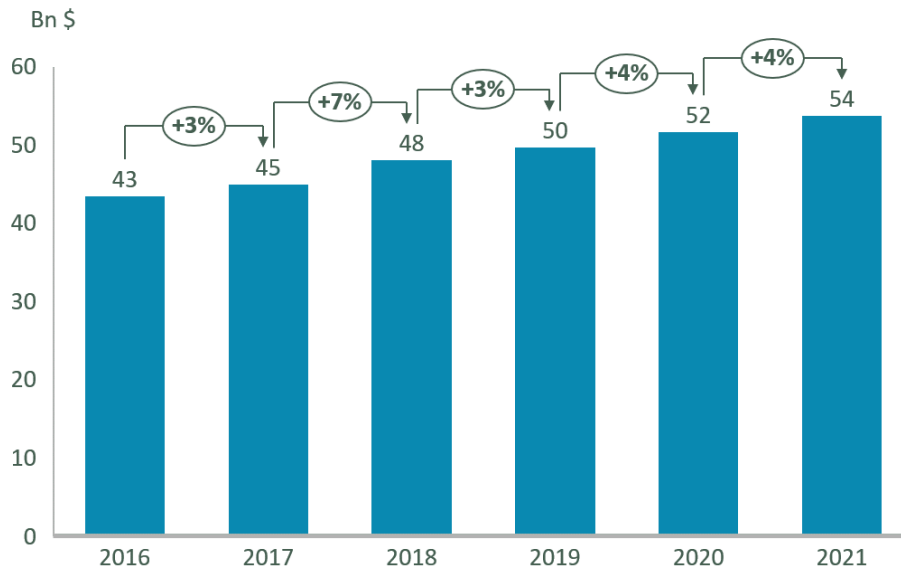


Figure 1- IT Consulting Market Growth Worldwide (Source: Statista, 2019)

In Portugal, this market is also growing at a 15% rate in 2018, achieving almost 5.2 billion euros of revenue in that same year. (PORDATA, 2018)

Consulting, activities related with program and information services in Portugal

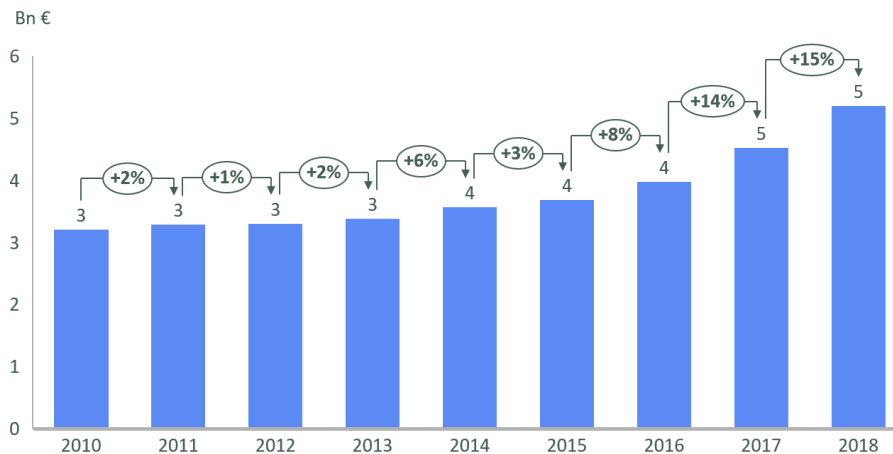


Figure 2-Consulting Revenues in Portugal since 2010 (Source: PORDATA, 2018)

2.1.2.1 Trends

2.1.2.1.1 Tech

Naturally, the expected growth in the demand for IT Consulting services is related to the emerging technological trends such as Big data, Artificial Intelligence, Robotics, IoT, and others which are no longer distant futuristic concepts but instead are becoming key influencers of corporate strategy and revenue streams. (Consulting.org, 2009) (Buettner & Timm, 2018)

The potential of Big Data and analytical applications combined with AI or machine learning is enormous. Both for consulting firms or their clients, these technologies provide capabilities that raise workers' productivity and results in quality while allowing clients to explore their data, fostering new discoveries, insights, and innovation.

This is a massive opportunity for consultancy service providers, as, according to McKinsey Global Institute, most companies are capturing only a fraction of the potential value from data and analytics, which means that there is a market opportunity if consultancy firms are skilled enough to offer it. (Henke et al., 2016)

2.1.2.1.2 Competition

In the meantime, the consulting and IT services industries are evolving into a truly global competition as traditional borders between market segments are vanishing, leading to a progressive exchangeability amid consultancy firms, which will necessarily lead to a loss of pricing power.

On one hand, as new technologies gain land, the big consulting firms (MBB¹ or the Big Four²) try to find their way in the Business/IT Consulting Space. On the other hand, this setting helps new competitors with innovative Business Models to enter the market. Examples such as Celonis, Narrative Science, Inspiient and others, are companies that do not intend to provide all consulting services but instead focus on supplying innovative solutions for part of the consulting process.

Concurrently, clients now tend to unbundle consulting services, which requires consulting firms to be more flexible and transparent, as well as to change their offer to a more modular approach. (Buettner & Timm, 2018)

A certain modularization can already be witnessed on the supply side of the consulting market. Examples like Oliver Wyman, Everis or the already mentioned Celonis, Narrative Science, Inspiient and others are firms not trying to be a one-stop-shop but instead are specializing in delivering a specific part of the value chain. (Oneke, 2018) (Williams, 2015) Thus, the consulting firms that are known as 360° solution providers and can usually sell big packed projects at a large price, now face growing pressure to unbundle their services and to lose the usual opacity between the client and the project team, by better characterizing each module of work. (Christensen et al., 2013) This also implies that different pricing models will emerge as the *pay-per-diem* becomes misaligned with the new consulting concepts. (Buettner & Timm, 2018)

In addition to these trends, asset-based consulting is becoming a tendency as each consulting project is now often grounded in software solutions, tools, models, algorithms, or data-based assets. Due to its increase in efficiency and speed, this type of consulting can offer relatively lower prices with shorter project timeframes. In this approach, there is a clear change in the delivery model and, in the long run, more innovative solutions as Design Thinking, Lean approaches, and Think Tanks will improve the handover even further.

Lastly, since a lot of incumbents in the market have not been able to keep up with the current trends, there has been intensive consolidation with M&A activity in the consulting sector over the last 15 years. (Communication, 2009)

¹ MBB refers to the name informally given to the world's three major strategy consulting firms by turnover, which are McKinsey & Co., The Boston Consulting Group and Bain & Company.

² Big Four is the nickname employed to refer collectively to the four leading professional services networks in the world, comprising the global accounting networks Deloitte, Ernst & Young, KPMG International and Price Waterhouse Cooper (PwC).

Number of mergers and acquisitions in the consulting industry (2006-2014)

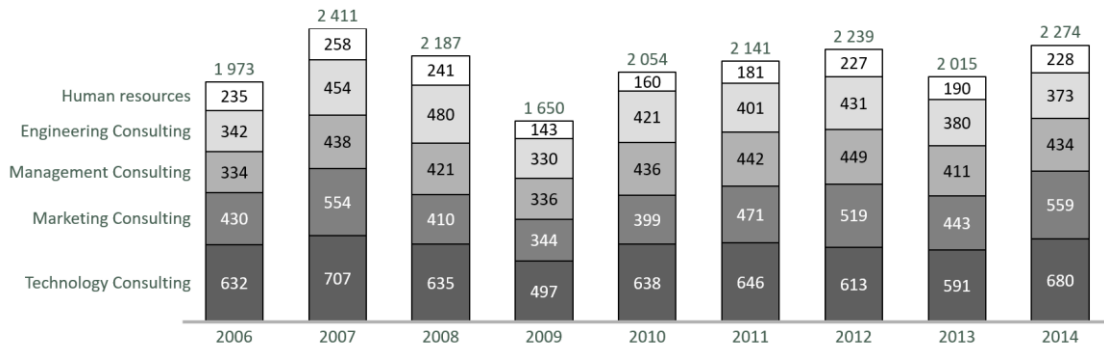


Figure 3- Mergers and Acquisitions in Consulting. (Source: Communication, 2009a)

2.1.2.1.3 Customer

In old fashion consulting, clients were used to relying on brand, reputation and “social proof” — i.e., the professionals’ educational pedigrees, eloquence, and demeanour—as substitutes for measurable results, giving incumbent consulting firms an advantage. (Christensen et al., 2013)

However, nowadays, the customer’s knowledge has increased, especially regarding technology, as Digital Natives ³are reaching decision-making roles. Also, as technology evolves, new complex challenges are defying clients, requiring the implementation of projects in digital transformation’s scope. In such cases, the decisive criterion in choosing the right consultancy firm is not its brand or reputation, but whether the firm is ahead of the clients’ knowledge and if it will be able to understand the client’s needs.

Today, clients have become more demanding and professional as they are now able to perform tasks that were a core competency of consultants just a couple of years ago (Buettner & Timm, 2018). Therefore, when looking for professional services to solve a problem, they want options that will allow them more control and less opacity in projects.

2.1.2.1.4 Professionals

In the Digital Transformation era, Consultancies can no longer simply hire young graduates out of the best business schools and expect that they are ready for any project. Now, talent selection needs to be more focused on exceptional skills in specific areas, such as business model, customer experience design as well as analytics, security, mobility and AI since currently it is common that many consulting projects tend to require more data scientists and fewer consultants. (Tepperman, 2017) (Cecere et al., 2016)

2.2 DIGITAL TRANSFORMATION IN THE ORGANIZATIONAL CONTEXT

More than 20 unique definitions can be pointed for the concept of Digital Transformation, which was joined and reframed in one conceptual definition by Vial as “a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies” (Vial, 2019).

³ Digital natives are people comfortable with technology and computers since little and that consider technology to be an basic and necessary part of their lives. (Prensky, 2014)

However, for the present report, Digital Transformation will continuously be mentioned in the organizational context. As so, Westerman's definition fits better the purpose, classifying it as "the use of technology to radically improve performance or reach of enterprises". (Westerman et al., 2011)

Digital transformation is not a new concept anymore, yet many companies have been trying to implement it without success. Statistics reveal that 70% of Digital Transformation projects fail to meet their main goals (Bucy et al., 2016). This phenomenon is related to the lack of employee engagement and teamwork, disagreement among top managers about the plan goals, and the lack of a Digital Culture, among other factors. (Hemerling et al., 2018)

It is also known that most of the DT projects are outsourced in order to obtain the most time and cost-efficient solution applied by trusted experts in various technologies, with exhaustive knowledge in technological innovations and hands-on experience in many horizontals. (Boichenko, 2017) (Lutskiy, 2021) Consulting firms are the typical vendors of this type of projects, some more specialized than others, but in the overall industry most of the players are selling digital Transformation projects.

2.3 DIGITAL TRANSFORMATION & CONSULTING

On one hand, Consulting firms, and particularly IT Consulting firms, hold most of the outsourced Digital Transformation projects. On the other hand, various readings and experiences point to the fact that these same firms have not yet embraced their internal Digital Transformation.

Within the Consulting industry, firms trailed different strategies to settle in the new digital era, in all its complexity. Many of the most known companies opted for the creation of separate units, starting with Deloitte Digital in 2012, followed by Accenture Digital in 2013, and BCG Digital Ventures in 2014. The second most common approach, carried out by Oliver Wyman, KPMG and PwC, was to establish digital teams that work in several units, in order to expand the digital expertise across sectors and projects. (Harvard Business School, 2018)

However, creating a Digital department or team does not necessarily mean to have undergone a digital cultural transformation. Evidence shows that many consulting firms still practice outdated methods for their internal processes, in contrast to what they advise their clients to do.

"As a consultant, I had to fly multiple times a week across various locations even just for a meeting that could have been easily done virtually, with significant cost savings for the client." (Harvard Business School, 2018)

This becomes a problem when one understands the dynamics taking place on the client-side and how they are becoming more demanding and professional in examining whether they need consulting services and which consulting company they want to recur to. (Buettner & Timm, 2018)

"Vendors that have not undergone a digital cultural transformation cannot lead." (Bieler, 2014) This seems to be a key problem: if a consulting firm is not practicing what it "preaches", not brand, nor reputation will save it from losing its clients to more capable and advanced consulting firms or other new players.

2.4 IMPLEMENTING DIGITAL TRANSFORMATION

To solve the incoherence problem referred above, in order to thrive in the market, consultancy firms will have no option other than to perform an internal DT.

As demonstrated, most DT projects fail for different reasons, with many being about *a priori* misalignments in goals, expectations, motivations, etc. To avoid this, companies, or in this case, consultancy firms, must start by defining the value of the transformation by securing senior management commitment and investment while setting clear and ambitious targets. (Catlin et al., 2017)

Having that set, and based on Westerman's roadmap for DT, the plan of action should be segmented in 3 main axes, which are then split into 3 elements each (Westerman et al., 2014):

1. Customer Experience
 - a. Customer Understanding
 - b. Top-line growth
 - c. Customer Touch Points
2. Operational Processes
 - a. Process Digitalization
 - b. Worker Enablement
 - c. Performance Management
3. Business Models
 - a. Digitally Modified Business
 - b. New Digital Businesses
 - c. Digital Globalisation

Westerman states, based on more than 150 interviews, that the companies which performed a successful DT are the ones that combine digital activity with solid leadership. It is also based on these interviews that the author points to these 3 key areas as the main building blocks for DT, adding that not all need to be fulfilled so that a DT takes place.

2.4.1 Customer Experience

When digitally transforming the customer experience, companies can take advantage of customer data through the most recent analytics technologies such as machine learning and AI. This will allow a deep understanding of the customers' preferences and tendencies, which can be leveraged by targeting specific clients with specific marketing campaigns or by designing new products/services based on those preferences in order to increase sales – top-line growth.

The customer touch points' element refers to the new digital ways customers can establish contact with the company. Modern demonstrations of this are the chatbots on websites, which with the help of AI are able to promptly give answers to customers.

2.4.2 Operational Processes

Operational processes include every internal process that takes place in a company's day-to-day activity, which are often repetitive and time-consuming tasks.

In this axis, process digitalization is an obvious element to embrace, since software development has increasingly allowed the automation of most of the standard procedures in a company, enabling their execution in more efficient, productive and profitable way. As an example, there are the Human Resources Portals as SAP, Factorial, or Smartsheet, also the collaborative tools such as Microsoft Teams, Slack or Dropbox, and some financial tools like Riskturn or Haslle.

Because of the virtualization of individual work, especially in the current pandemic times, workers are enabled to broadly navigate the organization, and, through the mentioned collaborative tools, they can reach mostly any colleague and thus get specific questions solved in real-time.

With all transactions being recorded in one or many information systems, both frontline workers and managers now have access to a deep level of detail on sales, customers, products, and the KPIs they set as relevant. As a result, decision-making becomes more informed, and performance can be managed with more detail and timeliness.

2.4.3 Business Models

“The times they are a-changing”⁴, and that has effects not only inside the organizations but also in its external behaviour and especially on their offer. As observed in the market review, these changes are already visible in the consulting industry and are taking different shapes.

The fight for survival in changing times is reflected in many digitally modified traditional business models. We see grocery stores going online, post offices specializing in order delivery, banks providing apps that allow their customers to manage their accounts, etc.

Not only are existing businesses changing, but there are also new businesses flourishing by introducing digital products or services. Examples are the extensions of Uber into Uber Eats or the iconic transformation of Netflix from DVD delivery into a top content provider platform.

Finally, Digital Globalization is an expected outcome of digitalizing one’s business. With technology, the world is getting more and more connected, there are no boundaries of reach. On one hand, this represents a threat to privacy and security, but, on the other hand, it allows for international synergies that promote efficiency and reduce risk, including shifting production centres around the globe, or simply outsourcing services from a different country.

Summing up, by identifying these 3 areas of action, a company is able to clearly map opportunities for a DT, whether it is related with the individuals work and collaboration, the business processes, or in the way a company understands and serves customers. (Westerman et al., 2014) Nevertheless, none of the companies studied by Westerman had transformed all nine elements at once. This roadmap shall serve mostly as a guide to constantly identify and focus on concrete opportunities for Digital Transformation.

3 PROBLEM, MAIN GOAL, AND SPECIFIC OBJECTIVES

With the above-exposed problem in mind, the question addressed in the course of this internship was: “How can a small company, with few human resources, implement a consistent and transversal Digital Transformation?”

In this case, there is an *a priori* advantage as the typical workforce of IT consulting firms is usually trained for this type of digital culture and hence more open to change. However, at Creative Management there was no materialization of the desired DT, meaning that there was no internal project assigned for this purpose.

My internship appeared as the right opportunity for this project to finally take place. With the main goal of implementing a Digital methodology for internal processes in the company, recurring to Westerman’s roadmap scheme, I proposed to follow the strategic digital corporate objectives and materialize those into new technological tools which will enable the company to practice part what it “preaches” to its clients.

⁴ Title of the song written by Bob Dylan in 1963, which was known to have influenced people's view of society.

To achieve this overall goal, some specific work fronts were defined. Firstly, it was necessary to define and develop comprehensive analytics' dashboards, which intend to give a complete vision of the current situation of sales and on-going projects. Subsequently, it was important to create a Manual of Good Practices that embed broad and specific guidelines for the new digital tools of Creative Management and its concrete features.

4 STUDY RELEVANCE AND IMPORTANCE

The idea of internal Digital Transformation is not new to Creative Management, and the company has had it in its "to do list" for more than a year. However, management postponed its execution multiple times, as external projects were more urgent while also more profitable in the short term.

The main advantage in the offset is the already existing knowledge base on the topic. As many digital transformation projects have been developed for different clients, there is experience and insight about the best practices to apply in a Digital Transformation. For the project, this was a very positive starting point since the mindset shift – one of the hardest steps in change management – was already halfway through.

With this project, Creative Management will improve its image as an IT Consulting firm by being consistent with its own beliefs and practices in the Digital area. Plus, it will be able to do it without external help, which makes the project cost-efficient. Lastly, with the new tools, partners will be able to better track projects and sales, which will lead to time savings and more informed decisions.

For the academy, it will make known the practical application of a Digital Transformation in an industry where it has not yet been studied, providing useful insights for future studies or implementations on similar industries.

5 PROJECT MANAGEMENT & DASHBOARDS

Literature, and my own experience, reveal that to work in the consulting industry means working within a project-based methodology. Consultancy firms, regardless of their business focus, were designed to deliver solutions, for specific problems, in a determined period of time, which is coincidental with the definition of projects, thus justifying its enforcement in the general consulting industry. (Adjei & Rwakatiwana, 2009)

Project-based work consists in pursuing temporary endeavours for the development of unique services or results, usually in team structures led by the project manager. The temporary character implies a strict beginning and end, defined by time, objectives, or both. Yet, this does not mean that all projects have short durations or impacts. The building of a bridge is an example of a project that has a great and lasting impact. (Vinet & Zhedanov, 2011)

Further on, researchers also disclose this work fashion as an ongoing tendency and expect that in the future most roles will be project-based, implying a more dynamic and intense way of working, with teams combining internal and external workers, receiving more coaching and feedback. (Allen et al., 2017) (Lyons et al., 2017)

By approaching project-based work, we necessarily need to discuss project management. This discipline is gaining more and more relevance as this nature of work expands. (PMI, 2017) Project management will be more efficient the more it is considered at a strategic level rather than simply at an operational level.

As projects are crucial for consultancy firms, senior partners necessarily need to focus on maintaining effective project management with a consistent methodology. For that to happen, partners need to rely on their project managers as active participants of strategic planning, the portfolio selection of projects, and capacity-planning activities while guaranteeing the application of the defined methodology. (Kerzner, 2012)

Project Management methodologies are split into two main groups: the traditional and the contemporary. The traditional methodology is also known as “Waterfall”, due to its sequential unwind. In the waterfall approach, it is considered that all projects follow the same lifecycle, with the stages of development being initiation, planning, execution, monitoring, and closure. As the name suggests, each new phase will start when the previous is fully completed, in all its activities. (Workep, 2019)

The Waterfall model is admired for its capacity of improving quality management via its verification and validation processes. (Cadle & Yeates, 2008) In contrast, it is criticised for being “poorly suited to the chaotic and client-driven business environment of the 21st century” (Thomsett, 2002), which naturally demands more dynamic and flexible frameworks.

In the beginning of the mid-1990s, because of the frustration of some practitioners of the mentioned traditional approach, mostly in the software development context, the new Agile methods started arising. At the time, these were simply a collection of different techniques that were based in the same values and basic principles. (Cohen et al., 2004)

With the new millennium, the Agile Manifesto was published by representatives from different practices in software development, namely from Extreme Programming, Scrum, and Crystal. This Manifesto is the summarization of the Agile perspective, including its twelve fundamental principles and the main differences from the traditional view. In that sense, Agile is set to follow a non-linear process, with regular deliveries in between the so-called “sprints” (2-4 weeks of work), involving less planning *a priori* and giving more emphasis to product revisions with the received feedback in each delivery. (Highsmith, 2001) (Workep, 2019)

Thus, Agile arises not as a single methodology but as a set of values and principles – a philosophy, one might say – where several modern project management methodologies find their place, especially in the IT context. (Cohen et al., 2004)

At Creative Management, projects are still undertaken in a waterfall glare. However, senior partners have been investing in training courses to evolve to a Scrum approach.

Independently from the methodology, any project needs to be assessed with metrics or Key Performance Indicators (KPIs) so that there can be a concrete performance management. KPIs are used to assess the overall success or failure of a business and can differ for several businesses. Still, there may also be multiple KPIs for every department or, in this case, project. (Mosca, 2019)

According to Kerzner, for deciding which metrics to use, the Project Manager needs to perform a benchmark analysis. However, he warns that this benchmarking must consider the specific in-house practices, adding that identifying the metrics is easier than using them. (Kerzner, 2012) Moreover, on the same topic, Eckerson supports that even with a solid metric definition, “teams can only get 80 percent of the way” as “the last 20 percent comes from deploying the metrics”. (Eckerson, 2010)

Nowadays, it is very common to visualize these same KPIs in dashboards which, despite the general misunderstanding, are relatively inexpensive. The interest in this visualization solution has been increasing accompanied by the increase of the market offer, in terms of software. Even

though “everyone is wild about dashboards” (Stephen Few, 2004), there is no unanimous definition and the term “dashboard” is being used to name diverse phenomena.

Yigitbasioglu points “graphical user interface that contains measures of business performance to enable managerial decision making” as a generic definition (Yigitbasioglu & Velcu, 2012) while Eckerson, facing the same confusion, further separates performance dashboards into three possible applications: 1) a monitoring application, 2) an analysis application, and 3) a management application. (Eckerson, 2010)

In the light of Eckerson’s book, the monitoring application is related with critical information displayed by employing timely and relevant data. The analysis application, in its turn, implies a more active use of the dashboard functionalities, for further investigation of the first glanced information, across multiple dimensions and different detail levels. Lastly, the management application is concerned with the impact of the dashboard in its users, in the way communication and feedback are stimulated and supported, specially by executives. (Eckerson, 2010)

The same author also differentiates 3 types of dashboards: Operational, Tactical and Strategic. Operational dashboards are focused on operational processes and oriented for monitoring purposes more than analysis or management. Tactical dashboards keep track of parts of the business, whether these are projects or departments, leading to an analysis application, more than monitoring or management. Finally, Strategic dashboards are used to control the strategic objective’s execution and, according to the previous, to give feedback and make decisions. This implies a management application, more than monitoring or analysis. (Eckerson, 2010)

Despite the complexity in defining dashboards, it is nevertheless clear that these are expected to improve decision making by amplifying understanding and capitalizing on human perceptual capabilities. For this, the development of a dashboard should include the collection, summarization, and presentation of information, from various sources, so that the end-user can easily understand how the main indicators are performing (Yigitbasioglu & Velcu, 2012)

However, even for the dashboard design procedure, there are few academic guidelines to orient practitioners. This is precisely what Yigitbasioglu and his colleagues try to deliver in their study. These authors distinguish two main design features: functional and visual features. Functional features refer to what the dashboard can do, in terms of interactivity, for example, while the visual features are related to the principles of visualizing data. (Steven Few & Edge, 2007) (Yigitbasioglu & Velcu, 2012)

The functional characteristics should be aligned with the dashboard’s objectives in order to assure and support a strong baseline for decision-making. For example, if the purpose of a dashboard is to compare data between two countries, to have only one display of data would be completely insufficient, as it would rely on human memory for the comparisons. (Yigitbasioglu & Velcu, 2012)

The visual features, on the other hand, will have a major impact on the data perception of the end-user. These will be efficient if the maximum amount of data is perceived in the least amount of time. For that to happen, the dashboard designer needs to develop a balanced mix of complexity and utility, avoiding, for example, the excessive use of colours, which might distract the decision-maker. (Yigitbasioglu & Velcu, 2012)

In spite of the mentioned difficulties with dashboard definition and development, it is undeniable that the interest in this tool has been increasing, as data volumes and technology are evolving, making it, presently, the most typical tool for business performance management. (Pappas & Whitman, 2011) (Eckerson, 2010) As Malik states “the dashboard is the new face of

the emerging information field” (Malik, 2005) and there are many case studies that prove its success.

In Chicago, for example, the use of IBM's Business Objects Dashboard Manager at Edward Hospital introduced better management of account receivables, enhancing its cash flow. (Schulte, 2006) Another success story took place at Unisy's, where a marketing dashboard allowed a better budget allocation as well as a more effective performance improvement tool that provides real evidence of impact on corporate goals. (Miller & Cloffi, 2004)

Most recently, in Portugal, with the outsourcing of the Portuguese data consultant BI4ALL, the Pestana group developed a robust Business Intelligence solution, starting with the development of a structured Data Warehouse and finalizing with the delivery of a strategic and operational dashboard, which is now the baseline for all decisions at the executive level. (BI4ALL, 2019)

In the present report, the development and implementation of strategic and tactical dashboards will be documented. These tools will be developed to address Digital Transformation on the element of Process Digitalization and Performance Management (Westerman et al., 2014) with the intention of facilitating project management and strategic planning, through interpretation of structured data, in its specific metrics and KPIs.

6 METHODOLOGY AND RESULTS

6.1 METHODOLOGY

The project was designed to last for 5 months with two deliveries on the aforementioned two main fronts:

1. The analytics dashboard(s)
2. The Good Practices Manual

Considering the different deliverables, distinct methodologies were applied. As for the Analytics Dashboards, the design was guided by a set of interviews done with the partners and the PM, which were then be submitted to content analysis.

Qualitative research, as an intent to explain social phenomena “from the inside”, has gained, in recent years, much more credibility. (Kvale, 2007) Within this area of research, user interviews are also a typical and essential approach for dashboard planning and design as opposed to a simple list of metrics with no context or detailed explanation. Interviews helped to clarify the “why” of each metric and to guarantee the answering of the right business questions through tailored visualizations (James, 2018)

Still, qualitative data analysis is many times a difficulty for researchers since data based on human experiences is complex, multifaceted, and often carries meaning on multiple levels. In this context, a methodology named “Content Analysis” was developed to help qualitative researchers with the undertake complex analysis. The objective in qualitative content analysis is to systematically transform a large amount of text into a highly organised and concise summary of key results. (Erlingsson & Brysiewicz, 2017)

The process begins with the integral transcription of the interviews and further repeated reading of these. Then, one seeks to summarize the whole text into meaning units, then formulating codes and subsequently grouping these codes into categories, which are fitted inside an aggregating theme.

There were four interviews made, with half an hour each, to 3 Partners and one Project Manager. These were held virtually and recorded through Zoom’s Software so that they could be later transcribed.

Throughout the Content Analysis methodology, having the key takeaways from the interviews condensed and organized in logical building blocks, it was possible to shape a customized dashboard, based on the insights of the key stakeholders making it relevant for Creative Management’s business needs.

For the Good Practices Manual, both the Dashboards development and its good use methods were documented, as well as the process of implementation, thus creating a Knowledge Base on this activity, available for every user.

6.2 CONTENT ANALYSIS

Considering the methodology proposed steps, the process started by summarizing the content of all interviews into meaning units, then codes, then categories and finally aggregating the theme that comprises all elements, resulting in what is displayed in figure 3.

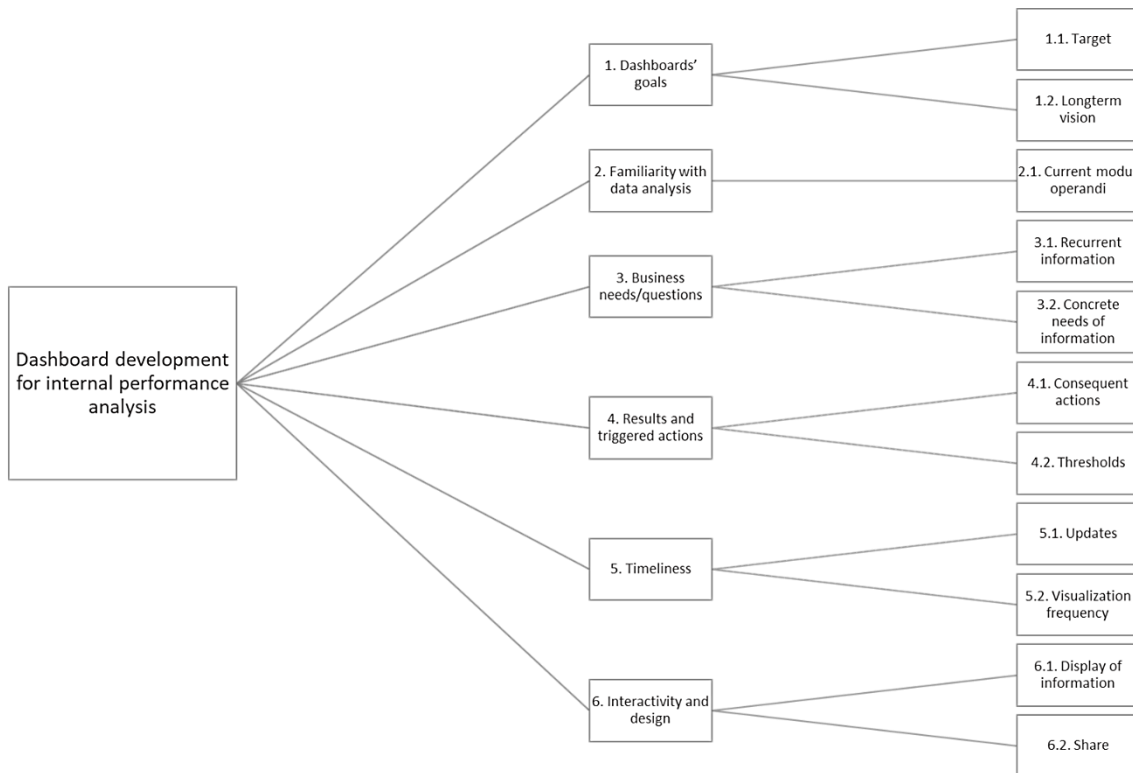


Figure 4- Content Analysis: Theme, Category, and Codes (Source: Author)

6.2.1 Dashboard Goals

General Category	Subcategory	Interviewee	Text
Dashboard Goals	Target	Project Manager	"Helps me estimating hours and following-up billing. It also helps me in productivity, (...) to see what the monthly margin of the project was. (...). Oh, another thing that is handy to me, and that I do manually right now, is to compile the hours that are posted in each project, create a time log and an invoice based on the price/hour agreed with each client."
		Partner 2	"A management dashboard helps me in my role from the moment I can access information that allows me to monitor and make a decision. (...) Dashboards at a time like this (confinement) even add importance because they allow you to collect a set of inputs about what people are doing or how they are taking up their time"
		Partner 3	"It helps me if you have information that allows me to support a decision and if you give me an alert and explain that alert to me. In my controlling experience, a dashboard in itself is of no use, but if it has the ability to analyze and alert, then yes, it supports a decision."
	Longterm vision	Project Manager	"Would make the right decisions to the business I manage."
		Partner 1	"I always have two visions here: What is the result that the company will have at the end of the year, both in terms of results and in terms of cashflow. These two visions are very important (...) Then there's another big view that is sales, so I'm interested in analyzing the sales pipeline and looking at sales forecasts".

		Partner 2	"The missed opportunities have to do with the fact that, for example, not having more granular information at the financial level impacts us (...), for example decision-making on the company's tax optimisation, it is not always taken according to the timings that should be taken. When I say tax optimisation is the ability for us, in the face of the fiscal structure that we have, to optimize as much as possible the tax benefits we have and for this we need detailed financial information, with the ability to design forward and simulate situations. And it's the second year we've been on the losing end of this effort."
		Partner 3	"[With a suitable dashboard] We can avoid the loss of time and the work under pressure, that leads to more mistakes."

Table 2- Dashboard Goals: Content Analysis (Source and translation: Author)

Table two gives the perception that most partners consider analytics dashboards useful if these provide information that triggers decision-making. This information is mostly related to invoicing, sales, and cashflow control.

The target (1.1.) of this information is split in four, as that is the suggested number of dashboards to produce. The first, the Executive Dashboard is for Partners only, the Project Management Dashboard and the Sales Dashboard are for Partners and the Project Managers, and the Individual Dashboard is for each worker with visibility for the partners.

Regarding the Long-term vision (1.2.), the aim is to reduce errors and time in performing data analysis.

6.2.2 Familiarity with data analysis

General Category	Subcategory	Interviewee	Text
Familiarity with data analysis	Current <i>Modus Operandi</i>	Project Manager	"I have an excel of mine, where I control whether I'm above or below what I've committed in each project. " (...) " As for sales, as there is no workflow thought, it is difficult to follow the pipeline and get the proposals out." (...) "Greater access to the cost of overhead prevents unprofitable projects from being made."
		Partner 1	"As we have done every year, at the end of some period, we export the data into a Excel sheet, transform and analyze it and, overall, draw the conclusions that today we would draw with a dashboard. The goals are partly written and partly mentally recorded. We set sales goals and billing goals at a high level every year. Then there are the goals of each project - every time we make a sale we have an associated budget and billing objective. This is formally a goal and is written in an Excel sheet."
		Partner 2	"I use interactive tools such as Dropbox Paper. Because I can set timings, I can view which tasks are of complementary responsibility, and I can take action. At the level of monitoring results, I stink through Excel."
		Partner 3	"I have information... it may not be too structured and gives me work to collect it. The information is scattered and needs to be worked on. I could waste an hour cleaning it."

Table 3-Familiarity with data analysis: Content Analysis (Source and Translation: Author)

In table three, the current *modus operandi* (2.1.) regarding data analysis is depicted. The overview shows that there is no guideline or protocol for this process – each worker has their way of analysing the business performance even though they mention the same KPIs.

Another insight that is evident in the analysed category is that the numerical objectives of the business are not formally written. Instead, these are verbally discussed and noted without predetermined purpose.

6.2.3 Business needs/questions

General Category	Subcategory	Interviewee	Text
Business needs/questions	Recurrent Information	Project Manager	"I look at the billing, I'm always very worried about this. The project's margin is important... I also look at delays in relation to the calendar. The latter is very important because it is one of those things that can make the relationship with the client sour."
		Partner 1	"I look at the results and respective trends of the company, but also the respective treasury forecasts for the next periods. The profitability of the projects, the allocation rate of the teams, whether we have a team with no project to integrate."
		Partner 3	"Year-to-date billing versus the objective value of each customer, opportunities on the table, and the value they represent – total value, number of opportunities, and probability of conversion of each of them."

Table 4-Business needs/questions: Content Analysis (Source and Translation: Author)

The table above allows a deeper knowledge of the measures and indicators already being calculated and the ones which would be nice to have.

The recurrent information (3.1.) concerns the turnover, profit, cashflow's situation, expenditures, and budgeted financials.

In addition to this, the interviewees expressed some other concrete needs of information (3.2.). Here they included projections of sales, payments, and liquidity, also the future resource allocation, a measure of risk for each project, the control of each project's timeline and respective time allocation.

6.2.4 Results and triggered actions

General Category	Subcategory	Interviewee	Text
Results and triggered actions	Consequent actions	Partner 1	<p>"At the executive level, there are immediate cashflow issues that involve going after clients for them to pay. In terms of sales, it is about pressuring the people responsible for selling the initiatives that have been behind for the longest time. Then, going down to the level of the projects,(...) when we begin to realize that the projects are falling behind, that often means that we have (...) to realize what are the problems to unlock them. At the individual level, what typically happens is that when a person begins to realize that their chargeability is far below expectations, they start asking the various project heads to be allocated"</p>
		Project Manager	<p>"As for sales, I check to see if I know anyone in the potential companies listed, and try to schedule a meeting. Depending on the team's occupation, it could mean you're selling too little or you're selling too much – any of these extremes is bad. You need to have a chargeability around 80%, if you don't have it and if you're at the bottom end, it means you have to sell more, if you're at the top end, either you hire or put projects on hold. The delays in the calendar, depending on how critical they are, lead to one of two actions of the manager, the first is to try to arrange a workaround, the second is a more careful customer management to give a justification and provide a new solution."</p>
		Partner 2	<p>"On the executive board's dashboard I can track developments and treasury needs, I can make strategic decisions, if I have the willingness to make investments in more people, giving the existing pipeline, I will do some contact management and understand the need for commercial or communication actions and at the resources level I can have an insight about people and what they are doing in a very simple way."</p>

		Partner 3	"If the billing amount is low, we need to focus more on sales. If the potential sales value is low, I have to allocate more people in the business development. (...) As for projects, especially in closed scope projects, we have to make timing decisions to prevent them from slipping. In individual control, it is necessary to balance and manage my effort taking into account the results."
	Thresholds	Project Manager	"As for chargeability, 90% is aggressive and means that the team does not have much time, which is not healthy. If you're below 60/50% it means half your time you're unoccupied (...). As for the delay of the projects, it's a bit subjective because I may even be a 1 week late and have a valid reason... It depends on the possibility of workaround."
		Partner 1	"Negative results at the company level, negative cashflow projections in the upcoming months leads one to act immediately. Then obviously, doing the drill-down, the same thing happens at the project level: negative results or deviations in the project, sales projections below fixed costs. Going down to the manager level, alert sales projections below the target, deviations from negative projects. At the individual level, the alert is mostly about the chargeability level."
		Partner 3	"[Red flags are]To be well below the planned billing (more than 10%). As for project management, it is important to be aware of slippage in planned allocations vs. used, and we pay attention to deviations of 10%/15%. As for costs, 5% deviations is already severe. "

Table 5- Results and triggered actions: Content Analysis (Source and translation: Author)

Table five refers to the outcomes of the Dashboard. Usually, according to the interviewees, cashflow information leads to consequent actions (4.1.) regarding clients, which often consist in applying pressure for them to pay the billed amounts in a timely manner. The information about sales will typically result in forcing sales owners on their initiatives. By looking at the information on projects, consequent actions will be mostly about meeting the timings and the budget, which might affect the allocation of people. Observing the time allocation, the interviewees guarantee they will be able to optimise each person's workload if provided with suitable information.

This table also mentions certain thresholds (4.2.) that lead to immediate action, such as negative profits, chargeability levels above 90% or below 60%, negative projections, and discrepancies of 10% and 5% with the budgeted revenue and expenditure, respectively.

6.2.5 Timeliness

General Category	Subcategory	Interviewee	Text
Timeliness	Updates	Project Manager	"Daily"
		Project Manager	"Weekly, at best."
		Partner 1	"I think in our case are periodic updates. (...) I don't think it makes sense for us to have anything in real-time... "
		Partner 2	"Periodic updates. I don't see any real-time updates to our reality. Unless I connect to the bank, but that's where I think the risk of making a call to the bank was great (...) other than that I don't see I don't see any real-time update required."
	Partner 3	"Periodic. We don't have tools that report in real-time."	
	Visualization frequency	Partner 1	"Monthly."
		Partner 2	"The Executive Dashboard at least monthly, in the meetings we have. The PM Dashboard according to the frequency that the project manager wants and the Personal Dashboard according to the frequency you want."
		Partner 3	"Individual Dashboard, weekly, project management Dashboard, monthly and Executive Dashboard, bi-monthly."

Table 6- Timeliness: Content Analysis (Source and Translation: Author)

Table six simply reveals the consensus of most interviewees about the frequency of updates (5.1.) and visualizations. Concerning the first, the dashboards should be updated periodically as opposed to real-time, with weekly updates as the best scenario. About the Visualization frequency (5.2.), the executive and sales dashboard will be consulted monthly, the project management and individual dashboards will most likely be viewed weekly.

6.2.6 Interactivity and Design

General Category	Subcategory	Interviewee	Text
Interactivity and design	Display of information	Project Manager	"I'd do a sales dashboard with a pipeline and another with the vision of portfolio, that is, the set of projects, with a client filter and underneath the projects and their KPIs. It should also include the accumulated hours, the value of the business and this over time. This is the Manager dashboard. Another different functionality, probably in a full dashboard, would be the log of detailed hours per day and its billing, (...) with a customer filter. In the management dashboard of each project is essentially a Gant Chart that gives me visibility on the meeting of deadlines."
		Partner 2	"In the management dashboard: treasury, commercial, resources, and accounting. In project management: plan, risks/ problems, action points, changes, and budget, there being. In the individual management dashboard: allocation of resources to projects and activities, vacation days I have to spend (...), chargeability."
		Partner 3	"In the executive dashboard, the value of totalizers and then divided by business area and Client. In projects, Client and disaggregated by project. Individual, development block. We can then enter a level of detail of training of soft skills, hard skills... always in a Minto's pyramid logic."
	Share	Project Manager	"In principle, everything here should be shared with partners, not with the people below. (...) The Dashboard of each project can be shared with the team. In the rest, I don't see much relevance in sharing with the team. We already have everything in the cloud so, according to the architecture of our company, they should be cloud."

		Partner 1	"The Executive Dashboard is to be shared with all board members, at the project level, it should be shared with the manager of each project and at the individual level, with each of the workers. We don't expect to give this visibility out of the company. As for form, the ideal was web access with user management and data roles."
		Partner 2	"The first is shared between three people, consulted online, preferably. (...) within a secure connection. The project management dashboard must be shared with the PM and at most the partners to consult (...). The individual I think is shared with each one, and maybe the partners can consult, unless a set of information is defined that the resources do not want partners to see, but I am also not seeing well how."
		Partner 3	"Share in a web browser."

Table 7- Interactivity and design: Content Analysis (Source and Translation: Author)

In table seven, the interviewees present a close alignment regarding the display of information (6.1.) on several dashboards. In the Executive board, there is agreement in exhibiting the turnover, treasury state of art and resource allocation. In a separate dashboard are supposed to be the sales pipeline as a funnel. The project management dashboard shall embed a Gantt chart, the availability of the resources allocated, and the total number of hours worked.

About the sharing method (6.2.), the consensus was on cloud hosting.

The analysis of the interviews allowed the acknowledgement and summarization of the most important insights for the Dashboard development.

Idea	Number of times mentioned
The focus on the sales pipeline is currently of most importance	9
Following up the invoicing volume is crucial	8
The performance of Chargeability levels is a key indicator	7
Timesheet control is something we should do more	4
The Dashboard is only useful when it leads to decision making	4

Table 8- Main ideas and frequency (Source: Author)

The main ideas of the interviewees were sorted according to how frequently they were mentioned (Table 8). From that, the takeaways are that both sales and invoicing are processes of major importance at the moment, which is most likely related to the maturity phase of the company, plus the current pandemic situation and its economic consequences. There is also the desire for closer control of the workers, in order to enhance time allocation. Lastly, the feeling that the dashboard would only be used on a regular basis if it generates decisions or triggers actions was conveyed by all interviewees.

6.3 TECHNICAL IMPLEMENTATION

After 3 months of work, in-between external and internal projects, with the understandings gained from the interviews, plus my own internship experience, I was able to deliver a solution that makes Creative Management more reliable, by practicing “indoors” what it sells to its clients.

The dashboards developed digitally transformed the operational processes of the company, as its purpose is to digitalize Performance Management and Time Control, allowing the worker higher visibility of its activity plus giving a complete vision of the current situation of sales and ongoing projects to the business partners.

As expected, all workers were very receptive to this project and had a genuine interest in its *go live*. Besides the interviews, I received a lot of informal feedback which was of great value for the final details of the reports.

Lastly, in order to store the Knowledge gained in this project, I created the mentioned Manual of Good Practices which embeds the main guidelines for the future development and use of the dashboards.

6.3.1 Dashboards

The dashboards were built using Microsoft Power BI's Software especially since Creative Management's main database was stored under the collaborative platform named Smartsheet, which has a direct live connector to Power BI.

Bearing in mind the interviews' insights, 2 reports were developed and a third was intended for later. The first was designed for the Executive Board, focusing on turnover and sales. The second was conceived for the project manager and focuses on timings, resources, and profitability. The one left for later is mentioned several times in the interviews and was planned for individual usage, giving each worker details of its time allocation, chargeability, vacation days, superiors' feedback, etc. However, this would imply more Power BI paid licenses and due to the need for investment, it was left for later on.

6.3.1.1 Executive Board's Dashboard

This report will be used by the three managing partners alone.

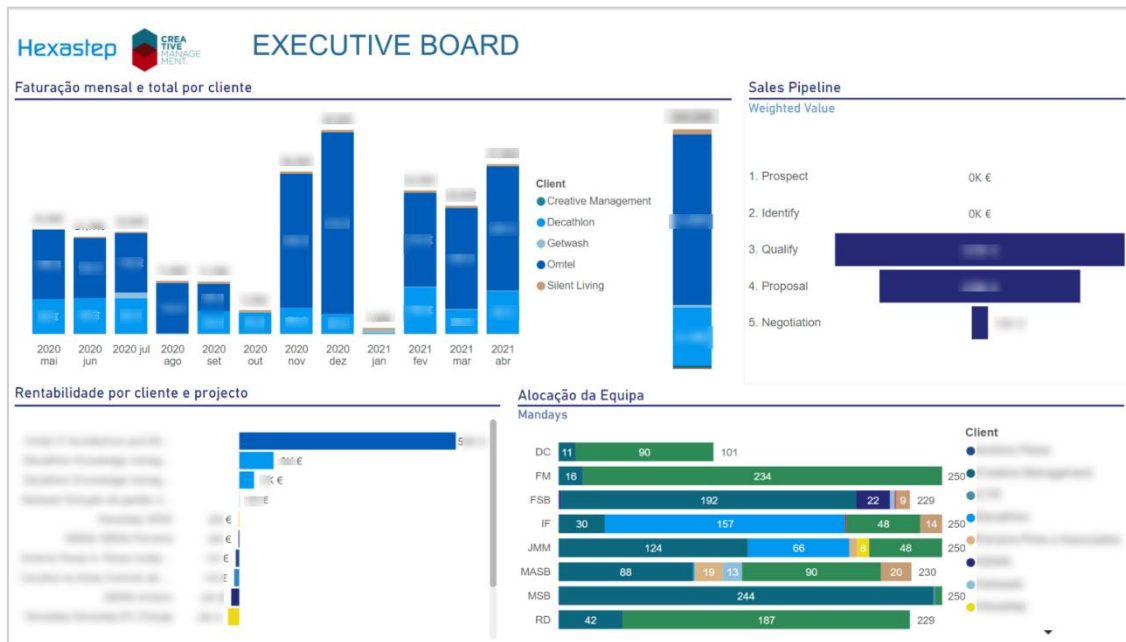


Figure 5-Executive Board Dashboard's main page (Source: Author)

The figure above shows the “home page” of the Executive Board’s Dashboard. This page is to provide insight on the state of the art of the business by displaying the main KPIs: Turnover, Profitability, Potential Sales, and Time Allocation. This allows the executive team to have an idea of the company’s “health condition” at a glance.

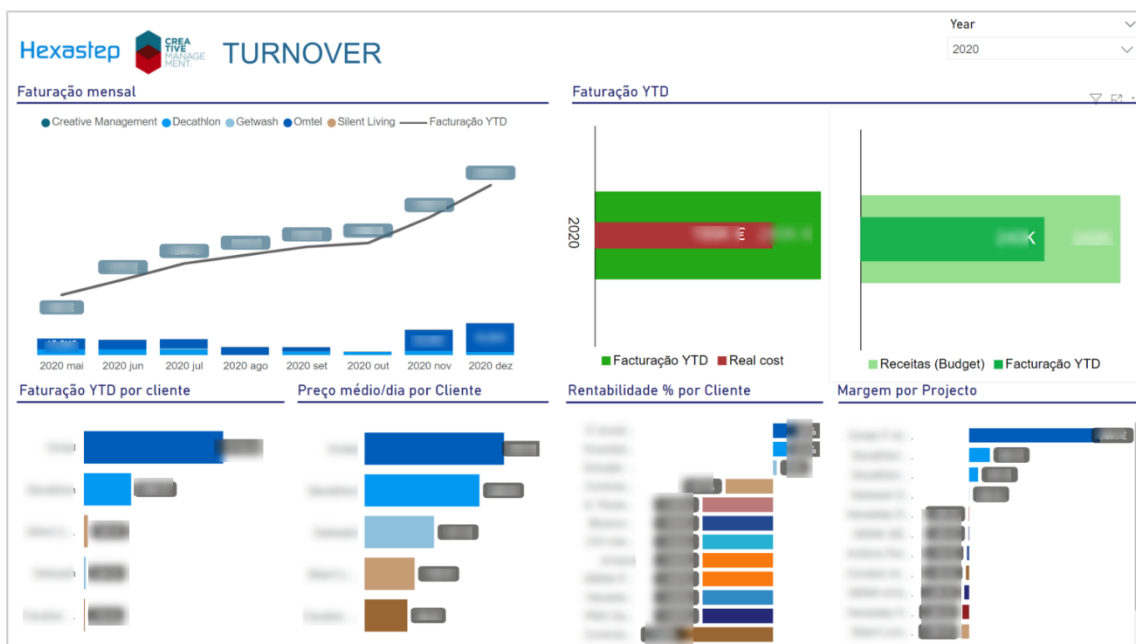


Figure 6- Executive Board Dashboard's Turnover page (Source: Author)

The second page is focused on turnover. It firstly displays the turnover by month, distinguishing it between clients. Then, there are two charts comparing the YTD Turnover with total costs and budgeted turnover, respectively. In the bottom line of charts, the first separates YTD Turnover between clients, then we have a chart depicting the average price by day, by client. At the bottom right, 2 charts display the profitability by project and by client, respectively.

By showing the main KPIs of sales, billing, and profitability, this page informs partners about the effectiveness of their billing process and helps them decide where to invest their efforts and resources, depending on the profitability.

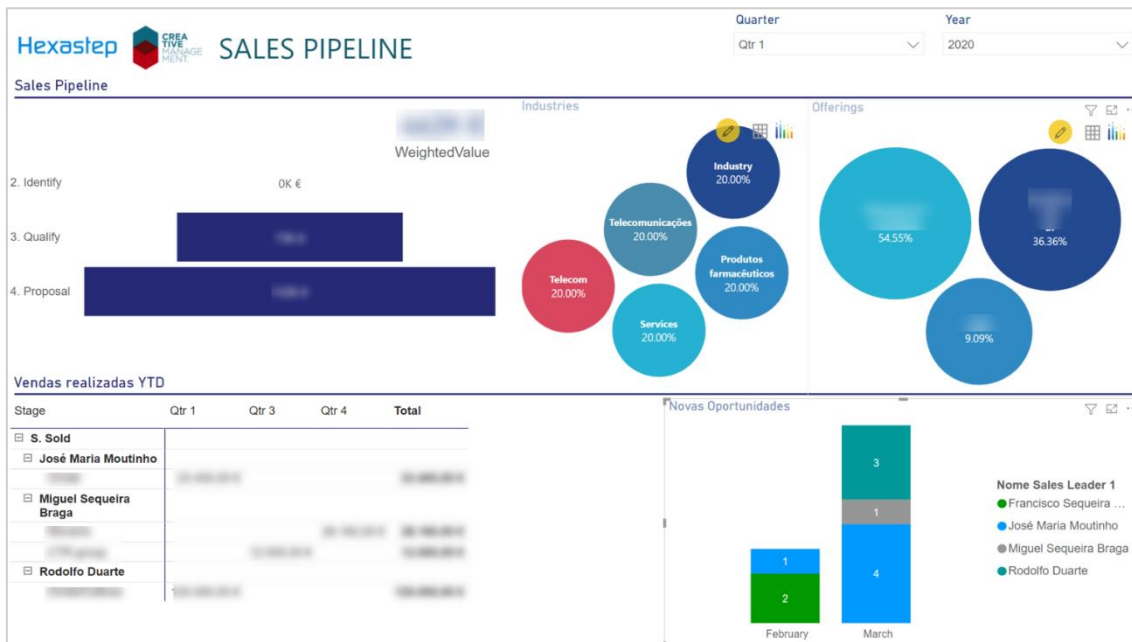


Figure 7- Executive Board Dashboard's Sales Pipeline page (Source: Author)

The third page is focused on the Sales Pipeline, which is one of the main drivers of the business. This page enlightens about the results of the business development endeavours in contrast with the defined goals. With this, partners can better decide the time and effort allocation for the consequent month.

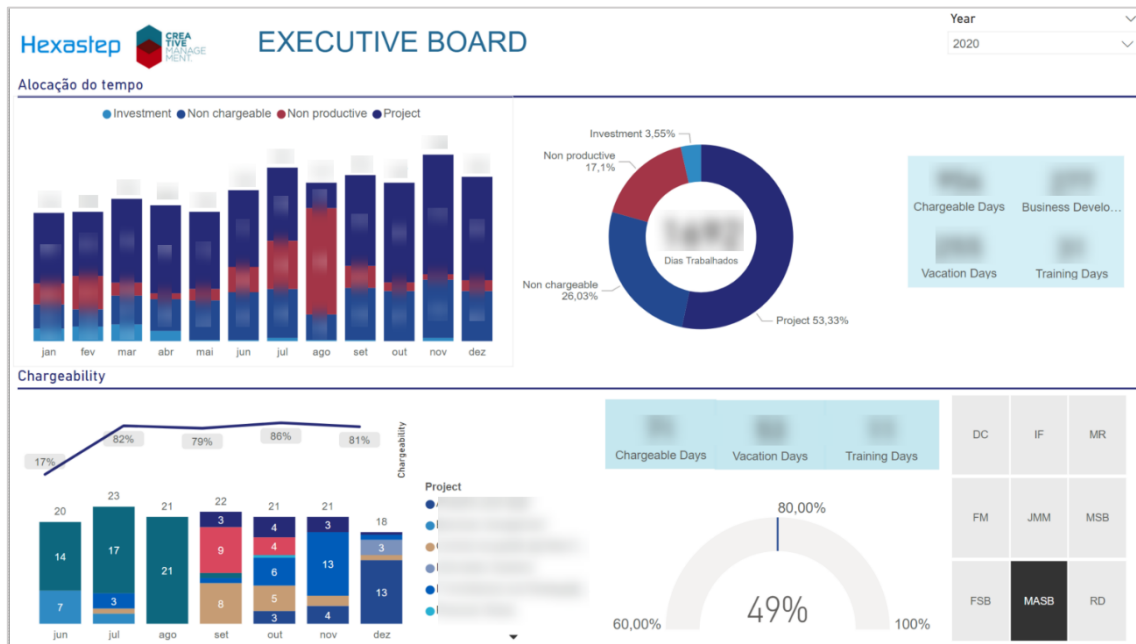


Figure 8- Executive Board Dashboard's Team page (Source: Author)

The last page of the Executive Board's Dashboard gives an impression of the time allocation of the company's workers as a whole but also displays detailed information by worker.

On the top left, we have a bar chart indicating the allocation of days for the different types of projects (regarding chargeability), distributed by month. To the right, the same information is summarized in a Pie chart with four cards highlighting the days used in Chargeable projects, Business Development, Vacation, or training.

At the bottom, the same bar chart is replicated but filtered to each worker, depending on the selection. On top of it, figures the chargeability rate by month. Also, regarding the chargeability, there is a gauge chart in the bottom right where the goal chargeability for each worker is depicted with a blue line.

By viewing this data, partners can understand how their employees' time is being used, which is especially difficult in the current post-pandemic times where most people are working from home. Knowing this, partners have the tools to ensure an optimal and balanced allocation of time in terms of workload, training, and vacations.

6.3.1.2 Project Management Dashboard

This report will be used by Project Managers and viewed by partners. At Creative Management, partners sometimes take project management roles.

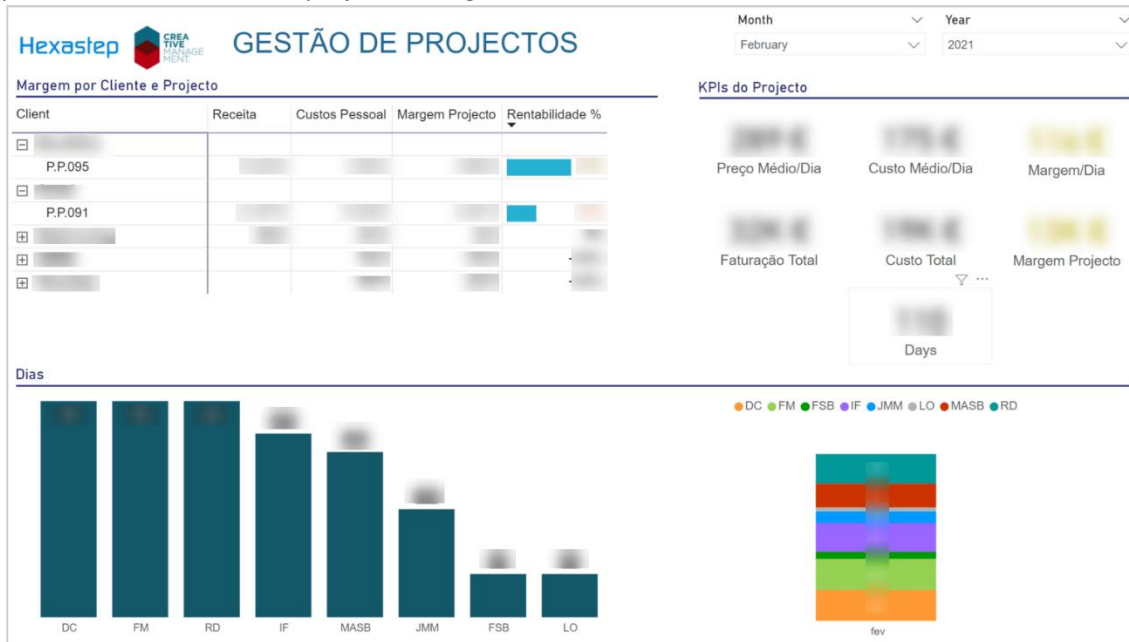


Figure 9- Project Management Dashboard's Main page (Source: Author)

This first page informs the project manager about the projects' profitability and resource allocation.

At the top left, we have a table that shows the return rate of each client, allowing the PMs to do drill-down to project level. The cards to its right emphasize the main project KPIs. At the bottom line, the resource allocation is displayed in two different charts, distinguishing workers according to the colour code.

By grasping this data, the PMs will have a financial vision of the project's execution at any time, enabling a constant follow-up, which necessarily generates a more efficient resource allocation.

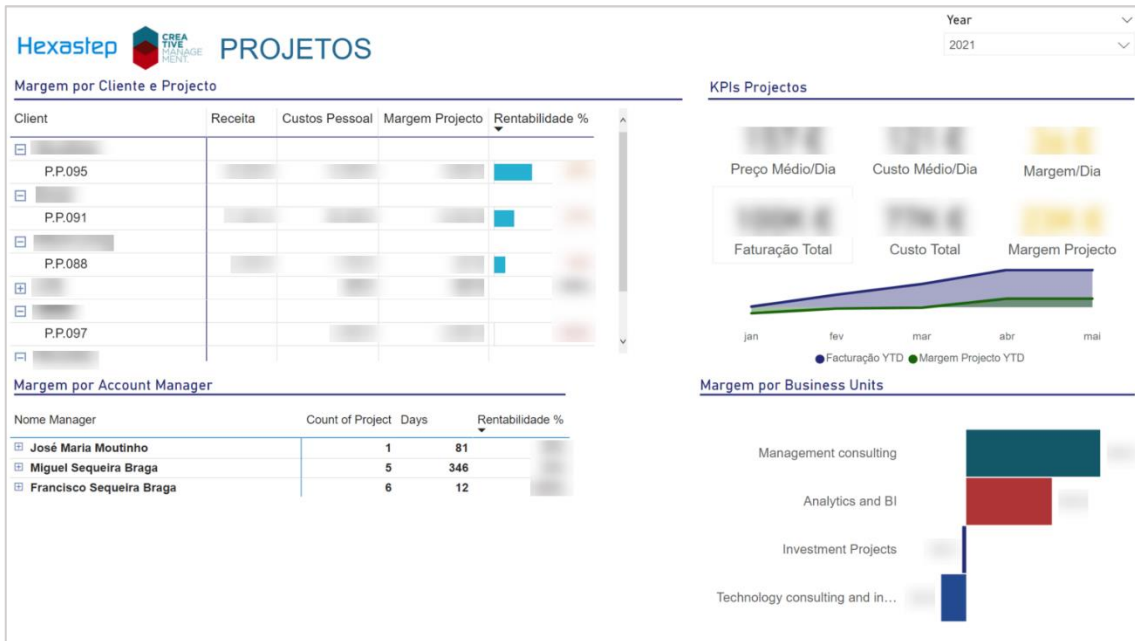


Figure 10-Project Management Dashboard's Profitability page (Source: Author)

The second page of this dashboard is very similar to the first with the addition of a business unit perspective, at the bottom right, as well as a view of profitability by project manager. This page will inform project managers and the board about the performance of projects and their respective leadership.

6.3.2 Good Practices Manual

As mentioned above, the good practices manual is an auxiliary tool to assist the navigation of the dashboard also serving as a knowledge base for future or similar developments.

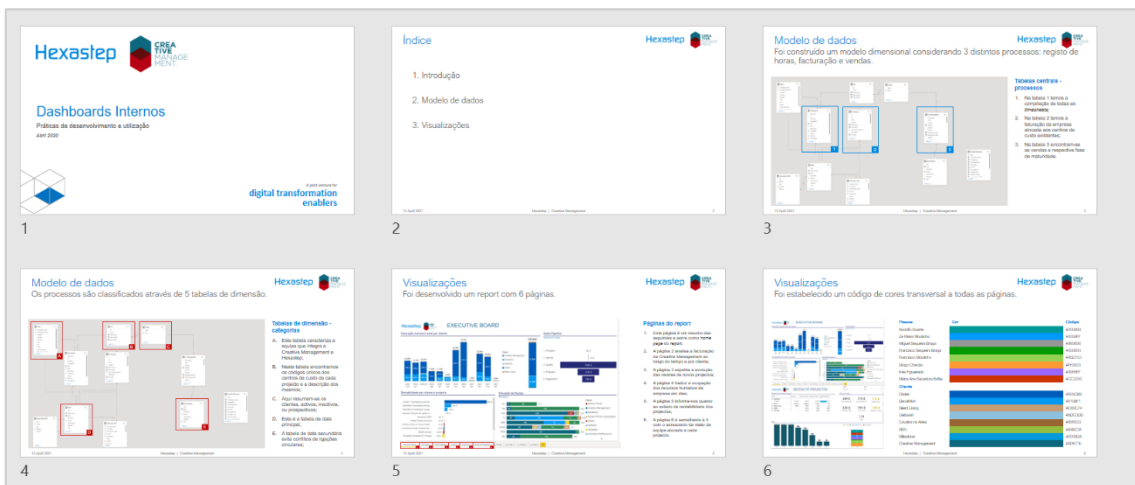


Figure 11-Good Practices Manual Overview (Source: Author)

The manual was developed following the company's design guidelines and includes the characterization of the data model (functional features) as well as the visualizations (visual features) (Yigitbasioglu & Velcu, 2012).

Measure name	Equation	Filter	Format
Chargeability	$\frac{\text{Chargeable days}}{\text{Worked days}}$		Percentage
Total Cost	$\text{Worked days} \times \text{Consultant's day rat}$		Currency EUR
Average cost/day	$\frac{\sum \text{Real Cost}}{\sum \text{Worked days}}$		Currency EUR
Average price/day	$\frac{\sum \text{Turnover}}{\sum \text{Worked days}}$		Currency EUR
Days YTD	$\sum \text{Worked days}$	This year; until today	Decimal number
Total Turnover	$\sum \text{Turnover}$		Currency EUR
Turnover YTD	$\sum \text{Turnover}$	This year; until today	Currency EUR
Project's Margin	$\sum \text{Turnover} - \text{Real Cost}$		Currency EUR
Project's Margin YTD	$\sum \text{Turnover} - \text{Real Cost}$	This year; until today	Currency EUR
Margin/day	$\text{Avg. cost. day} - \text{Avg. price. day}$		Currency EUR
Profitability	$\frac{\text{Project's Margin}}{\text{Total Turnover}}$		Percentage
Profitability/day/worker	$\frac{\text{Project's Margin} \times \text{Chargeability}}{\text{Worked days}}$		Currency EUR

Table 9- Dashboard's Created Measures. (Source: Author)

Also included in the Good Practices Manual is this table which names and deconstructs each of the measures created for the dashboards.

7 CONCLUSION

What began as a broad goal project progressively transformed into a concrete digital tool. The implementation of a Digital Methodology involved several scopes, namely the transformation of the operational processes, changing the way performance is managed. This was done by digitalizing time and performance management, enabling workers, particularly managing partners, to make more grounded decisions about resource allocation, salesforce, pricing, etc. (Westerman et al., 2014)

For Creative Management, this allows the executive team to have access to permanently updated information based on which they can monitor the sales pipeline, billing, profitability, and resource allocation, as the Dashboards are based on a live connection to the main data source, and make strategic and operational decisions in accordance.

Besides the value that the project generates internally, it has also added an important knowledge asset to the company, which can be replicated in the firm's external BI & Analytics service offering, being this a key area in which the company is strategically focused.

For the academy, this report demonstrates the applicability of a Westerman's Digital Transformation Roadmap, in two main elements, revealing that the company being very familiar with the IT field, with most of the workers considered digital natives, was of great help for the rapid adoption of change. In fact, Digital Transformation cannot be simply about implementing tools as it needs the mindset availability of the workforce, which in this case was a factor of success.

Overall, this internship report, and its translation as an internal project at Creative Management, was a great opportunity to apply the knowledge obtained in the Masters' program in a real-life scenario. Naturally, the real world reveals much more complex than what we get from seized frameworks and theories. However, these turn up essential to avoid losing focus and consistency in between the unexpected circumstances of a project life cycle.

Furthermore, the development of this project awarded me with a deep understanding of the consulting industry and its dynamics, helping me to comprehend the context of my work. And yet, it also developed my soft skills when interacting with diverse people with different roles while trying to implement change.

To end, it was of immense value to exchange ideas and doubts, especially in the interviews' stage, with such wise professionals, who were capable of dedicating time to share their insights and explain important concepts of the industry. To them, I address my sincere thanks.

8 LIMITATIONS AND RECOMMENDATIONS FOR FUTURE WORKS

To balance between internal and external projects is quite a challenge. Naturally, because internal projects are not chargeable, they tend to pass to second place, particularly when external projects are in critical phases. This explains most why most of the initially targeted dates were delayed.

Another constraint is related to the company's small size (8 workers), which made the collection of insights somewhat inconsistent, thus making it difficult to design the dashboard pleasing the interests of the majority. For future studies, I recommend either the introduction of the project in a medium-sized company with surveys instead of interviews or adding to the current methodology the second round of interviews, using the results from the first to build the second.

Looking at the long term, projects like the one presented have enormous potential and benefit for the industry. Particularly for consultancies, there is still a long way to go in what concerns Digital Transformation. As we have learned from Westerman's methodology (Westerman et al., 2014) the scope of DT is wide and includes several key areas. In this project, we covered some of them, yet, these unexplored areas, namely "Business Model" and "Customer Experience", can be interesting grounds for the application of this digital transformation methodology, raising the company's level of digitalization even further.

Assuming the application of such a project in a larger consultancy, it will be essential to have the support of a digital culture (Hemerling et al., 2018) which necessarily needs to be enforced and activated by leaders and most important stakeholders.

Often, in digital transformation projects, one feels like going against the tide and even gets frustrated with the reception of those involved. However, at the end of the day, one understands that the problem is not the new technology, the project's team, or each person involved. The problem is old and so is the solution: people are afraid of change; they are even lazy about it. That is why change management needs to be warily thought and planned and supported.

On a brighter side, with the recent Covid 19 pandemic, we witnessed an unprecedented velocity of change adoption. According to a McKinsey's study, in respect to "Increasing use of advanced technologies in operations" the time required to implement changes was previously expected for 672 days and took, on average, 26.5 days. Regarding "Increasing use of advanced technologies in business decision-making", the expected 635 days turned out to be 25.4 days.⁵ (LaBerge et al., 2020)

"Change need not to happen through slow, deliberate planning processes – with sufficient urgency, it can be sufficient accelerated." (Lesser & Reeves, 2021)

This new reality is a good omen for future works on similar projects as it raises the hope for technological advance and openness to change, making future works more welcomed and of faster adoption.

⁵ More information on annex 10.2

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10 ANNEXES

10.1 INTERVIEW SCRIPT

INTERVIEW FOR DASHBOARD DESIGN

GOAL

1. Who will use the *dashboard*? Is it for a single group, or people in different departments?
2. How does having a *management dashboard* help you in your role?
3. Think about the last time you set goals. Imagine if you are asked to evaluate your progress today, how would you?
4. What decisions do you make often require more information?
5. What missed mistakes or opportunities can be avoided if you have data?

FAMILIARITY WITH DATA ANALYSIS

1. At present, in your business, what data and tools do you use?
2. What metrics do you currently use? Why are they important?

BUSINESS NEEDS

1. What will the dashboard be used for? What questions are you going to use it to answer?
 - a. What questions do you want to see answered in an Executive Board Dashboard?
 - b. What questions do you want to see answered in a Project Management Dashboard?
 - c. What questions do you want to see answered in an individual control dashboard?
2. What specific information should be displayed in the dashboard? Lists all data items that should be included in the dashboard. Also indicate the level of summary/detail at which each item should be expressed in the dashboard.

RESULTS (DASHBOARD-FED DECISIONS AND ACTIONS)

1. What measures will be taken because of these responses?
2. What data would lead you to act immediately? / What are the thresholds that require you to act?
3. For each of these data, what would be an exception? Are there specific thresholds that represent exceptionally high or low values, or will users simply be looking for values that represent statistical outliers (meaning they are abnormally high or low)?

TIMELINESS

1. How should data be updated? Real-time or periodic updates?
2. How often will you review this *dashboard*?

INTERACTIVITY AND DESIGN

1. What logical groupings could be used to organize these data items in the *dashboard*?

- In which of these groups does each data item belong?
2. What are the useful views that will allow dashboard users to see the data listed above in context?
 3. Do you plan to share this information with others? In what way?
 4. Once you saw this *dashboard*, what would you do next?

10.2 COVID 19 IMPACT ON CHANGE MANAGEMENT

Change	Expected	Actual
	days	days
Increase in remote working and/or collaboration	454	10,5
Changing customer needs/expectations	511	21,3
Increasing customer demand for online purchasing/services	585	21,9
Increasing migration of assets to the cloud	547	23,2
Increased spending on data security	449	23,6
Changing ownership of last-mile delivery	573	24,4
Increasing use of advanced technologies in business decision making	635	25,4
Increasing use of advanced technologies in operations	672	26,5
Increase in the nearshoring and/or insourcing practices	547	26,6
Build redundancies into supply chain	537	29,6

Tabela 10-1- "10.2 Time required to respond to or implement changes, expected vs. Actual (number of days)".
Source: (LaBerge et al., 2020)