MASTER

ACCOUNTING, TAXATION AND CORPORATE FINANCE

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DISSERTATION

INTERNAL AUDIT'S ROLE IN THE PORTUGUESE AIR FORCE AND ITS INFLUENCE ON ORGANISATIONAL SUSTAINABILITY

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LIST OF ABBREVIATIONS AND ACRONYMS

AFI – Air Force Inspectorate

AVE – Average Variance Extracted

CA – Cronbach's Alpha

CAEs – Chief Audit Executives

CG – Corporate Governance

CQAE – Cabinet of Quality, Airworthiness and Environment

CR – Composite Reliability

EQCs – Environment and Quality Cabinets

ESG – Environment, Social and Governance

FPIAS – Financial and Patrimonial Inspection and Auditing Service

GRC – Governance, Risk Management, and Internal Controls

HRMP – Human Resources Management Practices

IA – Internal Audit

IAA – Internal Audit Alignment

IAD – Internal Audit Definition

IAE – Internal Audit Effectiveness

IIA – Institute of Internal Auditors

OLS – Ordinary Least Squares

PAF – Portuguese Air Force

SD – Standard Deviation

SO – Sustainability Orientation

TBL – Triple Bottom Line

VIF – Variance Inflation Factor

ABSTRACT

Internal audit (IA) has undergone significant changes in its area of activity and the way it operates, whereby today plays an active role in the sustainability of organisations. Facing this new paradigm, this dissertation first defines the Portuguese Air Force's (PAF) IA roles and then studies its influence on organisation sustainability while exploring the moderating effect of human resources management practices (HRMP). To this end, we collected data from all PAF internal auditors through two surveys and used Ordinary Least Squares multiple regression to analyse the hypotheses. The results showed that PAF's IA is following the IA tendencies worldwide and, more than that, it can positively affect an organisation's sustainability orientation. This study further complements this relationship showing that it is affected by context, namely, in the presence of HRMP oriented to that end. This study reinforces the literature on IA matters, mainly regarding its relationship with sustainability. Furthermore, it provides evidence of the possible moderating effect of HRMP. Finally, it extends to the Armed Forces, an area of research primarily conducted in the private sector.

RESUMO

A auditoria interna (AI) sofreu alterações significativas na sua área de atividade e no seu modo de funcionamento, desempenhando hoje um papel ativo na sustentabilidade das organizações. Face a este novo paradigma, esta dissertação define primeiro os papeis da AI da Força Aérea Portuguesa (FAP) e depois estuda a sua influência na sustentabilidade da organização, explorando ao mesmo tempo o efeito moderador das práticas de gestão de recursos humanos (PGRH). Para o efeito, recolhemos dados de todos os auditores internos da FAP através de dois inquéritos e utilizámos a regressão múltipla pelo método dos mínimos quadrados para analisar as hipóteses. Os resultados mostraram que a AI da FAP está a seguir as tendências da AI a nível mundial e, mais do que isso, pode afetar positivamente a orientação para a sustentabilidade de uma organização. Este estudo complementa ainda mais esta relação, mostrando que é afetada pelo contexto, nomeadamente, na presença de PGRH orientadas para esse fim. Este estudo reforça a literatura sobre questões de AI, principalmente no que diz respeito à sua relação com a sustentabilidade. Além disso, fornece provas do possível efeito moderador das PGRH. Por fim, estende-se às Forças Armadas, uma área de investigação conduzida principalmente no sector privado.

PALAVRAS-CHAVE: Governação Corporativa; Práticas de Gestão de Recursos Humanos; Auditoria Interna; Forças Armadas Portuguesas; e Sustentabilidade.

CÓDIGOS JEL: H83; M42; O15; O16; e Q56.

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1. INTRODUCTION

Whether for a long time, there has been a debate on whether an organisation must prioritise profit maximisation (Friedman, 1970) or stakeholder value maximisation (Freeman, 1984), nowadays, another idea is in the spotlight. According to Zumente and Bistrova (2021), organisations now intend to create value in a more sustainable, long-term-oriented way. Facing this organisational goal focus shift, corporate governance (CG) needed to readjust its processes and mechanisms to better respond to the stakeholders' requirements (Naciti *et al.*, 2021).

Internal Audit (IA), one of CG's crucial mechanisms (Gramling *et al.*, 2004), has been changing and no longer is the same as it was a few decades ago. While for some, regarding its well-known "police" function, the IA concept might still raise some negative thoughts, nowadays, it has been regarded as a vital function for an organisation to survive and thrive (Anderson *et al.*, 2017). Besides performing its traditional functions, IA is now in charge of advisory and driving value on what truly matters in the organisation (Eulerich & Lenz, 2020). Indeed, the brutal transformation IA has undergone in recent years led it to carry a heightened societal expectation (Pickett, 2010). In line with the organisations' sustainable goals, IA also plays a vital role in sustainability issues (IIA, 2021; WBCSD & IIA, 2022).

Regarding the branches of the Armed Forces, which are often considered traditionalists and resistant to changes when compared to the private sector (e.g., Burns *et al.*, 2014; Salvada, 2018), it might be questioned whether they are following these function developments in IA and how this CG mechanism contribute to organisational sustainability. This becomes even more important as the armed forces are, similarly to the rest of public administration, under pressure to improve their way of functioning (not only in economic but also in social and environmental issues) to "do more with less" and have more impact on society.

The present study consists of a case study carried out in the Portuguese Air Force (PAF) that aims to address two main questions: i) what are the roles/functions of the Internal Audit in the PAF?; and, ii) does IA contribute to the sustainability of PAF?. In addition to these questions, the human resources management practices' (HRMP) possible mod-

erator effect was also analysed to explore if any contextual factor could intensify this relation.

Based on data collected through questionnaires directed to PAF's internal auditors, the results show that IA is a value-added assurance and consulting service that acts on a wide range of areas such as auditing compliance with the regulatory code requirements and auditing financial risks. Moreover, IA can contribute to the sustainability of the PAF. The results reveal that this contribution is focused on the social and governance dimension of ESG, being possible to extend this contribution to the environmental dimension with the help of HRMP.

This dissertation is divided into five sections. After the introduction, the second section reviews the literature and presents the hypothesis under study. The third section describes the PAF's IA context, followed by the methodology used. It is presented how the data was collected, the constitution of the sample, how the model was measured and finally, how data was analysed. Then, in the fourth section, the results and the statistical tests that give them validity are presented. Also, in the fourth chapter, the results are compared with the literature, and their discussion is carried out. Finally, the fifth chapter presents the conclusions, implications, limitations, and future research opportunities.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The literature review is structured into five subsections. The first and second focus, respectively, on CG and IA´s value to CG, as one of its cornerstones. The third highlights sustainability, and then the fourth explores sustainability and its relationship with CG. Finally, the last subsection serves as a basis for hypothesis development, exploring IA and Sustainability, followed by HRMP as a moderator of the interactions between these two.

2.1 Corporate Governance

The major corporate financial scandals at the beginning of the millennium led to higher attention from academics and professionals to CG (DeSimone *et al.*, 2021; Vadasi *et al.*, 2019). Over the last decades, CG has become a popular term in the management literature (Pickett, 2010) and a central topic for most organisations (Aras & Crowther, 2008).

The literature presents several definitions of CG (Aguilera & Jackson, 2010). The OECD (2015), for its stance, defined it as a set of relationships between a company's management, its board, its shareholders, and other stakeholders. Here, in between these relationships arises the agency theory, which is the main driver for CG (Pickett, 2010). From the agency relationship, in which the principal delegates work to the agent, there may be some problems succeeding the existence of different goals and risk preferences between the firm's owners (principal) and the management (agent). As expected, to mitigate these deviations and related expensive control costs, owners demand rigorous CG principles and have incentives to invest in formal governance mechanisms, ensuring, that way, value creation (Aras & Crowther, 2008; Bonazzi & Islam, 2007; Khan, 2011; Pickett, 2010).

Nevertheless, while some academics focus mainly on shareholder interest, others take into consideration a broader range of stakeholders[1] (Aguilera & Jackson, 2010; Scherer & Voegtlin, 2020). On the one hand, the shareholder value approach (Friedman, 1970) focuses on protecting the interests of the owners of the firm, pursuing shareholder value maximisation. On the other hand, the stakeholder approach (Freeman, 1984) rejects this idea, defending that a firm should satisfy all stakeholders' interests rather than focusing exclusively on profit maximisation. Examples of these two CG orientations may be seen comparing the public and private sectors. While public sector organisations are service-oriented, focusing on providing services efficiently, private sector organisations are generally interested in maximising profits (Cohen & Sayag, 2010).

Also understood as the "practices through which societies are governed" (Meadowcroft, 2007, p. 300), good CG counts with four basic principles: transparency, accountability, responsibility, and fairness (Aras & Crowther, 2008). Besides this, there must be established structures and processes that not only enable the achievement of these principles but also enable actions by management and the existence of an effective independent IA (IIA, 2021).

The IA comes up as a cornerstone of a firm's effective CG, along with the other three: management, audit committee and external audit (Cohen *et al.*, 2004; Gramling *et al.*, 2004; Prawitt *et al.*, 2009; Samagaio & Diogo, 2022). Therefore, to pursue the quality

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[1] Such as customers, investors, politicians, the media, employees, regulators, partners, competitors, government, and local communities (Pickett, 2010).

of governance, all cornerstones of CG must be focused on. Paying attention to IA, it aims to assist an organisation in achieving its goals (Anderson *et al.*, 2017; Hass *et al.*, 2006), improving productivity, efficiency and performance in private and public sector organisations (Mihret *et al.*, 2010). Effective IA should be a governance requirement for all organisations (IIA, 2013).

2.2 Internal Auditing Value to Governance

Simultaneously to CG's greater awareness, IA has also risen to prominence and has been considered a crucial function to minimise the risk of financial scandals (Leung *et al.*, 2003; Ramamoorti & Siegfried, 2016). The need for effective control processes created the concept of internal auditing (Moeller, 2016), a line of the Three Line of Defence model (IIA, 2013). To assign and manage risk management and control responsibilities, CG may count on three different functions involved in risk management: operational management (the first line of defence), risk management and compliance functions (the second line of defence) and, finally, IA (the third line of defence). Each of them plays a distinct role, respectively, functions that own and manage risks and control, functions that define risk policies and support management, and functions that provide independent and objective assurance.

Many studies have investigated the role of the last line of defence (Paape *et al.*, 2003; Roussy, 2013; Roussy & Perron, 2018; Sarens *et al.*, 2012; Vadasi *et al.*, 2019) and acting as an oversight governance mechanism was the first identified role of IA (Gramling *et al.*, 2004; Roussy & Perron, 2018). According to this idea, IA enhances the quality and consequent reliability of financial information (Prawitt *et al.*, 2009) and mitigates both significant internal control weaknesses and financial fraud (Asare *et al.*, 2008; Lin *et al.*, 2011). Besides that, IA empowers the quality of CG and contributes to the organisation's achievement of its objectives (IIA, 2013; Lenz *et al.*, 2018; Sarens, 2009). Defined as a governance, risk management, and internal controls (GRC) partner (Eulerich e Lenz, 2020), IA's traditional activities focus on delivering assurance with a focus on the GRC area (Eulerich e Lenz, 2020; Moeller, 2016).

Other studies (Gramling *et al.*, 2004; Rittenberg, 2016; Sarens *et al.*, 2012) highlight IA's roles in CG via its relationship with other CG cornerstones, constituting it a resource to them. With the higher complexity and volume of organisations operations, the

owners and top managers cannot satisfactorily review the effectiveness of enterprise performance or its risk management and control process (Moeller, 2016; Roussy & Perron, 2018; Sarens, 2009; Sarens *et al.*, 2012). Thus, regarding the control environment and internal controls, they must rely extensively on the IA for comfort (Roussy & Perron, 2018; Sarens, 2009; Sarens *et al.*, 2012). IA's relationship with the audit committee, for instance, is considered one of the hallmarks of good governance (Rittenberg, 2016).

The IA roles are constantly evolving and go beyond governance oversight supporting the top management and the organisation (Lenz & Sarens, 2012; Roussy, 2013). The IA might also be known as a trusted advisor and as a value driver. Aiming to increase overall organisation performance, the advisory-oriented activity "focuses on more familiar topics; is supply-led; and is often associated with the GRC area" (Eulerich & Lenz, 2020, p. 17). Already as a value driver, it "goes further, cracks the traditional boundaries, and contributes to what truly matters in the respective organisation, thereby also dealing with the not so familiar, the lesser or unknown subject matters, and the more complex issues" (Eulerich & Lenz, 2020, p. 7).

Synthetising, IA's roles have changed to value-added independent, objective assurance[2] and consulting[3] services, as stated in the International Standards for the Professional Practice of Internal Auditing (ISPPIA) of the Institute of Internal Auditors (IIA). More specifically, IA "helps an organisation accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of governance, risk management and control processes" (IIA Standards, 2017, p. 23).

It is noteworthy that this definition serves both the public and private sectors (Goodwin, 2004). However, regarding the different goals public and private sector organisations pursue, there are differences between public and private sector internal audit functions. Considering the broader nature of public sector governance and broader objectives of public financial management, then it is also needed an IA's activity of a much broader scope (Asare, 2009; Goodwin, 2004).

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[2] Assurance refers to assessments of governance, risk management, and control processes.
[3] Consulting refers to counsel, advice, facilitation, and training at the client's request.

Public sector IA, which initially served as a simple administrative procedure aiming at the review of financial controls (Baltaci & Yilmaz, 2006; Enofe *et al.*, 2013), changed its attention to all organisational processes, primarily to ensure compliance, and afterwards to performance or value-for-money audits: an evaluation of the economical, efficient and effective allocation and utilisation of the public resources (Asare, 2009; Baltaci & Yilmaz, 2006; Goodwin, 2004; Rensburg & Coetzee, 2016). In addition, IA also provides internal consulting and adds value by minimising and managing the risks associated with the challenges the Public Sector may face (Asare, 2009; Rensburg & Coetzee, 2016). IA may perform a protector role, protecting the management against possible obstacles, and a helper role, supporting organisational performance and providing guidance when needed (Roussy, 2013).

Even though the stated above definition and roles of IA, IA's added value varies widely between professionals and organisations (Eulerich & Lenz, 2020). It depends on the requirements and expectations of IA's key stakeholders (senior management and the audit committee) as well as the specific characteristics of the respective organisation (Anderson *et al.*, 2017; Eulerich & Lenz, 2020; Harrington & Piper, 2015; IIA, 2013). Therefore, IA must be strategically aligned with its key stakeholders' interests (Harrington & Piper, 2015; Hass *et al.*, 2006): while the audit committee and external auditors expect IA to help monitor the internal control system (Hermanson & Rittenberg, 2003), senior management is interested in both assurance and consulting (Sarens & Beelde, 2006).

However, providing evidence of IA added value and effectiveness is not an easy task, as it is not directly observed (Lenz *et al.*, 2018). According to IIA's Value Proposition for Internal Auditing, IA's value results from three elements: assurance, insight and objectivity (Miller & Smith, 2011). Specifically, IA provides assurance on the GRC area, insight and recommendations based on analyses and assessments of data and business processes and provides value as an objective source of independent advice (Anderson *et al.*, 2017). Common Body of Knowledge 2015 global practitioner survey brings data that supports this concept: the nine activities considered the most valuable to Chief Audit Executives (CAEs) are directly related to these three elements (Seago, 2015).

Regarding the multiple roles documented, the fact that there is no consensus from the literature (Roussy & Perron, 2018) and today's continuously redefining of IA's roles (Moeller, 2016), we arise our first research question:

RQ1: what are the roles/functions of the Internal Audit in the PAF?

2.3 Sustainability

Sustainability is "the principle of ensuring that our actions today do not limit the range of economic, social, and environmental options open to future generations" (Elkington, 1997, p.20). With this definition, we found three interconnected pillars prevalent in sustainability descriptions (Purvis *et al.*, 2019): the economic, social, and environmental dimensions. This idea was already addressed by Elkington (1997), defined as the Three Bottom Line (TBL) (Elkington, 1997). TBL idealises that sustainability results from the holistically and supremely interaction of these three elements. Therefore, the environmental and social dimensions should be added to the conventional bottom line (Lopes, 2015), constituting the 3 P's of sustainability - People, Planet and Profit (Elkington, 1997), and encouraging organisations to take into consideration these pillars in their decision making (Purvis *et al.*, 2019).

Although this widespread conceptualisation, it faces some problems: the lack of theoretical development (Purvis *et al.*, 2019) and the difficulty of measuring the two added bottom lines compared to the traditional one (Lopes, 2015). Additionally, it is impossible to optimise all three pillars simultaneously (Aras & Crowther, 2008; Jensen, 2002), and sustainability, may mean different things to different people (Aras & Crowther, 2008; Hazaea *et al.*, 2021). Finally, there is no defined path for sustainable development: this concept may only define a framework for decision-making (Fiorino, 2010).

While scholars have used the TBL concept, its considered inadequacy to deal with social and environmental challenges has led to another measure addressing these dimensions' performance: ESG (Ferrell, 2021). This acronym refers to Environmental, Social and Governance, and, similarly to TBL, it provides a lens for organisations to integrate environmental and social concerns into their decisions and behaviour (Ferrell, 2021; Gillan *et al.*, 2021; IIA, 2021; KPMG, 2021). Additionally, it brings the term governance, which "refers to variables such as business ethics, leadership, executive pay, au-

dits, internal controls, intellectual property protection, and shareholder rights" (IIA, 2021, p.3).

Even though the slower signs and rhythm for the public sector, sustainability policies and practices adoption is a rising trend in both public and private organisations (Figueira *et al.*, 2018; Lundberg *et al.*, 2009; Williams *et al.*, 2011). Among the reasons for pursuing it, one is related to evidence showing that better performance in the environmental and social agendas often means better financial performance (Coyne, 2006). Besides that, whilst according to Hahn and Scheermesser (2006), the main reasons were environmental and social responsibility and ethics; Ditlev-Simonsen and Midttun (2011) demonstrated that branding, value maximisation, and stakeholders' management were the key reasons for it.

In the case of public sector organisations, considering the citizen pressure, fulfilling stakeholders' expectations (a comprehensive approach to ESG[4]) has greater importance, and it is required a greater extent of sustainability, accountability, and transparency in the use of public resources (García-Sánchez *et al.*, 2013; GRI, 2004; Piper, 2015). As this sector does not intrinsically pursue economic returns (Cohen & Sayag, 2010), sustainability is one necessary condition for public service delivery (Trondal, 2021). Indeed, if the public sector aims to foster the welfare of citizens, sustainability is up to evaluate it (Fiorino, 2010).

Nevertheless, to align with the pursuit of sustainability, it is needed a reorientation of public sector organisations and their way of working (Bornemann & Christen, 2019). This sector faces plenty of barriers to sustainable development, such as the lack of commitment, inadequate or unclear responsibilities and insufficient financial and human resources. Though these barriers make this journey even more difficult (Clar *et al.*, 2013; Marques *et al.*, 2021), this reorganised public governance must integrate creativity, innovation, and flexibility so that sustainability and public value may be chased (Palmi *et al.*, 2021). In some Portuguese public sector organisations, sustainability practices are already showing up but are mainly concerned with economic and social pillars (Figueira *et al.*, 2018). Moreover, public sector organisations' performance is already

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[4] Stakeholders expect organisations to consider sustainability aspects in their strategy, risk management, and organisation's decision-making and culture (Accountancy Europe, 2022).

being evaluated according to these three dimensions. This is connected to higher levels of sustainability principles and practices integration (Figueira *et al.*, 2018).

2.4 Corporate Governance and Sustainability

CG is essentially about answering questions such as the aim of a business and whose interests it should be running, and how (Elkington, 2006). Rewinding shareholder value approach[5], stakeholder approach[6] and others in between these two, many discussions have been in place among the society: it is questioned if an organisation must pursue profit maximisation or take into balance other goals such as, for instance, act responsibly and sustainably (Zumente & Bistrova, 2021). Broader questions related to social and environmental dimensions are among the most significant issues of these times and increasingly taking place in CG (Elkington, 2006; Naciti *et al.*, 2021). Governance is increasingly considering the impacts on the planet and people when monitoring corporate activities (Giddings *et al.*, 2002; Hussain *et al.*, 2018). Climate emergency, the loss of nature and growing inequality are current examples of these impacts (WBCSD & IIA, 2022).

As CG relates to all processes through which decisions are made (Naciti *et al.*, 2021), the sustainability agenda definition depends on it (Amidjaya & Widagdo, 2019; Aras & Crowther, 2008; Elkington, 2006). Nevertheless, more than sustainability progressively incorporating organisations' strategies (Iansiti & Levien, 2004), organisations should count on effective governance structures and processes to achieve their goals (IIA, 2020; WBCSD & IIA, 2022). The timeless necessity of strong governance led to a recent review of the Three Lines of Defence model, obtaining The Three Lines model, an enhanced version of the former (IIA, 2020).

Instead of simply reacting to circumstances and acting as a defensive tool, organisations may now look forward (IIA, 2020; WBCSD & IIA, 2022). According to it, an organisation's governance must enable accountability to stakeholders by a governing body, actions (including managing risk) by management and assurance and advice by an independent IA. These three players - the governing body, the management and the IA - are all key in governance. Even so, only the last two constitute the first, second and third

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[5] Friedman (1970).
[6] Freeman (1984).

lines[7]. Management is up to both first- and second-line roles and IA to the third one. While first-line roles relate to the provision of products and services to clients and roles of support functions, the second-line roles assist with managing risk, encompassing those complementary activities focused on risk-related matters. Finally, IA provides independent and objective assurance and advice on the suitability and effectiveness of governance and risk management. The governing body, though not figuring a line of this model[8], is assigned to the role of ensuring that appropriate governance mechanisms are in place for effective governance and that organisational objectives and activities are aligned with the stakeholders' interests (IIA, 2020).

It has been recognised that organisations impact their enveloping environment, and they must be accountable to a wide variety of stakeholders, as they are affected by the organisation's activities. (Aras & Crowther, 2008; IIA, 2021; KPMG, 2020; Naciti *et al.*, 2021). Truly, organisations are not only facing increased pressure from stakeholders to consider how they are impacting the environment but there is also an increasing recognition that organisations have a significant influence and impact on individuals and communities (Hazaea *et al.*, 2021; IIA, 2021). Currently, addressing sustainability is no longer something to take smoothly, and organisations should count on a governance structure that effectively pursues ESG strategy (IIA, 2021). Good CG is concerned with achieving the organisation's goals and balancing the economic and social/environmental goals (Aras & Crowther, 2008). Indeed, good governance must consider ESG-related issues and manage its risks to help organisations make decisions (WBCSD & IIA, 2022).

The Three Lines model guides organisations towards good governance, helping better determine the appropriate structures and processes to properly manage risks and achieve goals, including those related to ESG (WBCSD & IIA, 2022). Regarding the latter point, this renewed model helps organisations understand the roles needed to embed and manage ESG and sustainability considerations effectively. All roles need to work together to ensure the creation and protection of value and make the organisation future-

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[7] The term "line" intends to highlight a distinction in roles instead of structural elements. Also, it should not be understood as sequential operations but all operating concurrently (IIA, 2020).
[8] The governing body roles might have been considered a "line". It was not adopted to avoid confusion (IIA, 2020).

proof. The actions of all the players mentioned above are crucial (IIA, 2020; WBCSD & IIA, 2022).

Indeed, according to this model, the governing body should establish governance mechanisms that integrate the strategic objectives with sustainable and ESG considerations, oversee ESG reporting strategy and engage with stakeholders. The management should develop a multi-capital approach, undertake materiality assessment to inform ESG risk management and oversee ESG data quality and reporting. Finally, IA must test internal controls and assure the accuracy of ESG data, anticipate ESG disclosure regulations and interact consistently with other lines (WBCSD & IIA, 2022).

This subsection sets the relationship between CG and sustainability considerations. Organisations meet their sustainability goals easily if there are effective governance mechanisms (Hussain *et al.*, 2018). The better the CG, the closer organisations are to sustainability, and thus the better they assure value creation (Atu *et al.*, 2014; Elkington, 2006).

2.5 Hypothesis Development

The term "effectiveness", or similar, was often used in the definition and roles of IA and relates to the degree of achievement of the established goals (Asiedu & Deffor, 2017; Turetken *et al.*, 2020). In its turn, IA's effectiveness (IAE) derives from general definitions as the level of achievement of what IA was designed for (Mihret & Yismaw, 2007). IA was designed to add value and improve an organisation's operations, which is achieved by providing "objective and relevant assurance" and contributing "to the effectiveness and efficiency of governance, risk management, and control processes" (IIA Standards, 2017, p. 21). Since meeting these objectives depends on how effective an IA is (Mihret & Yismaw, 2007; Turetken *et al.*, 2020), research in internal auditing is moving towards an understanding of IAE (Albawwat *et al.*, 2021; Alzeban & Gwilliam, 2014; Arena & Azzone, 2009; Asiedu & Deffor, 2017; Coetzee & Erasmus, 2017; Cohen & Sayag, 2010; Dellai & Omri, 2016; Drogalas *et al.*, 2015; Soh & Martinov-Bennie, 2011; Turetken *et al.*, 2020).

Effective IA has been linked to various contributions to organisations. Examples of these contributions are, among others: helping to achieve its economic objectives (Spira & Page, 2003; Twaijry *et al.*, 2003); improving organisational performance (Cohen & Sayag, 2010); enhancing the control system and ensuring the quality of financial report-

ing (Albawwat *et al.*, 2021; Arel *et al.*, 2012). Literature also shows that effective IA helps ensure compliance with the established processes, laws and regulations and enables process improvement (Yee *et al.*, 2008). Besides that, IAE positively influences the prevention and detection of fraud (Eulerich & Eulerich, 2020) and the fight against corruption (Asiedu & Deffor, 2017). Finally, it helps senior management fulfil its governance responsibilities (Radu, 2012). This way, IAE is a valuable and desirable feature of modern CG (Barišić & Tušek, 2016; Bruwer *et al.*, 2020), being considered crucial for organisations' success (Drogalas *et al.*, 2015). Even though most of these contributions fit within the GRC partner concept of IA's roles, there is plenty of evidence that IA is effective in creating value.

As described in subsection 2.2, IA's roles go beyond traditional ones, and the responsibilities assigned to the IA constantly evolve (Eulerich & Lenz, 2020). In fact, in the same way IA and sustainability activities have grown, increased stakeholder interest in sustainability assurance, and consequently in quality and reliable information, has been in place (DeSimone *et al.*, 2021; Hazaea *et al.*, 2021; Soh & Martinov-Bennie, 2015; Trotman & Trotman, 2015). However, more than IA being expected to assure sustainability (Allegrini *et al.*, 2011; Coyne, 2006; DeSimone *et al.*, 2021; Fraser *et al.*, 2020), organisations are facing growing pressure to manage ESG challenges and risks (IIA, 2021). The challenges and complexity of ESG are considerable, and the results of poor management of it may be severe. Thus, it is crucial to understand IA's direct relationship with sustainability and if it effectively creates value in this area.

First, ESG reporting is becoming increasingly common (IIA, 2021; KPMG, 2020). Mainly driven by stakeholders' demands (Coyne, 2006), organisations are urged to commit to this new risk area and provide routine updates on ESG (IIA, 2021). In what concerns IA's role in measuring value and subsequent progress in the three dimensions of sustainability, which is often difficult to quantify (Coyne, 2006; IIA, 2021; Lopes, 2015), it may count with various major sustainability reporting frameworks. GRI is the dominant global standard on this topic, and 80% of organisations worldwide now report on sustainability (KPMG, 2020).

To enhance the credibility and transparency of these disclosures, multiple parties (both internal and external) may be involved in them (Darnall *et al.*, 2009; Farooq, 2017.; Soh

& Martinov-Bennie, 2018; Trotman & Trotman, 2015). Though third-party assurance has become a majority practice worldwide (KPMG, 2020), this does not mean IA cannot assure sustainability activities (DeSimone *et al.*, 2021). Beyond that, considering IA's produced information is material for both external and internal decision-making (Cohen & Simnett, 2015), it is increasingly recognised that IA's activity on sustainability is up to adding value to an organisation (DeSimone *et al.*, 2021; IIA, 2021; Mock *et al.*, 2007). The better the IA activity, the better the CG and, consequently, the higher levels of sustainability (Samagaio & Diogo, 2022). By getting IA involved in this area, sustainability activities may be improved, and its associated risks may be reduced (Stanwick & Stanwick, 2001). This reverts to added credibility to sustainability activities and reporting (Soh & Martinov-Bennie, 2015).

Because IA aims to deliver organisational value by providing independent, objective assurance and advice, its involvement in ESG is paramount and a natural fit (Roberts *et al.*, 2022). IA plays thus a key role as a support instrument (DeSimone *et al.*, 2021; Mock *et al.*, 2007) and, identically to the value-added of IA on its traditional activities, IA is a CG cornerstone in what concerns ESG matters. Broadly, IA may well support management in clarifying and managing ESG risks, thus assessing the organisation's ESG culture and its alignment with ESG initiatives, measuring ESG activities and assuring reporting. More specifically, IA activities may include, among others, reviewing reporting, including reviewing and recommending reporting metrics; conducting materiality or risk assessments; reviewing the effectiveness of risk assessments, responses, and controls; integrating ESG into audit plans; identifying and establishing an ESG control environment; and advising on ESG governance (IIA, 2021; KPMG, 2021).

In the same way IA is effective and adds value to other areas of its activity, it may do the same in sustainability matters. This leads us to our first hypothesis:

H1: *IAE is positively related to PAF's sustainability orientation (SO).*

Several studies have linked the IAE with the Internal Auditors' competence and proficiency (Alzeban & Gwilliam, 2014; Dellai & Omri, 2016; Mihret & Yismaw, 2007; Tackie *et al.*, 2016; Turetken *et al.*, 2020). Firstly, some suggest that an adequate level of competencies in an IA team is positively related to the effectiveness of IA (Ahmad *et al.*, 2009; Al-Twaijry *et al.*, 2003). Since working as an internal auditor requires

knowledge and experience, it is essential to use auditors with extensive professional skills. This way, both short and long professional training would considerably enhance the competence of auditors (Mihret & Yismaw, 2007). Secondly, the other way down, some studies suggest that the lack of competence of the IA team is counterproductive to the IAE (Mihret & Yismaw, 2007; Onumah & Krah, 2012). Indeed, low staff competence would limit IA's capacity to provide adequate service (Mihret & Yismaw, 2007) and, in some cases, a reason for not having an IA department (Al-Twaijry *et al.*, 2003). The same happens in public administration, where the lack of competence and experience inhibits IAs from meeting their full potential (Ahmad *et al.*, 2009; Onumah & Krah, 2012). All these studies corroborate that the competence of the staff is crucial to effective IA (Al-Twaijry *et al.*, 2003; Alzeban & Gwilliam, 2014; Dellai & Omri, 2016).

IIA Standards (2017) highlight this idea. Covering consideration of current activities, trends and emerging issues, internal auditors "must possess the knowledge, skills, and other competencies needed to perform their individual responsibilities" (IIA Standards, 2017, p. 6). Hence, internal auditors must pursue proficiency to add value and improve the organisation's operations. Finally, to demonstrate proficiency, the IA team is encouraged to obtain appropriate professional certifications and qualifications (IIA Standards, 2017).

The human capital of IA departments could be enhanced through human resource management practices (HRMP). The Human Capital Theory assumes that people's capabilities, knowledge, skills, life experiences and motivation are capital too, and of value as other resources organisations may use to achieve their goals (Becker, 2009). This means that expenditures on education, training and other types of developing human beings are capital expenditures that lead to organisational gains. First, it drives the marginal performance of labour, and then marginal performance drives gains. This theory seeks to understand the gains associated with these investments (Becker, 2009; Marginson, 2017; Nafukho *et al.*, 2004). As employees are expected to have the proper knowledge, skills, and abilities to perform their responsibilities, organisations must develop policies and practices that help them get better at what they do and perform well (Mathis *et al.*, 2017).

Literature suggests a relationship between an organisation's HRMP and organisational performance (Delery & Roumpi, 2017; Guest, 2011; Lengnick-Hall *et al.*, 2009). This stream of research started in the last millennium (in the 1980s) (Guest, 2011) and supports the idea that this relationship can be expressively large for many organisations (e.g., Chadwick, 2010). The environment that arises along with HRMP provides an important upstream context for both individual and organisational performance (Albrecht *et al.*, 2015; Boxall & Purcell, 2008; Lepak *et al.*, 2006). Firstly, they influence the skills, knowledge and motivations of individual employees, their efforts and their opportunities in their work. Secondly, HRMP help to build organisational capabilities, influence organisational culture, and, finally, help set the climate in which individuals work (Evans and Davis, 2005). As the individuals' performance opportunities and motivations are influenced by the quality of resources, collaboration, and trust in their working environment, individual and organisational levels are linked (Boxall & Macky, 2009). Organisational performance is influenced by team performance and, before that, individual performance. Straightforwardly, HRMP increase organisations' human capital (Rauch *et al.*, 2005; Wright *et al.*, 2001), leading to improvements in individual performance and, thus, increasing organisational performance (Albrecht *et al.*, 2015; Chandler & Mcevoy, 2000).

Better performance also comes together with the better achievement of organisational objectives. Indeed, organisations that may count on a well-developed HRMP system will have higher levels of individual, division, and organisational performance and, thus, better achieve the organisation's goals (Albrecht *et al.*, 2015; Daley & Vasu, 2005). In the presence of good HRMP, all aimed at optimising individual, group and organisational effectiveness, the likelihood of employees striving to achieve organisational objectives is higher (Macey & Schneider, 2008). Moreover, through continuous empowerment, which leads to more actively and efficiently work, employees may provide better information and more insight into the organisation's decisions and objectives (Rauch *et al.*, 2005). HRMP has, therefore, a positive effect on the competitive advantage of human resources (Pham, 2020): they become an important and unreplaceable resource in contributing to organisational goals and outcomes (Rauch *et al.*, 2005). Human capital is then a crucial component in this performance (Crook *et al.*, 2011; Daley

& Vasu, 2005; Delery & Roumpi, 2017), even in auditing organisations (Samagaio & Rodrigues, 2016).

To conclude, the effect of IA effectiveness on SO should be boosted in organisations that cultivate ESG-related issues in their HRMP. As HRMP enables the improved performance of individuals, departments and organisations, and consequently the achievement of organisational objectives, the following hypothesis arises:

H2: *HRMP moderates the positive relationship between IA effectiveness and PAF's SO, such that the relationship is stronger in the presence of HRMP.*

Figure 1 illustrates the research framework and hypotheses proposed in this section.
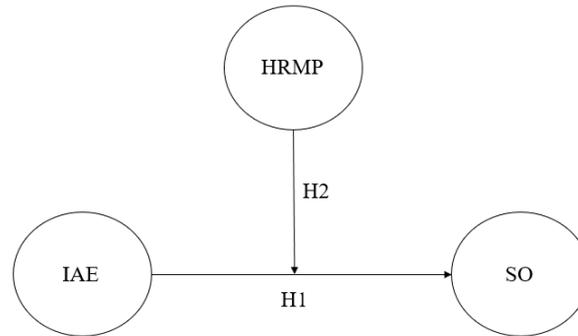
FIGURE 1 – Research Framework

3. METHODOLOGY

3.1 PAF Internal Auditing Framework

The Air Force is an Armed Forces branch that integrates the State's direct administration through the National Defence Ministry (LOFA, Art.º 1.º). Its' main mission is to participate, in an integrated manner, in the military defence of the Portuguese Republic. To accomplish its mission, PAF may count on IA.

In the PAF, IA does not consist of a single department. It is divided into three different departments, each located in different institution bodies and with distinct responsibilities. It comprises the Financial and Patrimonial Inspection and Auditing Service (FPI-AS), the Air Force Inspectorate (AFI) and the Cabinet of Quality, Airworthiness and Environment (CQAE) (which belongs to the Programs and Engineering Directorate). Related to this last cabinet and respective area of activity, even though they do not di-

rectly report to it but to units' commanders, Air Force is yet complemented by the Environment and Quality Cabinets (EQCs).

FPIAS internal auditing responsibilities fall within the scope of activities related to the administration of financial resources available to the Air Force. CQAE and EQCs work in the areas of quality and airworthiness management and environmental, health and safety at work management. Finally, AFI's auditing function is far more comprehensive than the other departments. It undertakes compliance with laws and regulations, effectiveness, relevance and efficiency of the Air Force's action in all its activities (DR, n.º 12/2015; MCLAFA 305-4; RFA 303-3 (A); RFA 303-10 (A); RFA 305-1 (B)).

3.2 Data Collection

Looking forward to analysing IA's role in the PAF, the research strategy was a Case Study. The data collection technique was the questionnaire, and evidence was collected from all the PAF's IA departments. The target population of the questionnaires comprised all the internal auditors of the organisation. The unit of analysis was the individual. Auditors were all identified through the internal database and then contacted by e-mail.

The data collection was done in two phases. Firstly, the role of IA in the PAF was addressed. For certain matters, the responses of the three departments' directors were obtained, and on other matters, to have a more in-depth view, other auditors were questioned. Within this last group of respondents, EQCs auditors are included. Secondly, the study evaluated the contributions of IA to the PAF's SO and the possible moderating effect of HRMP on it. In this questionnaire, all inquiries responded the same, and all questions were close-ended.

The questionnaires were internet-based, and both were developed through a literature review. To ensure the validity of the questionnaires on the Qualtrics platform, they were translated and back-translated to guarantee equivalence of meaning. The Air Force Academy language department reviewed the translation, and a native carried out the back-translation. Besides that, both questionnaires preceded a pre-test with three experts. Finally, the second questionnaire was reviewed by three recognised auditors.

As all variables were collected using the same method, common method variance may occur (Jordan & Troth, 2020). To minimise it, the questionnaires contained an introduc-

tory note informing the purpose of the research and that participation was voluntary, ensuring the anonymity of responses and, thus, encouraging them to answer honestly. Besides that, it also provided the contacts available if any questions arise. Lastly, no logic was followed in the inclusion of the variables and the measurement items were mixed to avoid illusory correlations. Acquiescence bias and the anchor effect were minimised through the labelling of the points of the scale and the use of nominal and five-point Likert scales, respectively (Jordan & Troth, 2020; Podsakoff *et al.*, 2003). To check whether common method variance was present, Harman's single-factor test was conducted (Podsakoff *et al.*, 2003). The exploratory factor analysis with an unrotated factor solution yielded seventeen factors with eigenvalues greater than 1, together explaining about 90.8% of the variance. As the first factor accounted for 34.3% of the total variance, less than the suggested threshold of 50% (Fuller *et al.*, 2016), common method variance was not present.

Of a population of 53 auditors, 45 responses were received on the first survey and 49 on the second. However, 10 and 14 responses, respectively, had to be discarded due to excessive missing data and straight-lining responses. It resulted in 35 usable responses for both the first and second surveys. These results might be related to the internet survey method. Internet surveys are easily discarded and, in the case of forcing respondents to answer questions, which is the case, may lead to premature termination (Hair *et al.*, 2017; Hoonakker & Carayon, 2009). Early and late responses for all items were compared using the Mann–Whitney test. Results suggested overall a likely absence of non-response bias (Armstrong & Overton, 1977).

3.3 Respondents' Characterisation

All the respondents were military from the PAF. Hereafter, two results for the same characteristic will be presented, the first concerning questionnaire 1 and the second concerning questionnaire 2. The military rank with the highest representation was Coronel (25.7% and 20%). Most of the respondents were audit staff (57.1% and 71.4%) and the average professional experience in internal auditing was 7.2 (SD = 7.7) and 7.1 (SD = 9.1) years. The respondents' main professional certification related to internal auditing was PAF's IA certification (60% and 62.9%). Finally, other certifications held by the respondents were diverse but mainly related to quality, airworthiness, and environment.

3.4 Measurement

3.4.1 Questionnaire 1

In the first questionnaire, CAEs defined the role of IA in PAF. They identified how the resources were divided between assurance and consulting, which IA policies or documents existed, and the activities IA was performing or was anticipated to perform. Subsequently, to address their perceptions of it, all auditors were asked to identify the top five risks on which PAF's IA was focusing the most significant level of attention in the current year and their belief on how aligned the IA with the strategic plan of the PAF was. Then, based on their reality, they gave their opinion on five statements regarding the IIA Standards (2017) definition of IA. All questions were based on selecting the available options unless the last one. It was measured on a five-point Likert scale, where 1 = "totally disagree," 3 = "neither disagree, neither agree," and 5 = "totally agree". All the questions and their items were based on several studies (Alkafaji *et al.*, 2010; Eulerich & Lenz, 2020; IIA, 2021; IIARF, 2015; Leung *et al.*, 2003).

3.4.2 Questionnaire 2

The second questionnaire scope was causal and intended to address the perceptions of PAF's internal auditors on various matters. The dependent variable is SO, and it is proxied by the importance given to 32 ESG issues in the management of PAF (construct ESG). SO refers to the management's attitude and conviction that the organisation should consider sustainability-related issues and act accordingly (Kautonen *et al.*, 2021; Kuckertz & Wagner, 2010; Shahidi, 2020). ESG refers to criteria that characterise an organisation's operations as sustainable and whose issues generally fall under one of its three main categories (IIA, 2021). The 32 issues presented to the auditors may be distributed between these three dimensions and serve, afterwards, as a basis for other three different constructs: ENV, SOC and GOV. These constructs will be important to understand IA's contribution to each ESG dimension, one by one. The importance of the 32 issues on PAF management was evaluated on a five-point Likert scale, where 1 = "unimportant", 3 = "moderately important", and 5 = "very important". The list of ESG issues was based on two studies (Roberts *et al.*, 2022; Soh & Martinov-Bennie, 2015).

Two main approaches have been used to measure IAE (Cohen & Sayag, 2010), the independent variable. The first analyses the fit between the IA function and a set of uni-

versal standards, but the second defends that IA effectiveness depends on IA stakeholders' subjective evaluations (Cohen & Sayag, 2010). Nevertheless, most IAE definitions provide interpretative freedom concerning measurement criteria (Barišić & Tušek, 2016). In this study, IAE's measurement contained 34 items (construct IAEG) covering a wide range of criteria (e.g., audit quality, added value, IA stakeholders' evaluations, and processes). Internal auditors were asked to state their extent of agreement with these items on a five-point Likert scale, where 1 = "totally disagree," 3 = "neither disagree, neither agree," and 5 = "totally agree". These items were developed based on prior literature (Alzeban & Gwilliam, 2014; Cohen & Sayag, 2010).

The moderating variable was HRMP. This variable comprised 13 items from Tang *et al.* (2017) instrument to measure Green HRM (encompassing its training, performance management and involvement constructs). Items were adapted to reflect HRMP on ESG. Its effect was measured on a scale ranging from 1 (totally disagree) to 5 (totally agree).

In both questionnaires, when necessary, items were adapted to the needs of this research and the public sector context. All the measurement items, their codes (used for descriptive purposes), and their sources are shown in appendices 1 to 9. Both questionnaires also included characteristics information of the participants, such as the military rank, work experience, professional qualifications and position held in the entity's IA.

3.5 Data Analysis

Firstly, for both questionnaires, IBM SPSS Statistics 28.1.1 was used to summarise the respondents' characteristics and a descriptive analysis of the variables. Secondly, in the second questionnaire, the same software platform was used to perform and analyse Ordinary Least Squares (OLS) multiple regression, the method used. OLS regression is a statistical method that can be used to analyse the relationship between a single dependent variable with several independent variables (Hair *et al.*, 2019).

The multiple regression implementation went firstly through measurement model assessment, followed by its estimation, the evaluation of the estimated model for meeting the assumptions underlying multiple regression, the assessment of the overall predictive accuracy of the independent variables, and finally, the interpretation of the regression variate.

4. EMPIRICAL RESULTS

4.1 Questionnaire 1

4.1.1 Descriptive Analysis

Results from CAEs revealed that only one of the departments might count on the IA operating manual, the IA strategy description, the code of conduct/ethics and the description of key performance indicators (appendix 1). IA charter and mission statement for the IA were missing in all departments. Moreover, 2 out of 3 CAEs stated that resources were equally divided between assurance and consulting. The last one stated that almost all resources were spent on assurance, and few were spent on consulting (appendix 2). The IA's roles and general perceptions of its activity are described in appendix 3. Of a total of 38 foreseen activities, 30 were carried out by PAF's IA. These activities represent the whole bundle performed independently of the three departments, and some activities were performed in more than one department.

Regarding individual perspectives of the top five risks on which PAF's IA was focusing (appendix 4), R_5 occupied the first position with 25 responses in favour. R_2 and R_4 came after with 18 responses both, followed by R_6, R_9 and R_11 with 9 responses each. Comparing officials' and sergeants' perceptions, the top three risks are maintained. However, there are some differences between the remaining two risks. For sergeants, the remaining selected were R_1 and R_21, whereas for officials were R_9 and R_11.

Table 1 shows the descriptive statistics of the two questions related to internal audit alignment (IAA) and internal audit definition (IAD). The IAA presented a mean of 3.93, showing that, generally, internal auditors believe IA is almost entirely aligned with the organisations' strategy. IAD[9] presented a mean of 4.17 in a range of $1 - 5$, and its items means scores between 3.83 (IAD_1) and 4.46 (IAD_2) and SD between 0.677 (IAD_4) and 1.098 (IAD_1). The Mann-Whitney test was performed to understand if there were significant differences between officials and sergeants on what concerns their view on these questions. Null hypotheses were not rejected, meaning no evidence was found supporting these differences.

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[9] Principal component analysis was performed; however, its results were not presented as it obtained only one dimension. Moreover, IAD's Cronbach's Alpha was 0.882, which revealed satisfactory internal consistency reliability (Hair *et al.*, 2019).

TABLE I

DESCRIPTIVE STATISTICS FOR QUESTIONS RELATED TO IAA AND IAD

Code	Mean	Median	SD	Skewness	Kurtosis	Theoretical range	Actual range
IAA – overall	3.93	4	0.923	-0.149	-1.249	1 − 5	1 − 5
IAD – overall	4.17	4,2	0.689	-1.392	3.267	1 − 5	1 − 5
IAD_1	3.83	4	1.098	-0.631	-0.858	1 − 5	2 − 5
IAD_2	4.46	5	0.817	-2.430	8.513	1 − 5	1 − 5
IAD_3	4.29	4	0.789	-1.332	2.283	1 − 5	2 − 5
IAD_4	4.20	4	0.677	-0.867	2.069	1 − 5	2 − 5
IAD_5	4.09	4	0.742	-0.598	0.511	1 − 5	2 − 5

4.2 Questionnaire 2

4.2.1 Descriptive Analysis

Appendix 10 shows the descriptive statistics of the latent variables and their items used to test our two research hypotheses. The latent variables with a higher mean were IAE1 and IAE3, both with values of 4.1, while the variable with a lower mean was HRMP, 2.85. The indicators with higher values were IAE_10 and IAE_21, with a mean of 4.31 each. Those with the lower values were HRMP_2 and HRMP_12, with a mean of 2.66 and 2.57, respectively. In general, there is positive Kurtosis and a negative Skewness. Both measures present values within the acceptable range.

4.2.2 Baseline Regression Model

The IAE construct was measured by 36 indicators and its unidimensionality was checked. Principal component analysis revealed nine factors explaining 80.7% of the variance. According to Marôco (2021), 50% of the total variance explained should be considered the minimum acceptable value when extracting factors. Therefore, only the first three factors were extracted, explaining 50.5% of the total variance. These three factors constituted the constructs IAE1, IAE2 and IAE3 (see appendix 11).

All constructs' indicators scores were summed to increase the reliability of the measurement through. A summated scale provides two specific benefits: reduction of measurement error and representation of multiple aspects of a concept in a single measure (Hair *et al.*, 2019).

Our hypotheses were tested based on the results obtained in the OLS regression models. First, we ran the baseline model to analyse the IAEG's effect on ESG. Afterwards, the same was conducted but for IAE1, IAE2 and IAE3. Finally, to get a deeper insight into how IA could contribute to each ESG dimension, the analysis was performed individually. In all cases, the possible moderator effect of HRMP was tested. Models testing IAEG construct will be entitled to global IAE models (models 1 to 4), and the models testing IAE1, IAE2 and IAE3 divided IAE models (models 5 to 8). This way, we used the following baseline regression models[10]:

Model 1 - $ESG_i = \beta 0 + \beta 1 * IAEG_i + \beta 2 * HRMP_i + \beta 3 * MODG_i + \varepsilon_i$

Model 2 - $ENV_i = \beta 0 + \beta 1 * IAEG_i + \beta 2 * HRMP_i + \beta 3 * MODG_i + \varepsilon_i$

Model 3 - $SOC_i = \beta 0 + \beta 1 * IAEG_i + \beta 2 * HRMP_i + \beta 3 * MODG_i + \varepsilon_i$

Model 4 - $GOV_i = \beta 0 + \beta 1 * IAEG_i + \beta 2 * HRMP_i + \beta 3 * MODG_i + \varepsilon_i$

Model 5 - $ESG_i = \beta 0 + \beta 1 * IAE1_i + \beta 2 * IAE2_i + \beta 3 * IAE3_i + \beta 4 * HRMP_i + \beta 5 * MOD1_i + \beta 6 * MOD2_i + \beta 7 * MOD3_i + \varepsilon_i$

Model 6 - $ENV_i = \beta 0 + \beta 1 * IAE1_i + \beta 2 * IAE2_i + \beta 3 * IAE3_i + \beta 4 * HRMP_i + \beta 5 * MOD1_i + \beta 6 * MOD2_i + \beta 7 * MOD3_i + \varepsilon_i$

Model 7 - $SOC_i = \beta 0 + \beta 1 * IAE1_i + \beta 2 * IAE2_i + \beta 3 * IAE3_i + \beta 4 * HRMP_i + \beta 5 * MOD1_i + \beta 6 * MOD2_i + \beta 7 * MOD3_i + \varepsilon_i$

Model 8 - $GOV_i = \beta 0 + \beta 1 * IAE1_i + \beta 2 * IAE2_i + \beta 3 * IAE3_i + \beta 4 * HRMP_i + \beta 5 * MOD1_i + \beta 6 * MOD2_i + \beta 7 * MOD3_i + \varepsilon_i$

4.2.3 Measurement Model Assessment

Before deepening into OLS regressions, the measurement model assessment was conducted. The individual indicator reliability, internal consistency reliability, convergent validity, and discriminant validity were examined. Table II shows the results for the variables' Cronbach's Alpha (CA), composite reliability (CR), and average variance extracted (AVE), and appendix 12 shows the loadings of the items. CA and CR were all greater than 0.7, indicating sufficient internal consistency reliability (Hair *et al.*, 2011;

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[10] In the regression models, "*i*" corresponds to observations 1 to 35, and MODs correspond to the moderator terms associated with the equation in question. MODG, MOD1, MOD2 and MOD3 were formed by multiplying HRMP by the other independent variables on each model (using standardised values). For example, in model 5, MOD 3 = IAE3 x HRMP.

Marôco & Garcia-Marques, 2006). Ideally, the internal consistency should be between 0.70 and 0.90, being acceptable up to 0.95 (Hair *et al.*, 2019). To assess convergent validity, AVE and items' loadings were analysed. AVE and items' loadings should be above 0.5 and 0.7, respectively. AVE values were all above the minimum required, and the generality of the item's loadings was above the suggested threshold. None of them was below 0.4; otherwise, they would be eliminated (Hair *et al.*, 2017).

TABLE II

CONSTRUCTS' CRONBACH'S ALPHA, COMPOSITE RELIABILITY

AND AVERAGE VARIANCE EXTRACTED

Construct	CA	CR	AVE
IAEG	0.703	0.831	0.624
IAE1	0.925	0.937	0.625
IAE2	0.917	0.933	0.701
IAE3	0.805	0.871	0.640
RHMP	0.960	0.965	0.682
ESG	0.927	0.953	0.873
ENV	0.941	0.950	0.705
SOC	0.912	0.927	0.563
GOV	0.964	0.967	0.684

The final step was assessing the discriminant validity, which refers to the extent to which a construct is genuinely distinct from other constructs in the model (Hair *et al.*, 2019). For that, we used the Fornell-Larcker criterion and Heterotrait-Monotrait (HTMT) ratio (appendix 13). According to Fornell-Larcker criterion, the square root of the AVE of each construct must be higher than its correlation with the remaining constructs. The Heterotrait-Monotrait ratio should be lower than the minimum threshold value of 0.85 (Hair *et al.*, 2019). Convergent and discriminant validity were confirmed.

4.2.4 Evaluation of the Estimated Model

The regression results are presented in tables III and IV. Regarding the statistical significance of regression coefficients on the set of global IAE models, IAEG is statistically significant in models 1, 3 and 4 at a significance level of .01. In model 2, HRMP and MODG reveal themselves statistically significant at the levels .05 and .1, respectively. Yet on the set of divided IAE models, MOD2 has statistical validity at the .1 level, in

model 6, and IAE1 at the .05 level, in models 5, 7 and 8. All significant coefficients show a positive association with de dependent variables.

TABLE III

REGRESSION RESULTS FOR GLOBAL IAE MODELS

	Model 1		Model 2		Model 3		Model 4	
	B	t	B	t	B	t	B	t
Constant	-4.424	-0.158	6.330	0.866	-3.074	-0.369	-7.680	-0.529
IAEG	1.412	3.394***	0.180	1.654	0.500	4.026***	0.732	3.386***
HRMP	0.329	0.850	0.213	2.095**	0.034	0.292	0.083	0.412
MODG	4.047	1.435	1.448	1.962*	1.312	1.559	1.288	0.878
R^2	0.392		0.337		0.429		0.351	
Adjusted R^2	0.333		0.273		0.373		0.289	
F-stat	6.664***		5.258***		7.756***		5.598***	

(a) *** Significant at the .01 level
** Significant at the .05 level
* Significant at the .1 level

TABLE IV

REGRESSION RESULTS FOR DIVIDED IAE MODELS

	Model 5		Model 6		Model 7		Model 8	
	B	t	B	t	B	t	B	t
Constant	-4.138	-0.140	7.135	0.903	-2.208	-0.246	-9.065	-0.589
IAE1	2.077	2.105**	0.147	0.559	0.630	2.11**	1.300	2.535**
IAE2	0.627	0.572	0.169	0.578	0.266	0.801	0.192	0.337
IAE3	1.269	0.780	0.319	0.735	0.527	1.069	0.424	0.501
HRMP	0.174	0.411	0.166	1.469	0.005	0.042	0.003	0.013
MOD1	-5.486	-1.120	-1.691	-1.296	-1.439	-0.971	-2.356	-0.926
MOD2	9.283	1.575	3.046	1.939*	2.346	1.315	3.891	1.271
MOD3	3.955	0.880	1.144	0.956	1.538	1.131	1.272	0.545
R^2	0.501		0.435		0.516		0.468	
Adjusted R^2	0.371		0.288		0.391		0.330	
F-stat	3.865***		2.967**		4.12***		3.388**	

(a) *** Significant at the .01 level
** Significant at the .05 level
* Significant at the .1 level

The coefficient of determination (R^2) which represents the proportion of the variance of the dependent variable about its mean that is explained by the independent variables

(Hair *et al.*, 2019), was analysed. As a guideline, R^2 values of 0.75, 0.50, and 0.25 can be considered substantial, moderate, and weak, respectively (Hair *et al.*, 2011). In some research contexts, R^2 below these might be considered satisfactory. In this study, it is possible to verify that R^2 ranges from 0.337 to 0.429 on the global IAE models and from 0.435 to 0.516 on the divided IAE models, indicating that our dependent variable effectively captures the independent variables. To assess the significance of the overall model, the coefficient of determination was tested. All models are jointly significant at the level of .01, except for models 6 and 8, which are jointly significant only at the level of .05.

Then, the adjusted coefficient of determination[11], a modified measure of the coefficient of determination proper for comparing equations with different numbers of independent variables, was analysed. In every case, all adjusted coefficients of determination have increased in value when changing from global IAE models to divided IAE models.

4.2.5 Heteroscedasticity Test

Unequal variances of the error terms (residuals), known as heteroscedasticity, is one of the most common assumption violations (Hair *et al.*, 2019). This can cause inflated Type I error rates or decreased statistical power (Rosopa *et al.*, 2013). Heteroscedasticity diagnosis was made with residuals plots analysis and four statistical tests. White test, Breusch-Pagan test, modified Breusch-Pagan test, and F test for heteroscedasticity were performed, and none rejected the null hypothesis. Homoscedasticity, the homogeneity of the residuals' variance, is then confirmed.

4.2.6 Multicollinearity Analysis

A vital issue in interpreting a regression variate is the correlation among the independent variables. Therefore, all regressions went through multicollinearity analysis to preclude the possibility of multicollinearity. The first overall measure of multicollinearity used for the diagnosis was tolerance, and the second was the variance inflation factor (VIF). The suggested cut-off for the tolerance value is 0.10, which corresponds to a VIF value of 10 (Hair *et al.*, 2019). In any case, VIF is lower than 5. Therefore, there is a

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[11] Considers the number of independent variables included in the regression equation and the sample size (Hair *et al.*, 2019). In this case, only the number of independent variables may be compared.

slight probability that the findings have been tainted by multicollinearity. Tables V and VI show the results for these two measures.

TABLE V

MULTICOLLINEARITY ANALYSIS FOR GLOBAL IAE MODELS

	Model 1		Model 2		Model 3		Model 4	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
IAEG	0.761	1.314	0.761	1.314	0.761	1.314	0.761	1.314
MODG	0.981	1.019	0.771	1.296	0.771	1.296	0.771	1.296
HRMP	0.771	1.296	0.981	1.019	0.981	1.019	0.981	1.019

TABLE VI

MULTICOLLINEARITY ANALYSIS FOR DIVIDED IAE MODELS

	Model 5		Model 6		Model 7		Model 8	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
IAE1	0.444	2.250	0.444	2.250	0.444	2.250	0.444	2.250
IAE2	0.542	1.844	0.542	1.844	0.542	1.844	0.542	1.844
IAE3	0.685	1.460	0.685	1.460	0.685	1.460	0.685	1.460
HRMP	0.610	1.639	0.610	1.639	0.610	1.639	0.610	1.639
MOD1	0.291	3.436	0.291	3.436	0.291	3.436	0.291	3.436
MOD2	0.287	3.483	0.287	3.483	0.287	3.483	0.287	3.483
MOD3	0.579	1.728	0.579	1.728	0.579	1.728	0.579	1.728

4.3 Discussion

This subsection aims to answer the two objectives established in the introduction of this work. Accordingly, the first three questions of the first questionnaire, answered only by CAEs, enable us to answer RQ1. Looking at the information collected, it is possible to see that PAF's IA performs, or is anticipated to perform, a wide range of activities (30 out of 38). Here, it is essential to note that, in between these activities, several are related to assurance and others to consulting. This idea was confirmed when CAEs were asked how IA was dividing resources into these activities. PAF's IA is no longer only focused on assurance but also on consulting. Besides that, two out of three departments divide their resources equally between assurance and consulting. Other activities to be highlighted, in line with the purpose of this paper, are those related to sustainability matters. Accordingly, "Tasks related to sustainability matters (ESG – Environmental,

Social and Governance)" appears with enhanced emphasis. Finally, regarding the exclusive questions to CAEs, we could notice that, though one department held some policies and documents, the remaining two did not. This is something that might not positively impact the activity of IA.

Overall, PAF's IA is evolving and following the evolution of IA worldwide. It has changed to a value-added independent, objective assurance and consulting service as it is expected not only by the literature (Eulerich & Lenz, 2020) but also by the IIA Standards (IIA Standards, 2017). This can also be seen through the number of activities performed. However, it has some improvement points as it is on the failure to present all IIA Standards required documents and policies.

The last three questions of the first questionnaire help us identify some internal auditors' perceptions about the focused risks in PAF, IA's alignment with the strategic plan of PAF and what was their general view of the IA activity. The top three risks on which PAF's IA was focusing, even when comparing sergeants with officials, were R_5, R_2 and R_4. The remaining two depended on how we analysed the data (everyone, sergeants, or officials' perceptions), which somehow revealed alignment between the groups compared. Comparing the results with the "On Risk" IIA report (2021), which defines the top risks likely to affect organisations in 2022, 9 out of 12 were selected at least once.

Finally, the questions related to the IAA and IAD allowed us to understand various ideas. First, the IAA question showed that IA is almost fully aligned with the organisation's strategy and, consequently, focused on both operational and strategic dimensions. The literature, in its turn, states that CG relates to decision-making processes (Naciti *et al.*, 2021) and, more than that, IA is one of the CG's cornerstones (Gramling *et al.*, 2004; Samagaio & Diogo, 2022). Moreover, IA is seen as capable to contribute to organisational objectives achievement (IIA, 2013; Lenz *et al.*, 2018; Sarens, 2009). Therefore, if that is the case, it would be expected that the organisation strategy and the IA, both intrinsically related to CG, would be aligned. Otherwise, IA would not be giving the support it should be given to the CG.

Secondly, results from the last question presented, overall, good scores. Once this question is based on the IIA Standards (2017) definition of IA, in a preliminary attempt to

understand internal auditors' perceptions of it, PAF's IA is aligned with it. It means that IA is satisfactorily fulfilling the main functions the IIA standards assign to it. Here, IAD_2 appears with higher emphasis, revealing the highest score and, with that, IA is truly adding value to PAF. On the other hand, IAD_1 was under-evaluated when compared to the others. That might indicate that IA may be lacking independence in PAF. In addition to IIA Standards itself, several studies focused on the added value and usefulness of IA (e.g., Anderson *et al.*, 2017; Eulerich & Lenz, 2020; Miller & Smith, 2011; Seago, 2015). This study confirms this idea and complements the literature on the IA's added value topic.

The first hypothesis (H1) theorises that IAE is positively related to SO of PAF. Overall, model 1 confirms it: IAEG is significant and can explain ESG. The same happens when IAEG is divided into three different components (model 5); however, only to IAE1. Looking at IAE1 items helps us understand which items of IAEG are contributing the most to this IAE's relation with SO: most of them dealt with the quality of IA.

This supports the shared general view in the literature that IA can contribute to an organisation's SO (ESG/sustainability). In fact, when the topic is taken on its generality, IA's contribution to sustainability matters is a given fact. Literature has been pointing to an expanding IA's role on ESG issues, highlighting its enhancement of sustainability levels (Eulerich & Lenz, 2020; Pickett, 2010; Ramamoorti & Siegfried, 2016; Samagaio & Diogo, 2022; Soh & Martinov-Bennie, 2018). This idea is also emphasised in IIA-associated studies: IA is expected to be a catalyst for innovation and improvement in sustainability matters (IIA, 2021; WBCSD & IIA, 2022).

Nevertheless, when it comes to understanding IAE's impact on each ESG dimension, results differ from the environmental. Models 3 and 4 reveal a significant relationship between IAEG and, respectively, SOC and GOV. Models 7 and 8 show a significant relationship between IAE1 and, respectively, SOC and GOV. However, in models 2 and 6, results were quite different. In a normal relation, IAEG and IAE1, IAE2 and IAE3, on their own, are not significant and do not contribute to ENV.

This is not congruent with what the literature suggests as the impacts of IA on the environmental dimension. First, some literature has highlighted the importance of IA in this sustainability dimension (e.g., DeSimone *et al.*, 2020; Ferreira *et al.*, 2006; Hazaea *et*

al., 2021; Trotman & Trotman, 2015). Then, the increased demand for environmental information and activities (Coyne, 2006; Hazaea *et al.*, 2021) increased the interest in environmental assurance and, subsequently, the number of organisations performing environmental audits (Darnall *et al.*, 2009). Expectably, any of these audits would be done if it was anticipated that they did not affect sustainability. According to this stream of research, it would be expected to have a positive contribution of IA in the environmental dimension of ESG. This was not verified.

Though these suggestions about the importance of IA in this area, there is evidence important to note: Ramamoorti and Siegfried (2016) pointed to environmental sustainability audits as the ones receiving the least attention. The same result was also achieved in a Soh & Martinov-Bennie (2015) study, suggesting that, by the moment of the investigation, IA was largely focused on social and governance issues rather than environmental ones. Even though it is expected to be an increase in environmental issues importance in the future (Soh & Martinov-Bennie, 2015), this lack of importance given to this dimension might be one of the causes of this no significant relation.

The second hypothesis (H2) posits that HRMP empowers the positive relationship between IAE and PAF's SO. Even though some studies have employed HRMP as a moderator variable (e.g., Bontis & Serenko, 2007; O'Donohue & Torugsa, 2015; Popaitoon & Siengthai, 2013; Rosli & Mahmood, 2013), what concerns this exact moderating effect of HRMP on the relationship between IAE and SO, no studies were found exploring it. In models 2 and 5, under the effect of the moderator variable (HRMP), IAEG and IAE2 turn out to be relevant. Straightforwardly, when ENV is the dependent variable, this is an expected result. Human resources are considered central to achieving successful environmental management (Tang *et al.*, 2017). This way, HRMP, when applied in this sense, may enhance environmental performance (Arulrajah *et al.*, 2015; Jabbour *et al.*, 2013; Nisar *et al.*, 2021). Moreover, glancing at the literature, a good part of it relies on environmental/green HRMP, which gives more power to this rationale.

Nevertheless, in line with the literature supporting this hypothesis, it would be expected to have a significant moderating effect in all models. HRMP would enhance human capital (e.g., through the development of skills and competencies), who, in turn, would achieve better performance in their responsibilities. This outcome would positively im-

pact IAE and, with that, lead to a superior contribution of IA on SO. Literature suggests that HRMP are effectively related to better performance, even when the topic is sustainable performance (Gilal *et al.*, 2019; Macke & Genari, 2019; Mousa & Othman, 2020; Paillé *et al.*, 2014; Rayner & Morgan, 2018; Zaid *et al.*, 2018a). In models other than those with ENV as the dependent variable, this hypothesis is hereby set aside.

As a final remark, interestingly, in model 6, even though it only becomes relevant in the presence of ESG-oriented HRMP, the focus is on IAE2 (contrary to other models, where the focus was on IAE1). This might mean that the items compounding IAE2 are the most suitable to be affected by these practices. The majority of IAE2 items dealt with the IA's added value.

5. CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH OPPORTUNITIES

IA is in an excellent position to help organisations achieve higher levels of sustainability. In light of the results of this study, several conclusions can be drawn on this topic. First, the results support that PAF's IA is an added value function, which provides an objective assurance and consulting services on a wide range of activities. These activities cover areas from auditing compliance with the regulatory code requirements or auditing financial risks, to tasks related to sustainability matters. Related to this last activity, the study shows that, overall, IA is positively related to SO. Indeed, when sustainability/ESG is addressed on its generality, results point towards a positive IA contribution. When the analysis focuses on each of the ESG dimensions individually, IA does contribute to the governance and social dimensions of ESG. The same does not happen in the environmental dimension unless in the presence of HRMP empowering it. This moderating effect of HRMP is only felt in the environmental dimension.

The findings provide theoretical and practical implications. First, this paper contributes to a research stream addressing the IA's contribution to sustainability. In this specific case, this topic is explored in a branch of the Armed Forces, a public sector organisation, and reflects its reality. This reveals a point to be noted as fewer studies deal with the public sector and the defence. This topic has been primarily analysed in the private sector. Second, the results showed that IA could enhance sustainability. Third, as the analysis was not only made for the sustainability topic on its generality, but also for each of its dimensions, it provides a more in deep analysis. Thus, increasing the analy-

sis's focus, this study raises attention to how IA may affect sustainability in organisations. Fourth, the IA contribution to the environmental dimension, happening only under the effect of HRMP, brings other crucial information: the effect of IAE on SO is affected by context, as was evident in the HRMP moderating effect. Fifth, we identified the main activities developed and the main risks focused on by the IA, bringing together, for this purpose, information from various studies.

Then, focusing on the study organisation, this study brings new data to it. The results showed that, in the case of PAF, IA could enhance sustainability, more specifically on the social and governance dimensions of ESG. This way, PAF may count on one more tool capable of helping achieve this strategic goal. However, abandoning IA's contribution to the environmental dimension makes some "sirens sound". PAF recognises that it faces many environmental challenges and has been reinforcing its intentions to invest in environmental sustainability: enhancing energy efficiency and reducing the environmental footprint, for example. The same happens in the Portuguese Public Administration, in the Portuguese Armed Forces and NATO, all different contexts the PAF belongs to.

First, to fulfil the mission assigned to it, the Air Force develops activities (military and aerial activity) that, by their nature, are likely to cause significant environmental impacts. Regarding the earth's rapidly changing climate and the negative consequences it drives with it, therefore, PAF and all the Armed Forces should consider acting responsibly to mitigate its impacts. Secondly, as part of public administration, this caution becomes even more important as the demands of its stakeholders are greater and more complex. Pressures to endeavour in environmental protection are becoming higher and increasingly unquestionable. Even in NATO or another international context, this is a crucial topic. All the players around the Air Force are now paying closer attention to the impacts their actions have and focusing on these issues.

Naturally, to meet the context in which it is embedded, PAF has hard work to do. IA not contributing to the environmental dimension does not mean PAF is neglecting this dimension, however, PAF might be losing a great opportunity to further enhance this strategic goal. IA is highly capable to take PAF's environmental sustainability a step further. It can help enhance what has been done and, additionally, search for more im-

provement while doing what does the best. Not taking advantage of what IA has to offer in this matter, PAF is further away to meet its objectives and others its context imposes. Having an IA that contributes to environmental sustainability is a status PAF should pursue. Considering that there is already work in this area, an analysis of the way IA operates on these matters and how it can be improved is important. This analysis should not focus only on the way of functioning but also on everything that surrounds it, so that PAF may obtain the desired outcome: a positive effect on environmental sustainability.

Finally, the results of the HRMP effect on IAE become truly important as it provides evidence that, now, to pursue environmental sustainability through IA activity, PAF must endeavour to implement these practices. This way, more than fixing the contribution of IA on the environmental dimension, PAF can seek out these HRMP to intensify it. This is also something PAF may use more in the future. This can also be useful to future organisational policies of the Portuguese Armed Forces.

This study has two main limitations. First, the sample dimension (related to the dimension of the study organisation) is not large and, on its own, limits the analysis (methods of analysis). This might influence the items on the construction of the constructs themselves. If the sample was larger, PLS-SEM could be used. Second, data were collected through two questionnaires. In front of sensitive questions, even before a confidentiality warranty, respondents may not answer or adapt their answers.

Observing the results and limitations of this study, it is proposed for future investigations use more robust methods to understand which items/activities of IAE contribute the most to sustainability and those that are more likely to be affected by HRMP. For that, future studies could extend the scope of the analysis to the entire Portuguese Defence Sector to solve the sample size problem.

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Appendix 1 – Policies and Documents

Code	Indicators	Source	Frequency
PD_1	Internal audit charter	161	0
PD_2	Mission statement for the internal audit department	161	0
PD_3	Internal audit operating manual	161	1
PD_4	Internal audit strategy description	161	1
PD_5	Code of conduct/ethics	161	1
PD_6	Description of key performance indicators (KPIs)	161	1
PD_7	None	161	2

Appendix 2 – Resources Division Between Assurance and Consulting

Code	Indicators	Source	Frequency
RAC_1	All resources are spent on assurance	161	0
RAC_2	Almost all resources are spent on assurance, and few resources are spent on consulting	161	1
RAC_3	Resources are equally divided between assurance and consulting	161	2
RAC_4	Almost all resources are spent on consulting, and few resources are spent on assurance	161	0
RAC_5	All resources are spent on consulting	161	0
RAC_6	I don't know	161	0

Appendix 3 – Activities Performed

Code	Indicators	Source	Frequency
ACTIVITY_1	Operational audits	6	1
ACTIVITY_2	Audits of compliance with regulatory code (including privacy) requirements	6	3
ACTIVITY_3	Auditing of financial risks	6	2
ACTIVITY_4	Investigations of fraud and irregularities	6	2
ACTIVITY_5	Evaluating effectiveness of control systems (using COSO, COBIT, etc., frameworks)	6	2
ACTIVITY_6	Auditing of IT/ICT risks	6	1
ACTIVITY_7	Auditing of information risks	6	1
ACTIVITY_8	Management audits	6	2
ACTIVITY_9	Audits of risk management processes	6 (adapted)	2
ACTIVITY_10	Provide advice and consulting on risk management activities	161	1
ACTIVITY_11	Project management assurance/audits of major projects	6	1
ACTIVITY_12	Security assessments and investigations	6	2
ACTIVITY_13	External audit assistance	6	3
ACTIVITY_14	Corporate governance reviews	6	1
ACTIVITY_15	Reviews of governance policies and procedures related to the	161	0

	organisation's use of information technology (IT)		
ACTIVITY_16	Disaster recovery testing and support	6	0
ACTIVITY_17	Facilitating risk/control/compliance training and education for organisation personnel	6	1
ACTIVITY_18	Auditing of outsourced operations	6	0
ACTIVITY_19	Ethics audits	6	1
ACTIVITY_20	Budget execution assessments	6 (adapted)	0
ACTIVITY_21	Reviews addressing linkage of strategy and company performance (e.g., balanced scorecard)	6	0
ACTIVITY_22	Due diligence reviews for corporate acquisitions/mergers, etc.	6	0
ACTIVITY_23	Quality/ISO audits	6	1
ACTIVITY_24	Tasks related to sustainability matters (ESG – Environmental, Social and Governance)	6 (adapted)	1
ACTIVITY_25	Migration to Accounting Standardisation System for Public Administrations (SNC-AP)	6 (adapted)	1
ACTIVITY_26	Implementation of Extensible Business Reporting Language (XBRL)	6	0
ACTIVITY_27	Adequacy and effectiveness of the internal control system assurance	161	2
ACTIVITY_28	Identifying emerging risks	161	2
ACTIVITY_29	Provide assurance on individual risks	161	0
ACTIVITY_30	Mining and analysing data for management	161	1
ACTIVITY_31	Recommending improvement	161 (adapted)	2
ACTIVITY_32	Informing and advising management	161	2
ACTIVITY_33	Informing and advising the audit committee	161	1
ACTIVITY_34	Informing key stakeholders	161	2
ACTIVITY_35	Assessing fraud risks and deterring fraud	53	2
ACTIVITY_36	Assuring the adequacy and effectiveness of the organisation's regulatory compliance processes	53	1
ACTIVITY_37	Testing the adequacy and effectiveness of management's assessment of controls	53	2
ACTIVITY_38	Assuring the adequacy and effectiveness of the organisation's governance processes	53	1

Appendix 4 – Focused Risks

Code	Indicators	Source	Frequency
R_1	Strategic risks	161	8
R_2	Risk management assurance/effectiveness	161	18
R_3	Corporate governance	161	6
R_4	Operational	161	18
R_5	Compliance/regulatory	161	25
R_6	Information technology (IT), not covered in other audits	161	9
R_7	Third-party relationships	161	1
R_8	Crisis management	161	1
R_9	Fraud, not covered in other audits	161	9

R_10	Cost/expense reduction or containment	161	6
R_11	General financial	161	9
R_12	Cybersecurity	165	0
R_13	Talent management	165	0
R_14	Data privacy	165	1
R_15	Economic and political volatility	165	1
R_16	Culture	165	2
R_17	Supplier management	165 (adapted)	3
R_18	Disruptive innovation	165	0
R_19	Social sustainability	165	1
R_20	Supply chain disruption	165	1
R_21	Environmental sustainability	165	8
R_22	Other	161	3
R_23	I'm not sure	161	9

Appendix 5 – Internal Audit Alignment

Code	Indicators	Source
IAA_1	Not aligned	161
IAA_2	Minimally aligned	161
IAA_3	Somewhat aligned	161
IAA_4	Almost fully aligned	161
IAA_5	Fully aligned	161

Appendix 6 – Internal Audit Definition

Code	Indicators	Source
IAD_1	Internal audit is an independent objective assurance and consulting activity in my organisation	99
IAD_2	Internal auditing adds value and improves the organisations operations	99
IAD_3	Internal audit brings a systematic and disciplined approach to evaluate and improve the effectiveness of risk management	99
IAD_4	Internal audit brings a systematic and disciplined approach to evaluate and improve the effectiveness of control	99
IAD_5	Internal audit brings an approach to evaluate and improve the effectiveness of corporate governance processes	99

Appendix 7 – Survey Items Used for Independent Variables

Code	Indicators	Source
IAE_1	IA is aware of and sensitive to the organisation's needs and operates accordingly	35
IAE_2	The evaluation of IA reports made by individuals in managerial positions who were audited is positive	35
IAE_3	The evaluation of IA reports made by individuals in operative positions who were audited is positive	35

IAE_4	The evaluation of IA reports made by external auditors and other external autorities is positive	35
IAE_5	IA identifies risks and competently assesses the adequacy and effectiveness of internal control systems	35
IAE_6	IA gets the attention of top management and focuses it on issues audited by IA	35
IAE_7	The issues to be audited are decided after identifying risks, quantifying them and determining appropriate risk levels	35
IAE_8	All control and auditing activities in the organisation are performed by IA or are coordinated with IA, including external auditing	35
IAE_9	IA is an autonomous and independent organisational unit	35
IAE_10	The IA department and its military are reliable and behave with integrity	35 (adapted)
IAE_11	The IA department is valued by management and makes valuable contributions during meetings	35
IAE_12	IA is a source of valuable data and information for the decision-makers in the organisation	35
IAE_13	The information provided by IA is vital to organisational operations	35
IAE_14	The costs of IA to the organisation are higher than the benefits and savings that result from its work (Reverse scored.)	35
IAE_15	All auditing functions that were approved in the auditing plans are performed completely	35
IAE_16	In addition to the issues determined and approved for inclusion in the annual audit, there are requests to the IA department to audit other issues	35
IAE_17	The number of complaints about the IA department is very low	35
IAE_18	Those who are audited demonstrate a high level of satisfaction with the work of the IA department	35
IAE_19	The time that passes between completing the audit and submitting the final report is too long (Reverse scored.)	35
IAE_20	The findings of internal audits are very significant for the organisation	35
IAE_21	The findings of internal audits are always based on documents and reliable data	35
IAE_22	The recommendations of the IA department can be easily implemented	35
IAE_23	The recommendations of the IA department provide practical, cost-benefit solutions for correcting the problems that were found	35
IAE_24	Only a small portion of the IA department's recommendations is implemented (Reverse scored.)	35
IAE_25	The IA reports are rigorous and accurate	35
IAE_26	The IA reports are clear and well presented	35
IAE_27	The IA reports include an introduction, goals, subjects, conclusions and recommendations	35
IAE_28	The IA reports are professional and of high quality	35
IAE_29	The management's decision-making process is strongly affected by the reports and findings of the IA department	35
IAE_30	The IA department contributes to the organisation above and beyond its operating costs	35
IAE_31	IA improves organisational performance	9
IAE_32	IA develops appropriate annual audit plans	9
IAE_33	Timely action is taken to implement the recommendations of the IA reports	9
IAE_34	IA provides adequate follow-up to ensure that appropriate corrective action is taken and that it is effective	9

Code	Indicators	Source
HRMP_1	The organisation develops training programs in ESG management to increase ESG awareness, skills and expertise of military	159 (adapted)
HRMP_2	The organisation has integrated training to create the emotional involvement of military in ESG management	159 (adapted)
HRMP_3	The organisation has ESG knowledge management (link ESG education and knowledge to behaviours to develop preventative solutions)	159 (adapted)
HRMP_4	The organisation uses ESG performance indicators in the performance management system and appraisals	159 (adapted)
HRMP_5	The organisation sets ESG targets, goals and responsibilities for managers and other military	159 (adapted)
HRMP_6	In the organisation, managers are set objectives on achieving ESG outcomes included in appraisals	159 (adapted)
HRMP_7	In the organisation, there are dis-benefits in the performance management system for non-compliance or not meeting ESG management goals	159 (adapted)
HRMP_8	The organisation has a clear developmental vision to guide the military's actions in ESG management	159 (adapted)
HRMP_9	In the organisation, there is a mutual learning climate among military for ESG behaviour and awareness in Portuguese Air Force	159 (adapted)
HRMP_10	In the organisation, there are a number of formal or informal communication channels to spread ESG culture in Portuguese Air Force	159 (adapted)
HRMP_11	In the organisation, military are involved in quality improvement and problem-solving on ESG issues	159 (adapted)
HRMP_12	The organisation offers practices for military to participate in ESG management, such as newsletters, suggestion schemes, problem-solving groups, low-carbon champions and ESG action teams	159 (adapted)
HRMP_13	The organisation emphasises a culture of ESG protection	159 (adapted)

Appendix 9 – Survey Items Used for Dependent Variables

Contruct	Dimension	Code	Indicators	Source
		ESG_1	Procurement of environmentally friendly materials	139 (adapted)
		ESG_2	Energy usage	155
		ESG_3	Materials usage	155
	ENV	ESG_4	Greenhouse gas emissions	155
		ESG_5	Hazardous waste management	155
		ESG_6	Water management	155
		ESG_7	Impacts on biodiversity	155
ESG		ESG_8	Climate risk	139
		ESG_9	Occupational health and safety	155
		ESG_10	Military retention and turnover	155 (adapted)
		ESG_11	Training and education of military	155 (adapted)
	SOC	ESG_12	Supply chain issues	155
		ESG_13	Human rights issues	155
		ESG_14	Community impacts and relations	155
		ESG_15	Donations and other humanitarian actions	155 (adapted)

	ESG_16	Mission management (national and international)	155 (adapted)
SOC	ESG_17	Mission privacy	155 (adapted)
	ESG_18	Data privacy and security	139
	ESG_19	Governance structure	155
	ESG_20	Organisation culture	155
	ESG_21	Ethics	155 (adapted)
	ESG_22	Conflicts of interest	155
	ESG_23	Remuneration structures and incentive systems	155 (adapted)
ESG	ESG_24	Diversity and equal opportunity	155
	ESG_25	Stakeholder dialogue	155
GOV	ESG_26	Risk management	155
	ESG_27	Strategic risks	155
	ESG_28	Corruption and bribery	155
	ESG_29	Anti-money laundering	155
	ESG_30	Fraud	155
	ESG_31	Whistleblower schemes	155
	ESG_32	Intellectual property protection	139

Appendix 10 – Descriptive Statistics

	Mean	Median	SD	Skewness	Kurtosis		Mean	Median	SD	Skewness	Kurtosis
IAEG	3.95	3.89	0.514	-0.255	1.889	HRMP_6	2.94	3	1.056	-0.358	-0.622
IAE1	4.10	4	0.582	-0.785	2.848	HRMP_7	2.74	3	0.950	-0.536	-0.461
IAE2	3.63	3.83	0.711	-0.915	1.857	HRMP_8	2.89	3	0.932	-0.224	-1.006
IAE3	4.10	4	0.639	-0.297	-0.643	HRMP_9	3.09	3	1.011	-0.361	-0.812
IAE_1	3.80	4	0.964	-1.454	2.727	HRMP_10	2.91	3	0.981	-0.018	-0.735
IAE_2	3.80	4	0.833	-1.217	2.924	HRMP_11	3.03	3	1.124	-0.322	-0.725
IAE_3	4.03	4	0.747	-0.496	0.285	HRMP_12	2.57	3	0.979	-0.012	-0.940
IAE_4	3.89	4	0.718	-0.331	0.252	HRMP_13	2.83	3	0.985	-0.420	-0.771
IAE_5	4.00	4	0.686	-0.580	1.153	ESG	3.61	3.59	0.792	-0.265	-0.219
IAE_6	3.37	4	1.031	-0.316	-0.590	ENV	3.55	3.5	0.794	-0.119	-0.498
IAE_7	3.66	4	0.838	-1.484	2.422	ESG_1	3.46	3	0.886	0.003	-0.612
IAE_8	3.49	4	1.147	-0.707	0.002	ESG_2	3.74	4	0.886	-0.530	-0.202
IAE_9	3.83	4	0.985	-0.812	0.713	ESG_3	3.54	4	0.886	-0.272	-0.554
IAE_10	4.31	4	0.796	-2.128	7.829	ESG_4	3.26	3	1.094	-0.119	-0.445
IAE_11	3.63	4	0.910	-0.902	1.041	ESG_5	4.00	4	0.907	-0.751	0.028
IAE_12	4.17	4	0.747	-0.294	-1.106	ESG_6	3.74	4	0.919	-0.172	-0.766
IAE_13	3.97	4	0.857	-0.836	0.551	ESG_7	3.40	3	1.006	0.199	-0.963
IAE_14	4.23	4	0.731	-0.869	1.158	ESG_8	3.26	3	0.950	0.099	-0.964
IAE_15	3.74	4	0.950	-0.754	0.824	SOC	3.63	3.7	0.779	-0.485	0.212
IAE_16	3.83	4	0.822	-0.675	0.382	ESG_9	3.94	4	1.259	-1.106	0.415
IAE_17	3.89	4	0.758	-0.232	-0.206	ESG_10	3.57	4	1.378	-0.515	-1.099
IAE_18	3.63	4	0.770	-1.279	3.078	ESG_11	3.77	4	1.031	-0.193	-1.164

Code						Code					
IAE_19	3.29	4	1.152	-0.112	-1.215	ESG_12	3.51	4	1.040	-0.540	0.360
IAE_20	4.03	4	0.857	-0.651	-0.007	ESG_13	3.40	3	1.117	-0.473	0.060
IAE_21	4.31	4	0.676	-0.479	-0.697	ESG_14	3.34	3	0.802	-0.358	1.307
IAE_22	3.29	3	0.789	-0.569	-1.140	ESG_15	3.09	3	0.887	-0.711	-0.149
IAE_23	3.57	4	0.778	-1.445	2.639	ESG_16	3.89	4	0.932	-0.917	1.401
IAE_24	3.00	3	0.907	-0.250	-1.214	ESG_17	3.69	4	1.051	-0.767	0.704
IAE_25	3.94	4	0.802	-0.256	-0.523	ESG_18	4.09	4	0.887	-0.711	-0.149
IAE_26	4.20	4	0.584	-0.038	-0.163	GOV	3.64	3.86	0.911	-0.475	-0.321
IAE_27	4.06	4	0.802	-0.831	0.842	ESG_19	3.77	4	0.770	0.017	-0.511
IAE_28	4.09	4	0.853	-1.376	3.693	ESG_20	3.74	4	0.980	-0.238	-0.911
IAE_29	3.14	3	0.810	0.079	1.248	ESG_21	3.94	4	1.110	-1.114	1.017
IAE_30	3.71	4	0.789	0.187	-0.673	ESG_22	3.57	4	1.092	-0.624	0.078
IAE_31	4.17	4	0.618	-0.906	3.558	ESG_23	3.34	3	1.392	-0.245	-1.227
IAE_32	4.09	4	0.612	-0.041	-0.151	ESG_24	3.11	3	1.367	0.002	-1.125
IAE_33	3.51	4	0.612	-0.057	-0.237	ESG_25	3.31	3	1.207	-0.227	-0.650
IAE_34	3.83	4	0.707	-1.335	2.438	ESG_26	3.80	4	0.964	-0.618	0.582
HRMP	2.85	3	0.802	-0.301	-0.601	ESG_27	3.69	4	1.105	-0.572	0.123
HRMP_1	2.77	3	0.973	-0.323	-0.810	ESG_28	3.86	4	1.033	-0.717	0.230
HRMP_2	2.66	3	0.838	-0.531	-0.090	ESG_29	3.77	4	1.003	-0.252	-1.000
HRMP_3	2.74	3	0.919	-0.172	-0.766	ESG_30	3.89	4	0.932	-0.455	-0.575
HRMP_4	2.94	3	0.938	-0.109	-0.343	ESG_31	3.63	4	1.239	-0.805	-0.240
HRMP_5	2.97	3	0.954	-0.371	0.001	ESG_32	3.54	4	1.146	-0.484	-0.365

Appendix 11 – Principal Component Analysis Results

Code	New construct	% of variance explained	Code	New construct	% of variance explained
IAE_2			IAE_1		
IAE_3			IAE_6		
IAE_5			IAE_7		
IAE_10			IAE_11	IAE2	9.323
IAE_21	IAE1	32.502	IAE_33		
IAE_25			IAE_34		
IAE_26			IAE_12		
IAE_28			IAE_13		
IAE_31			IAE_14	IAE3	8.67
			IAE_20		

Appendix 12 – Measurement Model - Items Loadings

Construct	Item	Loadings	Construct	Item	Loadings
IAEG	IAE1	0.892	ESG	ENV	0.866
	IAE2	0.760		SOC	0.979
	IAE3	0.705		GOV	0.954
IAE1	IAE_2	0.777	ENV	ESG_1	0.829
	IAE_3	0.810		ESG_2	0.744
	IAE_5	0.736		ESG_3	0.823
	IAE_10	0.762		ESG_4	0.853
	IAE_21	0.745		ESG_5	0.814
	IAE_25	0.862		ESG_6	0.923
	IAE_26	0.762		ESG_7	0.898
	IAE_28	0.889		ESG_8	0.861
	IAE_31	0..752	SOC	ESG_9	0.829
IAE2	IAE_1	0.878		ESG_10	0.696
	IAE_6	0.853		ESG_11	0.844
	IAE_7	0.816		ESG_12	0.839
	IAE_11	0.875		ESG_13	0.719
	IAE_33	0.828		ESG_14	0.799
	IAE_34	0.764		ESG_15	0.573
IAE3	IAE_12	0.761		ESG_16	0.717
	IAE_13	0.931		ESG_17	0.707
	IAE_14	0.491		ESG_18	0.736
	IAE_20	0.932	GOV	ESG_19	0.699
RHMP	HRMP_1	0.856		ESG_20	0.827
	HRMP_2	0.808		ESG_21	0.870
	HRMP_3	0.883		ESG_22	0.898
	HRMP_4	0.889		ESG_23	0.880
	HRMP_5	0.738		ESG_24	0.801
	HRMP_6	0.822		ESG_25	0.853
	HRMP_7	0.543		ESG_26	0.823
	HRMP_8	0.810		ESG_27	0.879
	HRMP_9	0.835		ESG_28	0.805
	HRMP_10	0.862		ESG_29	0.717
	HRMP_11	0.857		ESG_30	0.779
	HRMP_12	0.861		ESG_31	0.870
	HRMP_13	0.902		ESG_32	0.848

Appendix 13 – Discriminant Validity

Panel A	ESG	IAEG	HRMP
ESG	**0,935**	0,685	0,427
IAEG	0,587	**0,790**	0,557
HRMP	0,424	0,475	**0,825**

Panel B	ENV	GOV	SOC	IAEG	HRMP
ENV	**0,8402**			0,4791	0,4785
GOV		**0,8271**		0,6714	0,3532
SOC			**0,7502**	0,7698	0,3798
IAEG	0,4246	0,5988	0,6626	**0,7906**	0,5568
HRMP	0,5130	0,3683	0,3827	0,4742	**0,8258**

Panel C	ESG	IAE1	IAE2	IAE3	HRMP
ESG	**0,935**	0,636	0,385	0,408	0,427
IAE1	0,619	**0,790**	0,565	0,517	0,485
IAE2	0,391	0,515	**0,836**	0,418	0,486
IAE3	0,385	0,477	0,376	**0,801**	0,305
HRMP	0,422	0,461	0,471	0,197	**0,825**

Panel D	ENV	GOV	SOC	IAE1	IAE2	IAE3	HRMP
ENV	**0,840**			0,432	0,302	0,300	0,478
GOV		**0,827**		0,664	0,355	0,384	0,353
SOC			**0,826**	0,677	0,450	0,521	0,380
IAE1	0,436	0,657	0,660	**0,790**	0,565	0,517	0,485
IAE2	0,312	0,369	0,453	0,517	**0,837**	0,418	0,486
IAE3	0,270	0,364	0,461	0,478	0,379	**0,800**	0,521
HRMP	0,514	0,365	0,385	0,460	0,469	0,203	**0,751**

Notes: Panels presents the correlations between the constructs (Fornell-Larcker criterion) below the diagonal, and the Heterotrait-Monotrait ratio above the diagonal. The boldface scores on the diagonal are the square root of AVE. Panel A refers to model 1; panel B to models 2, 3 and 4; panel C to model 5; and panel D to models 6, 7 and 8.