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Business Intelligence in Non-Profit Organisations

*Role of Business Intelligence in Portuguese Non-Profit
Organizations to Support Decision-Making and Strategic
Definition*

Diogo Miguel Pereira Carriço

Dissertation proposal report presented as partial
requirement for obtaining the Master's degree in
Information Management with a specialization in Knowledge
Management and Business Intelligence

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Instituto Superior de Estatística e Gestão de Informação
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BUSINESS INTELLIGENCE IN NON-PROFIT ORGANISATIONS

***ROLE OF BUSINESS INTELLIGENCE IN PORTUGUESE NON-PROFIT
ORGANISATIONS TO SUPPORT DECISION-MAKING AND STRATEGIC
DEFINITION***

by

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“The harder I push, the more I find within myself.” – Ayrton Senna

ABSTRACT

New ways of competing, innovating, and creating value for stakeholders have emerged in the past few years. Business Intelligence tools and systems proved to be a factor of differentiation when organisations aim to gain and sustain a competitive advantage. For-profit institutions are continually improving their Business Intelligence systems to create more complex analytical analyses and unveil hidden patterns. In parallel, Non-Profit organisations felt the need to measure the impact of their strategic social goals, improve their decision-making process and especially define long-term strategies based on reliable and consistent information. Having that in mind, Business Intelligence systems seemed the most reliable and dominant solution.

Therefore, this study aims to generate a deeper understanding and knowledge of how Business Intelligence Systems impact Portuguese NPOs' decision-making process and strategic definition. Adding to this, the study will also identify the critical success factors to deploy Business Intelligence Systems within these organisations. In order to reach these objectives, a qualitative study was conducted by interviewing 9 participants from strategic and decision-making positions within 8 Portuguese NPOs.

With this, it was possible to acknowledge that Business Intelligence Systems revealed to be crucial for NPOs to measure their social impact and to design actions in a short and long-term period that can serve as support for their strategic goals. Besides this, these systems brought other benefits to NPOs as the opportunity of being more transparent, having standardised processes and be equipped with more tools for their fundraising efforts. Business Intelligence Systems as well empowered decision-makers and leaders with the ability to anticipate, transforming the decision-making process into a more proactive one.

KEYWORDS

Business Intelligence; Non-Profit Organisation; Decision-making; Strategic Intelligence

RESUMO

Novas formas de competição, inovação e de criação de valor para stakeholders têm vindo a emergir nos últimos anos. As ferramentas e sistemas de Business Intelligence provaram ser um fator de diferenciação quando as organizações procuram criar e manter a sua vantagem competitiva. Organizações com fins lucrativos usam constantemente os seus sistemas de Business Intelligence de forma a criar análises mais complexas e a revelar padrões que até agora eram desconhecidos. Em paralelo, organizações sem fins lucrativos começaram a sentir a necessidade e mensurar o impacto dos seus objetivos sociais estratégicos, melhorarem o seu processo de tomada de decisão e de especialmente definirem a sua estratégia de longo prazo com base em informação consistente e de confiança. Como tal, os sistemas de Business Intelligence parecem ser a solução mais fiável e dominante para estes objetivos.

Com base neste contexto, este estudo tem como objetivo criar um entendimento e conhecimento mais aprofundado de como estes sistemas impactam os processos de tomada de decisão e de definição estratégica nas organizações sem fins lucrativos portuguesas. De forma a atingir os objetivos pressupostos, foi realizado um estudo qualitativo que contou com 9 participantes de posições de relevância estratégica e de tomada de decisão de 8 organizações sem fins lucrativos portuguesas.

Com isto foi possível concluir que os sistemas de Business Intelligence revelaram ser cruciais para estas organizações mensurarem o seu impacto social e desenhar ações que pudessem num curto e longo prazo servir os objetivos sociais estratégicos. Além disso, estes sistemas trouxeram ainda benefícios permitindo assim que estas organizações se tornassem mais transparentes, conseguissem padronizar os seus processos e estarem equipadas com mais ferramentas para os seus esforços de angariação de fundos. Estes sistemas empoderaram ainda os líderes destas organizações com a capacidade de antecipação uma vez que o processo de tomada de decisão foi transformado num processo proactivo.

KEYWORDS

Business Intelligence; Non-Profit Organisation; Decision-making; Strategic Intelligence

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LIST OF ABBREVIATIONS AND ACRONYMS

- BI** Business Intelligence - technologies, applications, and systems used to collect, integrate, analyse, and present business information.
- BIS** Business Intelligence Systems - merging data gathering, data storage, and knowledge management with data analysis to evaluate and transform complex data into meaningful, actionable information
- EDA** Exploratory Data Analysis – approach used to analyse data sets to unveil their main characteristics and statistics. Visual methods are traditionally used in this phase.
- IS** Information Systems - a computer system or set of components for collecting, creating, storing, processing, and distributing information, typically including hardware and software, system users, and the data itself.
- NDA** Non-Disclosure Agreement - legal contracts that prohibit someone from sharing information deemed confidential.
- NPO** Non-Profit Organisation - organisations, commonly dedicated to a social goal or campaign for a shared perspective. These type of organisations does not aim for profit.
- KPI** Key Performance Indicator – is a measurable value with the purpose of demonstrating how effectively or not a business or organisation is being in achieving its objectives.
- OPI** Operational Performance Indicator - is a measurable value with the purpose of demonstrating how effectively or not a business or organisation is being in achieving its operational objectives in the short term.

1. INTRODUCTION

1.1 BACKGROUND

Business Intelligence (BI) is an umbrella term composed of technologies, processes, and tools to gather, store, and analyse data to improve decision-making (Turban et al., 2011). Alnoukari et al. (2012) consider that BI should be perceived as an imperative framework for this knowledge-based economy arena, once those tools help organisations manage, develop, and communicate their knowledge and information.

In the past years, it is possible to see an increasing interest in the use and implementation of BI tools, not only in companies but also in the academia (Nykänen et al., 2016). For-profit organisations, for a long time, have been exploring, using, and reaping all different kinds of benefits from investing in developing their BI tools (Oakley et al., 2015). This is justified because BI can provide more evolved ways of data visualisation, pattern recognition and business process improvement to achieve better performance and strategic goals (Watson & Wixom, 2007). However, for non-profit organisations (NPO), the situation might be different.

NPOs throughout time felt the need to become more transparent on what regarded their financial management, daily operations and to measure the impact of their social goals. BI systems were revealed to be an essential tool to support those organisations in this process (Oakley et al., 2015). The information collected and retrieved by BI tools is unveiled to be an essential asset for the decision-making process. With this, every member of a company, institution or organisation would have access to all information and would be able to make more conscious or data-driven decisions (Alnoukari & Hanano, 2017)

1.2 MOTIVATION

Since the early appearance of this kind of technology, for-profit organisations took a step forward and started exploring every single advantage or benefit that could be taken from this approach (Alnoukari & Hanano, 2017). The question remains in understanding how non-profit organisations (NPO) approached and incorporated this technology evolution. With this, it is crucial to have in mind that, compared to for-profit, non-profit organisations have different strategic purposes and goals and face different technology implementation barriers (Oakley et al., 2015)

Saying that, this study pretends to develop and deepen knowledge in Business Intelligence for NPOs. Generate a better understanding of why NPOs adopt these systems and how they are used for decision-making and strategic definition. Moreover, understand what benefits this can bring to NPOs and how does support the achievement of their social goals.

1.3 OBJECTIVES

BI Systems have proven to be a strategic asset for decision-making in companies, once anyone within the institution can have access to information and make data-driven decisions. (Alnoukari & Hanano, 2017). On top of this, Alnoukari & Hanano (2017) have also mentioned “Business intelligence as a strategic framework is becoming increasingly important in strategic management and supporting business strategies”, proving this way the contribution BI Systems can bring to companies’ strategy. Plus, BI Systems proved to bring benefits to companies for instance the creation of competitive advantage (Rouhani et al., 2015), or even a bigger focus on planning growth than addressing emergencies. (Kirange, 2016). Similar to this, NPOs want to understand their business context and the environment they are acting (Oakley et al., 2015). With NPOs’ priorities focused on becoming more transparent and measuring their social impact, BI Systems seem to be an essential tool to do it (Oakley et al., 2015).

Having this context in mind and feeling that there is a gap in research on how BI Systems can benefit and/or impact NPOs, this study identified the following research question: How Business Intelligence Systems implementation can support NPOs’ decision-making and long-term planning? Considering this, four specific objectives were defined to help generate a better and deeper understanding of this matter: (1) What are the critical success factors in implementing BI on NPOs, (2) What benefits can BI systems bring to NPOs, (3) How BI is impacting decision-making on NPOs, (4) How BI is impacting the strategic definition of NPOs.

1.4 METHODOLOGY

Regarding the Research Methodology, a literature review has been made to ensure that the chosen methods, approach, and theory have solid foundations and are the right path to follow. Once the approach and methods are validated a representative sample of NPOs will be chosen to contact.

Inside each NPO data collection will be made mostly through an interview with a member of the top management team. The goal was to perceive how top management teams are using these tools daily, especially for decision-making, to support their strategic achievement of social goals and what critical factors should be considered when deploying Business Intelligence Systems.

1.5 RESULTS AND CONTRIBUTIONS

As contributions, this research will (1) Deeper the knowledge in what are the CSFs for NPOs adopting BI solutions; (2) Generate more understanding of how these tools are used for strategic definition, and decision-making in those organisations; (3) Perceive how BI tools support social goals achievement.

1.6 MASTER THESIS STRUCTURE

This study will be structured in the following sections (1) Section 2 - Presents a theoretical background and literature review about Business Intelligence and decision-making; (2) Section 3 – Shows the methodology and data description; (3) Section 4 – Incorporates the data analysis and its results; (4) Section 5 - Discussion and limitations.

2. LITERATURE REVIEW

With the aim of presenting the problem identified behind this study, there was a need to have a literature review and theoretical background to get a deeper understanding of what has been developed so far, main findings, limitations and realise what concepts can be explored when studying Business Intelligence in NPOs.

2.1 BUSINESS INTELLIGENCE

2.1.1 BUSINESS INTELLIGENCE DEFINITION

Different definitions of BI emerged throughout time. This concept was introduced in 1989 by Dresner as an umbrella term that “describes a set of concepts and methods to improve business decision making by using fact-based support systems” (Power, 2007). More authors followed this classical definition and defined business intelligence as a term that includes techniques, tools, and processes that generate a more straightforward and effective business decision-making process (Sabanovic & Sjøilen, 2012). Pirttimäki (2007) tried to complement the definition of BI by mentioning “However, BI can be illustrated as a support tool of extensive, relevant and proactive management and decision-making in companies in which shaping the future is considered more important than reacting to it”.

In more recent years, previous definitions were synthesised. They gave place to news ones once BI started to be understood as a technological and analytic process that extracts and transforms data prevenient from different sources in order to convert it to knowledge and information, using these last two to identify patterns, opportunities, and market information (Wieder & Ossimitz, 2015).

2.1.2 BUSINESS INTELLIGENCE SYSTEMS

Concisely, it is possible to consider that BI systems were designed with the goal of providing the right information, to the right people at the right moment to support institutions in their performance (Richards et.al., 2017).

BI systems include a diverse set of components with the purpose of supporting decision-making. These components are usually a data warehouse to gather and collect business data, a data mining process and an OLAP system for data analytics (Retnowardhani et al., 2019).

According to Gauzelin & Bentz (2017) “A business enterprise can use one or more types of business intelligence systems (BIS) so as to boost its decision-making processes. Four major business intelligence systems are used in a business: reporting, analysis, monitoring, and prediction tools.”

Each type has its own purpose, as mentioned by Gauzelin & Bentz (2017) “The reporting intelligence business systems focus on the development of business documents that contain valuable information on what has happened. These provide the businesses with information about the company's activities within a given time span. The intelligence business analysis systems provide information on why an event happened. ”Business analysis also plays a key role in supporting business performance because those systems gather and analyse data to make it easier for decision-makers or leaders to interpret it (Gauzelin & Bentz, 2017).

Monitoring is the third type of BI and allows top management, decision-makers, or businesses in general to monitor, measure and evaluate their performance in real-time and includes tools such as dashboards, key performance indicators and performance management (Sabanovic & Sjøilen, 2012). As mentioned by Eckerson (2010) “the dashboard tools provide a central location whereby actionable and useful metrics are contained and represented graphically, making it easy for users. The key performance indicators (KPIs), on the other hand, measure the performance of a given specific project within a company, for example, return on investment. The business performance management tools refer to the system that ensures that the organisation meets the set performance goals. It is therefore designed to deliver results on whether the performance goals are met or not.” Finally, prediction tools support organisations that strive to predict the future and unveil patterns, behaviours or trends that may affect their operations and business (Gauzelin & Bentz,2017).

On the other hand, authors, such as Kirange (2016) present different components of BI. Those are divided into (1) Data transformation tools explained as “referred as ETL (Extract-Transform-Load) are used for data extraction from various sources and transmission of these data into specialised databases. Advanced ETL tools also handle data quality control mechanisms and metadata management. Transformed data are loaded to the data warehouse or to the data mart for substantial analysis.” (2) Data Staging area, presented as “operational data stores are used for temporary data storage during transformation.” (3) Business

Performance Management, understood as a “Dashboard provides an interface that aids managers and executives in getting data immediately from various departments in a similar format and makes it more accessible. An enterprise dashboard provides a condensed visualisation of a company’s performance.” (4) Key Performance Indicators explained as “The major part of creating a successful action plan for an organisation is to identify the area in which a business needs to improve upon and then setting advantageous Key Performance Indicators.”

2.2 BUSINESS INTELLIGENCE VS BUSINESS ANALYTICS

In more recent times new discussions arise that intend to distinguish Business Intelligence (BI) from the term Business Analytics (BA). Although this topic already generated some discussion and controversy, a distinction was commonly accepted, affirming that BI relies on measuring an institution's past performance and getting guidance. At the same time, BA is intended to generate new understandings, perspectives, and insights (MacKrell & Boogaard, 2012).

Different perspectives are still presented and claim that BA stands in the middle of the data warehouse environment and performance reporting (Turban et al., 2011). On the other hand, Davenport (2010) claims “BA to be the use of data analysis for performance reporting”.

For this research, the goal is not to distinguish between these two terms but, yes, to recognise the value obtained from BA through BI tools and systems.

2.3 BUSINESS INTELLIGENCE ON COMPANIES

With the emergence of a knowledge-based economy and new forms of competition focused on the use of analytics, BI tools and systems revealed to be a reliable, functional and a dominant platform for the purpose. Through the intense exploration and use of complex data analysis, the idea of creating or sustaining a competitive advantage made companies adapt their processes, technologies, and the way they operate on a daily basis. All that to become data-driven (Russel et al., 2010). As mentioned by Qushem et al. (2017) “In recent years, market enthusiasm towards business intelligence is overwhelming”.

To sustain this idea, in 2012, the money invested in BI systems raised 16% hitting a value of \$12.9 billion (Gartner, 2013). A survey was run on 251 IT leaders showed that 56 percent of

those organisations are planning to increase their BI usage (Qussem et al., 2017). Sustained on the affirmations presented above it is possible to see the continuous growth and adoption of BI systems. Many institutions feel motivated to adopt and bring in this kind of technology because it enables organisations to make the most accurate and right decisions to consequently take the right actions at the right moment (Gauzelin & Bentz, 2017).

At first glance other factors can be identified as a motivation, as mentioned by Gauzelin & Bentz (2017), "Business intelligence emphasises abstract thinking and innovative ways of solving problems in a timely manner because appropriate actions are taken so as to advance business goals and overcome any looming business disruption event. This is only possible when the right business systems are implemented."

2.4 CRITICAL SUCCESS FACTORS TO IMPLEMENT BUSINESS INTELLIGENCE

However, being keen to implement BI Systems is not a synonym for success, for that it is necessary to identify and follow the critical success factors for BI implementation (Kirange, 2016).

Kirange (2016) identified several CSFs as (1) Dedicated management support and sponsorship, which can be described as "Dedicated support and sponsorship from business executives make it easier to secure the necessary operating resources"; (2) Clear vision and well-established business case, assumed that "The business case must be associated to the strategic vision, business objectives and needs."; (3) BI Portfolio Management consists of "Organisations that have undertaken a complete review of the major BI opportunities for sales, marketing, manufacturing, distribution, customer service, and data quality to manage BI as a portfolio of investments."; (4) Continuous Process Improvement, understood as "If business users do not change the business processes to leverage BI, then the investment in BI will not found the necessary impact in profit and productivity of the organisation"; (5) Cross-Organizational Collaboration presented as "To succeed at BI, an enterprise must nurture a cross-organisational collaborative culture in which everyone could work toward the single goal"; (6) Balanced team composition intended as "The BI team should be cross-functional and composed of both technical and business personnel."; (7) Business-driven Development Approach consists of "Adequate project scoping enables the project team to focus on critical milestones and significant issues while defending them from becoming trapped in

unnecessary actions.”; (8) “User-participation in change management described as Improved user participation in the process of change can lead to better communication of their needs and requirements”; (9) Technology Factors, intended as “Technical readiness of an organisation such as network infrastructure, adequate technology for the implementation of data warehouse, various ETL applications and analytical tools, is also greatly influence the success or failure of the application of business intelligence in organisations.”; (10) Data quality and integrity consist in “Maintaining the quality of data, mainly in the source systems, is crucial for successful BI system implementation. Most analysts agree that the main reason of erroneous reporting is the operational data which is used for analysis as the data is filled with errors, duplications, and inconsistencies. Data quality management plays an important role in BI success. BI processes have to incorporate steps for dealing with data quality issues originating from various source systems.”

Yeoh & Popovič (2016) also identified CSFs and studied the criteria to which of them, the CSFs presented were (1) Committed Management Support and Sponsorship; (2) A Clear Vision and a Well-Established Business Case; (3) Business-Centric Championship and a Balanced Team Composition; (4) Business-Driven and Iterative Development Approach; (5) User-Oriented Change Management; (6) Business-Driven, Scalable, and Flexible Technical Framework; (7) Sustainable Data Quality and Integrity.

Vilamarín & Diaz (2017) mentioned thirteen key CSFs to ensure a successful BI system implementation. These are (1) Directives and top management success factors; (2) Business linking; (3) Project Leader or “Champion” set-up; (4) Business strategy; (5) Change Management; (6) BI Project deployment; (7) People and Human talent teams; (8) Learning and Skills; (9) Information and technology; (10) Professional networks; (11) Resources – it is divided into Economic, Intellectual and Technological; (12) Metrics key; (13) Environment.

Having this in mind, it is possible to conclude that when implementing BI systems, an organisation should pay attention to all those factors and design a plan to reach the proposed goal successfully. All organisations need to be on the same page when taking this kind of initiative; otherwise, they can negatively impact the strategic alignment.

2.5 BUSINESS INTELLIGENCE BENEFITS

Once BI is successfully implemented, organisations can start harvesting the results from this investment. BI systems give companies important technological tools that decision-makers, top management, or companies in general, make decisions based on concrete and reliable data or knowledge (Gauzelin & Bentz, 2017).

BI does not only leverage the decision-making process by turning it more efficient and generating better decisions but also creates an impact on the entire organisation. It is possible to have a return on investment by gaining new customers, suppliers, recruiting the best talent from the market and enhancing employees' satisfaction. Adding to this, BI Systems give complete visibility and notion of their activities, allowing decision-makers to have a great understanding of the organisation and environment in which operates (Sabanovic & Sjøilen, 2012). Puklavec et al. (2018) mentioned that "BIS evaluation as assessing the potential benefits of BIS to improve a firm's performance in value chain activities such as cost reduction and market expansion".

Watson & Wixom (2007) presented some of the main benefits an organisation can get from BI implementation, namely (1) Cost savings on obtaining data due to data consolidation; (2) Time savings in delivering/exploiting data; (3) Higher quality information is made available for analysis; (4) Better support for decision making; (5) Business Process reengineering; (6) Support for the achievement of strategic business goals.

Competitive advantage can also be created through BI Systems as mentioned by Kirange (2016) "With the implementation of a suitable BI System, SMEs would spend less time addressing emergencies and more time planning growth. With the support of a good business environment, the right expertise and the right level of technology SMEs would become more competitive." Rouhani et al. (2015) consider the effective decision, competitive advantage, and stakeholders' satisfaction, as benefits prevalent from BI systems implementation.

Based on all statements presented before, it is possible to conclude that BI systems can support organisations through direct and indirect benefits. Moreover, institutions can build a competitive advantage based on processes, tools and behaviours generated through BI systems.

2.6 BUSINESS INTELLIGENCE ON DECISION-MAKING

BI has an important impact on decision-making as mentioned by Wieder & Ossimitz (2015), they said: “The results of PLS and mediation analysis confirm that BI management quality has positive direct and/or indirect effects on data quality, information quality, and the scope of BI solutions. We also find that these effects – in combination – translate into a positive indirect effect on the quality of managerial decision-making. In particular, the results reveal a significant path from BI management quality to decision-making quality via (a) data quality and (b) information quality, which substantiates the calls for proper BI management (including data quality management initiatives) expressed in the practitioner literature.”

It is possible to conclude that due to the correlation between levels of business intelligence, which are (1) Strategic level of business intelligence; (2) Technical level of Business Intelligence; (3) Operation level of business intelligence, all have an important and significant role in the decision-making effectiveness process for managers (Zamani et al., 2017). Decision-making is a critical activity with a profound human, financial, and organisational impact on any organisation. Thus, managers need to employ some specific managerial support systems to help them in the decision-making path with clear beneficial outcomes for the enterprise (Oliveira et al., 2012).

Adding to this, BI Systems revealed to be a crucial asset for the decision-making process as every member of the organisation would have access to all the needed information and would be capable of making more conscious or data-driven decisions (Alnoukari & Hanano, 2017)

2.7 BUSINESS INTELLIGENCE ON STRATEGIC-DEFINITION

Lim & Teoh (2020) identified three strategic impacts that BI utilisation can bring to companies, (1) Enhancing Economic Performance presented as “Therefore, business intelligence utilisation has a strategic impact on enhancing the economic performance of the public listed companies. These companies can improve cost efficiency while garnering more revenue, and, eventually, attain the overall financial performance of the organisation.”; (2) Strengthening Environmental Performance justified as “Business intelligence utilisation could strengthen the environmental performance among public listed companies in Malaysia. Specifically, companies can observe the strategic impact in terms of diminishing the corporate impact on the natural environment, global warming, and responding strategically to the ongoing climate

change.”; (3) Reinforcing Social Performance presented as “Business intelligence use can help public listed companies to uncover insights about their employees’ morale and other related concerns, thereby contributing to human capital development. In fact, business intelligence usage has a significant impact on knowledge sharing and innovation. As employees of all levels utilise business intelligence in their daily tasks, everyone could share a united ambition with the company’s entire business network.”

Alnoukari & Hanano (2017) mentioned “Business intelligence as a strategic framework is becoming increasingly important in strategic management and supporting business strategies. It can be considered one of the most important technologies that allow managers and end-users to convert masses of non-transparent data into useful information that provides companies with huge capabilities. These technologies help coordinate projects, and schedules, and provide the roadmap to align with the corporate strategy. Business intelligence as an analytical tool changes internal and external data into appropriate knowledge that supports the decision-making process. Business intelligence combines operational data with the analytical tools to provide corporate planners and managers with competitive information.” More than this, BI systems are revealed to be crucial to ensure a proper and successful strategy creation, improvement, and implementation (Tyson, 1986). Waters (1996) also adds to this by stating that a strategy without BI on its design will be resumed to guessing.

Having in mind what those authors presented, it is possible to affirm that BI has a relevant impact on what regards strategic planning and definition. With this, BI Systems are demonstrated to bring many benefits to organisations that implemented them, turning decision-making into a more efficient process, and providing support for strategic planning and definition.

2.8 BUSINESS INTELLIGENCE IN NPOS

Since the early appearance of this kind of technology, for-profit organisations took a step forward and started exploring every single advantage or benefit that could be taken from this approach (Alnoukari & Hanano, 2017).

Oakley, et al. (2015) mentioned “The social sector is an important part of the American economy, where there are over 2.3 million non-profit organisations that employ 13.7 million people. Non-profit organisations contribute \$804.8 billion to the gross domestic product

(GDP), totalling approximately 5.5% and generate \$1.51 trillion in revenue, \$1.45 trillion in expenses, and \$2.71 trillion in total assets”.

NPOs started to prioritise their need to be transparent in daily operations, funds allocation and measure the impact of programs implemented to reduce social problems, for that the use and implementation of information systems (IS), especially BI revealed to be an important tool to support their strategic social goals (Oakley et al., 2015).

In order to tackle the complex social goals NPOs targeted to impact, innovative applications of IS started to be explored. Oakley et al. (2015) mentioned “Non-profit organisations aim to engage in strategic decisions that can support further attainment of organisational social goals. However, making the connection between an organisation’s technological investments and usage with the non-profit’s organisational performance is tenuous and difficult. Business Intelligence (BI) proves to be particularly useful in this endeavour because its sole purpose is to improve decision-making and provide insight into areas important to the organisation’s performance.” In similarity to what happens in companies, NPOs pretend to use BI to perform analysis, predictions and generate a more in-depth knowledge and understanding of their business environment (Oakley et al., 2015).

The main difference relies that, for-profit organisations use BI systems to increase their revenues and profits, but as mentioned by Oakley et al. (2015) “Non-profits focus on impacting society by reducing the negative impact of reoccurring social problems. Examples of social problems include education inequality, chronic homelessness, or the negative impacts of poverty.”

Also, Salomon & Sokolowski (2016) define NPOs as organisations seeking social impact instead of financial returns. This means they might generate revenues but not profit. Reinhardt & Enke (2020) highlighted that NPOs have qualitative targets rather than monetary ones due to their nature and purpose.

By reflecting on what is mentioned above, it is possible to state that the way NPOs measure their impact is different from the one for-profits use, hence their Operational Performance Indicators (OPIs) and KPIs will also be different. In fact, authors argue that a mere adaption

from for-profit performance measurement systems seems to be insufficient for NPOs due to their unique characteristics (Arena & Bengo 2014).

2.9 THEORETICAL BACKGROUND

Based on the literature review presented above, Table 1 was built with the purpose of summarising all articles and books being used for this chapter.

In Annex A will be possible to find a summary table with all the articles used for the literature review and their respective authors and findings.

Table 1 - Literature Review Articles

Topics	Authors
Business Intelligence	Gauzelin & Bentz (2017), Kirange (2016), Pirttimäki (2007), Power (2007), Retnowardhani et al. (2019), Richards et.al. (2017), Sabanovic & Sjøilen (2012), Wieder & Ossimitz (2015).
Business Intelligence vs Business Analytics	Davenport (2010), Mackrell & Boogaard (2012). Turban et al. (2011),
Business Intelligence on Companies	Gartner (2013), Gauzelin & Bentz (2017), Qushem et al. (2017), Russel et al. (2010).
Critical Success Factors	Kirange (2016), Vilamarín & Diaz (2017) Yeoh & Popovič (2016),
Business Intelligence Benefits	Gauzelin & Bentz (2017), Kirange (2016), Puklavec et al. (2018), Rouhani et al. (2015), Sabanovic & Sjøilen (2018), Watson & Wixom (2007).

Business Intelligence Decision-Making	Richards et.al. (2017), Oliveira et al. (2012), Wieder & Ossimitz (2015), Zamani et al. (2017).
Business Intelligence on Strategic-Definition	Alnoukari & Hanano (2017), Lim & Teoh (2020), Tyson (1986), Waters (1996).
Business Intelligence in NPOs	Alnoukari & Hanano (2017), Arena & Bengo (2014), Oakley, et al. (2015), Reinhardt & Enke (2020), Salomon & Sokolowski (2016).

In order to present how the literature review will support the objectives and research question of this study, a table named table 2 is presented below. This table exposes the study objective, the research questions, and the literature review that support and can be a base to achieve the most accurate findings in each of the questions.

Table 2 – Correlation between Research Questions and Literature Review

Research Question	Study Objectives	Literature Review
How Business Intelligence implementation can support NPOs' decision-making and long-term planning?	What benefits can BI systems bring to NPOs.	Eckerson (2010), Gauzelin & Bentz (2017), Oakley et al. (2015), Oliveira et al. (2012), Puklavec et al. (2018), Qushem et al. (2017), Retnowardhani et al. (2019), Russel et al. (2010),
	What are the critical success factors in implementing BI on NPOs.	Kirange (2016), Vilamarín & Diaz (2017), Yeoh & Popovic (2016).
	How BI is impacting decision-making on NPOs.	Davenport (2010), MacKrell & Boogaard, (2012), Power (2007),

Sabanovic & Sjøilen (2012),
Turban et al. (2011),
Wieder & Ossimitz (2015),
Zamani et al. (2017).

How BI is impacting the
strategic definition of NPOs.

Alnoukari & Hananao (2017),
Arena & Bengo (2014)
Lim & Teoh (2020),
Pirttimäki (2007),
Richards et.al. (2017),
Tyson (1986),
Waters (1996),
Watson & Wixom (2007).

3. METHODOLOGY

With the purpose of answering the study objectives above presented the qualitative method was the chosen approach. This means the content of a series of semi-structured interviews was analysed in order to understand the impact of BI Systems on NPOs in Portugal.

In the past decades, the usage of qualitative methods has conquered space and popularity as a method to gather and analyse information (Strauss & Corbin, 2014). Plus, having in mind the research questions' objectives, as a preferred format the interview was the selected one as a primary tool for qualitative information gathering. Even though a certain degree of subjectivity can be associated with this practice, it is still a method that allows the interviewed to directly provide information, insights, and perspectives on the subject of study (Carmo & Ferreira, 2008). Within the scope of the interviews, the semi-structured model was chosen once allows a developed and complete exploration of the matter in study while giving the flexibility to adapt the interview to the participants' characteristics (Ferreira, 2015).

3.1 PARTICIPANTS

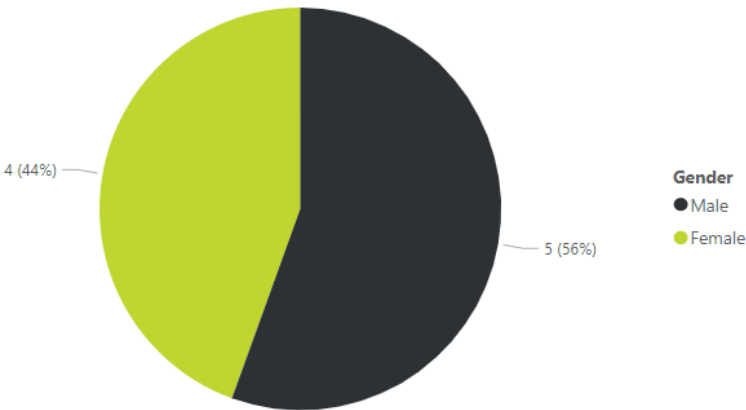
It is essential to refer that the sample chosen for the interviews and study had an intentional nature once interviewees were selected based on four requirements (1) the organisation they work for or represent is legally known and is operating as an NPO in Portugal (2) the NPO they work or represent must have deployed BI systems (3) the participant holds a decision-making position within the organisation/project, therefore, they are able to explain how these systems have been influencing the organisation, decision-making process and strategy (4) the participant has experienced a pre-BI systems deployment and a post-BI system's deployment reality within the NPO, department or context of work.

This study counts on the participation of nine interviewees representing eight Portuguese organisations, below it will be presented and described the variables selected to objectively characterise the sample of participants and organisations. The first variables described are related to the participants and the last two with the organisation in specific. Lastly, the answers were analysed with the purpose of gathering data to design empirical and theoretical conclusions.

Before a deep dive into the participants' and organisations' descriptions and as a matter of clarification, only for one organisation, more than one person was interviewed. This happened due to the NPO's complex structure, distinct fields of action and its nature of activities, the various levels of data literacy and BI maturity, but most importantly because even a person in a decision-making position for instance Board of Directors did not have the granular and deeper understanding of both areas at the same level. With that in mind and to reach the proposed objectives of this study two interviews were conducted within this organisation in specific.

Of the nine participants included in this study 4 (44%) are identified with the Female gender and 5 (56%) with the Male gender as shown in Figure 1.

Figure 1 - Participants distribution by Gender



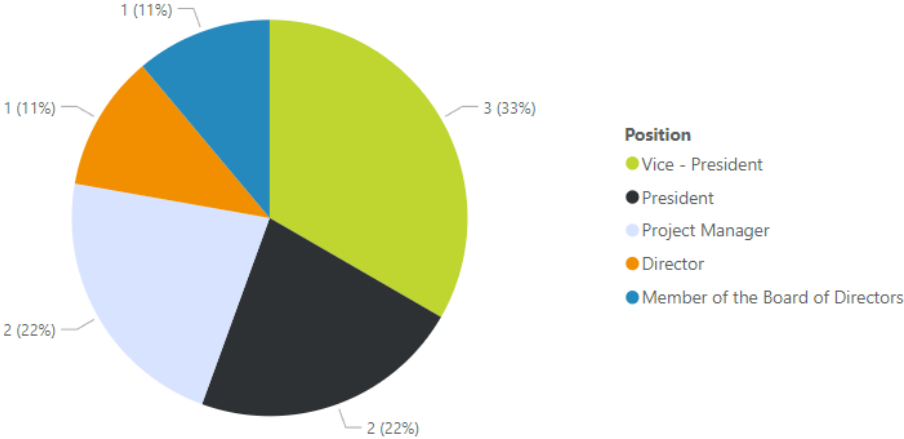
Source: Author

In what regards the participants' positions within the NPOs, 3 (33%) hold the position of Vice-President, 2 (22%) are President, 2 (22%) Project Managers, 1 (11%) Director and 1 (11%) Member of the Board of Directors as shown in Figure 2.

It is essential to clarify that the position of Project Manager within the NPOs considered for this study is characterised to be the person in charge of implementing and conducting data initiatives within the organisations, adding to this both work in strict collaboration with the Board of Directors in operational and strategical matters. Lastly, the positions held by these

participants are also characterised by their autonomy to make decisions and accountability for projects related to the institution.

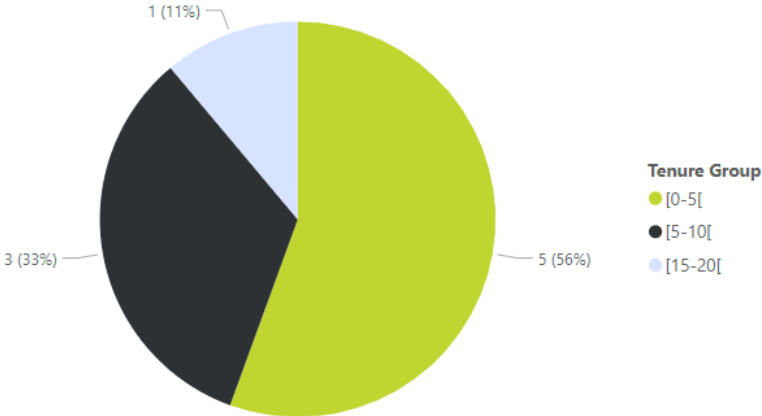
Figure 2 - Participants distribution by Position



Source: Author

For the Tenure, expressed in years of the nine participants 5 (56%) hold a position in the organisations between 0 to 4 years, 3 (33%) for 5 to 9 years and 1 (11%) in the range of 15 to 19 years. Figure 3 illustrates the description above.

Figure 3 - Participants distributed by Tenure in years

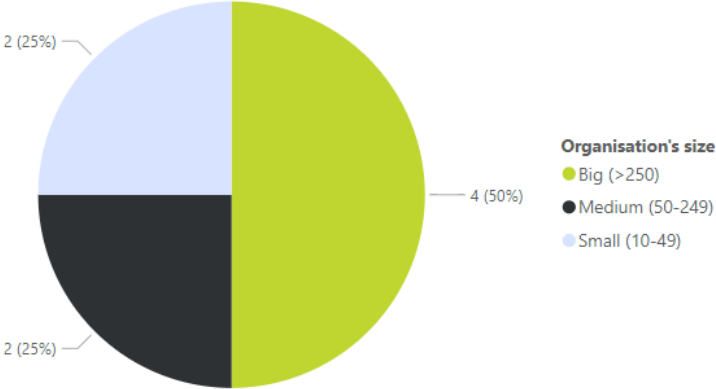


Source: Author

As illustrated in Figure 4 from the eight institutions considered for this study 4 (50%) are Big, which means they have more than 250 employees, 2 are Medium – having between 50 to 249 employees and 2 are Small – having between 10 to 49 employees.

For the purpose of this study and characterisation employees are people who work full-time for the organisation and have a legal bond with the same, volunteers were not considered for this variable.

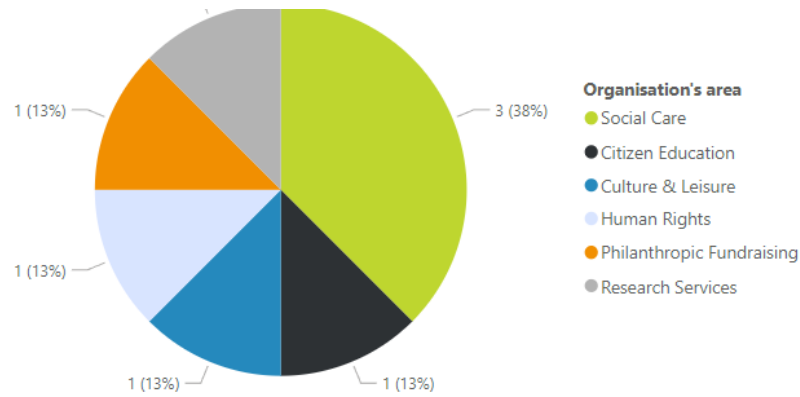
Figure 4 - NPOs distribution by size



Source: Author

Regarding the NPOs considered for this study, 3 out of 8 (38%) are acting in the field of Social Care, 1 (13%) in Citizen Education, 1 (13%) in Culture & Leisure, 1 (13%) in Human Rights, 1 (13%) in Philanthropic Fundraising and 1 (13%) in Research Services. Figure 5 illustrates the description above.

Figure 5 - NPOs distribution by field of action



Source: Author

3.2 DATA COLLECTION

Interviews had a duration of between forty-five minutes to sixty minutes, with the majority of them happening online through platforms such as Microsoft Teams or Zoom. The interview script presented in Annex B was developed through the following steps (1) based on the literature review (2) reviewed and validated by the supervisor and (3) shared with a convenience sample to refine questions and validate the interviewee's interpretation.

Furthermore, the script is divided into 6 principal areas which are (1) Demographic Questions – to gather key information about the participants and the institutions they represent or work for, (2) BI Systems Deployment – in order to understand if BI Systems are already deployed and if yes at what organisational level, for instance, organisation-wide range or department, (3) BI Systems in Decision Making – to evaluate the impact of these systems on decision making and its processes, (4) BI Systems in Strategy – as a way to acknowledge how these institutions employ these systems on strategic matters, (5) Benefits – understanding what benefits or impacts the implementation of these systems brought to these NPOs, and (6) Critical Success Factors – as a way to recognize in theirs' perspective what would be crucial to ensure success when implementing BI Systems within the organisations.

In order to get as much context as possible, allow participants to describe the impact of these systems in much detail as they could and have a deeper understanding of their perception most of the questions in the script are open-ended.

A total of 9 interviews representing 8 institutions were conducted for this study, considering the method followed – qualitative research, authors recommend samples of 8 to 15 participants (Hill, 1997; Hill, 2005). On top of this, by considering the nature of the matter of study, the social-economical context, and the data literacy level of the third sector in Portugal, the number of institutions represented in this study fairly illustrate the influence and usage of BI Systems in Portuguese NPOs.

With the purpose of ensuring ethical research, it is important to highlight that (1) all participants were informed beforehand about the topics to be discussed during the interview and its purpose, (2) the participation was voluntary, which means interviewees could choose to be in or out of the study at any point in time, (3) during all moments of the study participants, and institutions' anonymity was ensured by referring to them as participant X or institution X, and (4) data related to NPOs' or participants' distribution in terms of gender, position, organisation size and others it is exposed at a general level.

3.3 DATA ANALYSIS

To interpret the information all interviews were transcribed ¹ and later analysed by using the Software MaxQDA2022, which presents advantages such as the capability of providing insights about the qualitative data without making or suggesting any interpretations, unlocks an easy categorisation, structure and analysis of qualitative data, provides the user with a robust set of tools to analyse data, lastly, all those features will culminate in a more easy way to manage the interpretations and conclusions coming from the results. With the stated above in mind, a hierarchical code list was created underpinned by the Template Analysis, a specific method of thematic analysis (Brooks et al., 2015).

This method when compared with others allows the researcher to combine and balance a deductive analysis characterised by a high degree of structure with an inductive analysis capable of defining new categories according to and adapted to the study (Braun & Clarke, 2006). With this, some categories were defined before according to (1) the literature review, and (2) the interview script. While the remaining ones were added, adjusted, or removed throughout the data analysis process according to the results (King, 2004).

¹ The interviews' transcription will not be made provided in order to ensure participants' anonymity

Following the approach above described, for the first phase, a pre-defined categorial template was used, as exhibited in Annex C. This template was divided into 6 main categories which are (1) Business Intelligence Systems Deployment (2) Organisation Deployment level (3) Impact of BI Systems in Decision Making (4) Impact of BI Systems in the organisation's strategy (5) Other impacts (6) Critical Success factors. Inside these main categories, sub-categories were created with the purpose of providing a deeper understanding, better-categorising information and objectively identifying the impacts of BI Systems within each of those categories.

In a second phase and during the interviews' codification 7 categories were amplified by having 14 sub-categories added to them that were not thought of before. The sub-categories and changes done to the template are visible in Annex D, in italic will be possible to find the ones added in a posterior phase.

It is important to highlight that to ensure the quality of the study a dictionary for the categories template was created and exhibited in Annex E, with this any reader will be capable of evaluating the study and if intended replicate it. Adding on this and following the same line of thought, in the results section are mentioned several quotes from participants and the supervisor has validated the final codification.

4. FINDINGS

As mentioned before, a Template Analysis was done first based on the literature review and second on the interpretation made from the participant’s interviews, which resulted in a template code with 6 main categories and 58 subcategories.

Having in mind the Analysis Template structure and that the study’s objectives are to understand (1) how BI impacts decision-making on NPOs (2) how is BI impacting strategic definition on NPOs (3) what benefits can BI systems bring to NPOs (4) what are the critical success factors in implementing BI on NPOs, the results will be presented in the following order (1) Business Intelligence Systems Development (2) Impact of Business Intelligence in Decision-Making (3) Impact of BI Systems in the organisation's strategy (4) Other impacts and benefits (5) Critical Success Factors.

The results presented for each category and sub-category are sustained, presented, and defined on data shown on tables and reinforced by interview quotes from the participants. In order to respect the confidentiality mentioned in the chapters above, participants’ and organisations’ names will not be mentioned. As a way to distinguish the interviewees, a number between 1 and 9 will be assigned to each one of them and the name “Participant”. The number attributed will be based on the order participants were interviewed.

4.1 BUSINESS INTELLIGENCE SYSTEMS DEPLOYMENT

The first category is Business Intelligence Systems deployments and looks to understand at what level BI Systems are deployed within the organisation. In Table 3 it is possible to analyse the answers given by the participants on this topic.

Table 3 - Business Intelligence Systems Deployment

Category	Sub-categories	N	
Business Intelligence Systems	(1.1) Systems Deployed	8	
	(1.2) Systems Not Deployed	0	
Organisation Deployment Level	(2.1) Organisation-Wide	4	
	(2.2) Department	(2.2.1) Strategy	1
		(2.2.2) Financial	4

(2.2.3) Operations	4
(2.2.4) Social Impact	4
(2.2.5) Human Resources	4

Based on Table 3, it is possible to conclude that all organisations considered for the study (N=8) have deployed Business Intelligence Systems, being this a primary requirement to be considered for this sample.

According to the results presented in the table above, 4 organisations have deployed BI Systems at an organisation-wide level which means these systems are used as a tool by every area or department: *“The BI systems are implemented at an organization-wide level, so all departments are taking the most of their data and providing insights not only to themselves but as well to the organisation’s leaders.”* (Participant 9)

An interesting fact highlighted by participants is that even when BI Systems are implemented at an organisation-wide level, we can have different levels of exploitation: *“Across the organisation but with different levels of maturity, in some cases, we are only performing descriptive analysis while in others we can include prescriptive analysis already.”* (Participant 7)

This shows that even organisations that were already able to deploy BI Systems at an organisation-wide level will need a consistent data strategy to ensure from that moment on that the NPO can grow and be developed at the same speed on these matters.

Table 3 also demonstrates that 4 out of the 8 organisations have deployed BI Systems at a department level. According to data, it is possible to conclude that NPOs focus their deployment approach on departments that can give quick insights about their organisation such as Operations, Human Resources and Financial: *“Currently, these systems are more implemented at a department level, in this case, we can consider Operations (e.g., volunteering), Human Resources and Financial.”* (Participant 5)

Adding to this, the impact that BI Systems can generate through these departments can also be a factor: *“Financial, Social Impact and Human Resources believing that these are the*

departments that will have the biggest impact on the capacitation field and social impact”.
 (Participant 6)

Only 1 participant mentioned that the organisation has deployed BI Systems in a department with a more strategical focus: *“Several departments use these systems, namely Operations (e.g., Social Action, Health and Real Estate and Property), Financial, Human Resources and, Studies and Strategic Planning.”* (Participant 2)

Taking into account what was mentioned before and combining it with the last paragraph, this can be an indicator that only after NPOs have a good view of their operations, financial health, and people, they will progress to include departments with a more strategical focus.

4.2 IMPACT OF BI SYSTEMS ON DECISION-MAKING

Focusing now on the impact of BI Systems on decision-making, the goal is to understand and evaluate how the deployment of this technology has supported, changed, and impacted the decision-making process.

This section will be divided into two sub-categories (1) Timely Decision Making, and (2) Changes in the decision-making process and supported by Table 4 and Table 5.

4.2.1 Timely Decision Making

With the information provided and presented in Table 4 and based on the answers provided by participants, it will be possible to analyse how BI Systems helped in timely decision-making.

Table 4 - Timely Decision Making

Category	Sub-category	N
	(3.1.1) It does not help	0
	(3.1.2.1) Information Availability	4
	(3.1.2.2) Precise Information	6
	(3.1.2.3) Real-time information	2
Timely Decision Making	(3.1.2) It does help	
	(3.1.2.4) Identify trends and patterns	3
	(3.1.2.5) Ability to anticipate	4
	(3.1.2.6) Knowing your audience	1

By analysing Table 4 it is possible to infer that all participants could affirm that BI Systems do help their organisations (N=8) in timely decision-making.

Based on Table 4, it is important to highlight that the main contribution to this impact comes from the capability of these systems to provide precise, reliable, and trustworthy information (N=6): *“With this, we could make decisions based on trustworthy information, with our audience in mind and with a clear vision.”* (Participant 8). Plus, *“This aggregation of data provides reliable and precise information capable of giving an organisational and execution vision that ultimately helps in decision making.”* (Participant 9)

Participants have also highlighted the information availability (N=4) as an important factor as allows decision-makers to access data at any necessary time: *“Plus, as we have information available at any moment almost in real-time, we can make our decisions based on data and with confidence.”* (Participant 3). Also, *“It has helped as the information is available at any moment and to everyone.”* (Participant 6)

Highlighting factors as real-time information (N=2): *Allowing analyses to be made practically in real-time* (Participant 2) and the possibility of identifying trends and patterns (N=3): *“Yes, thanks to BI systems we can now have a deeper understanding of what is happening in at, local, regional, and national level by identifying patterns and trends. This way we have the chance to collect as much data as possible and gain visibility of all structure.”* (Participant 3)

“Through the information collected, it is also possible to analyse trends and needs, so that the offer can be adapted, or the jobs can be readapted according to the information. As an example, Social Service is organized by geographical area and the technicians manage Family Cases, with a ratio of no. of Family Members per technician considered adequate. When it is verified that a certain area has a deficit in terms of technicians and another has lower demand, the jobs are reorganized, ensuring the reinforcement of the deficit area.” (Participant 2)

It is possible to infer that the combination of these 2 factors with the ones stated before, gives BI Systems a characteristic that is revealed to be important for the participants, the fact that decision-makers and/or leaders are gaining the ability to anticipate: *“With these, we have the chance to act on problems before they cause a negative impact or bigger consequences.”*

(Participant 3). Adding to what has been stated, *“It allows us to predict some somethings about the organisation and adapt our decision-making accordingly.”* (Participant 1)

Having in mind the information provided in this section it is possible to affirm that BI Systems Deployment has an impact on timely decision-making mostly due to its characteristics of trustworthiness, availability and empowering decision makers with the ability to anticipate.

4.2.2 Changes in the decision-making process

With the information provided and presented in Table 5 will be possible to understand and evaluate based on the participants’ answers what changes occurred in the decision-making process with the deployment of BI Systems.

Table 5 - Changes in the decision-making process

Category	Sub-category	N
	(3.2.1) Has not changed	0
Changes in the decision-making process	(3.2.2) Changed	
	(3.2.2.1) Proactive not reactive	4
	(3.2.2.2) Decisions made based on data	7
	(3.2.2.3) Faster	3
	(3.2.2.4) Focus on the big picture	3

Looking at the results in Table 5 it is possible to conclude that all organisations (N=8) affirm that their decision-making process has changed since the deployment of BI Systems.

The change most of the participants have claimed to feel in their organisations (N=7) is the fact that decisions started to be made based on data rather than empirical knowledge or guessing: *“The ability to make decisions faster and based on data, means the sense of the impact each initiative will have. Before we implement the BI Systems all decisions were made based on gut feeling and experience, there were not many indicators to evaluate, assess or discuss which action should be taken.”* (Participant 9). Plus, *“The change we notice the most is the fact that now decisions are made based on data.”* (Participant 5). Another participant claimed the same impact, *“Decisions become more based on data rather than gut feeling or perception.”* (Participant 1)

Another important change that participants referred to is the fact that now the decision-making process became more proactive than reactive (N=4), meaning that organisations can make decisions not only to adopt corrective measures but to adopt preventive ones and act on issues before they bring negative consequences: *“This way we have the chance to collect as much data as possible and gain visibility of all structure. With these, we have the chance to act on problems before they cause a negative impact or bigger consequences. With these systems, we could start making proactive decisions instead of reactive ones.”* (Participant 3). On top of this: *“Obtaining and controlling the information necessary for decision-making, making it possible to anticipate or take presently measures in a timely manner, reducing the risk of negative impacts on the organisation.”* (Participant 2)

It is as well interesting to mention that for some organisations the deployment of BI Systems allowed their decision-making process to be faster (N=3) and consequently more efficient: *“The implementation of these systems has given the organisation greater speed in decision making, as it makes access to data faster, allowing analyses to be made practically in real-time. It allows analyses that, before the existence of this type of tool, would only be possible after months of information collection, which makes decision-making faster and more effective.”* (Participant 2)

In some organisations the deployment of these systems brought a different approach to the decision-making process, in the sense that even small or short-term decisions are taken based on the big picture (N=3) and its goals in the long-term: *“Yes, it allowed the organisation to make decisions based on continuity and understand if the decisions we are making foster the goals we have defined for the organisation in the future.”* (Participant 6)

With all the information presented in this section, it is conceivable to affirm that the deployment of BI Systems has changed the decision-making process in these organisations. Allowing decision-makers and leaders to take their decisions based on data, faster, in a proactive way and all this ensuring consistency and continuity with their long-term goals.

With the analysis of these two sub-categories (timely decision-making and changes in the decision-making process), it is possible to conclude that by having trustworthy and precise information decision-makers and leaders can start taking their decisions based on data. More important than this, organisations will be able to decide faster and convert their decision-

making process into a proactive one rather than reactive due to the ability of anticipation provided by BI Systems.

4.3 IMPACT OF BI SYSTEMS ON THE ORGANISATION’S STRATEGY

Looking now to the impact of BI Systems on the organisation’s strategy, the goal is to understand the applicability and contribution of these systems in the strategy’s definition, monitorisation and implementation.

This section will be divided into five sub-categories (1) Support Strategic Goals, (2) Monitor Development, (3) Long-term planning (4) BI Systems perceived as a Strategic Asset, and (5) Social Impact. The analysis will be supported by Tables 6,7,8,9 and 10.

4.3.1 Support Strategic Goals

In this section with the support and data presented in Table 6, the aim is to acknowledge how BI Systems help NPOs achieve their strategic objectives and through what means.

Table 6 - Support Strategic Goals

Category	Sub-category	N
	(4.1.1) Not used	0
Support Strategic Goals	(4.1.2) Used	
	(4.1.2.1) Planning	7
	(4.1.2.2) Definition of KPIs	3
	(4.1.2.3) Resource Allocation	4

By analysing Table 6 it is possible to infer that all organisations (N=8) mentioned using BI Systems as a tool to support their strategic goals.

Based on Table 6, the sub-category Planning (N=7) was revealed to be the most relevant for participants and organisations, meaning data provided by BI Systems is used to have a deeper comprehension of the organisation’s results on initiatives/projects in order to plan the following year: *“Yes, it helps to define which projects should be implemented and how. At a certain point, we have launched a one-time initiative, but due to the data we collected it was possible to evaluate the impact that programme had, we even acknowledged we had waiting lists and with this and without planning it in the beginning we have decided to include this*

initiative in the following annual plan.” (Participant 1). Another participant mentioned: *“We use these systems to help define which organisations we should support in the following year based on the data collected from the current year.”* (Participant 8)

Connected to this, participants have also mentioned having their organisations use these systems to define their KPIs (N=3): *“Considering what happens, for example, in the Social Action area, it was already possible to establish targets for some objectives based on the possibility of data collection, their measurement in previous years and the predictability of their evolution in view of greater investment in certain areas (with strategic objectives).”* (Participant 2)

Besides the planning and definition stage, BI Systems also have a contribution to the implementation stage of this sub-category, meaning that some NPOs use these systems for resources allocation (N=4) in order to achieve the goals previously defined: *“How we can allocate our resources and funds to the different initiatives during its implementation.”* (Participant 9). Plus: *“Manage investments and reallocate resources at a local, regional, and national level during the year.”* (Participant 3)

It is possible to affirm that BI Systems do support NPOs on their strategic goals by giving them the possibility of planning based on data, defining their KPIs with as much accuracy as possible and allocating or reallocating resources based on the organisation’s needs.

4.3.2 Monitor Development

In this section with the data provided in Table 7, the goal is to understand how NPOs use BI Systems as a tool to monitor their development.

Table 7 - Monitor Development

Category	Sub-category	N	
	(4.2.1) Not used	0	
	(4.2.2.1) KPIs and OPIs monitorization	6	
Monitor Development	(4.2.2) Used	(4.2.2.2) Organisation's development	3
		(4.2.2.3) Daily Operations	7

Looking at Table 7 and its data it is possible to conclude that all organisations (N=8) use BI Systems to monitor their development, which means NPOs count on these systems to give information about their performance and progress.

The possibility of monitoring the organisation's daily operations (N=7) is one of the most important topics highlighted by participants: *"Provides a 360° view of the organisation's development and operations. Allowing the end user to have a comprehension of what is happening in every field of the institution on a daily basis."* (Participant 4). Adding to this: *Currently yes, helps us understand a bit better our resource allocation, how are operations going on a daily basis and play with our resources to allocate them the best way possible.* (Participant 5)

Participants have also mentioned organisations use these BI Systems to monitor their KPIs and OPIs (N=6), allowing decision-makers and leaders to understand if the implemented actions are giving the expected results: *"Mostly used to understand if we are reaching our KPIs and OPIs."* (Participant 5). Also, *"Yes, to understand how the different initiatives and its result have been developing throughout time according to our OPIs and KPIs."* (Participant 7)

Besides this, some participants (N=3) have mentioned their organisations also use these systems to monitor their development throughout time: *"Especially to evaluate since the beginning how the organisation has been growing, impacting, and developing in the previous years."* (Participant 1). The same impact was claimed by another participant, *"How the organisation has been developing in the past years."* (Participant 3)

Having all this in mind, it is possible to conclude that BI Systems do help organisations in monitoring their development by having a better understanding and view of their daily operations, measuring if their operational and strategical objectives are being achieved and evaluating their progress in the previous years.

4.3.3 Long-term planning

With the support of Table 8, in this section, the aim will be to understand if organisations use these systems as a tool for long-term planning and if yes how.

Table 8 - Long-term Planning

Category	Sub-category	N	
Long-term planning	(4.3.1) Not used	3	
	(4.3.2) Used	(4.3.2.1) Plan long-term solutions to solve cyclical problems	1
		(4.3.2.2) Define the following strategic cycle	5

Based on Table 8 it is possible to infer that 3 out of the 8 organisations do not use BI Systems for long-term planning, meaning that when planning the next strategic cycle or long-term goals do not have into consideration the information or insights provided by these systems. The reasons to not do it, differ from organisation to organisation but mostly because (1) They do not plan so ahead: *“Currently no, although we think it could be a valuable tool, the main reason, we are not doing it is because most of our planning is focused on the short-term.”* (Participant 5), (2) Do not directly use these systems: *“They are not being used directly. Indirectly any performance information from the organisation ends up having an influence.”* (Participant 4), and (3) Do not know how to use it for that purpose: *“No, I cannot see how we can fit it into the long-term planning.”* (Participant 6)

Regarding the organisations that use BI Systems for long-term planning the majority of its application (N=5) it is for defining the following strategic cycle, meaning that these tools are a support for leaders to define their long-term strategy and its goals: *“Of course, to evaluate our KPIs, understand if the path we followed in the past will be the same for the next strategic cycle (5 years).”* (Participant 9). Plus, *“Yes, based on the results of previous years using that information to define the strategic priorities for the following years.”* (Participant 1)

“Also, it was used to understand how the organization has been progressing and work as a backbone to define the following strategical cycle. Plus, we use these systems to plan and evaluate the creation of a new nucleus, which takes around 2 to 3 years to have a functional one.” (Participant 7)

Another interesting applicability of these systems in the long-term planning highlighted by only one of the participants is the ability to identify cyclical problems and think of strategies

to solve them: *“Yes, thanks to BI Systems we could have a deeper understanding at are our cyclical pains/problems and design strategies to in 2/3 years fight these kinds of issues (e.g. the creation of festival as a new source of revenue)”*. (Participant 3)

Even though only 1 participant has mentioned this applicability, it is relevant to present it in the study once, not only for being a usage BI system can have but for unveiling that these systems might help as well NPOs reinvent their business model.

It is also interesting to mention that the same participants that said having their organisations (N=4) deploy BI Systems at an organisational level (Participants 1, 3, 7, 8 and 9) or having systems deployed in a department with a strategical focus (Participant 2) are the same that claim to use these tools for long-term planning (Participants 1, 2, 3, 7, 8 and 9). This can reinforce the statement mentioned before that NPOs only after having focused their deployment on more operational areas will think or approach these systems with a more strategical focus.

Concisely it is possible to infer that regarding the usage of BI systems for long-term planning there is still a path to do, once 3 out of 8 organisations do not use them for this purpose. Still, for those who are already on this path (N=5) BI Systems have been revealed to be a valuable tool to plan the following strategic cycle and for 1 of the organisations even to solve cyclical pain points or problems.

4.3.4 Social Impact

With the support of the information provided in Table 9, in this section, the goal will be to understand how BI Systems can contribute or help to measure NPOs' social impact.

Table 9 - Social Impact

Category	Sub-category	N
Social Impact	(4.5.1) Social Impact Indicators	8
	(4.5.2) Know the subscribers	2

Based on the data shown in Table 9 it is possible to conclude that all organisations (N=8) could have a better understanding and view of their Social Impact.

This means that through these systems organisations could measure and/or keep track of the social impact indicators defined by the organisation: *“Yes, allowed us to monitor the implementation of projects and know how many people benefit from these programmes, the people involved, and the number of hours dedicated.”* (Participant 8). Another participant mentioned: *“It helped to know the number of hours, money, people, and resources dedicated to these projects and also to have a clear picture of how many people our initiatives reach.”* (Participant 7). In a different context but with the same purpose: *“Allowed us to understand how many Kg of food we are gathering, how many meals we can serve and to how many people”.* (Participant 3)

Besides this, 2 participants mentioned that organisations also use this BI Systems to have a better understanding, knowledge, and comprehension of who are the subscribers of some services they have for fundraising purposes: *“Sure, allowed us to get a concrete understanding of what each person likes, what kind of things they get from our offer, personalize our offer, know exactly who our subscribers are. Know who is our target audience. These BI Systems were the first step for the digital transformation we are carrying in our organization.”* (Participant 7)

Considering all stated above it is possible to conclude that BI Systems do help NPOs measure and understand their social impact by allowing them to know how many people initiatives/projects impact or reach and what resources are being deployed on these same projects/initiatives.

4.3.5 BI Systems perceived as a strategic asset

The main purpose of analysing this section is to comprehend if the organisations considered in this study perceive BI Systems as a strategic asset, Table 10 will be used to support this analysis.

Table 10 - BI Systems as a strategic asset

Category	Sub-category	N
BI Systems perceived as a Strategic Asset	(4.5.1) Perceived	8
	(4.5.2) Not Perceived	0

Based on the results presented in Table 10 it is possible to infer that all organisations (N=8) perceive BI Systems as a strategic asset and as something that sooner or later will be core: *“Yes, and with a growing investment.”* (Participant 7). Another participant mentioned as well, *“Yes, considering its importance in the development and definition of the organisation's strategy. The information and respective analysis obtained by the BI tools are central to the organisation's strategy.”* (Participant 2)”

After analysing these 5 sub-categories it is possible to conclude that BI Systems revealed to be especially important to support NPOs on their strategic goals, monitor their development and give NPOs a tool to better measure and understand their social impact. In what regards to long-term planning the results were not so homogenous but showed that there are different levels of progression and maturity. Nevertheless, independently of the different applications of these systems within each organisation, all of them perceive this technology as an asset that will become core.

4.4 OTHER IMPACTS

In this category, the goal is to identify what other impacts the deployment of BI Systems had on the NPOs considered in this study. In Table 11 it is possible to analyse the answers given by the participants on this topic.

Table 11 - Other Impacts

Category	Sub-category	N
Other Impacts	(5.1) Fundraising	1
	(5.2) Transparency	3
	(5.3) Discipline	2
	(5.4) Process standardisation	4
	(5.5) Data Driven organization	2
	(5.6) Application to funds	2
	(5.7) Application to awards	2

By analysing Table 11 it is possible to conclude that the deployment of BI Systems brought other impacts and benefits for the organisations considered for this study (N=8)

The process standardisation is the most mentioned and relevant impact according to participants' answers, meaning that the deployment of BI Systems allowed the organisation to standardise processes through the different locations and departments, this way the organisation could ensure they have trustworthy data and with quality: *"Allowed us to standardise our processes in the different locations to guarantee data quality, synchrony, and trustworthy information."* (Participant 3). Another participant mentioned as well: *"Process standardisation, allowed the institution to have data with more quality once the processes were standardised, and information was centralised."* (Participant 7)

With this process standardisation participants (N=2) have also claimed that this brought discipline to its organisation, meaning everyone realise the importance of data and implementing processes in the correct way: *"Created discipline because even the ticket office personnel understood the importance of filling the forms with the right information, of course, some changes to the process were made in order to allow this."* (Participant 8)

These two factors together have also made organisations (N=3) increase their transparency: *"Another impact we felt, was transparency, now everyone can know what is happening, what are the numbers for the areas using these systems, and what is going well or not."* (Participant 6). The same was felt by another participant: *"Brought more transparency to our organisation, by my initiative every three months we present results, numbers, and status to everyone, with data collected through these systems."* (Participant 9)

BI Systems revealed also to be important for matters such as fundraising (N=2): *"I will have to do this work this year and report everything since the foundation, especially because this will determine how much money will be used/invested in the foundation."* (Participant 6) Or in a similar degree (N=2) for funds application: *"We use these systems to collect the data and build reports used for funds applications, once has the information we need."* (Participant 9)

The recognition of effort and work is also an important topic for NPOs, for this reason, some organisations (N=2) use already these systems to apply to awards: *"The data we gathered*

through these systems is as well used when we apply to awards since the implementation of this BI solution the work became easier and faster.” (Participant 1)

Lastly, 2 participants claimed to experience a change of mindset in the organisation making it become more data-driven: *“Another impact I can feel in the organisation since we adopted these systems is the fact that everyone lies on data on a daily basis, take decisions based on it and building processes to ensure that we keep putting data in the core of our strategy.”* (Participant 9)

With this, it is possible to infer that the deployment of BI Systems brings other impacts for NPOs who do it. Allow the organisation to ensure everyone is implementing and following processes the same way by realising the importance of data and the individual role in it. Permitted organisations to build mechanisms to support their fundraising streams and increase recognition. All this together, not only made organisations more transparent but also allowed some to adopt a new mindset and become data-driven.

4.5 CRITICAL SUCCESS FACTORS

This section of the study is intended to identify according to the participants what are the critical success factors to deploy BI Systems and understand why those were mentioned. The analysis will be made based on Table 12 which represents the answers given by participants.

Table 12 - Critical Success Factors

Category	Sub-category	N
	(6.1) Financial Resources	6
	(6.2) Technical Knowledge	5
	(6.3) Top Team Sponsorship	5
Critical Success Factors	(6.4) Team Alignment	3
	(6.5) Easiness of usage	2
	(6.6) Clear objectives and purpose	4
	(6.7) Synergies	2

Based on Table 6 it is possible to affirm that financial resources are the Critical Success Factor most mentioned by participants: *“Financial resources and in our case thanks to funds we were available to develop a strategy and projects that allowed us to implement BI systems across the organisation and even develop a tailor-made software to better suit our operations.”* (Participant 3). To reinforce what is stated above, *“Financial resources that are not awards or one-time funds.”* (Participant 6)

This is the most mentioned critical success factor because when organisations are faced with a shortage of it, difficult decisions have to be taken: *“An end consequence of the lack of financial resources is when organisations have a shortage of this resource they have to reflect if it would be better to invest on this kind of tools even though they know will bring value or hire another pair of hands.”* (Participant 7)

“Money, as social and humanitarian organisations, also have limited budgets and are always very dependent on external funding, so decisions to acquire or adopt new tools are sometimes postponed to the detriment of social and humanitarian interventions.” (Participant 5). Or even the organisation has to allocate many of its resources for getting funds: *“Organisations are many times overburdened with seeking funding to survive.”* (Participant 9)

Once the organisation has enough funds or financial resources to deploy these systems it is important to know where to go and how to go. With this in mind, participants have mentioned technical knowledge (N=5): *“It is fundamental to have technical knowledge, people that know exactly what in a technical perspective needs to be done, so the systems are successfully deployed, and we can quickly collect benefits of it.”* (Participant 4)

Adding to this, participants have as well mentioned that having top team sponsorship is crucial: *“Having the management team’s sponsorship is key because is a difficult change or implementation and by having the management team pushing for this everyone will understand the importance of it and make all the necessary efforts.”* (Participant 3). Another participant said *“I would mention top management team sponsorship because it is important that the leaders support this initiative, and have a vision of what to reach and extract from it. Leaders should use their management skills to think about how NPOs can extract value from this the same way a business does and make everyone understand what can be done and*

achievable with data. In my opinion, this is crucial and not all organisations have this kind of mindset.” (Participant 9)

Combined with the factors mentioned above participants have considered having clear objectives and purpose as a critical success factor (N=4): *It is necessary to know very well what you want to achieve with this, what are your objectives, and it should be clear to everyone what is the purpose. (Participant 1), because only by having team alignment (N=3) organisations will be capable of ensuring a complete adoption of these systems: “Another critical success factor that I can remember is team alignment because when deploying BI Systems, you need to make sure the team accepts this change and adopt these tools with as much commitment as you. For this, it is important to make them understand the why of this change and how they will contribute to it, we have within the organisation a person whose mission is to make sure everyone adopts and works to put these systems at the core of our strategy.” (Participant 6)*

Following what was said above, participants (N=2) have also mentioned easiness of usage as a critical success factor, meaning that is important that BI Systems have proportionality to the tasks performed and are easy for the final user to interpret and use: *“The Business Intelligence system used is also important, particularly in terms of how easy or not it is for users to use it, contribute for it and take value from there.” (Participant 4)*

Another interesting factor to highlight is the creation of synergies (N=2), meaning that the organisation can partner or work together with other organisations to ensure its success on this topic: *“For us, one of the critical success factors is the creation of synergies as we have partnered with organisations specialised on this topic to provide help to us through their corporate social responsibility programmes.” (Participant 9)*

To conclude critical success factors can be different from organisation to organisation because of their reality and context. Still, it is possible to conclude that in this study the most critical success factor is the financial resources, as, without it, organisations have to put their technological development in second place or in the worst case block them to progress on these matters.

Nevertheless, when these systems are deployed having the management team sponsorship, a clear vision and purpose are important so the team can be aligned on this change and adopt BI Systems. The easiness of usage also plays a key role in this as will work as a factor for final users to take the most value and benefit from these systems.

It is also interesting to highlight the importance of synergies and how they can help NPOs to reshape their business model and support their daily activities: *“Synergies, for instance, we have created some synergies for the BI Systems deployment, funds applications, for not paying services as insurance, mobile, internet services and others, in some cases companies still charge for these services and later make a donation in the same value. We chose to do it because gave us the chance to get support on our operational needs and in terms of business model we felt an advantage.”* (Participant 7)

5. DISCUSSION

“Data is the new oil”, a quote heard often from the famous British mathematician and entrepreneur in the field of Data Science, Clive Humby. Even though for-profit companies had found this true some time ago, NPOs have started now to understand how data can be relevant and valuable for this sector as well.

This study intended to interpret the influence of BI Systems on the decision-making process and strategic definition of Portuguese NPOs, as well as unveil what are the Critical Success Factors for the implementation of these BI Systems.

5.1 BUSINESS INTELLIGENCE SYSTEMS DEPLOYMENT

Based on the findings presented in this study it is possible to consider that these BI Systems have achieved their main goal for NPOs. According to what is mentioned in the literature review this is seen as the ability to provide the right information to the right people at the right moment in order to support institutions in their performance (Richards et al., 2017).

Furthermore, as this study indicated in what regards to the BI Systems Deployment level, NPOs tend to follow a bottom-up approach, meaning that the reporting systems might be implemented department by department. This can be validated by what Boyer et al. (2010) mentioned “Many organizations may also approach business intelligence from a sequential technology perspective. A reporting system may be implemented on a silo of data, and one by one, the IT team may add additional data repositories from various business areas.”

This was also underpinned by the eminent need or business problem the organisation has in a certain area, which goes in conformity with what Boyer et al. (2010) mentioned “When an individual decision area identifies a business problem, the first response is to implement a business solution that helps to solve the immediate goals of that entity. The solution may touch multiple departments or reach across to other decision areas. An example of this might be to provide a reporting or analytical tool that is easy to implement or to apply a legacy solution that has been customized to meet the specific needs of the decision-making area.”

With this study was also possible to conclude that NPOs have shown a tendency in deploying BI Systems first in departments with a more operational focus as operations, human resources and financial. In accordance with the literature review, NPOs have started to prioritise their

need to be more transparent in what regard to their daily operations, funds allocation and social impact measurement (Oakley et al., 2015).

These are strong arguments to sustain the conclusion stated above that NPOs will deploy these systems in more operational departments because (1) most likely will be the ones with the most urgent business problems, (2) are the ones that will allow the organisation to become more transparent not only to external stakeholders but as well for its collaborators, and (3) are the ones that better give insights and understand to the organisation about its social impact.

5.2 IMPACT OF BUSINESS INTELLIGENCE ON DECISION-MAKING

Looking now to the impact of Business Intelligence on decision-making, this study has shown that BI Systems not only help organisations on making timely decisions but also play a key role in the way the decision-making process is restructured.

In the study, it was possible to infer that mostly due to the fact that BI Systems make information available at any moment, that this information is precise and trustworthy, decision-makers will be empowered to act earlier and prevent negative consequences for their organisation. Equivalent results were obtained by Gauzlin & Bentz (2017) by saying that the main motivation for many institutions to deploy this kind of system is the fact that it will enable the organisation to make the most accurate and right decisions leading consequently to take the right actions in the right moment. Adding to this Gauzelin & Bentz (2017) also mentioned BI Systems allow organisations to solve their problems in a timely manner because those appropriate actions are taken to overcome any unexpected business events. As a contribution, this study has also indicated that having this information in almost real-time and the capability to identify patterns and trends are also relevant facts for helping these NPOs make timely decisions.

When looking at the impact that BI Systems can have on the decision-making process, based on this study it is possible to infer that these systems do help decision-makers on NPOs to make their decisions based on data, the same was stated by Alnoukari & Hanano (2017), when mentioned that BI Systems enabled every member of the organisation to have access to the information so it would be possible to make more data-driven decisions. On top of this, this study also pointed out that the decision-making process becomes more proactive than

reactive meaning that NPOs use data to make decisions or take actions before an issue or business problem occurs. This could also be pointed out by Pirttimäki (2007) mentioning “However, BI can be illustrated as a support tool of extensive, relevant and proactive management and decision-making in companies in which shaping the future is considered more important than reacting to it”.

For this topic, participants in this study have also mentioned that BI Systems enabled the organisation's decision-making process to become faster and with a perspective of continuity and long-term.

5.3 IMPACT OF BUSINESS INTELLIGENCE ON THE ORGANIZATION’S STRATEGY

Reflecting now on the results gathered from this study on the role of BI Systems in supporting NPOs’ strategic goals, it is possible to affirm that these systems have a significant role, especially in planning, meaning NPOs use these systems as a tool of support to build the Annual Plan for the following year and how the different resources are allocated. A similar finding about for-profit companies was stated in the literature review by Alnoukari & Hanano (2017) when they mentioned “These technologies help coordinate projects, and schedules, and provide the roadmap to align with the corporate strategy”. Meaning that NPOs like for-profit organisations rely on these systems as a support for achieving their strategic goals. Besides the impacts stated above, participants also mentioned that these systems were unveiled to be important for the organisation in the definition of KPIs and OPIs, which can now be done based on the information gathered through BI Systems.

In this study, NPOs also proved to use these systems as a mechanism to monitor their development in diverse ways, namely through the monitorisation of their KPIs and OPIs, daily operations and their development throughout time. Similar findings can be found in the literature review, mentioning that BI Systems provide dashboards that allow organisations to understand if the performance goals are being met or not (Eckerson,2010). Sabanovic & Sjøilen (2012) found that monitoring as the third type of BI allows organisations to in general monitor measure and evaluate their performance in real time. Adding to this, the reporting type of BI allows institutions to access, gather, and analyse historical data providing this way insights about the organisation and events in its past (Gauzelin & Bentz, 2017).

The usage of BI Systems as a long-term planning tool for NPOs was also the object of study, based on the results presented previously, 3 out of 8 organisations do not use these systems for long-term planning, which shows that there is still a path to do on this matter and most important there is still some benefits that can be exploited. For the ones that use BI Systems as a tool for long-term planning, the purposes are essential to plan long-term solutions to solve cyclical problems and to plan the following strategic cycle. These findings come in accordance with what Tyson (1986) revealed, that an effective strategy cannot be created without the use of BI Systems. Ten years later Waters (1996) came to reinforce this idea by stating that designing a strategy without BI Systems will be resumed to guessing.

This study also showed that NPOs use BI Systems as a mechanism to measure their social impact, these indicators can differ from organisation to organisation and according to their field of action. Essentially NPOs use it, to have an understanding of what social impact their projects/initiatives are causing and how to measure it. Similar findings were stated in the literature review, as Oakley et al. (2015) expressed that NPOs prioritise their need to become transparent regarding daily operations, funds allocation and to measure the impact of programmes to reduce social problems.

Based on this study, all participants have recognized BI Systems as a strategic asset for the organisation, being core for its current strategy and with increasing importance and weight in the organisation's priorities. Mostly because these systems support NPOs with their strategy, help organisations enhance their performance and achieve the established social goals. Similar findings were stated by Oakley et al. (2015) "Non-profit organisations aim to engage in strategic decisions that can support further attainment of organisational social goals. However, making the connection between an organisation's technological investments and usage with the non-profit's organisational performance is tenuous and difficult. Business Intelligence (BI) proves to be particularly useful in this endeavour because its sole purpose is to improve decision-making and provide insight into areas important to the organisation's performance."

With this, it is possible to state that NPOs intend to use BI Systems to generate a deeper knowledge and understanding of their internal and external context. The same conclusion was reached in the literature review by Oakley et al. (2015).

5.4 OTHER IMPACTS

This study also evaluated what other impacts the deployment of BI Systems brought to these NPOs. From the results the most mentioned impact was the process standardisation, meaning that the organisation could standardise its processes among different locations and departments. A similar benefit was presented by Watson & Wixom (2007) by mentioning that the deployment of BI Systems would lead to an improvement of the business process. Participants have also mentioned the discipline provided by this process standardisation as an impact of the BI Systems deployment.

In this study, transparency was also an important impact raised by the participants, explaining that with these systems everyone could have a good and clear picture of what is happening within an organisation. Oakley et al. (2015) had already claimed that the need of becoming transparent would be a priority for NPOs.

For-profit organisations can maximize their return on investment in BI Systems by bringing more customers to their business or saving costs (Sabanovic & Sjøilen, 2012). Similar to this, NPOs also intend to maximise their return of investment on these systems by using them as a tool for fundraising, and applications to funds. Interestingly, NPOs also use BI Systems as a support mechanism for their application to awards, once they won it can lead to more recognition of their social mission and ultimately to more funds.

Participants have also mentioned that their organisations became more data-driven, meaning that data started to become part of their daily work and be the base for every decision.

5.5 CRITICAL SUCCESS FACTORS

Lastly, this study also intended to understand from the perspective of these NPOs what the critical success factors would be to deploy BI Systems within the organisation. An interesting aspect to highlight is that for most NPOs financial resources are revealed to be the most critical success factor, in the literature review done for this study this did not seem to be a concern for for-profit organisations. This can show how fragile an NPO business model can be when compared to for-profit organisations, but more important than this reinforces how crucial money is for NPOs, as it can really act not only as a barrier due to its shortage or as an enabler

for NPOs' social mission and impact but as well as stop or go for the development of the organisation itself.

Kirange (2016) identified management support and sponsorship as a critical success factor by mentioning "Dedicated support and sponsorship from business executives make it easier to secure the necessary operating resources". The same was felt by participants in this study when claimed that having the top management team sponsorship would be critical to ensuring the successful deployment and utilisation of BI Systems within the organisation. Connected to this, participants also mentioned that having a clear vision and purpose for deploying these systems is an important critical success factor. Kirange (2016) identified the same factor expressing that is important to have a clear vision and well-established use case.

In this study NPOs have considered Technical Knowledge as a critical success factor as well, meaning having people that have the expertise and knowledge to deploy and work with these systems. This can be represented in the literature review by a combination of two factors mentioned by Vilamarín & Diaz (2017), People and Human talent teams and, Learning and Skills. Another critical success factor mentioned several times in the literature review is change management (Yeoh & Popovič, 2016; Vilamarín & Diaz, 2017). The same was raised by the participants by mentioning how important is Team Alignment and the relevance of having everyone understand, be involved and support the BI Systems deployment and use.

Participants in this study have also mentioned synergies as an important factor for the organisation's business model and support for its activities, but most important this turned out to be a critical success factor when the organisation has no internal knowledge or funds to deploy the BI Systems. A similar finding was also mentioned by Oakley et al. (2015) "Non-profits may not have in-house capabilities to engage in BI practices. Thus, it is essential to partner with competent 3rd party organizations that can provide BI services to non-profits".

The easiness of usage was also mentioned by the participants in this study as a factor, ensuring that the solution deployed can be used and understood by the end user. A similar factor was expressed by Kirange (2016) that involving the user in the change management process would lead to a better understanding and communication of their needs and requirements.

To conclude, not all critical success factors identified in the literature review were mentioned by participants in this study, this might happen because of the different business models, requirements, needs and means that NPOs have when compared with for-profit organisations. The data literacy and maturity level of the organisation has might be as well a contributor.

Nevertheless, many points of intersection were found meaning that NPOs face similar challenges to for-profit organisations and look to take the most of these systems as for-profit organisations are already doing in the majority.

5.6 CONTRIBUTION OF THE RESEARCH

Generating new information and knowledge is essential for a dissertation. This study started with the lack of knowledge about how Portuguese NPOs have deployed and are using BI Systems in their decision-making and strategy, consequently leading to understanding how these systems are helping NPOs leverage their mission. In addition to this also to know what factors are considered when implementing these kinds of technologies.

As a contribution, this study presented how Portuguese NPOs are deploying BY Systems within their organisations, showing that some of them can already benefit from it at an organisational level but others only use it more at a department level. More important than this, is the fact that with this study it was possible to understand NPOs deploy BI Systems by a bottom-up approach prioritising departments that can bring insights and transparency to its operations, resources, and social impact.

The study also brought more knowledge and understanding of how these systems can influence and impact decision-making on Portuguese NPOs. It was possible to realise that BI Systems are used to support decision-making at an operational, tactical, and strategical level, empowering decision-makers to have the ability to anticipate and make decisions based on trustworthy and precise information. Important to highlight as well that the deployment of these systems brought positive changes to the decision-making process on these NPOs, transforming this process into a proactive one rather than a reactive one, allowing decisions to be made based on data and at a faster pace.

The impact BI Systems can have on the organisation's strategy can also be considered a contribution brought by this study. It is possible to conclude that BI Systems support these organisations on their strategic goals, and are used as a tool for short-term planning and to monitor the organisation's development. Also showed that in regards to long-term planning there is still a path to do and mostly to show to some organisations how these systems can be used for such type of planning. BI Systems revealed especially important, useful, and critical as a tool and mechanism for NPOs to measure their social impact. The study also showed that all NPOs independently of their level of deployment consider BI Systems as a strategic asset with increasing importance.

As a contribution this study also allowed the researcher and readers to have a good understanding of what would be the benefits of NPOs when these systems are deployed, allowing organisations to become more data-driven, standardised and transparent. A relevant event raised during this study is the fact that NPOs also use these systems as a tool and mechanism for fundraising and awards applications.

The study also highlighted that most of the critical success factors in the deployment of BI Systems in NPOs are similar to the ones for companies. Still, NPOs have highly stressed financial resources as the most critical success factor for them, this is an insightful point once shows the fragilities of NPOs' business model and how money can be an enabler and blocker for these institutions' development.

To conclude, this study has shown that NPOs can learn and follow similar approaches to for-profit organisations in regard to the deployment of BI Systems. Can even consider similar critical success factors and harvest equally important benefits for their social goals. Still, the study has also highlighted the fragility, choices, and difficulties these kinds of institutions face when looking to take a step further in their technological development.

BI Systems do impact NPOs' decision-making process and strategy, for sure the deployment of these systems is the first step for the enhancement of these organisations' social impact.

5.7 LIMITATIONS AND FUTURE RESEARCH

Adding to what has been written, it is equally important to identify the limitations of this study. Starting by mentioning that once this is a qualitative study and of exploratory nature, the number of interviewees is by itself limited, so any generalisation should be done carefully and mindfully of this study's limitations. Also, the fact of being difficult to find NPOs in Portugal that have already deployed BI Systems can be a limitation once these 8 organisations and consequently the study might not mirror the real context of the Portuguese third sector, where most of the organisations have not deployed these systems.

Once the majority of interviews were done online this could lead to the loss of some non-verbal clues or language (Aquilino, 1994), nevertheless it is possible to recognize that this approach brought participants more privacy and confidentiality once they were in their “space” and felt more comfortable.

Another limitation worth mentioning is the absence of validation of the codification by an independent researcher. As a way to minimize the impact of this limitation and, as mentioned in the methodology chapter, the researcher ought to ensure the quality of the study by creating a categories dictionary and presenting as many citations as possible from participants. In the same way, throughout the study, the researcher ought to provide as much information and detail as possible to the reader. Important to mention as well that 4 out of the 8 (50%) organisations are considered big, meaning that have more than 250 employees. While small and medium NPOs represent only 25% each. In the vast majority, only 1 person was interviewed by organisation, it can be beneficial to understand in more detail the strategic reasons, drivers and thought behind the deployment of BI Systems but at the same time can be a constraint for the benefits and critical success factors once having the contribution of participants from more operational functions would enrich those topics.

Based on the limitations identified in this study for future research the following topics should be considered, (1) A broader number of NPOs, even if necessary extend to an international context because this will allow researchers to design general conclusions with more security and even explore in a solid way the differences between small, medium and big NPOs in the deployment and usage of BI Systems, (2) Ensuring an equal representation of NPOs size, connected to the previous point this will allow researchers to draw solid and general

conclusions for each type of NPOs and get a deeper understanding of the benefits and constraints in each level, (3) The inclusion of more participants per organisation and define each one will contribute to each section/topic. Once some participants might not be able to give their contribution from a strategical point of view but could be important for the operational perspective, and (4) Extend the study to organisations that position their selves as impact ventures and understand when compared with NPOs what their enablers and blockers for BI Systems deployment and usage are.

6. BIBLIOGRAPHY

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7. ANNEXES

7.1 ANNEX A – LITERATURE REVIEW ARTICLES' FINDINGS

Table 13 - Literature Review Articles' Findings

Authors	Title	Findings
Alnoukari et al. (2012)	Business Intelligence: Body of Knowledge in Business Intelligence and Agile Methodologies for Knowledge-Based Organisations: Cross-Disciplinary Applications	How Business intelligence applications are vital as they help organisations manage, develop, and communicate intangible assets such as information and knowledge.
Alnoukari & Hananao (2017)	Integration of business intelligence with corporate strategic management	BI has a relevant and direct impact on business strategies and gives top management the ability to make the right decisions.
Arena & Bengo (2014)	Performance measurement for social enterprises.	Stepwise method to be used by SEs to develop their own PMS.
Davenport (2010)	Business Intelligence and Organizational Decisions.	How BI is related and impacts organisational decisions.
Eckerson (2010)	Performance dashboards: measuring, monitoring, and managing your business.	What are dashboards, where they can be used and why they are so important.
Gauzelin & Bentz (2017)	An examination of the impact of business intelligence systems on organisational decision making and performance: The case of France	The study concluded that BI systems have an important impact on the operations of SMEs.
Kirange (2016)	Role of Business Intelligence in Decision-Making for SMEs	Proved BI generate value for companies who implement it, especially in today's competitive market. Identified CSFs to implement BI systems successfully.

Lim & Teoh (2020)	Realising the strategic impact of business intelligence utilisation	They concluded that BI utilisation enhances companies' performance in several areas and reinforces social performance.
MacKrell & Boogaard (2012)	Making sense of business intelligence: proposing a socio-technical framework for improved decision-making in not-for-profit organisations	Presented a conceptual framework that considers the human agency and interaction with IS. A new inductive and socially embedded approach to developing IS solutions.
Nykänen et al. (2016)	Business intelligence in decision-making in Finnish enterprises	Organisational factors were presented as more important than technological factors to the benefits perceived.
Oakley et al. (2015)	Examining the Role of Business Intelligence in Non-profit Organisations to Support Strategic Social Goals	How BI provides value to non-profit by developing intellectual capital and supporting those organisations in achieving their social goals.
Oliveira et al. (2012)	Business analytics in supply chains – the contingent effect of business process maturity	The authors explain which areas of BI and BA companies should focus on according to their maturity level.
Pirttimäki (2007)	Business Intelligence as a Managerial Tool in Large Finish Companies	The author explored how BI Systems are used in Finnish companies and their influence on managerial roles and tasks.
Power (2007)	A Brief History of Decision Support Systems	The relevant role of Business Intelligence can have as a decision support system.
Puklavec et al. (2018)	Understanding the determinants of business intelligence system adoption stages an empirical study of SMEs	The authors presented important progress in the theoretical understanding of the role of technology, organisation, and

		environmental factors throughout BI systems adoption stages.
Qushem et al. (2017)	The trend of business intelligence adoption and maturity	Provides a significant contribution to the body of knowledge in the area of BI initiative for SME companies as well as BI-adopted companies.
Reinhardt & Enke (2020)	Successful without profits: personal factors that affect performance in NPOs	14 personal factors can be aggregated into four categories—experience, virtues and vices, interpersonal skills, and management skills—each of which affects NPO managers' individual performance and/or individual innovativeness.
Retnowardhani et al. (2019)	Review Study of Business Intelligence to Support Strategic Decision Making	Provide a general overview of the development of BI research.
Richards et al. (2019)	Business Intelligence Effectiveness and Corporate Performance Management: An Empirical Analysis	Presented a positive and meaningful relationship between BI systems implementation and crucial corporate management practices of BA.
Rouhani et al. (2016)	The impact model of business intelligence on decision support and organisational benefit	Provided an insightful knowledge and understanding of BI's functions have a more substantial impact on the outcomes.
Russel et al. (2010)	Organic Evolution and the Capability Maturity of Business Intelligence	Demonstrated how the conceptual model could be applied and give a common ground for the exploration of organic macro-level contexts of capability maturity.

Sabanovic & Sjøilen (2012)	Customers' Expectations and Needs in the Business Intelligence Software Market. Journal of Intelligence Studies in Business	What do companies desire when looking for BI systems.
Salomon & Sokolowski (2016)	The size and scope of the European third sector.	The impact, size, and importance of the third sector have in Europe.
Turban et al. (2011)	Decision Support and Business Intelligence Systems	Presents how Decision Support Systems and Business Intelligence can be used for better decision-making.
Tyson (1986)	Business intelligence--putting it all together	The author presents what are the key steps to deploy a successful BI Strategy and how to take the most of it.
Vilamarín & Diaz (2017)	Key success factors to business intelligence solution implementation	The authors identified 13 factors that have a key role in ensuring a successful BI solution implementation and how they are more relevant.
Waters (1996)	Competitive Intelligence Must Become Priority	The author describes the relevance information systems can have in a company's strategy.
Watson & Wixom (2007)	The Current State of Business Intelligence	How BI can benefit companies, key factors to success and strategies.
Wieder & Ossimitz (2015)	The impact of Business Intelligence on the quality of decision making—a mediation model	BI influences positively through an indirect way, quality of managerial decision-making.
Yeoh & Popovic (2016)	Extending the understanding of critical success factors for implementing business intelligence systems	CSFs have a direct, positive, and significant impact when implementing a BI solution. Moreover, it showed that CSFs

		are essential prerequisites for a successful BI implementation.
Zamani et al. (2017)	Evaluating the implementation of BI to increase the effectiveness of the decision-making process	The authors concluded that BI could increase the effectiveness of the DM process for managers.

7.2 ANNEX B – INTERVIEW SCRIPT

Demographic Questions

Gender

Position

Tenure

Organisation's size

Organisation's field

Business Intelligence Systems

- Has your organisation deployed business intelligence? (Gauzelin, Bentz,2017)
- Are the business intelligence systems used at all levels of the organisational department?
If not, which departments use business intelligent systems? (Gauzelin, Bentz,2017)

Impact of Business Intelligence Systems in Decision Making

- Does the information that is generated by the business intelligence system help in making timely decision-making? If yes, how? (Gauzelin, Bentz,2017)
- How did your decision-making process change since the implementation of business intelligence systems?

Impact of Business Intelligence Systems on the organisation's strategy

- Are the business intelligence systems being used to support specific strategic goals? If yes, how? (Sabanovic, Sjøilen, 2012)
- Is your organisation using Business Intelligence Systems to monitor its development?
- Is your organisation using Business Intelligence Systems as a tool for long-term planning and strategy? If yes, how?
- With the implementation of Business Intelligence systems could the organization better understand its social impact? If yes, how?
- Are Business Intelligence systems perceived as a strategic asset in your organisation? (Sabanovic, Sjøilen, 2012)

Other impacts

- Other than helping in prompt decisions making are there other impacts or benefits of business intelligence systems in your organisation? If yes, how?

Critical Success Factors

- What are for you the critical success factors that are important to implementing effective business intelligence systems?

7.3 ANNEX C – PRE-DEFINED CATEGORIAL TEMPLATE

1. Business Intelligence Systems Deployment

- 1.1. Systems Deployed
- 1.2. Systems not Deployed

2. Organisation deployment level

- 2.1. Organisation-Wide Range
- 2.2. Department
 - 2.2.1. Financial
 - 2.2.2. Operations
 - 2.2.3. Social Impact
 - 2.2.4. Human Resources

3. Impact of BI Systems on Decision Making

- 3.1. Timely decision making
 - 3.1.1. It does not help
 - 3.1.2. It does help
 - 3.1.2.1. Information Availability
 - 3.1.2.2. Precise information
 - 3.1.2.3. Real-time information
 - 3.1.2.4. Identify trends and patterns
- 3.2. Changes in the decision-making process
 - 3.2.1. Has not changed
 - 3.2.2. Changed
 - 3.2.2.1. Decisions made based on data
 - 3.2.2.2. Faster
 - 3.2.2.3. Focus on the big picture

4. Impact of BI Systems on the organization's strategy

- 4.1. Support Strategic Goals
 - 4.1.1. Not used
 - 4.1.2. Used
 - 4.1.2.1. Definition of KPIs
 - 4.1.2.2. Resource allocation
- 4.2. Monitor Development
 - 4.2.1. Not used
 - 4.2.2. Used
 - 4.2.2.1. KPIs and OPIs monitorization
 - 4.2.2.2. Organization's development
 - 4.2.2.3. Daily operations
- 4.3. Long-term planning
 - 4.3.1. Not used
 - 4.3.2. Used

4.3.2.1. Define the following strategic cycle

4.4. Social Impact

4.4.1. Social Impact Indicators

4.4.2. Know the subscribers

4.5. BI Systems perceived as a Strategic Asset

4.5.1. Perceived

4.5.2. Not Perceived

5. Other impacts

5.1. Transparency

5.2. Discipline

5.3. Process standardisation

6. Critical Success Factors

6.1. Financial resources

6.2. Technical knowledge

6.3. Top team sponsorship

7.4 ANNEX D – FINAL CATEGORIAL TEMPLATE

1. Business Intelligence Systems Deployment

- 1.1. Systems Deployed
- 1.2. Systems not Deployed

2. Organisation deployment level

- 2.1. Organisation-Wide Range
- 2.2. Department
 - 2.2.1. *Strategy*
 - 2.2.2. Financial
 - 2.2.3. Operations
 - 2.2.4. Social Impact
 - 2.2.5. Human Resources

3. Impact of BI Systems on Decision Making

- 3.1. Timely decision making
 - 3.1.1. It does not help
 - 3.1.2. It does help
 - 3.1.2.1. Information Availability
 - 3.1.2.2. Precise information
 - 3.1.2.3. Real-time information
 - 3.1.2.4. Identify trends and patterns
 - 3.1.2.5. *Ability to anticipate*
 - 3.1.2.6. *Knowing your audience*
- 3.2. Changes in the decision-making process
 - 3.2.1. Has not changed
 - 3.2.2. Changed
 - 3.2.2.1. *Proactive, not reactive*
 - 3.2.2.2. Decisions made based on data
 - 3.2.2.3. Faster
 - 3.2.2.4. Focus on the big picture

4. Impact of BI Systems on the organization's strategy

- 4.1. Support Strategic Goals
 - 4.1.1. Not used
 - 4.1.2. Used
 - 4.1.2.1. *Planning*
 - 4.1.2.2. Definition of KPIs
 - 4.1.2.3. Resource allocation
- 4.2. Monitor Development
 - 4.2.1. Not used
 - 4.2.2. Used
 - 4.2.2.1. KPIs and OPIs monitorization

- 4.2.2.2. Organization's development
 - 4.2.2.3. Daily operations
 - 4.3. Long-term planning
 - 4.3.1. Not used
 - 4.3.2. Used
 - 4.3.2.1. *Plan long-term solutions to solve cyclical problems*
 - 4.3.2.2. Define the following strategic cycle
 - 4.4. Social Impact
 - 4.4.1. Social Impact Indicators
 - 4.4.2. Know the subscribers
 - 4.5. BI Systems perceived as a Strategic Asset
 - 4.5.1. Perceived
 - 4.5.2. Not Perceived

5. Other impacts

- 5.1. *Fundraising*
- 5.2. Transparency
- 5.3. Discipline
- 5.4. Process standardisation
- 5.5. *Data-Driven organisation*
- 5.6. *Application to funds*
- 5.7. *Application to awards*

6. Critical Success Factors

- 6.1. Financial resources
- 6.2. Technical knowledge
- 6.3. Top team sponsorship
- 6.4. *Team alignment*
- 6.5. *Easiness of usage*
- 6.6. *Clear objectives and purpose*
- 6.7. *Synergies*

7.5 ANNEX E– CATEGORIES’ DICTIONARY

1. Business Intelligence Systems Deployment:

The main purpose of this category is to evaluate if the organisation has deployed or not BI Systems

1.1. Systems Deployed:

The organisation has already deployed BI Systems.

1.2. Systems not Deployed:

The organisation has not deployed BI Systems.

2. Organisation deployment level:

Within this category, the objective is to evaluate at what level BI Systems are deployed within the organisation

2.1. Organisation-Wide Range:

BI Systems are deployed across all organisation’s fields, areas, or departments.

2.2. Department

BI Systems are deployed at a department level.

2.2.1. Strategy

BI Systems are deployed in the Strategy committee/department.

2.2.2. Financial

BI Systems are deployed in the Financial department.

2.2.3. Operations

BI Systems are deployed in the Operations department.

2.2.4. Social Impact

BI Systems are deployed in the Social Impact department.

2.2.5. Human Resources

BI Systems are deployed in the Human Resources department.

3. Impact of BI Systems on Decision Making

Interpret and understand how BI Systems impact the decision-making and its process within the organisation.

3.1. Timely decision making

How BI Systems help organisations make timely decisions.

3.1.1. It does not help

BI Systems do not help the organisation in making timely decisions

3.1.2. It does help

BI Systems do help the organisation in making timely decisions

3.1.2.1. Information Availability

BI Systems do help the organisation in making timely decisions because the information is available and accessible for its users at any moment.

3.1.2.2. Precise information

BI Systems do help the organisation in making timely decisions because the information is trustworthy and reflects with an elevated level of precision organisation's reality.

3.1.2.3. Real-time information

BI Systems do help the organisation in making timely decisions because the information is gathered and presented at a near real-time or real-time pace.

3.1.2.4. Identify trends and patterns

BI Systems do help the organisation in making timely decisions because historical and up-to-date allow the organisation to identify trends and patterns in its operations and context.

3.1.2.5. Ability to anticipate

BI Systems do help the organisation in making timely decisions because decision makers can make use of the information to understand what problems issues can occur in the near or long future.

3.1.2.6. Knowing your audience

BI Systems do help the organisation in making timely decisions because the NPO is capable of having a deeper understanding of their beneficiaries and donors.

3.2. Changes in the decision-making process

Evaluate if since the implementation of BI Systems there were changes in the decision-making process

3.2.1. Has not changed

The implementation of BI Systems did not cause any change in the decision-making process.

3.2.2. Changed

The implementation of BI Systems did cause changes in the decision-making process.

3.2.2.1. Proactive not reactive

The implementation of BI Systems allowed the decision makers to take decisions based on what could happen (proactive way) and not on what happened (reactive way).

3.2.2.2. Decisions made based on data

With the implementation of BI Systems, decisions started to be made based on data rather than gut feeling or empirical knowledge.

3.2.2.3. Faster

The implementation of BI Systems allowed decision makers to make faster decisions once the information needed was made available at the moment it would be needed.

3.2.2.4. Focus on the big picture

With the implementation of BI Systems decision-makers started to make operational decisions with a focus on their long-term goals and/or the big picture.

4. Impact of BI Systems on the organization's strategy

Interpret and understand how BI Systems support the organisation's strategy.

4.1. Support Strategic Goals

How BI Systems are used to support the organisation on their strategic goals.

4.1.1. Not used

BI Systems are not used within the organisation as a mechanism of support for strategic goals.

4.1.2. Used

BI Systems are used within the organisation as a mechanism of support for strategic goals.

4.1.2.1. Planning

The organisation used BI Systems as a tool to evaluate what initiatives and projects should integrate into the annual plan in the following year according to the results they are having in the current year.

4.1.2.2. Definition of KPIs

The organisation uses the BI Systems as a mechanism to help define its KPIs.

4.1.2.3. Resource allocation

The organisation uses the BI Systems as a tool to define and evaluate the allocation and reallocation of resources.

4.2. Monitor Development

How BI Systems are used as a tool to help the organisation monitor its development.

4.2.1. Not used

The organisation does not use BI Systems as a tool to monitor its development.

4.2.2. Used

The organisation does use the BI Systems as a tool to monitor its development.

4.2.2.1. KPIs and OPIs monitorization

The organisation uses BI Systems to monitor its KPIs and OPIs.

4.2.2.2. Organization's development

The organisation uses BI Systems to monitor its development and growth throughout time.

4.2.2.3. Daily operations

The organisation uses BI Systems to monitor its operations and status on a daily basis.

4.3. Long-term planning

How BI Systems are used by the organisation to support its long-term planning

4.3.1. Not used

The organisation does not use BI Systems as a tool to support its long-term planning.

4.3.2. Used

The organisation uses BI Systems as a tool to support its long-term planning.

4.3.2.1. Plan long-term solutions to solve cyclical problems

The organisation uses BI Systems as a tool to identify and plan how to solve structural pain points.

4.3.2.2. Define the following strategic planning

The organisation uses BI Systems as a tool to help define/redefine the priorities or focus for the following strategic cycle.

4.4. Social Impact

Assess how BI Systems help the organisation in having a perception of their social impact.

4.4.1. Social Impact Indicators

The implementation of BI Systems allowed the organisation to have a method to measure social impact indicators related to its social activity.

4.4.2. Know the subscribers

The implementation of BI Systems allowed the organisation to have a deeper understanding of who are the subscribers of its programmes.

4.5. BI Systems perceived as a Strategic Asset

Evaluate if BI Systems are perceived as a strategic asset within the organisation.

4.5.1. Perceived

BI Systems have perceived as a strategic asset within the organisation.

4.5.2. Not Perceived

BI Systems have perceived as a strategic asset within the organisation.

5. Other impacts

Understand what other impacts/benefits the implementation of BI Systems brought to the organisation.

5.1. Fundraising

The implementation of BI Systems is used by the organisation as a tool to leverage their fundraising efforts.

5.2. Transparency

The implementation of BI Systems brought more transparency to the organisation's processes, results, and operations.

5.3. Discipline

The implementation of BI Systems created more discipline in the way processes were followed, reported, and implemented.

5.4. Process standardisation

The implementation of BI Systems forced everyone in the organisation to follow the same method, practice, and rules in regard to processes across multiple locations.

5.5. Data-Driven organisation

The implementation of BI Systems created the urgency of treating data as a strategic asset and building capabilities to make use of it on a daily basis.

5.6. Application to funds

The organisation uses the BI Systems as a tool to measure and monitor indicators or requirements for awards' application,

5.7. Application to awards

The organisation uses the BI Systems as a tool to measure and monitor indicators or requirements for awards' application.

6. Critical Success Factors

Understand according to the organisation what the Critical Success Factors are to successfully deploy BI Systems within an NPO.

6.1. Financial resources

The organisation considers financial resources as one of the Critical Success Factors in successfully deploying BI Systems within an NPO.

6.2. Technical knowledge

The organisation considers technical knowledge as one of the Critical Success Factors in successfully deploying BI Systems within an NPO.

6.3. Top team sponsorship

The organisation considers top team support as one of the Critical Success Factors in successfully deploying BI Systems within an NPO.

6.4. Team alignment

The organisation considers that having a team aligned and committed to this change that is the implementation of a new solution is one of the Critical Success Factors to successfully deploying BI Systems within an NPO.

6.5. Easiness of usage

The organisation considers the systems' easiness of usage and proportionality of the systems with reality as one of the Critical Success Factors in successfully deploying BI Systems within an NPO.

6.6. Clear objectives and purpose

The organisation considers having a clear idea of what is the data strategy and the why of these changes as one of the Critical Success Factors in successfully deploying BI Systems within an NPO.

6.7. Synergies

The organisation considers the creation of synergies with other organisations or companies as one of the Critical Success Factors in successfully deploying BI Systems within an NPO.