



## Beyond compliance: The impact of ISO 45001 on corporate efficiency and profitability in Southern Africa – a resource-based view

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**Abstract:** *Purpose:* This study investigates the financial implications of adopting the ISO 45001 Occupational Health and Safety (OH&S) management standard within the Southern African region. Specifically, it examines whether certification leads to improved revenues, efficiency, and profitability, and how these outcomes are moderated by prior OHSAS 18001 certification and industry sustainability sensitivity. *Methodology:* The research employs a quantitative approach using a sample of 98 publicly listed companies in Southern Africa that achieved ISO 45001 certification between 2022 and 2024. An extended event study method was used to analyze abnormal performance, complemented by a Weighted Least Squares (WLS) regression to identify moderating contextual factors. *Results:* The empirical analysis reveals that ISO 45001 certification positively impacts corporate efficiency and return on assets (ROA) but has no statistically significant effect on revenue growth. Furthermore, the positive impact is diminished for firms with prior OHSAS 18001 certification and those operating in sustainability-sensitive sectors. *The theoretical contribution:* The study contributes to the Resource-Based View (RBV) and Signaling Theory by demonstrating that in developing markets, OH&S standards function primarily as internal resources for operational efficiency rather than external market signals for revenue generation. *Practical implications:* The findings suggest that managers in Southern Africa should view ISO 45001 as a tool for cost reduction



and process optimization. For policymakers, the study provides economic justification for enforcing safety standards, linking employee welfare (SDG 3 and 8) directly to corporate financial health.

**Keywords:** ISO 45001, occupational health and safety, financial performance, resource-based view, operational efficiency, event study, sustainable development, management standards

**Sustainable Development Goals (SDGs):** **SDG 3:** Good Health and Well-being; **SDG 8:** Decent Work and Economic Growth

## 1. Introduction

Recent statistics from the International Labour Organisation (ILO) indicate that approximately 2.78 million individuals die annually due to occupational causes, while another 374 million experience non-fatal work-related injuries and illnesses each year (Chikosi, 2022). In 2024, the economic loss due to occupational illnesses and injuries was estimated at 4.94% of the world's gross domestic product (GDP). Organisations are dedicating considerable resources to identifying strategies and implementing policies that promote employee health and well-being (Hussain, 2024). This program is being implemented since organisations have acknowledged the importance of tackling this issue. The ISO 45001 standard is a significant tool that may be utilised to achieve this objective. ISO 45001 employs a process-orientated methodology distinguished by systematisation and formalisation (Rikhotso et al., 2022b). It was intended to supplant the British standard OHSAS 18001, which originated in the United Kingdom. The objective is to prevent job-related injuries and illnesses while fostering safe and healthy work environments for employees (Rikhotso et al., 2022a). ISO 45001 is gaining recognition as a critical occupational health and safety management standard in the Southern African region, succeeding ISO 9001 along with ISO 14001 (environmental management).

The worldwide implementation has reached around 300,000 certified corporations, with a 55% growth rate from 2022 to 2023. In the Southern Africa region, acceptance has been consistently increasing, especially within high-risk occupational sectors like oil and gas extraction, industrial production and civil engineering (Esterhuyzen, 2022). Despite the substantial number of individuals who comply with ISO 45001, the impact of this standard on corporate profitability remains largely unexamined. The absence of clarity on the implications of accreditation implementation may hinder the understanding of their potential and value, thus leading firms to forgo them (Moyo, 2021). Given that this is a vital subject in the body of studies on organisational guidelines, it is essential to address it. Previous studies on ISO 45001 have yielded findings that are sometimes inconsistent and sparse. Although some academics concur that the norm can aid firms in improving their health and safety, others caution that it may have unforeseen effects (Mohale, 2021).

Similarly, while research indicates that firms may use ISO 45001 to meet client expectations, the impact of this standard on revenue and profitability remains a disputed topic. The reliance on survey-based procedures, sometimes plagued by "perceptual measures", as well as a concentration on certain countries (such as Mozambique and Zimbabwe), may contribute to this lack of unanimity (Thobejane, 2023). The following research questions are formulated: RQ1: Do performance concerns arise from the application of ISO 45001? How do the results of implementation vary based on the contextual factors involved? We assessed revenue, efficiency, as well as profitability, as a concentration on metrics for addressing RQ1, consistent with research completed on ISO 14001, SA8000, and ISO 9001. Concerning the second study question, we explored the significance of three factors that are related to company, sector, and national characteristics that may affect the connection between ISO 45001 as well as profitability. The criteria include earlier implementation of OHSAS 18001, the sector's sustainability sensitivity, and the country's level of development (Ntsoane, 2023).

To formulate our assumptions, we utilised Signalling Theory (ST) and the Resource-Based View (RBV). We evaluated these assumptions by extended event research (RQ1) alongside a weighted least squares (WLS) regression (RQ2) with a sample of 98 widely listed companies from diverse industries and nations. The data indicate that organisations adopting ISO 45001 have improvements in efficiency and profitability, although there is no significant effect on revenues. Moreover, the influence of ISO 45001 appears to be diminished for enterprises who currently adhere

to OHSAS 18001, along with organisations functioning in sectors that prioritise sustainable development (Asbury, 2024). The results of the research provide many contributions. Our engagement in the discourse regarding the profitability ramifications of international management standards illustrates, from a theoretical perspective, that initiatives focused on protecting the well-being of workers result in favourable economic results. Furthermore, the study underscores the importance of specific context variables in influencing the results for ISO 45001 standard implementation. Based on a pragmatic perspective, the research might help executives to tackle difficulties related to the impact of this requirement on organisational profitability.

## 1.2. Background of the study

The International Organisation for Standardisation (ISO) 45001 delineates the criteria for an occupational health and safety management system and offers guidance for its implementation, enabling organisations to ensure safe and healthy work environments by preventing work-related injuries and illnesses while also enhancing their improving its health and safety profitability proactively. This is achieved using a process-orientated, risk-based approach. All businesses, irrespective of their size, industry, or nature, must adhere to the standard. Furthermore, it aligns with the 2030 Agenda for Sustainable Development's Sustainable Development Goals (SDGs), particularly Objective 3, which seeks to guarantee good health while improving wellness for individuals at every stage of life, and Objective 8, which focuses on inclusive, ongoing, and viable expansion of the economy and full and valuable employment, as well as decent labour for everybody. From this perspective, the implementation of ISO 45001 illustrates a company's commitment to worldwide goals and signifies an active dedication to workforce security.

ISO 45001, in contrast to OHSAS 18001, is characterised by more precisely defined objectives, vocabulary, and scope; a heightened focus on senior management responsibilities; and a more prominent emphasis on the needs and expectations of employees. In addition, it depends upon the "high-level structure" Annex SL, a well-recognised foundation for standards developed by ISO. This approach facilitates the implementation and maintenance of the standard by enterprises. A complete lookup in Springer's Web of Science through the search terms "ISO 4500\*" or "ISO4500\*" facilitated the discovery of prior research undertaken on ISO 45001 standards (Abudabbus et al., 2023). Our investigation yielded 49 papers, all of which were published in English and subjected to peer evaluation. This was executed to ensure that the selected contributions were of superior quality. Upon evaluating the whole texts, we resolved to exclude 14 publications that only referenced ISO 45001 without offering any analysis or opinion and also because they referenced other occupational health and safety standards. We conducted a forward and backward citation analysis on the remaining 25 papers, leading to the discovery of four more relevant articles.

We examined and assessed a total of 29 papers. The data indicates that twenty-five per cent of the papers are conceptual, whereas just four publications are grounded in established theoretical frameworks. Daidj (2024) framework is founded on the principles of institutional theory and socio-technical system theory and incorporates three separate perspectives: institutionalisation theory, resource-based view, and stakeholder theory. The analysed articles encompass four fundamental and diverse aspects of ISO 45001: the rationale for implementation, the implementation process, the results of being adopted, as well as the underlying variables. Regarding the initial subject, the reasons for organisations implementing the norm encompass not just the intention to avert injuries and crashes, adhere to legal mandates and regulations, and enhance internal processes and activities, but also the aspiration to elevate corporate image, penetrate international markets, and address business pressures and competitive dynamics. The initial subject is the incentives for organisations to embrace the standard.

The essential elements of the ISO 45001 implementation process are the focus of the second component that has been analysed. The reviewed documents indicate that substantial time is required to perform tasks and complete documentation associated with the application of ISO 45001 standards. The standard's ambiguous language compels enterprises to expend significant expenses to select outside specialists and specialists. Moreover, employees might discover it challenging to grasp the importance of the established protocols and steps, hence requiring the introduction of costly specialist training programmes. The outcomes of implementing ISO 45001 are the focus of the third issue explored in the study literature. Contradictory data have been identified across nearly all assessed parameters. From an efficiency standpoint, the implementation of ISO 45001 has facilitated the streamlined identification and management of potential occupational illnesses and accidents, resulting in a decrease in time and financial losses, such as operational downtime, legal expenses related to incidents, and insurance premiums.

Academics have highlighted that the swift spread of knowledge, frequently resulting from the implementation of ISO 45001, can foster discourse as well as contribute to greater rapid choices.

Conversely, ISO 45001 has been condemned for generating an excessive degree of bureaucracy. This may dissuade employees and adversely affect their participation in safety management operations. Furthermore, it may reduce the time employees allocate to the organisation's essential activities. Similarly, there is an absence of definitive knowledge on the effect of ISO 45001 on the image aspect. Many academics assert that ISO 45001 conveys a significant message to competitors and that it aids organisations in showcasing their dedication to social responsibility to key stakeholders.

This is anticipated to enhance the company's reputation and foster confidence in its goods and services. Notwithstanding these factors, previous studies have suggested that the impact of accreditation is possibly somewhat restricted, while ISO 45001 might inadvertently convey a misleading message due to its "absence of assurance, legitimacy, and suitability in addressing improving its health and safety (IH&S) concerns". Moreover, accreditation alone may insufficiently address workplace health and safety issues. Abdul Hamid (2022) asserts that the efficacy of the standard is contingent upon several factors. These features encompass the genuine incorporation of the Occupational Health and Safety system into everyday operations and adherence to the legal stipulations of the firm's operational environment. The profitability metrics are the focus of the paper. It has been established that ISO 45001 has both positive and negative effects on the organisation (Dhliwayo et al., 2024). The observed differences are likely attributable to the diverse environments under study, along with the inclusion of organisations that have adopted a combined management system, namely ISO 45001 with ISO 9001 and ISO 14001.

The contributions of Chetty et al. (2024) elucidate the substantial impact of business size. Large organisations often prioritise occupational health and safety considerations, thereby increasing their likelihood of obtaining accreditation. Moreover, they possess greater resources to allocate towards the effective execution of an occupational health and safety strategy. Szöke (2021) indicates that ISO 45001 is often more advantageous in factories because of the prevalence of hazardous working conditions in manufacturing firms. The implementation and effectiveness of ISO 45001 rely on traits related to leadership and managerial dedication, specifically how top management perceives occupational health and safety and communicates its significance to employees. This is based on the evidence of Elkaseh et al. (2023). In conclusion, the conducted study indicates that the implementation of ISO 45001 aims not only to enhance occupational health and safety requirements but also to facilitate process improvement and economic benefits. Our investigation indicates that the profitability outcomes of ISO 45001 are inconsistent and largely anecdotal. This remains true despite the accreditation necessitating considerable expenditures. Furthermore, confusing results arise from broadening the scope to encompass contributions focused on OHSAS 18001.

Certain factors have had a positive influence on health and safety, as well as on profitability metrics like revenues and efficiency (Szöke, 2021). Critics have noted that the accreditation does not correlate with any profitability benefits relevant to the firm's operations; instead, it may hinder the organisation's profitability and promote decoupling while obscuring complex risks. The discourse regarding the effectiveness of various accreditations and management systems, including ISO 1401, SA8000, ISO/IEC 27001, and ISO 9001 (Radzilani, 2023), pertains to the contention surrounding the results of ISO 45001 and OHSAS 18001, especially concerning their respective accreditations and management systems. The assumption is that ambiguity surrounding the economic and functional implications of norms implementation will impede the comprehension of its possibilities and worth.

These contributions, which typically rely on event studies conducted using secondary data from companies' financial statements, are predicated on the belief that such ambiguity will obstruct those opportunities and value. Thus, there is a considerable need to rectify the deficiencies in the current literature on ISO 45001 and to examine the standard's impact on corporate profitability, along with the influence of specific contextual factors on the findings of such an inquiry.

### 1.3. Hypotheses

In this section, we will formulate many study hypotheses on the effect of ISO 45001 on company profitability (research question 1) and the contextual factors that affect this relationship (research question 2). Commencing with RQ1, we selected three parameters: revenues, efficiency, and profitability. This was executed in alignment with previous contributions to management requirements and campaigns, including ISO 14001, ISO 9001, the United Nations Worldwide Agreement, and SA8000 (Raditsela et al., 2025). To build our theory, we used the principles established by ST and RBV. These theories, beyond becoming notably useful for elucidating the successful effects of ISO 45001, have become one of the more often utilised frameworks for analysing difficulties related to the implementation and results of organisational standards. The hypothesis on the influence of ISO 45001 on revenues may be constructed using the ST's directives. Bukali (2022) indicates that relationships between two parties engaged in a trade, including vendors and

purchasers, are frequently defined by inadequate and inaccurate data. This could end up in exorbitant contracts and inadequate choices. Corporations exhibiting attractive characteristics in their products or practices convey signals and activities that disclose critical information—to achieve the objectives of minimising information asymmetry and promoting mutually beneficial relationships.

ISO 45001 accreditation may be considered an invaluable tool for conveying that the organisation has taken on an organised strategy to workplace safety and health, therefore informing potential clients of the organisation's knowledge of the issue. We anticipate that this signalling technique will contribute to a boost in revenue based on at least two distinct considerations (Jibril, 2022). Initially, acquiring accreditation through a prestigious regulation, for instance ISO, might allow companies to distinguish their products in the marketplace and serve as an obstacle for entrance that hinders smaller environmentally friendly businesses compared to fighting. Secondly, prioritising employee health and safety may enhance a company's reputation, so affording accredited enterprises a more favourable standing in the marketplace. The enhanced reputation generated by environmentally friendly action could draw fresh clients and create more opportunities for business activity. Consequently, we shall forward the subsequent hypothesis: The implementation of ISO 45001 leads to enhanced income for the organisation.

The Resource-Based View (RBV) paradigm posits that an organization's competitive advantage stems from its possession of valuable, rare, inimitable, and not interchangeable resources and capabilities (Ramchander and Nadar, 2025). Recent research indicates that the organised methodology behind management system standards may emerge as a valuable resource. It enables firms to cultivate their own procedures and skills, potentially resulting in reduced costs and enhanced efficiency. This appears to be accurate for ISO 45001 for at least three particular causes (Saavedra García, 2022). ISO 45001 fosters a culture of continuous improvement inside organisations. This is achieved by the frequent review, evaluation, and evaluation of health and safety performance. By identifying particular areas for prioritisation and implementing correction steps, businesses may streamline operations and enhance overall efficiency in operations. Secondly, the standard has the capacity to reduce the incidence of injuries, mishaps, and diseases in the workplace, hence minimising unavailability. Third, ISO 45001 mandates the deployment of successful instruction and competency development programs for businesses.

Workers who have had sufficient training are more inclined to take decisions through precise information, adjust to diverse working settings, and execute their duties effectively (Shabani and Jerie, 2023). In conclusion, ISO 45001 can promote the implementation of effective processes and organisational competencies, which may provide a substantial competitive advantage to the affiliated company. Consequently, we propose the idea that: The use of ISO 45001 leads to greater efficiency within the organisation. Despite the substantial spending and internal efforts required for the implementation of ISO 45001, we expect that the enhanced revenue from increased revenues and reduced operational costs due to heightened efficiency will result in enhanced profitability (Gómez-Puerta et al., 2024). Additional arguments may be made to substantiate the positive influence of ISO 45001 on profitability from both the Stakeholder Theory (ST) and the Resource-Based View (RBV). Maljugić et al. (2024) asserts that obtaining ISO accreditation allows firms to indicate quality, enabling them to increase product prices without a simultaneous decrease in interest. This is due to the signals being sent by the ISO accreditation.

Businesses perceived as responsible, reliable, and trustworthy can cultivate enhanced consumer loyalty, therefore positively influencing corporate profitability. Consequently, we may expect that enterprises certifying their workplace health and safety management practices would experience an enhancement in their profit margins and total profitability. From the perspective of the Resource-Based View (RBV), ISO 45001 may be regarded as a valuable resource, as it encompasses both intangible assets (such as competencies and expertise) and tangible elements (such as tools and devices particularly developed for certain purposes). The reasoning posits that the standard may provide specific advice at several organisational levels while disseminating safety and health at work information throughout the whole organisation, hence decreasing accidents. Consequently, firms can mitigate financial losses associated with interruptions in operations, legal expenses, and compensating initiatives. Moreover, although many studies contend that the expenses and challenges of accreditation may surpass its benefits, ISO 45001 mandates that organisations tailor their occupational health and safety management system to their own features and needs.

The inherent flexibility of ISO 45001 allows organisations to circumvent superfluous operational costs and expenditures in occupational health and safety by focussing on essential requirements (Nkosi, 2022). Consequently, we may assert that: The use of ISO 45001 leads to enhanced firm profitability. Concerning the second study issue, previous studies on various management systems, standards, and initiatives indicated that the accreditation-profitability link may be influenced by attributes related to the organisation, the field, and the country. Although the

research on ISO 45001 recognises the existence of contextual variables, the role of these elements has primarily been examined concerning attributes linked to the implementation of ISO 45001 standards (ADIKWU et al., 2023). Consequently, we assert that the profitability ramifications of ISO 45001 are significantly affected by both internal and external organisational conditions. Furthermore, as profitability may be seen as the cumulative effect of implementing a management system standard, primarily influenced by factors like revenues and efficiency, we confined the contingency analysis to this specific profitability outcome.

This assessment conforms to the methods established by the current research on ISO 900. The prior accreditation of some organisations under OHSAS 18001 is an initial component that could impact the results of implementing the ISO 45001 management system (Kabiesz and Tutak, 2024). Organisations transitioning from OHSAS 18001 to ISO 45001, having an existing foundation, may have a more streamlined implementation procedure. They can utilise their existing systems for managing occupational safety and health and enhance them to comply with the more rigorous criteria of ISO 45001 law. Nevertheless, enterprises that have never before implemented OHSAS 18001 could be facing greater consequences to ISO 45001 than those that used to comply with OHSAS 18001. These firms might be forced to develop and put into effect systems for managing occupational safety and health from inception, which will cause substantial modifications in their protection policies along with profitability (Mavroulidis et al., 2022). Generally, smaller businesses may profit from reduced costs and time needed to align their routines and operations with accreditation by ISO, while larger organisations may capitalise on the possibility for enhanced development in their internal processes.

Consequently, it is presumed that there exists a link between the prior implementation of OHSAS 18001 and the influence of ISO 45001 accreditation on operational profitability. The second aspect that may influence the outcomes of ISO 45001 compliance is the extent of the company's dedication to sustainability. Alves and Ramos (2022) assert that industries focused on sustainability often involve high-risk work conditions. Consequently, these sectors have formulated and consistently executed security protocols and regulations. The implementation of ISO 45001 by these firms may serve as an encouragement, resulting in gradual improvements instead of significant changes in internal systems and procedures. Simultaneously, it is crucial to acknowledge that sustainable industries face heightened public scrutiny, hence intensifying the demand to adhere to ISO 45001 standards. Companies indifferent to sustainability may prioritise safety to a lower extent. ISO 45001 may thus exert a more pronounced impact by implementing novel safety protocols and procedures (Kasradze et al., 2023).

Moreover, companies indifferent to sustainability could choose to proceed according to their own efforts and company principles instead of in response to customer complaints. The differing degrees of safety, profitability, regulatory demands, and current procedures might be contributing to the disparity in the implications of ISO 45001 across receptive and insensitive sectors. Therefore, the subsequent theory is proposed for evaluation: In conclusion, as working circumstances vary across developing and emerged nations (Kasradze et al., 2023), the results of ISO 45001 implementation are expected to change based on the country's degree of development. The sector's sustainability sensitivity determines the impact of ISO 45001 accreditation on profitability. Emerging nations are typified by a higher probability of fatal workplace accidents, inadequate security forces, and fragile legislative structures (Barkat Ullah et al., 2025). Furthermore, in this specific context, information asymmetry is often more extreme, hindering stakeholders' access to crucial sustainability information. Consequently, we can expect that the deployment of occupational health and safety systems will be particularly advantageous for reducing fatalities and improving credibility, which will ultimately impact the company's profitability (Asbury, 2023). Corporations situated in industrialised countries frequently possess greater financial resources to allocate towards health and safety programs. This may lead to improved integration of the processes and procedures outlined by ISO 45001, a standard developed by the International Organisation for Standardisation (ISO). Skills and knowledge gained via training and development initiatives may serve as significant assets that are challenging for competitors to replicate (Abdul Hamid, 2022). Consequently, in light of the many principles that may characterise the two contexts, we put up a further hypothesis: The degree of development in the organization's country of origin influences the impact of its ISO 45001 accreditation on profitability.

## 2. Research methods

RQ1 was addressed by performing an extended event research, while RQ2 was addressed by carrying out the weighted least squares regression. Both solutions were successful. The study was recently carried out to explore the profitability implications that are related with the application of global management standards, both methodologies are consistent with the findings of the research.

When it pertains to assessing the consequences of managerial choices, such as the implementation of new processes and standards, extended event research are a method that is well accepted due to its efficacy and popular acceptability. Some examples of these types of decisions include the introduction of novel processes and standards (Abudabbus et al., 2023). To cast light on the profitability implications of an organization's strategic decisions, they are intended to eliminate important causes of endogeneity that frequently occur. This is done to shine light on the impacts of such decisions. Indeed, it is feasible that firms that exhibit specific attributes are more inclined to participate in various activities. This is something that may be considered a possibility.

Moreover, this tendency leads to a choosing themselves process that is not random because of the essential nature of the characteristic. Using the event study, it is possible to examine the effects of standard implementation while minimising problems associated with biases in choice and the presence of prior patterns. In order to achieve this goal, a comparison is made between businesses that have implemented ISO 45001 and a control group that is comprised of businesses that are comparable but have not implemented the standard. In order to discover a representative sample of firms that have been accredited to ISO 45001, a technique that consisted of numerous phases was utilised. This was done because ISO does not provide information on companies (Abudabbus et al., 2023). To begin, we conducted a keyword search by applying the phrases "ISO 45001," "ISO 45000," and "ISO 45000" to the commercial news database Factiva. This provided us with the opportunity to find relevant information. The period from 2018 (the year when ISO 45001 was initially introduced) through 2024 was considered for the purpose of this study. An extra screening was performed on each and every possible firm that may be accredited to ISO 45001 standards.

For the purpose of this screening, a supplemental news search was conducted using the Google search (Chetty et al., 2024). Additionally, the websites and annual reports of the firms were examined. This screening was conducted with the purpose of accomplishing the following objectives: (a) determining the actual accreditation status and determining the precise accreditation date; (b) ensuring that there were no "confounding events" that took place during the time frame of the ISO 45001 accreditation and that could influence the outcome of the companies that were sampled. The third step involved comparing the list of companies with the Johannesburg stock exchange database, which is a storehouse of accounting records for organisations that are publicly listed (Saavedra García, 2022). This was done in anticipation of the fourth phase. Johannesburg is one of the many locations in the province of Gauteng that has already implemented this database. Other locations in the province of Gauteng include. There are 98 distinct companies that are included in the dataset that was created (for demographic details, please check out Table 1 for more information) (Ramchander and Nadar, 2025). In order to assess the proportion of our sample in respect to the wider population of businesses that have been accredited to apply ISO 45001 standards, we matched our data with the data from the ISO questionnaire up to the year 2024. This was done in order to determine how well our sample reflects the overall population. After a more in-depth evaluation, it is evident that the makeup of the data we have corresponds with the countries.

**Table 1: The distribution of samples according to the year of implementation, the area, and the state sector**

Implementation year		Frequency
2022		9
2023		5
2024		7
Southern Africa		Frequency
Botswana		15
Namibia		8
Lesotho		2
South Africa		11
Zimbabwe		1
Mozambique		1
Sectors	NACE code	Frequency
Oil and Gas Extraction	4-7	6
Industrial production	8-21	32
Civil Engineering	22-27	9
Logistics and distribution	29-32	6
Hospitality and Tourism	34-36	9
Banking and credit institutions	38-43	11

Accreditation issued in compliance with ISO 40001. Botswana companies constitute 39.47% of the enterprises in our dataset and account for 47.35 percent of the total accreditation given.

In a comparable manner, Namibia enterprises indicate 21.05% in our sample and 42.24% of the overall population. It is essential to emphasise that disparities emerge when statistics are evaluated at the national level. This is because transparency is essential. Lesotho companies make up 5.26% of our sample as well as 1.21% of the as a whole population; South African companies represent 28.95% of the sample and 36.25% of the population; and Zimbabwe companies make up 2.63% of the sample and 1.23% of the population. The International Organisation for Standardisation (ISO) provides minimal information regarding the sectors in which ISO 45001-approved companies function, rendering industry comparisons unfeasible.

## 2.1. Evaluation of the event

To ascertain if the 98 ISO 45001-accredited companies in our sample demonstrate significantly abnormal revenues (H1), efficiency (H2), and profitability (H3) achievement, an event-study technique was employed. This technique was compared to a control sample of businesses lacking accreditation in the same domain. Workplace health and safety management systems often need five to seventeen months for full implementation; thus, the event period was designated as the accreditation year (t) and the preceding year (t-1). The year t-2, commonly referred to as the event-free year, was designated as the base year and employed in the construction of the control business sample. Year t-3 was incorporated into the study to confirm the absence of endogeneity issues. This was conducted to ascertain that performance implications were truly associated with the accreditation of ISO 45001 and that no prior patterns or selection biases existed. This was executed in light of the methodological observations provided by Navia Núñez (2020).

We utilised year-over-year revenues growth for revenues (H1), the ratio of cost of goods sold to revenues for efficiency (H2), and return on assets (ROA) for profitability (H3). JSE was utilised to get the financial data employed in the study. The three profitability parameters explored have been implemented according to the methods employed in prior event investigations. In line with Johanes et al. (2023), a distinct portfolio of control companies was created for each ISO 45001-accredited organisation and for every presentation feature under research. A portfolio management strategy founded on three criteria, as proposed by Wieland and Geraldo Schwengber (2024), was executed: Both ISO 45001-accredited companies and control firms must be categorised using the same two-digit NACE code. Control firms should possess total assets ranging from fifty percent to two hundred percent of those held by ISO 45001-verified companies in the base year.

Moreover, the profitability metrics of the control businesses, including revenues, efficiency, and profitability, must reside within the ninety to a hundred and ten percent range of the profitability indicators of ISO 45001-approved firms. If no match was identified, the manufacturing standard was subsequently modified to include the NACE code, a unique identifier, and then eliminated. On average, all authorised organisations were paired with 9.470 control businesses, a ratio commonly utilised in event evaluations. To compute the alteration in abnormal profitability (AP) for each ISO 45001 sample firm, the below formula was employed:

$$AP(t+b) = PS(t+b) - EP(t+b)$$

$$EP(t+b) = PS(t+a) + (PC(t+b) - PC(t+a))$$

EP denotes expected profitability, PA signifies actual profitability of ISO 45001-verified businesses, and PC represents the median profitability of the control firms. t is the year in which the accreditation according to ISO 45001 was awarded, a represents the first year of comparison (3, 2, 1, 0, 1), and b signifies the final year of comparative (2, 1, 0, 1, 2). Our results reveal several differences when contrasted with the entire population of ISO 45001-verified enterprises, as previously noted. The inverse probability post-stratification weighted provided by Asbury and Ball (2016) was employed to rectify the problem and align the sample's nation distribution with that of the whole population. The sample was weighed utilising measurements that corresponded to the following values: % accreditation given in the nation / % of the cases in that nation in the sample.

The prior implementation of this approach is documented, amongst others, in Abatan (2018). The Shapiro-Wilk tests demonstrated that our data did not conform to a normal distribution. Consequently, we evaluated whether the anomalous profitability (AP) substantially deviated from zero utilising non-parametric testing. The Wilcoxon signed-rank test (WSR) as well as the sign test were employed for symmetric and skewed distributions, correspondingly.

## 2.2. Weighted Least squares

To evaluate H4, H5, and H6, we conducted a weighted least squares regression on the aberrant ROA profitability from  $t - 2$  to  $t + 2$ . This method facilitates the alignment of our sample's country distribution with that of the population, hence enhancing the generalisability of our findings. In a manner analogous to the methodology employed for the event research, the weight assigned to each observation is delineated as *% accreditation given in the nation / % of the cases in that nation in the sample*. The independent variables are implemented as follows:

To account for the prior implementation of OHSAS 18001 (H4), we incorporated a dummy variable valued at "1" for enterprises that have earlier complied with OHSAS 18001 standards.

A dummy variable with a value of "1" was incorporated for enterprises engaged in sectors dependent on sustainability (H5). These sectors encompass mining, oil and gas, metals, forestry and paper goods, cigarettes, chemicals and medications, defence, alcohol and utility. This was executed in alignment with the market classification suggested by Mavroulidis et al. (2022).

The Human Development Index (HDI), developed by the United Nations, was utilised to measure the developmental status of a company's country of origin (H6). The results of this investigation align with previous studies. This measure aims to provide a thorough representation of each nation's growth by emphasising factors such as "a long and healthy life, access to education, and a satisfactory standard of living." To guarantee the credibility of our outcomes, we included the following categories of control variables involving nation, sector-, and customised factors that could influence the results of ISO 45001 method delivery:

Regulation quality (regulating excellence index): enterprises functioning in environments with stringent and successful regulations may have limited opportunities for enhancement. Economic transparency, measured by the ratio of the imports and exports of a nation to its gross domestic product, indicates that enterprises in open economies often establish commercial connections with numerous countries; consequently, the "qualifying effect" of ISO standards is generally more pronounced. In such contexts, the average weekly working hours throughout different sectors and nations indicate that health and safety problems are generally more critical in contexts involving considerably extended hours.

Competitiveness in the industry (1-JSE index; established at the 2-finger NACE code level): the efficiency of global leadership standards sometimes diminishes in increasingly competitive sectors.

Sector size (the natural logarithm of total assets within the sector, as described at the 2-digit NACE code level): firms operating in bigger sectors generally face increased scrutiny, which may enhance the efficacy of management standards implementation. The sector's efficiency, measured by the median return on assets at the 2-digit NACE code level, indicates that the advantages of implementing standards may be diminished in contexts where systems are already streamlined. Tan Mullins (2020) indicate that the impact of standards implementation is anticipated to differ based on the company's size, quantified by the natural logarithm of its total assets. For pre-accreditation return on assets (ROA in year  $t - 2$ ), the advantages of accreditation may be diminished for enterprises with superior initial profitability.

Firm age (the duration in years since the establishment of the firm at the time of ISO 45001 implementation): enterprises can derive more advantages from accreditation by using the expertise accumulated during their operational lifespan. The impact of management systems and standards may vary based on the company's size. The intensity of capital can be described as the ratio of assets to revenues in the reference year.

The year of implementation (particularly, the year of ISO 45001 accreditation) to account for period-specific factors that may influence the findings (e.g., COVID-19).

Furthermore, dummy variables related to the different businesses and sectors were integrated into the model. A brief description of the considered variables is provided in Table A2 and Table A3 of the online appendix. These tables demonstrate the relationships between the variables and the matrix, accordingly.

## 3. Results

### 3.1. Implications for profitability in line with ISO 45001

Table 2 displays the results of the event study conducted to assess the influence of ISO 45001 accreditation on the profitability of prior accredited organisations. For every achievement dimensions and period analysed, the following information is documented: data characteristics (normality and skewness), the number of reports (N), the weighted mean and weighted median of

the abnormal profitability (WAP mean and WAP median), and the results of the Wilcoxon signed rank (WSR) test (for symmetric data) and the sign test (for skewed data).

The revenues outcomes were inconsistent. A significant positive anomalous profitability was identified in the time spans from t-2 to t-1 and t+1 to t+2. Conversely, there was a statistically significant negative anomalous profitability commencing at time t and persisting until time t+1. Moreover, none of the multi-year intervals had statistically significant results, hence undermining hypothesis H1. Regarding efficiency, negative and statistically significant abnormal effects were seen from t-1 to t and t-2 to t+2 (H2 is corroborated).

These anomalous results suggested that ISO 45001 accredited organisations had superior profitability compared to their peers (Tan Mullins, 2020). The results indicated a positive and statistically significant anomalous profitability in the following time intervals: t-2 to t-1, t-1 to t, t-2 to t, and t-2 to t+2, hence validating hypothesis H3. Finally, to ascertain the absence of endogeneity issues - specifically, to ensure that the outcomes were solely affected by the ISO 45001 accreditation without prior trends or selection biases - we also analysed the interval from time point 3 to time point 2. No statistically significant differences in profitability were seen. Hence, anomalous profitability was exclusively noted in all profitability metrics considered when firms initiated the implementation of ISO 45001 (specifically, from time 2 to time 1 - ROA, revenue) or when companies obtained the accreditation (namely, from time 1 to time 1 - efficiency). The absence of prior trends and the strength of our findings were both corroborated by these two unique qualities.

### 3.2. Contextual variables

The WLS regression findings, detailed in Table 3, reveal that the effect of ISO 45001 accreditation on profitability is influenced by the prior implementation of OHSAS 18001 and the sustainability sensitivity of the respective sector (supporting both hypotheses H4 and H5). Specifically, organisations currently accredited under OHSAS 18001 and those in sectors with a strong focus on sustainability may see diminished advantages from adopting ISO 45001 standards. Conversely, no statistically significant implications were identified concerning the level of a country's development (thesis H6 is unsupported). Concerning the control variables, more successful enterprises (Pre-accreditation ROA) obtain less upgrades.

Furthermore, we calculated the variance inflation factors for each of our independent variables throughout this procedure. The VIF has an average value of 2.144, with a range from 1.132 to 6.135. This result is below the normal threshold of 10, indicating the absence of multicollinearity concerns.

**Table 2: Event research study**

	Period	Normality	Skewness	N	WAP Mean	WAP Median	p-value (WSR)	p-value (sign test)
<b>Revenue</b>								
<b>Multi-year period</b>	t - 2 with t (accreditation)	No	S	98	7.25	5.46	0.156	0.321
	t with t-2 (post-accreditation)	No	S	98	-3.15	-1.54	0.252	0.352
	t-2 with t+2 (whole period)	No	S	98	5.32	3.25	0.545	0.975
<b>Single-year periods</b>	t-3 with t-2	No	S	92	-2.56	-6.56	0.784	0.545
	t-2 with t-1	No	S	98	7.12	2.55	0.011**	0.000***
	t-2 with t-1	No	S	98	0.15	3.56	0.254	0.254
	t-1 with t	No		98	-8.24	-7.52	0.254*	0.000***
	T with t+1	No	S	98	5.11	3.21	0.100*	0.212
	t+1 with t+2	No		98	4.56	3.25	0.100*	0.225
<b>Efficiency</b>								
<b>Multi-year period</b>	t - 2 with t (accreditation)	No	S	89	-3.12	-3.16	0.125	0.522
	t with t+2 (post-accreditation)	No		89	0.25	0.24	0.47	0.654
	t-2 with t+2 (whole period)	No	S	89	-2.46	-2.35	0.021***	0.000***
<b>Single-year periods</b>	t-3 with t-2	No	S	82	0.21	-2.52	0.451	0.254
	t-2 with t-1	No	S	89	-2.13	-2.56	0.421	0.541
	t - 1 with t	No		89	-3.56	-3.85	0.122***	0.000***
	t with t +1	No	S	89	0.62	0.62	0.651	0.421
	t+1 with t+2	No	S	89	-0.32	0.35	0.625	0.652
<b>Profitability</b>								
<b>Multi-year period</b>	t - 2 with t (accreditation)	No	S	97	4.14	4.67	0.011***	0.000***

	t with t+2 (post-accreditation)	No		97	2.44	3.12	0.888	0.422
	t-2 with t+2 (whole period)	No		92	5.52	3.65	0.000***	0.000***
<b>Single-year periods</b>	t-3 with t-2	No	S	97	-2.35	-2.52	0.452	0.534
	t-2 with t-1	No	S	97	2.11	3.00	0.000***	0.000***
	t -1 with t	No		97	-1.35	-1.21	1.12	0.954
	t with t +1	No	S	97	4.53	3.56	0.25*	0.113**
	t+1 with t+2	No	S	92	2.54	-3.58	1.222	0.546

Note: To avoid type I error the false detection rate methodology suggested by KANS () is being used. \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

### 3.3. Research expansion

We contended that the results of implementing ISO 45001 may be influenced by the cultural attributes of each nation. Researchers have shown that culture, attitude, and lifestyle are nation-specific elements that affect ways of managing and, consequently, the efficacy of adopting management standards. Given a nation's insufficient degree of development (H6 is unsupported), we articulated this reasoning. Consequently, we performed an additional regression analysis using the six variables suggested by Hofstede to assess the cultural characteristics of a nation. The aspects are individuality, distance from power, avoiding uncertainty, an extended perspective, masculinity, and luxury. Instances of prior deployments of this the implementation can be observed in Maljugić et al. (2024), among other sources.

### 4. Discussion

Utilising a theory-driven research framework and validating it with a longitudinal event research and a weighted least squares regression conducted on a sample of 98 verified firms, our research provides compelling evidence regarding the impact of ISO 45001 on the profitability of verified entities and the significance of certain contextual factors in modulating this impact.

**Table 3: WLS regression results**

Dependent variables = ROA (t-2with t+2)		WLS (n=97)		
		Determined coefficients	Robust standard errors	Statistical significance
<b>Explanatory variables</b>				
	OHSAS 18001	-0.001	-0.124	0.102*
	Environmental sustainability	-0.212	0.124	0.121*
	Responsive			
	Degree of growth	-0.345	0.166	0.135
<b>Control variables</b>				
	Regulation Quality	0.165	0.123	0.254
	Liberalisation of the marketplace	0.011	0.001	0.234
	Mean labour hours	0.01	0.003	0.354
	Competitive landscape	0.675	0.425	0.234
	Industry size	-0.154	0.029	0.086
	Industry effectiveness	-0.312	0.9258	0.425
	Companies size	0.015	0.007	0.254
	Pre- accreditation ROA	-0.632	0.125	0.110***
	Company age	0.000	0.000	0.328
	Capital concentration	0.011	0.021	0.756
	Implementation year	-0.024	0.025	0.354
	Regional indicators	Incorporated		
	Sector indicators	Incorporated		
	R-squared adjustment	37.35%		

Note:\*p < 0.05,\*\*p <0.01,\*\*\*p < 0.001.

Concerning RQ1, the current body of research has shown some shortcomings that may diminish the economic effect of ISO 45001 implementation. Our study has proven that the advantages of ISO 45001 surpass any potential drawbacks linked with it. Specifically, it has been found that organisations implementing ISO 45001 see significant improvements in both efficiency (H2) and profitability (H3). The results above are analogous to those identified for ISO/IEC 27001 and ISO 9001, although they contradict the findings related to ISO 14001 and (partially) SA8000. Conversely, we see that substantial abnormal profitability variations associated with ISO 45001 predominantly arise over an extended timeframe. This contrasts with ISO 9001, where the effects on production appeared to be instantaneous. This is probably attributable to the protracted process required for the effective incorporation of this standard.

To elucidate in accordance with the RBV framework, our findings suggest that ISO 45001 serves as a valuable resource that not only augments worker skills and knowledge but also facilitates enhanced recognition and separation of duties and obligations. Providing support and care to workers enhances their motivation and engagement in their roles, encourages them to exceed expectations, and elevates their efficiency in the workplace (ADIKWU et al., 2023).

The ramifications of ISO 45001 may be associated with the implementation of a process-oriented methodology, supported by a framework for ongoing enhancement. The impact of the accreditation is not confined to the manufacturing and operating sectors, affecting efficiency, but rather encompasses every part of the organisation due to factors related to profitability for at least two reasons (OKORIE, 2024). Organisations may optimise their allocation of finances, resources, and personnel by holding regular meetings, doing audits, and improving communications. These actions assist businesses in routinely evaluating and redefining their operational procedures. Secondly, ISO 45001 assists organisations in diminishing their legal expenses and insurance rates by decreasing the incidence of workplace accidents. The impact of ISO 45001 on revenues (H1) appears to be rather minor. Two potential reasons exist for this. ST posits that the absence of pertinent revenues-related results is contingent upon the "the strength of the signal". While the ISO 45001 standard is gaining traction, the considerable volume of accreditation issued may have transformed its role into a compulsory criterion for market participation, rather than a distinguishing element among businesses.

Conversely, it is plausible that ISO 45001 serves primarily as a relationship booster rather than a tool for acquiring new clients. Acquiring this kind of accreditation might be advantageous as it may enhance loyalty to clients and strengthen existing connections within the downstream network; nevertheless, it may not lead to increased revenues or market opportunities. Concerning RQ2, we like to highlight that the financial implications of ISO 45001 are affected by the prior implementation of OHSAS 18001 (H4) and the industry's environmental sensitivity (H5). Companies operating in sustainability-sensitive sectors are, on one hand, under scrutiny. These organisations are often required to prioritise employee workplace conditions and report their attempts to many key stakeholders as a necessity for doing business (Kabiesz and Tutak, 2024). Conversely, although ISO 45001 diverges from OHSAS 18001 in several significant aspects, organisations earlier verified under the latter have already implemented the essential safety and health at work policies and procedures (Radwan et al., 2025). However, the use of ISO 45001 in these two contexts yields only marginal enhancements, thereby diminishing the benefits realised. In conclusion, the absence of impact from the country's level of development (H6) can be elucidated by existing research on the performance implications of social standards: although the effects of the standard are anticipated to be more pronounced in less developed contexts, the associated execution and upkeep costs are elevated due to the significant gaps that require attention. Conversely, the results are influenced by the cultural attributes of the nation; organisations implementing ISO 45001 in contexts with a lower focus on the extended event and marked by stringent social norms typically adhere more to traditions and exhibit a greater propensity for upholding rights and values, thereby placing increased emphasis on social sustainability and satisfaction with work.

## **5. Conclusion**

### **5.1. Contributions to the conceptual foundation of the theory**

In a number of significant ways, our research contributes to the advancement of academic understanding. In the beginning, we acknowledge the rising relevance of improving its health and safety (IH&S), and we emphasise the requirement of proactive expenditures to preserve the well-being of staff members. This is done to demonstrate that systematic standards such as ISO 45001 produce financial advantages. A number of previous studies have produced contradictory results, which may be partially attributed to the use of subjective criteria (research based on surveys) and the failure to take into account the possibility of bias during the selection process. In this context, we assert that the significance of ISO 45001 is not connected to satisfying the demands of consumers or communicating to external stakeholders the importance that is placed on occupational health and safety. Rather, the significance of ISO 45001 stems from its ability to assist businesses in defining their internal procedures and practices. It is especially relevant to consider our findings because of the challenges involved in determining the effectiveness of occupational health and safety expenditures, as well as the concerns surrounding the potential cost disadvantages associated with ISO 45001 standards.

In the second place, as was highlighted in the section on the literature review, the information that is currently available on ISO 45001 is lacking in terms of insights into the effect of contextual factors.

The purpose of this research is to demonstrate that the effects of ISO 45001 may vary depending on aspects such as the country, the industry, and the organisation. This analysis is the first attempt to solve the problem. Because of this, the little information that is currently available on the topic is expanded, and academics are encouraged to investigate further the numerous situations in which ISO 45001 is implemented. Thirdly, the research contributes to the expansion of the existing body of information concerning the performance repercussions of management system innovations and standards. Using the Resource-Based View (RBV) and Stakeholder Theory (ST), we explore the impact that the most prominent improving its health and safety (IH&S) standard has had on a group of publicly listed companies. Our findings provide considerable evidence of the association between accreditation and profitability. According to the findings, the effects of ISO 45001 are primarily linked to profitability in the company's internal processes. This is in contrast to "signalling orientated" standards and initiatives, such as the United Nations Global Compact, and more general standards, such as ISO 9001, which have a significant impact on revenue profitability.

## **5.2. Contribution practice**

It is strategically crucial for managers and organisations to make the decision to implement ISO 45001 because it requires an appraisal of the necessary expenditures in comparison to the potential effects on the performance of the company. Despite the fact that the influence on organisational profitability is still a disputed subject, the efforts that are involved in adopting ISO 45001 are widely acknowledged and considerable. The current empirical research on this topic are limited in their extent, impacted by methodological flaws, and characterised by conclusions that are contradictory with one another. Our research is one of the first attempts to provide definitive statistics on the financial consequences of ISO 45001, and it is one of the first initiatives to use a large-scale, cross-national sample. The findings can be of assistance to managers in resolving concerns regarding the influence that ISO 45001 has on the operation of a firm. More particularly, they can be employed to justify to shareholders the costs that are associated with the implementation of ISO 45001 standards. In addition, we give managers with things to take into consideration when they are going through the accreditation process by analysing the effect of certain contextual conditions.

In the second place, regarding the ongoing management of ISO 45001, the research suggests that managers should make use of two specific profitability metrics, namely efficiency and profitability, in order to evaluate the effectiveness of the standard inside their own businesses. The formulation and monitoring of realistic goals in both the short term and the extended event would be made easier because of its implementation. Thirdly, our research is in line with the Southern Africa objective of achieving sustainable development. As was underlined in Section 2, the implementation of ISO 45001 represents a proactive action towards the achievement of several important Sustainable Development Goals, including SDG 3 and SDG 8. Consequently, the findings are relevant to the alignment of companies with these Goals, which is an essential component in the process of attaining a future free of accidents in the workplace and guaranteeing the well-being of workers. There is a possibility that the findings are relevant to the regulatory authority (ISO). The fact that the outcomes of ISO 45001 implementation are influenced by elements that are particular to the country, the industry, and the firm may suggest that the International Organisation for Standardisation (ISO) ought to develop ways to help businesses in applying the standard in a variety of settings.

The implications of the study extend into the realm of academia, particularly with regard to the development of future professionals and managers through education and training. Our findings highlight the relevance of improving its health and safety (IH&S) and advocate a paradigm change in corporate perception: from simple compliance to a strategic instrument for value development. Improving its health and safety (IH&S) is an acronym that stands for occupational health and safety. Based on the point of view, educational institutions have the potential to raise awareness among young people about the relevance of occupational health and safety standards as a key approach for enhancing the performance of organisations. It is possible that this will instil a culture of safety and sustainability in future leaders, as well as provide them with the knowledge and skills necessary to carry out these requirements in an appropriate manner. Furthermore, our research may serve as an example of academic discussion, challenging students to contemplate the vast ramifications that operational decisions have on the wellbeing of employees and the results of financial operations.

By incorporating these results into academic programs, future managers will be able to build a mentality that places a focus on the inclusion of sustainability and safety into core company strategy. In conclusion, our findings may make it easier to disseminate International Organisation for Standardisation (ISO) 45001 by providing convincing proof of the financial ramifications associated

with the standard. It is possible that this will contribute to the development of a more sustainable society, one in which businesses place a higher priority on the welfare of their employees, protecting their health and safety while concurrently pursuing economic success. We anticipate that this study will inspire further studies on the accreditation framework by illustrating the significant implications associated with the application of ISO 45001 standards. We invite research examining how the determinants of ISO 45001 implementation, the challenges of implementation, as well as the standard's utility varies across different environments.

### Conflict of interest statement

The authors declare that they have no conflicts of interest.

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