



## Timeliness of the Financial Reporting Among Maltese Licensed Voluntary Organisations



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**Abstract:** The voluntary sector in Malta plays a vital role in supporting communities and delivering essential services. However, delays in financial reporting by voluntary organisations can weaken governance, reduce the usefulness of information, and erode stakeholder trust. This study investigates the financial reporting lag (FRL) among Category 2 and 3 voluntary organisations in Malta from 2018 to 2020 ( $n = 103$ ), aiming to (i) measure the extent of the lag and (ii) identify the key factors influencing it. A quantitative, hypothesis-driven research design was adopted, employing non-parametric statistical tests and a neural network model to detect both linear and non-linear relationships, marking the first application of neural networks to this topic. Findings reveal that Category 2 organisations consistently exceeded the allowable FRL during the study period, with compliance improving only in 2020 due to extended filing deadlines. Category 3 organisations generally demonstrated better timeliness, except in 2019, when COVID-19 disruptions led to significant delays. Compared with Belgium and the UK, where late filings range between 5% and 24%, Malta's compliance levels were notably lower, reflecting structural and regulatory challenges. The analysis identified “Year” as the most influential variable, capturing pandemic-related effects, policy changes, and learning curve dynamics. Profitability and equity were also strong predictors, while reliance on donations or grants and liquidity had a moderate impact on the results. The organisation's category and gearing exerted minimal influence on the model's predictions. The study provides evidence-based insights to guide regulatory and policy reforms in Malta's voluntary sector, particularly in light of the recent INPAS, the International Non-Profit Accounting Standard, and ongoing reforms. By integrating neural networks into the analysis of financial reporting timeliness, the research enhances our understanding of the complex factors that shape reporting behaviour. It contributes to strengthening transparency and accountability in Malta's voluntary sector.

**Keywords:** Non-profit organisations; Voluntary organisations; Financial reporting lag; Neural networks; Malta

**JEL Classification:** M41; M48

### 1. Introduction

Governed by the Government of Malta (2007), the voluntary sector in Malta comprises over 1,800 registered voluntary organisations and 30,000 volunteers (Times of Malta, 2024). The Government of Malta recognises the sector as a vital socio-economic pillar in society (Farrugia Portelli, 2024). A comparative study on volunteering across the European Union highlights the heterogeneity of the voluntary sector, with organisations linked to political and cultural aspects, religious initiatives, social welfare activities, and sports. Religious organisations and

those involved in social work activities together represent around 90% of the sector (NGEnvironment, 2021). Additionally, a strong culture of volunteering has been a well-established tradition for around a century (GHK, 2010), with nearly all NGOs being managed by volunteers (NGEnvironment, 2020). In a recent survey, Malta actually ranks in the top ten, with an index score of 54 points, which evidences the local culture's disposition to help those in need (Charities Aid Foundation, 2024).

In the non-profit sector, maintaining accountability and stakeholders' trust is crucial (Brandtner, 2021; Kaba, 2021; Ortega-Rodríguez et al., 2020; Tacon et al., 2017) as this can either enhance or inhibit the organisations' ability to operate effectively. Sustaining stakeholder trust is deemed to be a critical factor for their legitimacy and effectiveness (Dethier et al., 2023; Gibelman & Gelman, 2001; Harris et al., 2017; Jeavons, 2001) and is also theorised to be a fundamental condition for charitable giving, as argued by Gaskin (1999) and Chapman et al. (2021). Two key arguments underpin this line of reasoning. First, individuals with a stronger general disposition to trust others are considered more inclined to engage in charitable giving compared to those with lower levels of trust. Empirical evidence supports this claim. For instance, Bekkers (2003) found a positive relationship between generalised trust and the level of charitable donations in the Netherlands. Brown & Ferris (2007) found such a positive relationship for the USA, and similar claims have been found across other countries, (Evers & Gesthuizen, 2011; Glanville et al., 2016). A second line of reasoning emphasises that non-profit organisations, as fundraisers for specific causes or beneficiary groups, rely on trust through the mechanism of perceived efficacy, that is, the expectation that charitable contributions will meaningfully benefit the recipients (Bekkers & Wiepking, 2011). Empirical evidence, such as that of Beldad et al. (2015) and Hou et al. (2017), supports this claim: the former study found that American donors' belief in the efficacy of their contribution predicts their willingness to continue donating, while the latter found that donor satisfaction exerts a strong influence on future behaviour and motivation for donating.

Financial reporting is a mechanism used to enhance accountability, transparency and trust, as it enables stakeholders to assess the financial position of the entity and how its funds were obtained and utilised. In 2018, the National Audit Office in Malta warned that the Office of the Commissioner for Voluntary Organisations (OCVO), which is the regulatory authority responsible for this sector, was unable to ascertain how much money was being raised by voluntary organisations (VOs) or how it was being used (NAO, 2018a). The report further highlighted a notably high rate of non-compliance among VOs regarding the timely submission of the annual return. From a user's perspective, prior research, such as Blanchet (2002), Heald (2006), and Kulzick (2004), and, views timely reporting as an important concept in transparency, alongside other key concepts including accuracy, consistency, appropriateness, completeness, and clarity. In financial reporting, timeliness is "*having information available to decision makers before it loses its capacity to influence decisions*" (Reheul et al., 2014). Delays in financial reporting may therefore diminish the relevance of the disclosed information, potentially suggesting weaknesses in governance or operational effectiveness, and undermining the confidence of stakeholders (Al-Ajmi, 2008; Knechel & Payne, 2001). This may be detrimental to non-profit organisations. "*Timeliness thus plays an important role in this regard*" (Adebayo & Adebisi, 2016).

Accordingly, regulators acknowledge the importance of timely reporting by imposing deadlines for reporting. Daoud et al. (2014) describe the financial reporting lag (FRL) as "*the period between the end of the financial reporting period and the date the financial reports are issued, or the date of the submission of the reports to the regulatory bodies.*" The FRL in this study refers to the length of time between the end of the reporting period of a VO and the date when the annual return and accounts of the VO are submitted to the OCVO.

Reheul et al. (2014) note that an understanding of the determinants of the FRL in the voluntary sector is important. However, literature in connection with the FRL in the voluntary sector is quite limited. Most studies on the FRL focus on publicly traded firms, typically examining their influence on market reactions or identifying firm-specific determinants such as size, audit complexity, or sectoral characteristics (Chambers & Penman, 1984; Leventis & Weetman, 2004). In contrast, limited research addresses timeliness in non-profit organisations, despite their reliance on public funds, grants, and tax advantages (Keating et al., 2005). VO's financial statements are an important source of information for various stakeholders, such as governments, donors, and volunteers. As argued by Yetman & Yetman (2011), inaccurate financial statements can lead to suboptimal decisions and the potential misallocation of resources. This financial dependence intensifies the need for timely reporting to ensure accountability and preserve public trust. As such, examining the FRL in the Maltese non-profit context offers valuable insights into transparency and governance practices in a sector where stakeholder scrutiny is high and resources are scarce. In light of this, the present study:

- (a) Measures the extent of the FRL in Category 2 and Category 3 VOs during the years 2018–2020; and
- (b) Ascertains the important explanatory variables affecting the FRL.

This article is intended to contribute to the literature on financial reporting in the voluntary sector. It is particularly timely in view of the focus on non-profit organisations and the launch, in October 2025, of INPAS, the first internationally recognised financial reporting standard for the non-profit sector. It is expected that the adoption of this standard by non-profit organisations will strengthen the rigour of their financial reporting processes and reinforce stakeholders' confidence in the integrity of the reported financial information (Saidykhan

& Sensoy, 2023). The sector is also currently being eyed for reform by the Maltese Government and the regulator to strengthen it, enabling it to continue being recognised as an important pillar in society (Ministry for Inclusion & the Voluntary Sector, 2024). A public consultation document was issued in 2024. Regulatory frameworks shape organisations’ conduct and their transparency practices and are therefore important (Dethier et al., 2023). Additionally, while VOs in Malta are deemed to be “*a main pillar within society and the economy*” (OCVO, 2025), there is a paucity of scholarly research. The Centre for European Volunteering (2020) noted that the minimal “*research on volunteering in Malta significantly limits the degree to which national and organisational policies and services aimed at promoting and supporting volunteering can ever be developed in an appropriate, effective, efficient manner.*” In this connection, this study provides the regulator with evidence-based research to inform future policy changes regarding non-profit organisations in Malta.

The remainder of this paper is structured as follows. The next section reviews the relevant literature and develops the study hypotheses. Section 3 outlines the data collection and the methodology employed to examine the explanatory variables affecting the financial reporting timeliness of VOs. Section 4 presents the findings, and Section 5 discusses the results, while the study concludes with Section 6.

## 2. Literature Review and Hypotheses Development

### 2.1 Regulatory Background

Prior to 2007, Malta’s voluntary sector lacked formal regulation, with no legal obligations in the areas of registration, financial reporting, or operational transparency. The 2005 White Paper, “*Strengthening the Voluntary Sector*”, introduced formal regulatory oversight. In 2007, the Voluntary Organisations Act was enacted, through Act XXII of 2007, establishing a regulatory framework and the OCVO, to initiate oversight over the sector while ensuring transparency and accountability.

Under the Voluntary Organisations Act, a VO is defined as an organisation established for any social purpose, operating on a non-profit basis, and comprising volunteers. Registration of such organisations with the OCVO involves meeting several requirements, including the submission of annual returns and accounts, as introduced by Legal Notice 379 of 2012 (Government of Malta, 2012). VOs are classified into three categories by size, based on the annual revenue and income of the organisation. The size thresholds over the years, including the changes brought about in 2020 through Legal Notice 317 of 2020 (Government of Malta, 2020) are depicted in Table 1.

**Table 1.** Size thresholds

Title	Category 1	Category 2	Category 3
Legal Notice 379 of 2012 Revenue	Less than or equal to €20,000	Exceeds €20,000 but does not exceed or is equal to €200,000	Exceeds €200,000
ACT No. XXXVI of 2018 Revenue and income	Less than or equal to €50,000	Exceeds €50,000 but does not exceed or is equal to €250,000	Exceeds €250,000
Legal Notice 317 of 2020 Revenue and income	Less than or equal to €50,000	Exceeds €50,000 but does not exceed or is equal to €250,000	Exceeds €250,000

Source: Legal Notice 379 of 2012 (Government of Malta, 2012), ACT No. XXXVI of 2018 (Government of Malta, 2018) and Legal Notice 317 of 2020 (Government of Malta, 2020)

In 2013, the OCVO reported that only 55% of VOs submitted their respective annual returns and accounts within the deadline stipulated by law. A year later, the OCVO reported that the percentage of submissions across all categories was decreasing over the years. At this point, the concept of the FRL came under the scrutiny of the National Audit Office (NAO). Through a performance audit, the NAO concluded that for the financial year ending 2016, only 16% of VOs were compliant in submitting their annual returns and accounts within the legal timeframe, with most non-compliance relating to Category 1 VOs, owing to a lack of technical and administrative competencies (NAO, 2018b). To address this, key legislative changes were enacted in 2018: the OCVO’s responsibilities were expanded, the thresholds were revised as depicted in Table 1, mandatory enrollment for all VOs was required, and enforcement actions in cases of non-compliance were addressed. Additionally, prior to 2018, Category 2 VOs could choose to prepare their accounts on either a cash basis or an accruals basis, and this had to be clearly disclosed in the accounts. One of the legal amendments in 2018 required Category 2 VOs to prepare their accounts in line with GAPSME, hence adhering to the accruals concept. At the same time, the OCVO launched several initiatives to enhance its internal processes, empowering the Commissioner to reinforce its regulatory role in the vetting and oversight of voluntary organisations (OCVO, 2019). For VOs, “*the ability to fundraise depends entirely on retaining the public’s trust*” (Malta Council for the Voluntary Sector, 2021). Following the aforementioned legislative changes, a Gallup and Wellcome Trust study found that Malta ranked among the top ten countries globally, with 79% expressing trust in charities and only 11% expressing distrust (Younis & Rzepa, 2019). Notably, no other EU countries made the global top ten (The Malta Independent, 2019).

The returns submitted by VOs are currently regulated by the Voluntary Organisations Act and the VOs (Annual Returns and Annual Accounts) Regulations enacted through Legal Notice 317 of 2020. Legal Notice 317 repealed Legal Notice 379 of 2012 and assigned different deadlines for VOs to submit annual returns and annual accounts depending on their category, as detailed in Table 2. Additionally, the Commissioner's powers in cases of non-compliance were further strengthened. The Commissioner may now request any information from any person to assess whether an organisation qualifies as a non-profit entity and whether the principles, rules, or guidelines of the law are being observed. Furthermore, Article 34 of the Voluntary Organisations Act provides that, upon investigation, the Commissioner can also impose penalties for breaches of the law's provisions, as well as request information from banks or other entities.

On the other hand, VOs enrolled with the OCVO may enjoy the privileges contemplated in the law. Under article 4 of the Voluntary Organisation Act, these include being able to make collections without the need to obtain further authorisations; also receiving or being the beneficiary of grants, sponsorships or other financial aid from the Government, any entity controlled by the Government or the Voluntary Organisations Fund. These changes in legislation stem from the importance of VOs maintaining accountability towards stakeholders, reflecting both upward accountability to funders and regulators, and downward accountability to beneficiaries, employees, and volunteers, such accountability being on the lines indicated by the literature (Dhanani & Connolly, 2012; O'Dwyer & Unerman, 2007; Unerman & O'Dwyer, 2006). A study carried out in 2024 through surveys and focus groups with businesses and VOs in Malta found that acquiring detailed data and encouraging transparent reporting are essential for a more informed and equitable giving sector in Malta (Academy of Givers, 2024). It is clear, therefore, that good reporting is important in building trust (Connolly & Hyndman, 2013a), as is timely reporting. However, while financial reporting in the voluntary sector aims to enhance transparency and accountability (Yasmin & Ghafran, 2021) and is helpful to stakeholders (Connolly et al., 2017; Trussel & Parsons, 2007), little empirical work has been undertaken to investigate the timeliness aspect of financial reporting in the voluntary sector. In one of the earliest studies focusing on the FRL in the voluntary sector, Reheul et al. (2014) report that, in the Belgian voluntary sector, around 17.2% of VOs within the selected sample filed their annual financial statements late in 2007 and 2008. Similarly, Christiaens et al. (2015) found that for the years 2011 and 2012, among large and very large VOs in Belgium, 24% of the sample failed to meet the legal deadline. A similar percentage was also found to apply in the case of registered charities in England and Wales, with 18% filing their financial statements late (Morgan, 2011). More recently, Mayapada et al. (2024), drawing on a sample of UK charities from 2007 to 2018, reported a relatively low proportion of late filings at 5.02%, indicating that most charitable organisations file their financial statements on time. In fact, in the UK, the filing rates amongst UK charities have improved with 92% of charities filing on time by the end of 2024–25, representing a significant improvement from the previous year's 81% (Charity Commission for England & Wales, 2025).

**Table 2.** Annual accounts, basis for preparation and further obligations

Annual Accounts and Basis for Preparation Since 2018			Days Permissible to File the Annual Accounts and Other Documents		Further Obligations
			Legal Notice 379 of 2012	Legal Notice 317 of 2020	
Category 1	Category 2	Category 3			
Income and expenditure template of the OCVO: Cash basis			75 days	90 days	
Option: Financial statements: GAPSME	Financial statements: GAPSME		106 days	180 days	Signed by an accountant
Financial statements: IFRS Accounting Standards	Option: Financial statements: IFRS Accounting Standards	Financial statements: IFRS Accounting Standards	244 days	240 days	Audited by an auditor

Source: Legal Notice 317 of 2020 (Government of Malta, 2020) and Legal Notice 379 of 2012 (Government of Malta, 2012)

This study focuses on the timeliness of financial reporting of VOs in Malta. As noted earlier, Legal Notice 317 of 2020 revised the date for filing annual accounts and other documents with the OCVO, as illustrated in Table 2. The option to prepare the accounts using a higher-level framework was also introduced at this time. Such documents are available to the public for inspection, allowing the regulator to conduct a proper assessment. The aim is to ensure transparency and accountability. The annual returns that are to be submitted to the OCVO include the (i) organisation chart; (ii) list of administrators; (iii) any documents amending the statute; (iv) annual return and annual report which require an overview of the finances during the year including the sources of funding, the fundraising activities if any, the disbursement of funds and the financial challenges that the VO has encountered; and a signed copy of the annual accounts prepared as outlined in Table 2. This illustrates additional obligations



arising from Subsidiary Legislation 492.02 in relation to the assurance and filing deadline based on Legal Notice 317 of 2020.

The Malta Council for the Voluntary Sector (2021) noted that “*not all voluntary organisations have the same capacity and thus there should not be any equal administrative burden which in principle also reflects the three categories established by the same Voluntary Organisations Act with reference to financial capacity*”. Subsidiary Legislation 281.05—Accountancy Profession (General Accounting Principles for Small and Medium-sized Entities) Regulations (GAPSME) is the national GAAP of Malta, which is highly aligned with the IFRS Accounting Standards (Micallef, 2017). This was the result of the transposition of the EU Accounting Directive 2013/34/EU into Maltese legislation (Micallef & Gauci, 2023), whose aims are to facilitate cross-border investment and enhance comparability and public confidence in financial statements through consistent disclosure. In terms of reporting requirements, minor and medium-sized for-profit organisations in Malta now need to prepare their financial statements on an accrual basis in line with GAPSME, unless the Board of Directors passes a resolution to the effect that IFRSs as adopted by the EU are to be used. On their part, large for-profit organisations and public-interest entities need to follow IFRSs as adopted by the EU. Interestingly, the thresholds in Table 1 are much lower than the financial reporting size thresholds in the Companies Act of Government of Malta (1995) (based on revenue applicable to for-profit organisations. This means that, for financial reporting purposes, Category 1 VOs are dissimilar to their for-profit counterparts of the same size, as the former use the cash basis and only file an Income and Expenditure template, thereby being subject to relatively fewer reporting requirements than their for-profit counterparts. Arguments supporting this could relate to the problems faced by these entities in terms of compliance costs, such as the lack of skilled accounting staff (Cordery, 2013) and high staff turnover (Mohd Nasir et al., 2009). On the other hand, some Category 3 VOs are required to prepare IFRS financial statements when similarly sized for-profit organisations are required to abide by GAPSME. While IFRS Accounting Standards enhance the extent of comparability in financial reporting across entities, thereby promoting consistency and transparency in financial reporting (Onah & Edeh, 2024), the different thresholds of VOs relative to for-profit organisations mean that there is currently no level playing field. The current requirements might be imposing too much of a relative burden on these VOs, and this could ultimately materialise in a lack of financial reporting timeliness.

As of 2024, all for-profit organisations, with minor exceptions, were legally required to undergo audits. As Table 2 illustrates, Category 1 and Category 2 VOs are exempt from such stringent measures. However, in 2025, changes to the audit obligations of Maltese companies took effect through the Audit Exemption Rules, 2025 (Government of Malta, 2025). Such rules now mainly apply for financial periods commencing on or after 1 January 2025 and cater for new criteria under which companies may be exempt from statutory audit but are subject instead to a review engagement. Such companies include those qualifying as micro entities (*in terms of turnover, if this is equal to or less than €93,000*). Contrastingly, prior to this revision in law and throughout the period during which the fieldwork for this study was conducted, Category 1 and Category 2 VOs were not required to undergo an audit.

In 2024, OCVO introduced a new set of proposals for reforming the voluntary sector. The Ministry for Inclusion & the Voluntary Sector (2024) notes that the need to update the way the sector is regulated has long been felt, and such reform should provide the voluntary sector with the opportunity to continue its work. Among the proposals being put forward in this consultation process, termed VO Plus, are changes to the thresholds and the respective reporting procedures as illustrated in Table 3.

**Table 3.** Proposed thresholds and obligations

Category	Threshold Based on Revenue and Income	Annual Accounts and Basis for Preparation and Further Obligations
Financial Category 1	below €95,000	A simplified return based on a new model from OCVO Organisations with an income of less than €25,000 are to be assisted by the Maltese Council for the Voluntary Sector if necessary
Financial Category 2	€95,000 to €499,999	Accounts are to be presented in GAPSME format ( <i>may be audited</i> )
Financial Category 3	€500,000+	Accounts are to be presented in GAPSME format, accompanied by an auditor’s opinion

Source: Ministry for Inclusion & the Voluntary Sector (2024)

As depicted in Table 3, the 2024 consultation document proposed nearly doubling the thresholds across the three categories, thereby allowing more VOs to benefit from simpler financial reporting requirements. In December 2024, the Government of Malta published a feedback report on this consultation document. Such feedback showed that most VLOs are in favour. It was also suggested that “*more research on the sector should be carried out*” (Ministry for Inclusion & the Voluntary Sector, 2024). This study aims to contribute to the research process by shedding light on the FRL prevalent among VOs in Malta. In addition, as the usefulness of financial information is further evidently affected by several underlying factors contributing to the FRL of Maltese VLOs, the study also

aims to shed light on the main explanatory variables that affect such FRL. To ensure sufficient comparability between the VOs within the scope of this study, it is limited to the accruals-based Categories 2 and 3 VOs, thereby excluding the cash-based Category 1 VOs. Furthermore, previous studies investigating the timeliness aspect of financial reporting in the voluntary sector, such as Mayapada et al. (2024) in the UK charities and Reheul et al. (2014) in Belgium, have used regression analysis to identify determinants of financial reporting timeliness in these sectors. This study is therefore aimed at contributing to the non-profit literature by complementing these findings as applicable to VLOs in a small island state and also utilising neural networks rather than regression models. The principal advantage of this approach over traditional regression methods is that neural networks are considered more effective in modelling complex, non-linear relationships within data, given that regression analysis typically relies on the assumption of linearity and homogeneity of variance.

## 2.2 Development of the Hypotheses

### 2.2.1 Reliance upon donations and/or grants

VOs are commonly classified into two main types: donative and commercial (Chang & Tuckman, 1994; Herman & Renz, 2008; O'Hagan & Purdy, 1993). The key distinction between them lies in their revenue structure, with commercial VOs relying more extensively on non-donative income sources compared to their donative counterparts (Calabrese, 2011). Resource dependence theory, proposed by Salancik (1978), posits that organisations rely on external stakeholders for essential resources, thereby rendering them susceptible to varying degrees of external influence. In the non-profit context, such critical resources tend to be donations, which makes the group of donors an important external stakeholder (Connolly & Hyndman, 2013a; Connolly & Hyndman, 2013b; Hyndman & McDonnell, 2009). Cooley & Ron (2002) note that most VOs prioritise their accountability towards donors because their survival is dependent on them. Consequently, consistent with resource dependence theory, donative VOs seek to maintain compliance with legal and regulatory requirements, including the timely submission of reports (Verbruggen et al., 2011). Based on a survey carried out by the National Statistics Office (2008) in Malta, a total income of €37 million was reported by the NGOs, and donations accounted for 44% of this total income. Donors are interested in the use of donated funds and therefore exert a degree of monitoring, often using the financial statements to evaluate how responsibly resources are used (Connolly & Hyndman, 2013b; Trussel & Parsons, 2007) to assess accountability. The signalling theory, initially developed by Spence (1973), is also relevant due to the information asymmetry that exists between the non-profit organisations and the donors (Harris & Neely, 2021). Donors continue to donate funds to the more accountable non-profit organisations (Felix et al., 2017; Hyndman & Jones, 2011; Hyndman & McKillop, 2018). Financial accountability would be reflected in good quality, transparent financial statements (Hyndman & McDonnell, 2009; Ortega-Rodríguez et al., 2020), which is based on the premise that signalling is employed to mitigate information asymmetries, and Harris & Neely (2021) argue that transparency serves as a signalling mechanism aimed at building credibility and fostering a sense of connection and trust. Consequently, non-profit organisations are incentivised to decrease their FRL and to enhance their reporting so that donors are more willing to provide funds to the entity (Hyndman & McMahon, 2011; Reheul et al., 2014).

Recent evidence suggests that organisations that rely on donations are more likely to submit their financial reports on time. One example is Mayapada et al. (2024), who examined 8,490 UK charitable companies from 2007 to 2018 and found that charities relying more heavily on donation income took a shorter time to file their financial reports. Another example is Reheul et al. (2014), who found that in Belgium, VOs that are predominantly reliant on donations and/or grants have a greater incentive to disclose their financial results quickly. On the contrary, Christiaens et al. (2015) found that the resource dependency theory does not hold for “large” and “very large” VOs in Belgium, and no negative relationship was found between reliance on donations and/or grants and the FRL. Given that VOs in the local context are smaller in size compared to those in Belgium, and that “if VOs have capacity issues when it comes to reporting, that could stop Businesses from collaborating” (Academy of Givers, 2024), the following hypothesis is formulated:

**H1:** There is a negative relationship between reliance on donations and/or grants and the FRL.

### 2.2.2 Size

Previous research based on for-profit organisations, relating to the size of the organisation and the timeliness of financial reporting, shows opposing views. On one hand, some studies find an inverse relationship between organisation size and the time period, suggesting that larger organisations report in a more timely manner (Adebayo & Adebisi, 2016; Atiase et al., 1989; Ezat & El-Masry, 2008; Givoly & Palmon, 1982; Ku Ismail & Chandler, 2004; Owusu-Ansah, 2000). This is often attributed to increased external monitoring (Newton & Ashton, 1989) and higher internal resources, such as accounting staff and systems (Owusu-Ansah, 2000). Furthermore, since large organisations are more visible when compared to smaller ones, they are more inclined to adopt strategies aimed at mitigating the risk of regulatory intervention (Al-Ajmi, 2008). These arguments, in relation to private organisations, are likely to apply to non-profit organisations as well (Reheul et al., 2014). However, in relation to

VOs, taking income as the primary determinant of size, Reheul et al. (2014) found a significantly positive correlation between size and the FRL, finding support in the argument put forward by Bryant-Kutcher et al. (2007), who argued that the higher complexity of large organisations may delay the reporting process. These results were also supported by Christiaens et al. (2015), who found that when assets are used as a proxy for size, there is no negative relationship between the size of the VO and the FRL. Moreover, in Malaysia, Zainon et al. (2014) also found a positive relationship between size and the FRL; however, Reheul et al. (2014) found that when assets were taken as the primary determinant of size, a negative relationship emerged between the size of the VO and the FRL. This can be attributed to the fact that measuring size in the voluntary sector is not straightforward (Beattie et al., 2001).

In Malta, VOs are frequently expected to operate in a manner akin to for-profit organisations, with requirements to develop business plans and articulate long-term strategic visions; however, given that volunteers and minimal staff essentially carry out their activities, the imposition of extensive regulatory and administrative demands poses significant challenges to their capacity for effective delivery (Academy of Givers, 2024). Most NGOs operate with the help of voluntary workers (National Statistics Office, 2008), and VOs often find themselves lacking the necessary tools and human resources. Moreover, when support is offered in the form of pro bono services, VOs acknowledge that they are often deprioritised due to the absence of payment, which subsequently creates challenges in meeting deadlines (Academy of Givers, 2024). Consequently, based on this research, the following hypotheses are formed:

**H2a:** There is a positive relationship between the size of the VOs, measured by total revenue and income, and the FRL.

**H2b:** There is a positive relationship between the size of the VOs, measured by total assets, and the FRL.

### 2.2.3 Unfavourable financial information

Prior research posits that management is more likely to release favourable news quickly compared to bad, unfavourable news (Basu, 1997; Bowen et al., 1992; Bryant-Kutcher et al., 2007; Chambers & Penman, 1984; Haw et al., 2000). This is because good news may attract potential investors and help in retaining existing ones. Based on this theory, unfavourable financial information is associated negatively with the timeliness of financial reports and hence leads to a longer FRL. Freeman (2010) argues that organisations are accountable to various stakeholders who can influence or are influenced by the organisation. The origin of stakeholder theory dates back to the 1960s, when the Stanford Research Institute first proposed that organisations need the support of both their shareholders and stakeholders to survive (Mahajan et al., 2023). In the non-profit context, stakeholders typically include donors, the government and regulators, beneficiaries, employees, volunteers, organisational partners, and the wider community (Hyndman & McConville, 2018; Van Puyvelde et al., 2012). According to stakeholder theory, such organisations need to address the information needs of multiple stakeholders to preserve legitimacy, accountability, and trust. Consequently, the acquisition and retention of contracts, grants, and other financial support depend on non-profit organisations demonstrating accountability through audited financial statements and various forms of performance reporting (Leroux, 2009).

In financial reporting, unfavourable financial information can take several forms, and some researchers examine various related hypotheses (Reheul et al., 2014; Trussel & Parsons, 2007). Organisations tend to delay filing their financial statements when reporting a deficit, negative equity, low liquidity and high leverage. To capture financial distress, Reheul et al. (2014) test these variables in a non-profit context, and Keating et al. (2005) rely on these variables to assess their financial vulnerability. More recently, Mayapada et al. (2024) found that charities with unfavourable news in their financial statements, represented by deficits, negative equity, low liquidity, and high leverage, tend to lag in their filings.

Although charities are not primarily driven by profit, reporting financial deficits may still be perceived negatively, similar to losses in the for-profit sector (Hyndman & McConville, 2018; Reheul et al., 2014). Furthermore, maintaining a modest financial surplus is commonly considered sound financial management within the non-profit sector (Australian Charities & Not-for-profits Commission, 2022; Jimeno García et al., 2023). Such surpluses contribute to the organisation's financial sustainability, allowing it to meet both planned commitments and unforeseen costs, thereby enhancing long-term stability and public trust (Anheier, 2014; Park et al., 2022). In the Belgian voluntary sector, Reheul et al. (2014) found a negative relationship between profitability and the FRL.

Reheul et al. (2014) also found a negative relationship between liquidity and the FRL in the Belgian voluntary sector, as well as a positive relationship between gearing and the FRL. Calabrese & Grizzle (2012) found that debt may signal to donors that a non-profit organisation is at risk of insolvency, potentially leading to a reduction in donations. High levels of debt may also deter donations from donors who prefer their donations to be allocated toward current, rather than past, program activities (Yetman, 2007). Additionally, donors prefer to fund non-profit organisations that are more established (Parsons, 2003), and they may become apprehensive as increasing gearing is deemed a sign of financial vulnerability.

Similar to for-profit organisations, a positive equity, with assets in excess of obligations, needs to be maintained in order to operate (Anthony, 1983). Without an adequate reserve of funds, a non-profit organisation will be unable

to continue operating normally. It may become financially distressed when faced with a reduction in revenues, including donations, or in the event of financial problems (Trussel & Parsons, 2007). Trussel & Greenlee (2004) find that equity is a positive and significant predictor of financial stability. Non-profit organisations with higher equity ratios can leverage their assets without curtailing their program activities. Consequently, organisations with greater equity are less likely to experience financial distress. Reheul et al. (2014) found a negative relationship between equity and the FRL in the Belgian voluntary sector. Based on this literature, the following hypotheses are formed:

**H3a:** The distribution of FRL differs across firms with negative versus positive profitability, with negative profitability expected to be associated with longer FRL.

**H3b:** VOs with low liquidity are expected to exhibit longer FRL compared with VOs with high liquidity.

**H3c:** VOs with low equity are expected to have longer FRL compared with VOs with high equity.

**H3d:** VOs with high gearing are expected to have longer FRL compared with VOs with low gearing.

#### 2.2.4 Learning curve

Section 2.1 provides details on the legal framework for VOs in Malta, with one key amendment, implemented in 2018, primarily affecting the basis for preparing Category 2 VOs. Prior to 2018, Category 2 VOs could choose to prepare their accounts on either a cash basis or an accruals basis, and this had to be clearly disclosed in the accounts (L.N. 379 of 2012). This was changed in 2018 through the Voluntary Organisations (Amendment) Act (Government of Malta, 2018) requiring them to adhere to the accruals concept. Additionally, in 2018, the thresholds were raised across all three categories, resulting in a shift between categories and changes to the financial reporting adherence requirements. Owusu-Ansah (2000) suggests that compliance improves over time as familiarity with new regulatory requirements increases, and Luypaert et al. (2016) found that, consistent with a learning curve effect, older small firms in Belgium are significantly more likely to file their financial statements early. Drawing from this literature, following the local amendment in 2018, a learning effect is expected, as administrators become increasingly familiar with the new procedures. Therefore, the following hypothesis is formed:

**H4:** The distribution of FRL differs across the years 2018–2020, with FRL expected to decrease over time.

### 3. Data Collection and Research Method

#### 3.1 Data Collection

To ensure comparability of financial reporting, this study focuses on Category 2 and Category 3 VOs, as these follow the accrual basis of accounting. As noted earlier, Category 2 follows the accrual basis of accounting since 2018, and Category 1 VOs prepare accounts on a cash basis. The population for this study, therefore, consists of all Category 2 and Category 3 VOs registered with the OCVO as of the end of 2017. This cut-off point was selected to minimise the likelihood of missing annual returns and accounts for the study period, which spans 2018–2020. Based on these criteria and discussions with the OCVO, the population for this study was determined to be 206 VOs. It is essential to note that while the VOs make submissions of the accounts to the OCVO at the end of each financial year, these are not accessible online on the OCVO's website, but can be obtained through a formal request to the OCVO. Any required accounts for all the years 2018–2020 needed to be specifically identified and set aside by the staff at OCVO. Given the practical constraints of setting aside all the required accounts, the OCVO agreed to select a sample of 103 VOs through simple random sampling for each of the three years, resulting in 309 accounts being sourced. This sampling method minimises both recognised and unrecognised sources of human bias (Thompson, 2012). At a 95% confidence level, the study yields a margin of error of 6.84%. The accounts of these VOs for each of the three years were subsequently made accessible by the OCVO for analysis. All required data for the variables outlined in Section 3.2.1 were then manually extracted from these accounts, except for the variable FRL, which was extracted from a file provided by the OCVO containing the submission dates for every set of accounts.

#### 3.2 Research Method

This study examines the primary explanatory variables that influence the FRL within the Maltese voluntary sector. Prior to the neural network analysis, we conducted univariate analyses to explore the relationships between the predictor variables and the outcome. These analyses provided an initial assessment of associations. A neural network was then applied to capture complex, non-linear relationships among variables, to predict the outcome, and to determine which variables are more important than others. Results from univariate tests and neural networks may differ: a variable may not show a significant association in, for example, the Spearman or Kruskal-Wallis tests, but still contribute substantially to predictive performance in neural networks as the latter is comparing the dependent variable to the other explanatory variables, and additionally it determines which ones are significant



and which are not significant. Furthermore, the application of neural networks in accounting research remains relatively novel, particularly within studies focused on the voluntary sector and the FRL.

### 3.2.1 Variables description and hypotheses testing

Non-parametric statistical tests were conducted to assess the hypothesised relationships between various financial and organisational proxies and the FRL. Table 4 presents a description of the variables employed in this study together with the corresponding non-parametric test applied to each hypothesis. In addition, for data simplification the variables ‘FRL’; ‘Total Revenue and Income’; and ‘Total Assets’ were expressed as a logarithmic function. The variables’ description is mostly based on Reheul et al. (2014). The results for each hypothesis are discussed in turn.

**Table 4.** Variables description and hypothesis testing

Hypotheses No.	Variable	Measurement of Variable	Variable Description	Statistical Test (Hypotheses Testing)
N/A	FRL	Submission date less reporting date	The number of days between the reporting date (financial year end) and the date the annual returns and accounts are submitted to the OCVO.	N/A (Dependent Variable)
N/A	Category	N/A	Represented by dummy variables: 2 for Category 2, and 3 for Category 3 VOs.	N/A
H1	RatioDG	$\frac{\text{Donations} + \text{Grants}}{\text{Total Revenue and Income}}$	A ratio closer to 1 shows an organisation which relies on donations and/or grants, while a ratio closer to 0 shows a more commercial VO.	Spearman Correlation
H2a	SizeRevInc	Revenue + Other Income	Size of the organisation in terms of revenue and income.	Spearman Correlation
H2b	SizeAssets	Non-Current Assets + Current Assets	Size of the organisation in terms of total assets.	Spearman Correlation
H3a	Profit	Net Profit Figure	Represented by a dummy variable coded 0 if a VO reported a profit; 1 if the VO reported a loss; and 2 if it was break even.	Kruskal-Wallis test
H3b	CR	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	Represented by a dummy variable coded 1 if the VO's ratio falls below the desired threshold of 1; and 0 otherwise.	Mann-Whitney U test
H3c	Equity	Equity Figure	Represented by a dummy variable coded 1 if a VO reported negative equity; and 0 otherwise.	Mann-Whitney U test
H3d	Gearing	$\frac{\text{Total Debt}}{\text{Total Debt} + \text{Equity}}$	Represented by dummy variable coded 1 if the VO's gearing exceeds the median value; and 0 otherwise.	Mann-Whitney U test
H4	Year	N/A	Represented by dummy variable coded 1 if Year = 2018; 2 if Year 2019; and 3 if Year = 2020.	Kruskal-Wallis test

### 3.2.2 Neural network

The neural network is a collection of nodes organised in a number layers as shown in Figure 1. Each node in the input layer represents one of the explanatory variables in that set. The number of nodes in the hidden layer is chosen automatically by SPSS; the number is optimised to produce the best possible results. The output layer contains one node that generates the predicted classification. The connections between the nodes, commonly termed edges, are typically assigned weights that indicate the strength of the relationship, with larger weights reflecting stronger links between two connected neurons. The output layer can therefore be modelled by a non-linear function involving the sum of the neurons in the input layer.

We denote the nodes in the input layer by  $x_i$ , where  $i \in \{0, 1, 2, 3, \dots, P\}$ . Here,  $P$  denotes the number of variables in the data set and  $x_0$  denotes the so-called bias term. This term appears in the input and hidden layers of a neural network. Each node  $z_j$ , for  $j \in \{0, 1, 2, 3, \dots, C\}$ . In the hidden layer can be represented as a weighted sum of the nodes in the input layer:

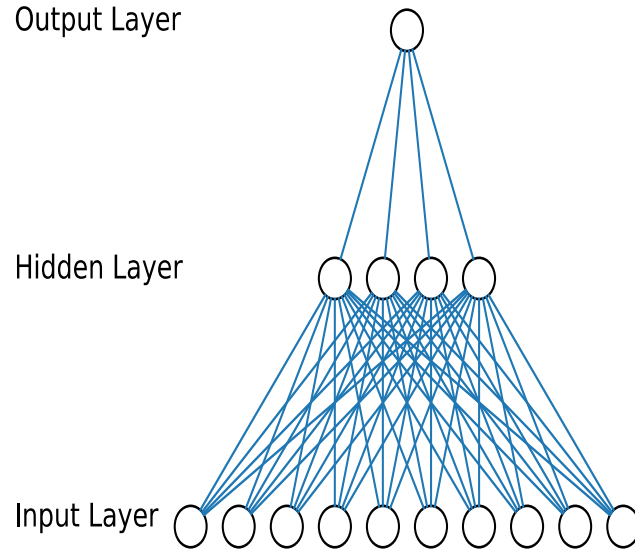
$$z_j = h^H \left( \sum_{i=0}^P w_{ij} x_i \right) \quad (1)$$

where,  $C$  denotes the number of neuros in the hidden layer;  $h^H$  is the activation function; and  $w_{ij}$  represent the weights of the hidden layer. Finally, the node in the output layer, which we denote by  $y$  can be written as follows:

$$y = h^O \left( \sum_{j=0}^C w'_j z_j \right) \quad (2)$$

where,  $h^O$  denotes the activation function for the output layer and  $w'_j$  represent the weights in the output layer. Hence, combining the above two equations we get:

$$y = h^O \left( \sum_{j=0}^C w'_j h^H \left( \sum_{i=0}^P w_{ij} x_i \right) \right) \quad (3)$$



**Figure 1.** Neural network

There are a number of activation functions which include amongst others the logistic sigmoid, hyperbolic tangent and the softmax function. More details can be found in (Haykin, 1994). The values of the weights can be found using an algorithm called gradient descent method, in combination with the back and forward propagation. Several researchers have demonstrated that artificial neural networks are excellent at developing overall models, such as Pao (2008) in modeling capital structure. However, neural network has not yet been applied to ascertaining the important explanatory variables affecting the FRL. Its use is particularly appropriate in this context, given the complexity of the data, which renders linear models unsuitable for capturing such intricate relationships.

## 4. Results

### 4.1 The FRL During the Period 2018–2020

Table 5 provides the sample distribution for our VO-year observations for all the 103 charities over the three years with a total of 309 observations. The table indicates that the highest proportion of filings, at 12.62%, occurred within the 241–270-day range. This suggests that a significant number of VOs submitted their accounts approximately 8–9 months after the end of the financial year, with the rate of submissions declining thereafter.

Table 6 presents the percentage of timely submissions for each year and category. The mean FRL in relation to Category 2 VOs, exceeds the permissible FRL during each of the years 2018, 2019 and 2020. The percentage of timely submissions in relation to this category ranges between 9.52% to 41.27%, with the year 2020 seeing an increase in timely reporting party due to the increase in the permissible FRL from 106 days to 180 days for that year, as noted in Table 2. In contrast, Category 3 VOs performed relatively well, with the mean FRL exceeding the permissible limit only in 2019. Relatively better results are also evident in the percentage of timely submissions which is consistently higher when compared to that of Category 2 VOs.

**Table 5.** Distribution of the FRL during the years 2018–2020

FRL	N	Percentage	Cumulative percentage
1–90	21	6.80	6.80
91–120	23	7.44	14.24
121–150	26	8.41	22.65
151–180	16	5.18	27.83
181–210	28	9.06	36.89
211–240	30	9.71	46.60
241–270	39	12.62	59.22
271–300	27	8.74	67.96
301–330	24	7.77	75.73
331–360	11	3.56	79.29
361–390	15	4.85	84.14
391–420	6	1.94	86.08
421–450	10	3.24	89.32
451–480	4	1.29	90.61
481–510	1	0.32	90.93
511–540	4	1.29	92.22
541–570	7	2.27	94.49
571–600	5	1.62	96.11
601–630	1	0.32	96.43
631–660	2	0.65	97.08
661–690	2	0.65	97.73
691–720	0	0.00	97.73
721+	7	2.26	100.00
Total	309	100.00	

**Table 6.** The FRL during the years 2018–2020

Year	Category	N	Mean	SD	95% Confidence Interval for the Mean		Permissible FRL	Percentage of Timely Submissions
					Lower Bound	Upper Bound		
2018	2	63	198.96	1.09	167.70	236.04	106	19.05%
	3	40	243.20	1.07	213.15	277.49	244	40.00%
2019	2	63	263.59	1.08	227.08	305.94	106	9.52%
	3	40	303.84	1.08	260.06	354.99	244	20.00%
2020	2	63	186.20	1.07	164.09	211.28	180	41.27%
	3	40	228.63	1.08	194.61	268.59	240	52.50%

For both Category 2 and Category 3 VOs, the lowest rate of timely submissions was recorded in 2019, which may be attributed to the impact of the COVID-19 pandemic on their operations. An overall improvement in timely submissions occurred in the year 2020. This year, the highest percentage of timely submissions was recorded, with Category 2 also benefiting from an increase in the legally permissible FRL. This is in support of the initiatives introduced by OCVO, which aimed at strengthening its internal operations, thereby enabling the Commissioner to more effectively exercise regulatory oversight and carry out the vetting of VOs (OCVO, 2019). The legislative changes enacted during this time also arose from the need for VOs to uphold both upward accountability to funders and regulators, as well as downward accountability to beneficiaries, staff, and volunteers, both of which were examined in the literature, including that of Dhanani & Connolly (2012), O'Dwyer & Unerman (2007), and Unerman & O'Dwyer (2006). The improvement in the percentage of timely submissions also underscores the importance of good reporting in establishing trust (Connolly & Hyndman, 2013a).

When compared to other countries, the situation in Malta appears less favourable. In the Belgian voluntary sector, Reheul et al. (2014) report that in 2007 and 2008, approximately 17.2% of VOs filed their annual financial statements late, while Christiaens et al. (2015) observed that 24% of large and very large Belgian VOs failed to meet the statutory deadline during 2011 and 2012. Similar patterns are evident in England and Wales, where Morgan (2011) identified that 18% of registered charities submitted their accounts after the legal deadline. More recently, Mayapada et al. (2024), using data from UK charities between 2007 and 2018, found a considerably lower late filing rate of only 5.02%, suggesting a high level of compliance. By contrast, the timely submission rates of both Category 2 and Category 3 VOs in Malta during the period 2018–2020 were substantially lower, highlighting a persistent compliance challenge in comparison to the voluntary sectors of Belgium and the UK. Current trends further demonstrate progress in the UK, with the Charity Commission for England & Wales (2025) reporting that 92% of charities filed on time by 2024–25, up from 81% in the previous year. A similar trend is, however, observed in Malta, where both Category 2 and Category 3 VOs demonstrated higher compliance in 2020 relative to the

previous year. This aligns with the enactment of Legal Notice 317 of 2020, which amended the deadline for filing annual accounts and related documents with the OCVO, especially favouring Category 2 VOs. Nonetheless, the extent of timely submissions is still lower than that in other countries. This may be attributed to contextual and cultural factors, as well as the possibility that the reporting framework is overly burdensome for these VOs, as discussed in Section 2.1. Such findings also lend support to the reform proposals launched by OCVO in 2024 (Ministry for Inclusion & the Voluntary Sector, 2024), planning to almost double the thresholds and remove the requirement for Category 3 VOs to abide with IFRS, requiring them instead to abide with GAPSME.

## 4.2 Explanatory Variables Affecting the FRL

### 4.2.1 Descriptive statistics

Table 7 reports the descriptive statistics for the sample. The mean of *FRL* is 267.36 days which means that on average, VOs report between 8 to 9 months after their year end. A quarter of observations filed within 164 days and 50% of the VOs submit between 164 and 324 days. We also note that for *SizeRevInc* representing the size of the VO in terms of total revenue and income, the average revenue and income is €627,781. The median is €185,649, suggesting that most VOs are smaller, with some large VOs. The variable *SizeAssets* represents the size of a VO in terms of its total assets. The mean is €1,159,432 and the median is lower at €368,673, indicating some large VOs. Visual inspection of the data shows that 20% of the data relate to quite larger VOs and therefore form a distinct cluster, suggesting that they are not statistical outliers but a sub-group. *RatioDG* represents the extent of a VO's reliance on donations and/or grants. A value closer to 1 suggests higher reliance on donations and/or grants, while a value closer to 0 indicates a more commercial VO. We note that the mean of 0.68 suggests that on average, the VOs lean towards reliance on donations and/or grants. This variable is useful for understanding the funding model of the VOs with a higher ratio indicating greater reliance on donations and/or grants.

**Table 7.** Descriptive statistics: Variables

Variable	Mean	Median	SD	25th Percentile	75th Percentile	Min	Max
FRL	267.36	244.50	150.71	164.25	324.00	38.00	1,035.00
SizeRevInc	627,781	185,649	1,188,270	90,863	511,410	9,453	8,896,148
SizeAssets	1,159,432	368,673	2,555,857	94,076	1,032,778	456	22,901,239
RatioDG	0.68	0.33	0.32	0.42	0.98	0.00	1.00

### 4.2.2 Non-parametric tests

The FRL affects the extent to which financial information is useful and it is therefore important to understand the main underlying factors affecting the FRL. We used non-parametric correlation tests because the data did not fully satisfy the assumptions required for parametric tests, in particular, the relationships between variables were non-linear.

#### (i) H1: Reliance on donations and/or grants

With respect to H1, Table 8 shows that the Spearman Correlation test yields a correlation coefficient of -0.107 and a P-value of 0.078. Although, as predicted, the negative coefficient indicates a tendency for VOs that primarily depend on donations and/or grants to exhibit a lower FRL, this relationship is not statistically significant. Therefore, H1 is not supported, suggesting that within the Maltese voluntary sector, reliance on donations and/or grants does not constitute a primary determinant of the FRL. This result contrasts with the correlation analysis of Mayapada et al. (2024) and Reheul et al. (2014), who both found the relationship to be statistically significant.

**Table 8.** Spearman correlation test: Reliance on donation and/or grants

		Days	Reliance on Donations and/or Grants
Spearman's rho	Days	Correlation coefficient	1.000
		P-value	0.078
		N	306
	Reliance on donations and/or grants	Correlation coefficient	-0.107
		P-value	0.078
		N	274

#### (ii) H2a: Size as total revenue and income

Moving on to H2a, as depicted in Table 9, when the size of the VO was measured by total revenue and income, a significant positive relationship was observed between the dependent variable FRL and total revenue and income at the 99% confidence level, supporting H2a. This aligns with the correlation analysis of prior studies, such as



Reheul et al. (2014), which suggest that larger entities may experience reporting delays due to increased complexity. On the other hand, the correlation analysis of Mayapada et al. (2024) show a significant negative relationship. Empirical results therefore yield mixed results.

**Table 9.** Spearman correlation test: Total income and revenue

		Days	Total Revenue and Income
Spearman's rho	Days	Correlation coefficient	1.000
		P-value	-0.186**
		N	0.001
	Total revenue and income	Correlation coefficient	306
		P-value	304
		N	0.001

Note: (\*\*) Correlation is significant at the 0.01 level

(iii) H2b: Size as total assets

As illustrated in Table 10, when total assets were employed as the proxy for size, no statistically significant relationship was found between the FRL and total assets, and therefore H2b is not supported. This result is consistent with the findings in Christiaens et al. (2015), who similarly found no association between size, measured by assets, and the FRL.

**Table 10.** Spearman correlation test: Total assets

		Days	Total Assets
Spearman's rho	Days	Correlation coefficient	1.000
		P-value	-0.049
		N	0.398
	Total assets	Correlation coefficient	306
		P-value	301
		N	0.001

(iv) H3a: Profitability

The reporting of financial deficits in the voluntary sector may be perceived negatively (Reheul et al., 2014; Hyndman & McConville, 2018). In Belgium, Reheul et al. (2014), through correlations, reported that that less profitable organisations may delay reporting. Looking at H3a, analysis of the voluntary sector in Malta using the Kruskal-Wallis test, depicted in Table 11, indicates a statistically significant difference in FRL across profitability groups; however, pairwise comparisons revealed no significant difference between profit- and loss-making VOs ( $p = 0.337$ ), with significant differences observed only between break-even VOs and those reporting either a profit ( $p = 0.017$ ) or a loss ( $p = 0.036$ ). Since loss-making VOs did not significantly differ from profit-making VOs, the specific prediction about negative profitability is not fully supported.

**Table 11.** Kruskal-Wallis test: Profitability

Independent-Samples	Kruskal-Wallis Test
Total N	304
Test statistics	6.328
Degree of freedom	2
P-value	0.042

(v) H3b, H3c, H3d: Liquidity, gearing, and equity

Turning to the remaining proxies related to bad news, both Reheul et al. (2014) and Mayapada et al. (2024) report, based on their correlation analyses, that the filing of accounts is delayed in the presence of bad news represented by these three proxies, with these delays reported as statistically significant.

In the Maltese context, the Mann-Whitney U test between the FRL and liquidity (H3b) as illustrated in Table 12, indicates a statistically significant difference. VOs with a current ratio below 1 recorded a higher average FRL (300 days) compared to those above 1 (258 days), thereby supporting H3b and aligning with international evidence. By contrast, no significant associations were found between the FRL and either equity (H3c) or gearing (H3d), as illustrated in Table 13 and Table 14, meaning that these hypotheses are not supported. A plausible explanation is that Maltese VOs typically operate with limited access to external financing, rendering gearing less meaningful in this context. In such circumstances, liquidity constraints emerge as a more immediate and influential factor in shaping reporting behaviour, whereas equity and leverage appear to exert little practical influence on compliance with filing requirements.

**Table 12.** Mann-Whitney U test: Liquidity

Independent-Samples	Mann-Whitney U Test Summary
Total N	301
P-value	0.018

**Table 13.** Mann-Whitney U test: Gearing

Independent-Samples	Mann-Whitney U Test Summary
Total N	300
P-value	0.481

**Table 14.** Mann-Whitney U test: Equity

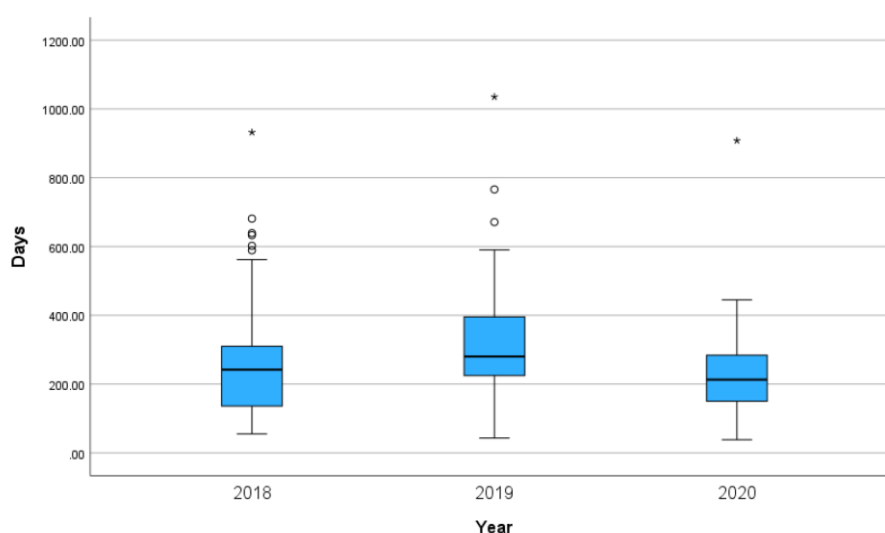
Independent-Samples	Mann-Whitney U Test Summary
Total N	302
P-value	0.100

(vi) H4: Year

Prior studies suggest that compliance improves over time as organisations adapt to regulatory requirements (Owusu-Ansah, 2000), with Luypaert et al. (2016) finding evidence of a learning effect among Belgian firms. In this study, as illustrated in Table 15, a Kruskal-Wallis test revealed a statistically significant difference in FRL across the years, suggesting that the distribution of the FRL significantly differed across the years 2018–2020 ( $p < 0.001$ ), consistent with the expectation of a decreasing trend over time, as also seen in Figure 2.

**Table 15.** Kruskal-Wallis test: Learning effect

Independent-Samples	Kruskal-Wallis Test
Total N	306
Test statistics	21.923
Degree of freedom	2
P-value	$< 0.001$

**Figure 2.** Box plot: Median FRL

However, pairwise comparisons in Table 16 indicate no significant difference in the median FRL between 2018 and 2020 ( $p = 0.297$ ). In contrast, the median FRL for 2019 differs significantly from both 2018 and 2020 ( $p < 0.001$ ), reflecting substantially longer delays, as also indicated earlier, in Table 6. This can be attributed to the fact that the accounts for the year 2019 were processed in 2020, a period during which the COVID-19 pandemic disrupted administrative workflows and led to widespread filing delays. Although these results initially suggest an absence of a learning effect between the years 2018 and 2020, and that H4 is not supported, it is important to note that in the year 2020, the permissible FRL for Category 2 VOs was increased from 106 days to 180 days. This

regulatory change likely influenced the observed patterns, as VOs were able to enjoy longer FRL periods. As a result, although the median FRL shows only a slight decrease between 2018 and 2020, this apparent stability may, in fact, not reflect a lack of a learning curve; instead, it may indicate that the extended permissible FRL allowed for longer processing times without violating policy limits, during a pandemic. Taken together, these findings highlight the need to consider both external disruptions, i.e., the COVID-19 pandemic, and regulatory adjustments when interpreting temporal trends in FRL, as they jointly shape the observed outcomes and may obscure underlying operational changes.

**Table 16.** Pairwise comparisons of year

Sample 1–Sample 2	Test Statistic	Std. Error	Std. Test Statistic	P-value
2020–2018	12.946	12.420	1.042	0.297
2020–2019	55.363	12.390	4.468	< 0.001
2018–2019	-42.418	12.359	-3.432	< 0.001

#### 4.2.3 Multivariate analysis: Neural network

While the non-parametric tests indicate a few significant associations between predictors and the FRL, the neural network analysis captures more complex, non-linear interactions. We performed a neural network analysis to explore the combined, non-linear influence of the independent variables on the FRL. The dataset was divided into training (73.5%) and testing (26.5%) subsamples as illustrated in Table 17. The excluded 37 data points refer to missing data. The excluded 37 VOs represent those VOs having missing data. In the training part of the data, the model adjusts its internal weights and biases to minimize error.

**Table 17.** Multilayer perceptron, case processing summary

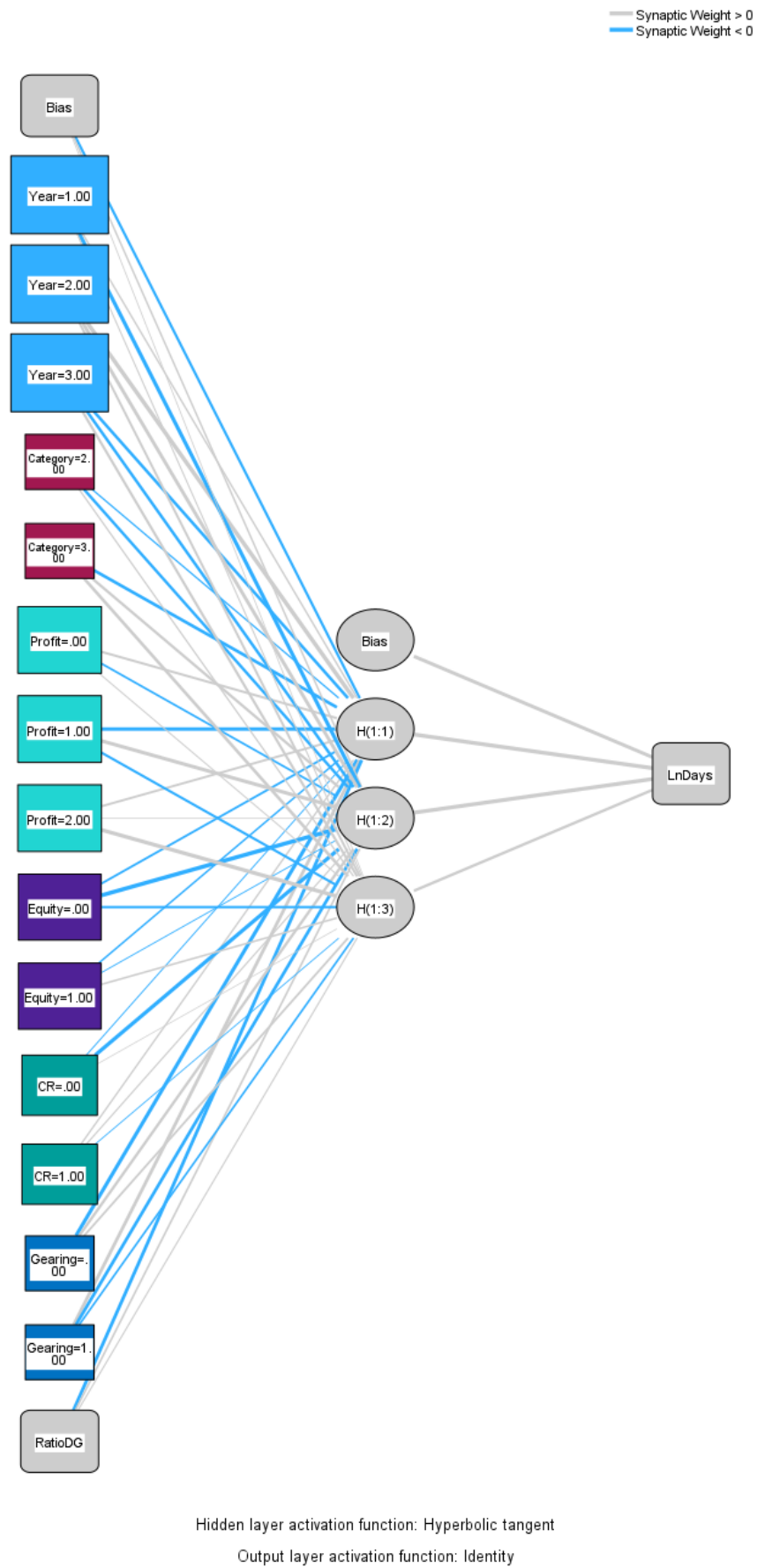
Case Processing Summary			
		N	Percent
Sample	Training	200	73.5%
	Testing	72	26.5%
	Valid	272	100.0%
	Excluded	37	
	Total	309	

The dependent variable was the natural logarithm of filing delay in days (LnDays), with predictors including profitability, equity, current ratio (liquidity), gearing, reliance of donations and grants, VO category, and year as shown in Table 18.

**Table 18.** Network information

Network Information		
input layer	factors	1 year
		2 category
		3 profit
		4 equity
		5 CR
		6 gearing
	covariates	1 RatioDG
	number of units <sup>a</sup>	15
	rescaling method for covariates	standardized
hidden layer(s)	number of hidden layers	1
	number of units in hidden layer 1 <sup>a</sup>	3
	activation function	hyperbolic tangent
	dependent variables	1 LnDays
output layer	number of units	1
	rescaling method for scale dependents	standardized
	activation function	identity
	error function	sum of squares

**Note:** (<sup>a</sup>) Excluding the bias unit



**Figure 3.** Visual representation of the neural network



The model architecture, as shown in Figure 3, consists of a single hidden layer with three neurons, using a hyperbolic tangent activation function. This specification allows the model to capture non-linear relationships between the variables and late filing behaviour, thereby predicting the FRL. Each independent variable is represented as a node in the input layer. The lines connecting the input nodes to the hidden layer nodes are each assigned a weight (Synaptic Weight) which represents the strength and direction of the connection. The thickness and colour of these lines provide a visual representation of these weights depicted in Figure 3.

(a) Synaptic Weight  $> 0$  (Grey lines): A grey line indicates a positive synaptic weight. The thicker the grey line, the stronger the positive relationship between the two nodes it connects. A positive weight means that as the value of the input variable increases, the activation of the hidden node also tends to increase.

(b) Synaptic Weight  $< 0$  (Blue lines): A blue line indicates a negative synaptic weight. A thicker blue line signifies a stronger negative relationship. A negative weight means that as the value of the input variable increases, the activation of the hidden node tends to decrease.

In Figure 3, the visual representation of the weights, particularly the thickness and colour of the lines, allows for a visual understanding of which predictors have the most influence within the neural network's structure, reinforcing the findings presented in Table 19.

**Table 19.** Independent variable importance

Independent Variable Importance		
	Importance	Normalized Importance
year	0.259	100.0%
category	0.077	29.9%
profit	0.170	65.8%
equity	0.165	63.8%
CR	0.118	45.6%
gearing	0.076	29.2%
RatioDG	0.134	51.9%

Table 20 shows that performance statistics indicate strong predictive power without overfitting: the relative error is 0.891 in training and 0.815 in testing, with both values being low and close.

**Table 20.** Model summary

Model Summary		
Training	Sum of squares error	88.667
	Relative error	0.891
	Stopping rule used	1 consecutive step(s) with no decrease in error <sup>a</sup>
	Training time	0:00:00.05
Testing	Sum of squares error	38.033
	Relative error	0.815
Dependent variable: LnDays		
Note: ( <sup>a</sup> ) Error computations are based on the testing sample		

The analysis of the model's output in Table 19 reveals the relative importance of each independent variable in predicting the FRL. Table 19 indicates that the *Year* variable is the most influential (importance = 0.259; 100% normalised importance). This is followed by *Profit* (65.8%) and *Equity* (63.8%). *RatioDG*, representing the dependency on donations and grants (51.9%), and liquidity, measured by the current ratio (CR) (45.6%), exhibit a moderate influence. The *VO Category* (29.9%) and *Gearing* (29.2%) report the lowest importance scores, suggesting their limited influence on the neural network's predictions.

## 5. Discussion of the Findings

We analysed the thickness and colour of the connections from each input variable through the hidden layer to the output node, in Figure 3, to infer the overall predicted sign of each variable's relationship with the FRL. This was examined together with the independent variable importance reported in Table 19. The most influential variables are analysed next, together with the results of non-parametric tests presented in Section 4.2.2.

### 5.1 Year

Year emerged as the most influential variable in the model. This is further illustrated in Figure 3, where the connections from the *Year* nodes to the hidden layer are the thickest, indicating that the variable is of high importance. Taking 2018 as the base year, the connections for 2019 are represented by thick grey lines, indicating

that the related filings were associated with longer FRLs compared to those related to 2018. This increase aligns with the pairwise comparisons reported in Table 16, which indicate that median FRL in 2019 is significantly higher than in both 2018 and 2020, likely reflecting administrative delays caused by the onset of the COVID-19 pandemic.

In contrast, the year 2020 is represented by predominantly thinner blue lines in Figure 3, suggesting that filings related to this year had shorter FRLs relative to the year 2018. The non-parametric test results indicate no significant difference in median FRL between the years 2018 and 2020. The apparent stability in 2020, despite a potential learning curve, may be influenced by the regulatory increase in the permissible FRL for Category 2 VOs from 106 days to 180 days, allowing for more extended processing periods without breaching policy limits.

Taken together, these findings indicate that the neural network, which identifies *Year* as the most influential variable with 100% normalised importance, effectively captures temporal variations in FRL, including the 2019 pandemic-related delays and the combined effects of policy changes in the year 2020 and potential learning effects during this period.

## 5.2 Profitability

Profitability is the second most influential variable in the neural network model. While the non-parametric test found no significant difference in FRL between profit- and loss-making VOs, the neural network analysis strongly suggests a negative relationship for loss-making VOs, as indicated by the thick blue connections to the hidden layer. This finding suggests that VOs reporting a loss may, contrary to the literature (Mayapada et al., 2024; Reheul et al., 2014), file their accounts more promptly than break-even or profit-making VOs. This seemingly counterintuitive result could be interpreted through the lens of signalling theory and organisational legitimacy. When faced with a financial deficit, a VO's reputation and continued access to funding sources become highly vulnerable. In such a scenario, prompt filing, despite the unfavourable results and the seemingly bad news, could be a strategic move to signal transparency and accountability to stakeholders. By doing so, the VO demonstrates that it is not concealing bad news. This approach can help mitigate reputational damage and maintain the trust required to secure future funding. Therefore, rather than a cause for delay, a financial loss may act as an incentive for timely reporting.

## 5.3 Equity, Gearing and Liquidity

The neural network analysis in Table 19 reports CR (liquidity), Equity, and Gearing as potential predictors of the FRL, with *Gearing* showing the least importance. Consistent with the Mann-Whitney U test, *Gearing* is not a significant predictor of the FRL, and CR is reported as a significant factor, albeit with lower normalised importance compared to other predictors. This convergence reinforces the evidence that liquidity constraints are associated with longer reporting delays. The latter is also consistent with the regression analyses in Reheul et al. (2014) and Mayapada et al. (2024), where liquidity is statistically significant in both studies.

Although the Mann-Whitney U test found no statistically significant association between *Equity* and the *FRL*, the neural network assigned *Equity* a relatively high normalised importance. This suggests that the neural network is uncovering a subtle yet influential effect that is masked in a univariate context. This mixed evidence mirrors prior international findings. Reheul et al. (2014) report that equity is not statistically significant in regression models, whereas Mayapada et al. (2024) identify equity as a significant determinant of reporting timeliness. Taken together, these results suggest that the role of equity may be context-dependent.

## 5.4 Reliance on Donations and/or Grants

With respect to *RatioDG* (Reliance on donations and/or grants), while the Spearman correlation indicated a negative association with *FRL*, which is not statistically significant, the neural network assigns *RatioDG* a normalised importance of 51.9%, suggesting that this variable plays a moderate role in predicting FRL when considered in conjunction with other determinants. This result aligns with the regression analysis of Mayapada et al. (2024) and Reheul et al. (2014), who both found the relationship to be statistically significant, offering support for the resource dependence theory, which posits that donative VOs seek to adhere to legal and regulatory requirements, including the timely submission of reports (Verbruggen et al., 2011). The results also support the signalling theory, which suggests that donors are more likely to continue funding non-profit organisations that demonstrate accountability, reflected, for example, in the timely filing of accounts (Felix et al., 2017; Hyndman & Jones, 2011; Hyndman & McKillop, 2018).

## 5.5 Measures of Size

With respect to *SizeRevInc* (size measured by total revenue and income) and *SizeAssets* (size measured by total assets), similar to prior empirical results, the non-parametric tests yielded mixed results. Regression results

reported in Reheul et al. (2014) show no statistically significant relationship. In contrast, Mayapada et al. (2024) found a significant positive relationship when size is measured in terms of income and a significant negative relationship when size is measured in terms of assets. Interestingly, the neural network model did not identify either size variable as a key predictor of *FRL*. These mixed empirical findings reinforce argument of Beattie et al. (2001) argument that measuring size in the voluntary sector is inherently complex and subject to variation depending also on the proxy applied. In the neural network, size is additionally represented by the variable *Category*, distinguishing between Category 2 and Category 3 VOs. Consistent with the mixed results observed in the non-parametric tests, this variable exhibits a low normalised importance of 29.9%.

## 6. Conclusion

This is the first comprehensive empirical study of reporting timeliness in the voluntary sector in Malta. Our analysis is based on a sample of 103 VOs from 2018 to 2020. It also identifies the important explanatory variables that affect the VOs' financial reporting timeliness.

The application of a neural network in this study adds methodological value to research on the *FRL* in the voluntary sector. Unlike traditional regression models, neural networks capture complex, non-linear interactions between predictors, which allows for a better understanding of how variables jointly influence compliance. This approach adds value and extends the methodological toolkit available to researchers, yielding insights that linear models may overlook.

The results confirm *Year* as the most influential predictor, with the neural network capturing pandemic-related delays in 2019 and the interplay of policy changes and learning effects in 2020. Profitability and equity emerge as the strongest explanatory variables. Moderate contributions are observed for dependency on donations and grants, as well as for liquidity. In contrast, the VO category and gearing exhibit the lowest importance scores, indicating a limited role in shaping the neural network's predictions.

The analysis further indicates that Category 2 VOs persistently exceeded the statutory reporting lag from 2018 to 2020, with compliance improving only in 2020 following the extension of filing deadlines. In contrast, Category 3 VOs generally demonstrated better timeliness, although compliance deteriorated in 2019, mainly attributable to COVID-19 disruptions. Compared to Belgium and the UK, compliance levels in Malta remain substantially lower, highlighting ongoing challenges.

The findings carry several implications for policy and practice. The OCVO should ensure consistency in monitoring and enforcement across years to minimise fluctuations in the timely filing of accounts. Particularly in exceptional circumstances, such as the COVID-19 pandemic, the OCVO could also offer support that helps mitigate resource-related barriers. Additionally, simplified filing systems, training, or administrative assistance may improve compliance outcomes. This is especially important when considering that some VOs are subject to relatively more complex financial reporting requirements compared to their for-profit counterparts, which use GAPSME, and which could ultimately result in financial reporting filing delays.

This study is particularly timely in view of the new set of proposals launched by the OCVO in 2024 to reform the voluntary sector and reduce the relative obligations it is subject to. Addressing the call for further research on this sector by the Ministry for Inclusion & the Voluntary Sector, this study provides evidence to inform decision-making by the government, the OCVO and other stakeholders.

## Data Availability

The data used to support the research findings are available from the corresponding author upon request.

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## Conflicts of Interest

The authors declare no conflicts of interest.

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