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Internalization of the 'Safety & Quality Assessment for Sustainability' System Motivations and performance in Spanish road transport firms

Juan L. Torres-Rubira [*], Ana B. Escrig-Tena, Miguel A. López-Navarro

Department of Business Administration and Marketing, Universitat Jaume I, Castelló de la Plana, Spain

ABSTRACT

The Safety & Quality Assessment for Sustainability (SQAS) system aims to measure sustainability levels – quality, safety, security and environmental requirements – of logistics providers in the distribution of European chemicals. In the context of SQAS adoption, the purpose of this work is twofold. First, it examines how the motivations of road transport companies carrying dangerous goods to evaluate through the SQAS system condition the real (not symbolic) internalization of the system. Secondly, it analyzes how the internalization of the SQAS system impacts sustainability performance. The study analyzes a sample of 78 Spanish companies assessed according to the SQAS Transport Service module. We use structural equations models applying partial least squares to test the research hypotheses. Results suggest that customer pressure is the main motivation for a company to undergo the assessment. In addition, in line with the literature on management standards, the results show that internal motivations impact to a greater extent than external ones in the internalization of SQAS, and that greater internalization contributes to better sustainability performance.

1. Introduction

The growth of international trade, ICTs and globalization have accentuated the key role of transport in economic development, while intensifying the challenges to transport sustainability (Evangelista, Colicchia, & Creazza, 2017). This study focuses on the transport sector, particularly on road transport companies carrying dangerous goods. These goods are defined and identified as dangerous by the UN, because their physical or chemical properties immediately cause harm to human life, to material goods, and/or ecosystems when they are exposed to the environment (Lieggio Junior, Granemann, de Souza, & Rocha, 2012; UNECE, 2020), and they can provoke public safety issues (Gemou & Bekiaris, 2012; Ruifang, 2010; Toumazis, Batta, & Kwon, 2013). These circumstances motivate the pursuit of excellence in the operations and management practices used by road transport companies (Zheng & Zhang, 2011), given that they have to cater to a wider range of stakeholders that are more interested in influencing their management systems (Flodén & Woxenius, 2021).

The inherent danger of these goods also affects consignors' concern to transport them safely. Such is this concern that the European chemical industry has developed a model for assessing corporate social responsibility (CSR) and the sustainability of companies involved in their

logistics operations. This system is known as SQAS (Safety & Quality Assessment for Sustainability) and its aim is to assess three aspects of any company that can act as a logistics provider (Dong, Qian, Li, & Fan, 2013): identify and promote the use of "good practices" in terms of quality, safety, security, environment and CSR; quantify their level of compliance to improve the levels of management in these companies, and anticipate greater regulatory requirements. The assessment provides a factual report with a score, which a third party prepares from a questionnaire, and which provides useful information on the strengths and weaknesses observed during the assessment in the aspects evaluated: quality, safety, security and environment (CEFIC, 2018a).

The fact that companies are subject to these assessments solely because of institutional pressures (DiMaggio & Powell, 1991) may mean that this evaluation is somewhat symbolic, and no more than "CSR-washing" (Boiral, Heras-Saizarbitoria, & Testa, 2017). This perception has been noted in previous studies about specific certification schemes such as HES (Health, Safety and Environment) (Njå & Fjelltun, 2010) or SA8000 (Boiral et al., 2017).

However, neither the transport of dangerous goods nor the SQAS system has been studied in the literature beyond the analysis of security systems, routing or tracking and tracing (Holeczek, 2019), despite the fact that the transport of dangerous goods entails greater environmental

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and safety impacts than that of conventional goods (Batarlienė, 2018; Li & Wang, 2017; Mardani et al., 2020). A lack of evidence has been identified in the logistics field, specifically on the impact that adopting environmental practices has on performance in the logistics sector (Centobelli, Cerchione, & Esposito, 2017; Dubey, Gunasekaran, & Business, 2017; Lieb & Lieb, 2010; Luthra, Garg, & Haleem, 2014).

In this context, the objective of this paper is to evaluate the effectiveness of the SQAS system as a sustainability management tool in the field of transport and logistics. On the one hand, and inspired by the literature that analyzes the motivations in the adoption of management systems (Melão, Amorim, Marimon, & Alegre, 2018; Tarí, Heras-Saizarbitoria, & Dick, 2014), it aims to identify the motivations for evaluating through the SQAS system and how they can contribute to a real internalization of the SQAS system, not just a symbolic adoption. On the other hand, the study also analyzes the extent to which this internalization is related to three performance dimensions: environmental, economic and social. This research highlights the relevance of SQAS as a sustainability assessment system and the keys that determine its effectiveness, while focusing its attention on the sector of dangerous goods transport by road as a benchmark of excellence in sustainability.

The paper is structured as follows: the next section outlines the theoretical framework used and defines the hypotheses. The methodology and the results of a study on companies in Spain evaluated using the SQAS Transport Service modality are then presented. Finally, the results and implications of the research are discussed.

2. Literature review and research hypotheses

2.1. The Safety & Quality Assessment for Sustainability (SQAS) system

Road freight transport has a huge impact on the environment, for example in terms of CO_2 emissions and their contribution to climate change, pollution and its effects on human health as well as accidents (Lieggio Junior et al., 2012; Wang, 2019). These negative externalities are even more evident in the case of dangerous goods transport, especially in terms of potential accidents and the resulting risks, giving rise to public safety problems (Ruifang, 2010; Toumazis et al., 2013). As a consequence, the transport of dangerous goods is subject to special monitoring and regulation by public administrations, the ultimate goal of which is to reduce, as far as possible, the negative impacts of this activity on human life, property and the environment (Galierikova & Sosedova, 2018; Holeczek, 2019) based on quality, safety and security.

But it is not just the administration that is concerned about transportation safety. Transport company customers, aware of the importance of the logistics chain in the sustainability of their own organizations, and of the potential harm to their image from poor logistics chain management, have taken initiatives that go beyond their statutory responsibilities and that entail the regulatory evaluation of their logistics operators. The purpose of this evaluation is to minimize the risks and to improve the sustainability performance of its logistics providers (Seuring & Müller, 2008).

Direct regulation by the state, through controls and inspections, can force companies to make major changes to their structures and operating models. In contrast, the industry relies on self-regulation in its attempts to establish standards through voluntary agreements, such as environmental certification schemes or evaluation systems like SQAS. Self-regulation can take the form of standards, objectives and goals to improve the environment and aspects of safety, which are also made public (Anton, Deltas, & Khanna, 2004; Buysse & Verbeke, 2003). However, this self-regulation is characterized by voluntary action (low levels of obligation), imprecise rules and delegation of authority to non-governmental actors (Scherer & Palazzo, 2011).

Héritier and Eckert (2009) point out that if industrial processes produce negative external effects on human health and the environment, and there is a public awareness of the problems they generate, the industry in general prefers to solve this problem by opting for self-regulation. The industry's preference for this type of action over binding legal regulations can be explained by the absence of coercive instruments in the voluntary self-regulating option. However, the same lack of binding obligations favors the industry's discretion in defining regulatory objectives.

Lobbying activities and the growing use of self-regulation contribute, in short, to companies trying to impose their interests by helping to curb public sector intervention, and to a certain extent legitimizing their activities to try to gain stakeholders' trust (López-Navarro, Tortosa-Edo, & Llorens-Monzonís, 2015). For example, oil companies use specific vetting procedures to ensure that ships meet the necessary requirements for the safe transport of oil (Ivshina et al., 2015; Frynas, 2012; Gritsenko, 2015). Specifically, in 1993 the Oil Companies International Marine Forum (OCIMF), an association of oil companies, launched the Ship Inspection Report Programme (SIRE), an oil tanker vetting system aimed at improving the condition of ships (Frynas, 2012). In turn, the CDI-M scheme focuses on the bulk maritime transport of liquid chemicals and gas (CDI, 2023) to improve vessel security through inspections. The chemical industry has also developed initiatives to promote road transport safety. More specifically, the European Chemical Industry Council (CEFIC), the body responsible for the production of most products in the chemical industry, has developed "a tool to assess safety, quality, security, health, environmental and corporate social responsibility management systems of logistic service providers and distributors", called SQAS (CEFIC, 2018b). While the scope of the abovementioned vetting systems is limited to transport units (vessels), the SQAS system covers the entire organization (the road transport company in our study); it is a company-wide safety and quality system that places continuous improvement at its core.

Evaluation by SQAS is based on a factual assessment according to a series of questions as to whether the organization applies a set of practices, with three possible answers: "yes", "no" or "not applicable". The practices assessed include active management commitment and responsibility, risk management, human resource management such as behavior-based safety (for safe driving and for safe loading/unloading of road freight vehicles), emergency preparedness and response, management of subcontractors, equipment inspection, measurement and management of transport greenhouse gas emissions, security in transport, inspections or control of operations (CEFIC, 2018b). The result is specified in a score, between one and one hundred, that indicates the percentage of questions with affirmative responses. An accredited SQAS assessor issues a SQAS report with the total score and the strengths and weaknesses of the assessed organization, which allows chemical companies to evaluate road transport providers according to their own standards. This report proves that the organization has undergone the assessment and, once issued, is valid for three years, after which the organization must be re-evaluated. Thus, evaluation is still a method of selecting suppliers that, in addition, increases the added value of services (Centobelli et al., 2017; Evangelista & Durst, 2015; Martinsen & Huge-Brodin, 2014) and aims to minimize the cost of monitoring safety in operations, while ensuring that some of the criteria that matter most to chemical companies are evaluated: safety, health and quality of service (Gardas, Raut, & Narkhede, 2019).

2.2. Motivations for the Safety & Quality Assessment for Sustainability (SQAS) system

To the best of our knowledge, no studies have examined companies' motivations to undergo an evaluation through the SQAS system. However, we can draw on research analyzing the motivations for adopting management standards (Gómez-López, Serrano-Bedia, & López-Fernández, 2016; Nair & Prajogo, 2009), and assessment, recognition or certification of management practices (Gómez-López et al., 2016; Martínez-Costa, Martínez-Lorente, & Choi, 2008; Tarí et al., 2014). This literature mainly uses two theoretical frameworks to explain these motivations. First, institutional theory (DiMaggio & Powell, 1983) holds

that organizations are motivated by external factors to initiate the certification or evaluation process, in attempts to imitate the practices of the organizations in their environment. Second, the resource-based theory (Peteraf, 1993; Sarkis, Helms, & Hervani, 2010; Wolf, 2014) holds that internal motivations drive these organizations to embark on evaluation and certification processes, in order to improve their management and their performance (Martínez-Costa et al., 2008; Nair & Prajogo, 2009; Tarí et al., 2014).

The motivations for adopting environmental systems and other standards vary widely. Table 1 shows the convergence between some of the most commonly reported motivations.

In the case of certification of environmental management systems or social responsibility, *regulatory pressure* (Campbell, 2007; Sarkis et al., 2010) and *customer requirements* (Christmann & Taylor, 2006) are the most commonly referenced external motivations. Both motivations have their origin in institutionalization, which tends to homogenize the behaviors of companies in a certain environment (DiMaggio & Powell, 1983). In relation to internal motivations, some authors have approached their analysis from the resource-based theory (Carter & Rogers, 2008; Peteraf, 1993), considering them as a catalyst to promote improvements in the *quality of service, processes* and, in general, to pursue *continuous improvement* in management.

Studies, both qualitative and quantitative, specifying motivations in the case of logistics sustainability identify a mixture of external and internal motivations: cost reduction, demand for sustainable products, regulatory pressures or simply doing the right thing (Martinsen & Huge-Brodin, 2014; Perotti, Micheli, & Cagno, 2015; Schnittfeld & Busch, 2016). The key motivation, however, is the need for a "green" image and reputation (Perotti et al., 2015).

According to the literature on the logistics chain, logistics providers are motivated to undergo an evaluation or certification because their customers use these credentials as a selection criterion (Vijayvargiya & Dey, 2010) that goes beyond legal requirements (Multaharju, Lintukangas, Kähkönen, & Hallikas, 2017) and that guarantees the transfer of

their own corporate sustainability agendas (Schnittfeld & Busch, 2016). At the same time providers are motivated to increase market opportunities (Muha, 2009) since the certification signals good management practices. Cost savings are also an important motivation (Muha, 2011), since a single certification replaces several others that customers might otherwise require.

SQAS aspires to include sustainability in its scope, even if it is limited to one sector and is accepted only by CEFIC companies. Although road transport companies undergo assessment through the SQAS system, there is no evidence of what really motivates them to do so. In our attempt to identify some of their motivations, it is worth noting that a favorable SQAS report is a requirement for firms that want to be part of the supply chain of any CEFIC company. The SQAS reports provide an understanding of the strengths and weaknesses of potential logistics providers and allow chemical companies to evaluate them according to their own standards. By its very nature, adopting SQAS attracts companies that want to show their strengths, ensuring that the assessment will not only *not* lead to a decrease in customers, but will actually increase their number to the extent that it helps to improve the image of these organizations. An initial assessment may increase road transport companies' market opportunities, but it may subsequently stimulate competition between them to obtain higher scores. Thus, the assessment and the SQAS report may be used to facilitate a channel of communication between chemical companies and logistics providers as part of a continuous improvement process.

Consequently, in the absence of previous studies on the motivations for carrying out the evaluation through the SQAS system, we considered it appropriate to expand the objectives of our study in order to identify the main motivations behind road transport companies' decisions to adopt SQAS.

Table 1
Motivations for adopting practices in different areas of management.

Area	Implementation of sustainability initiatives (Marchet, Melacini, & Perotti, 2014)	Drivers influencing the adoption of green initiatives (Evangelista et al., 2017)	Implementation of ISO 14001 certifications (Qi, Zeng, Li, & Tam, 2012)	Quality systems adoption (Melão et al., 2018).
Internal	Company environmental improvement		To improve firms' environmental performance	To improve service quality
	Company reputation	To improve corporate image on the market	To enhance companies' image or reputation[1]	To enhance the company's image[1].
	Efficiency increase and cost reduction	Cost reduction	To reduce cost by improving efficiencies	To improve processes and practices
	Corporate desire to do the right thing	Green initiatives requested by top management/strategic board	To improve the level of environmental management	To pursue continuous improvement
		To improve company profitability	To improve the level of environmental risk management	
		To reduce company risk	To enhance employees' skills/training	
			To make better use of resources	
External	Legislative and regulatory compliance	International, national, regional or local regulations		To comply with legal requirements.
	Pressure by customers/ marketing or explicit customer demand	Green initiatives implemented/requested by customers		To respond to customer pressures
		To improve customer relationships		
		To improve the overall customer supply chain effectiveness.		
	Competitive pressures	Green initiatives implemented by competitors	To match competitors' actions	To become a role model for the industry
	Desire to gain competitive advantage			
	To improve company performance			
	Public pressure and societal expectations	Green initiatives implemented by 3PLs partner	To respond to the requirements of entering into an international market	To respond to pressures from other stakeholders
	Collaboration/integration with suppliers	EU, national, regional funding/economic incentives		

Source: The authors, based on the cited works.
  [1]. Although these authors consider the improvement of the corporate image as an external motivation, we have maintained this motivation among the internal factors, following the criteria of the rest of the authors in the table. The concept of improving the corporate image can be associated with both external issues and internal issues, depending on the approach to the recipient of this improvement, internal or external stakeholders.

2.3. Motivations and internalization of the Safety & Quality Assessment for Sustainability (SQAS) system

Numerous authors have highlighted the importance of analyzing the degree of internalization of the practices associated with management systems in the day-to-day running of the company. Most of the literature in this field relates to quality management systems (Escrig-Tena, García-Juan, & Segarra-Ciprés, 2019; Melão et al., 2018; Nair & Prajogo, 2009; Tarí et al., 2014; Tarí, Heras-Saizarbitoria, & Pereira, 2013), although there are also studies in the field of environmental management systems (Zhu, Sarkis, & Lai, 2007). These authors understand internalization as the active use of the practices included in the management standards, with the purpose of modifying organizational behavior and contributing to continuous improvement (Nair & Prajogo, 2009). Other more pragmatic definitions consider internalization to be the process of turning explicit knowledge into tacit knowledge (Cai & Jun, 2018). This stream of literature finds that certification is no guarantee that the practices have been internalized and effectively serve to trigger an improvement process. This also happens in the case of companies assessed with SQAS. In the process of assessment, the third-party report indicates the level reached by the logistics services company in terms of quality, safety, security, and environment at the time it is carried out. It is then up to the company to improve the results of the assessment by establishing improvement plans. Therefore, we can consider that SQAS system is internalized if it is used as part of the organizational routines, with the effective purpose of identifying opportunities and adopting improvements in the evaluated practices, such that the adoption is substantive, rather than rhetorical, and its use impacts on the company's environmental, economic, and social performance.

As noted above, logistics providers may approach the SQAS system instrumentally, driven by the demands of their most powerful stakeholders (Castka, Bamber, Bamber, & Sharp, 2004). The objective in these cases is twofold: to increase trust in the framework of established relationships, and to legitimize their practices (DiMaggio & Powell, 1991; Hoque & Alam, 1999; Scott, 2013). If external pressures are really what motivate the evaluation, and condition it to the point that its internalization is non-existent, we are likely to be dealing with a case of *CSR-washing,* defined by Boiral et al. (2017, p.2) as "a disconnect between the positive image projected to stakeholders with regard to corporate social responsibility and a company's actual internal practices in this area". The question then arises as to whether companies use the SQAS system as an opportunity to change their behavior or, on the contrary, SQAS is steeped in rhetoric and symbolism, with the sole purpose of obtaining the requirement demanded by customers. In other words, whether SQAS involves the use of practices and improvement programs that are taken into account in the company's daily practice or, on the contrary, whether the evaluation is reduced to a mere procedure.

In their attempts to analyze which variables contribute to a true internalization of management standards, researchers have shown that in cases in which organizations are driven by internal motivations to embark on the certification or evaluation process, they are more likely to achieve a more effective adoption of quality management (Boiral, Heras-Saizarbitoria, & Brotherton, 2018; Escrig-Tena et al., 2019) or environmental systems (Todaro, Testa, Daddi, & Iraldo, 2019). This may be because these organizations are driven by the desire to implement changes that help to improve the organization and its performance. Internal motivations therefore have a direct impact on the internalization of quality management systems. If we transfer these arguments to the context of transport and evaluation through the SQAS system, when internal motivations drive transport companies to undergo the evaluation, they are more likely to use the assessment as an opportunity to identify areas for improvement and promote change, resulting in a more substantive assessment. Based on the above arguments, we propose the following hypothesis:

H1.   *The internal motivations for evaluating through the SQAS system in road transport companies are positively related to their degree of internalization.*

On the other hand, there are discrepancies with regard to the relationship between external motivations and internalization, although external motivations seem to have a lower impact than internal motivations (Tarí et al., 2014). In the field of ISO 9000 certification, various authors, such as Heras-Saizarbitoria (2011) and Nair and Prajogo (2009), point out that certain external motivations for certification can drive internalization and that both internal and external motivations help the internalization of practices (Tarí, Heras-Saizarbitoria, & Pereira, 2013; Testa, Boiral, & Iraldo, 2018), although not all of them do so with the same relevance (Escrig-Tena et al., 2019; Tarí et al., 2014).

In contrast, results from other work in the fields of quality management (Escrig-Tena et al., 2019; Lasrado & Nyadzayo, 2020; Tarí, Heras-Saizarbitoria, & Pereira, 2013) and environmental management systems (Castka & Prajogo, 2013; Heras-Saizarbitoria, Arana, & Boiral, 2016), or on the adoption of sustainability practices (Testa, Boiral, & Heras-Saizarbitoria, 2018) suggest that external motivations do not contribute significantly to internalization. Thus, part of the literature advocates a more neoinstitutionalizing perspective, considering that external motivations for adopting systems are pursuing legitimacy (Heras-Saizarbitoria & Boiral, 2013), driven by customer pressure, which tends to encourage greenwashing (Boiral et al., 2017; Testa, Boiral, & Iraldo, 2018). Transferring these results to the case of SQAS, it can be expected that when companies are driven by external motivations, they will be less committed to making changes that contribute to improving the organization, so a substantive internalization of the assessment cannot be expected. Therefore, we propose the following hypothesis:

H2.   *External motivations for evaluating through the SQAS system in road transport companies are not significantly related to their degree of internalization.*

2.4. Internalization of the Safety & Quality Assessment for Sustainability (SQAS) system and sustainability performance

SQAS evaluates and verifies the application of practices but does not evaluate their effectiveness in improving sustainability performance, which is not covered by the evaluation in any way. Although the concept of sustainability associated with performance is not clearly defined, there is some agreement that it covers at least the social, environmental and economic dimensions that make up the Triple Bottom Line (TBL) (Elkington, 1999); these are the dimensions reviewed in this work. It is therefore appropriate to consider whether the effective internalization of the SQAS system can contribute to improving performance, in line with previous research into the internalization of other management practices (e.g., Schons & Steinmeier, 2016; Tarí, Molina-Azorín, López-Gamero, & Pereira-Moliner, 2021).

Extensive literature cautions that adopting environmental standards such as ISO 14001 (Tarí, Molina-Azorín, & Heras, 2013) does not necessarily contribute to improved environmental performance (Mani, Gunasekaran, & Delgado, 2018; Testa, Boiral, & Iraldo, 2018; Todaro et al., 2019). Similarly, and especially in the field of logistics, the adoption of sustainability models and practices is not enough to impact economic performance (Agyabeng-Mensah, Afum, & Ahenkorah, 2020; Huo, Gu, & Wang, 2019; Kusumah & Fabianto, 2018; Laari, Töyli, & Ojala, 2018), if they are not really internalized (Lasrado & Nyadzayo, 2020). Thus, as the literature highlights the importance of management system internalization (Castka & Prajogo, 2013; Qi et al., 2012), the key to the effectiveness of SQAS and its impact on performance may lie in internalization. Organizations that implement SQAS with a low degree of internalization adopt the practices only symbolically and regard the

external assessment as a means to obtain a score, but have no commitment to make improvements in line with the factual assessment report. They make no effort to translate the good practices and opportunities for improvement detected in the assessment into improvements and changes in organizational processes. In fact, their response is the opposite of a true internalization of SQAS, which calls for a firm commitment to the continuous improvement of the practices assessed.

SQAS covers quality, safety, security and environmental practices, which can be recognized as sustainability practices (Green, Inman, Sower, & Zelbst, 2019). Effective internalization of the SQAS system leads to a process of knowledge generation, by identifying both good management practices and areas for improvements, with particular awareness of the needs of the logistics customers that are implicitly reflected in the SQAS system. The existing literature concludes that this commitment to the continuous improvement of practices is what can lead to an improvement in performance. Therefore, this internalization implies a culture of identifying opportunities for improvement in the field of environmental practices (Qi et al., 2012; Tarí et al., 2021; Testa, Boiral, & Heras-Saizarbitoria, 2018; Testa, Boiral, & Iraldo, 2018; Testa, Iraldo, & Daddi, 2018), which would result in an optimization of resource and energy consumption, and by extension, in a reduction in costs, which would help to improve environmental and economic performance (Çankaya & Sezen, 2019), consistent with the resource-based theory (Carter & Rogers, 2008; Peteraf, 1993). In the same way, improving quality management practices can lead to improved employee training, which makes workers more efficient and productive and more committed to the organization and its objectives, as well as continuous improvement (Lasrado & Nyadzayo, 2020; Tarí, Molina-Azorín, Pereira-Moliner, & López-Gamero, 2020). Finally, safety and security practices are an important part of the SQAS system; therefore, certain practices such as implementing the OHSAS 18001 standard have been found to have a positive impact on social outcomes (Lafuente & Abad, 2018; Mohammadfam et al., 2017), although no studies have assessed the role internalization plays in these practices, as Tarí et al. (2021) point out.

In summary, the literature finds that internalization of the SQAS system enables improvements in different dimensions of sustainability performance. Consequently, we propose the following hypotheses:

H3. *The internalization of the SQAS system is positively related to environmental performance.*

H4. *The internalization of the SQAS system is positively related to economic performance.*

H5. *The internalization of the SQAS system is positively related to social performance.*

Fig. 1 shows the proposed hypotheses and graphically represents the proposed research model.

3. Research methodology

3.1. Sample

To answer the research question and test the hypotheses, we surveyed companies that transport dangerous goods by road and that have been assessed according to the SQAS system. The most notable data from the fieldwork are reported in Table 2. The population comprised 175 Spanish companies operating under a common regulatory and safety culture, and sharing the same infrastructure, which had been assessed under the SQAS Transport Service module. This module evaluates road transport logistics providers with their own vehicles following the methodology developed by CEFIC. The list of companies evaluated according to SQAS was obtained from the CEFIT website in September 2019.

Table 2
Summary of fieldwork.

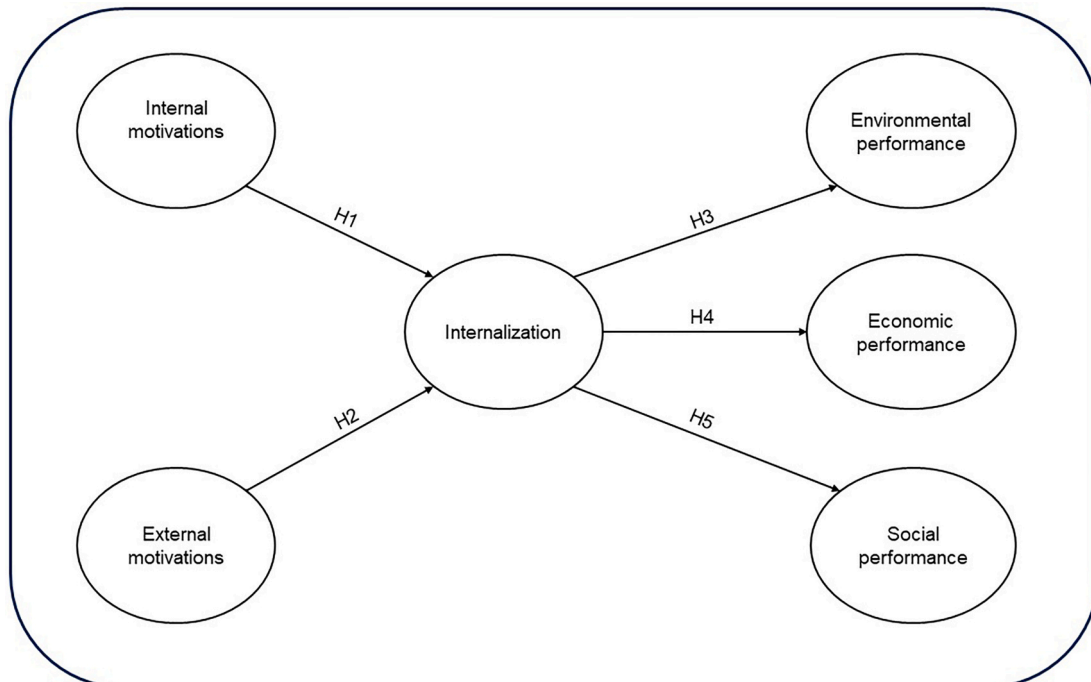| Geographical scope	Spain
Population	Road freight transport companies SQAS (transport service)
Population size	175
Sample size	78
Response rate	44.57
Data collection mode	Google Forms online questionnaire
Field study period	May to December 2020

Fig. 1. Research model.

The questionnaire was pretested through interviews with the managers responsible for the SQAS system in two transport companies, together with the quality manager of a chemical company, during the fourth quarter of 2019. In light of the feedback from these interviews, the wording of some questions was adapted to the characteristics of the sector. The fieldwork was carried out from May to December 2020. The questionnaire was prepared using Google Forms and sent by email to the 175 companies that constituted the target population, with subsequent telephone follow-up to increase the response rate. A total of 78 responses were obtained, 44.57% of the sample population, which represents a sampling error of ±8.24% with a significance level of 5%.

Google Forms was chosen because of its versatility, its compatibility with smartphones (Tourangeau et al., 2018), its integration into other Google tools and the speed and ease of data export. In addition, it generates more confidence than paper questionnaires, particularly when answering sensitive questions (Tourangeau & Yan, 2007).

Because this study analyzes the perception of the SQAS system from the perspective of those responsible for the companies evaluated, the questionnaire was addressed to senior and middle managers. These managers included the person responsible for the SQAS system; security advisors; environmental and quality managers; and managers responsible for the prevention of occupational hazards. Table 3 summarizes the main characteristics of the sample companies.

3.2. Measures

The measures used in this study were developed in accordance with the literature on management systems, sustainability, and internalization of management systems, as explained below. The specific items used to measure each of the variables are shown in Table 5.

Motivations: Since no scale has yet been developed to measure motivations for evaluating through the SQAS system, we relied on the literature on the adoption of quality management models (Cai & Jun, 2018; Gómez-López et al., 2016; Tarí et al., 2014). Specifically, we used the motivation scale for the adoption of EQUASS developed by Melão et al. (2018), which includes three items referring to internal motivations and five referring to external motivations, all of them evaluated on a five-point Likert scale (1 = Not at all important; 5 = Very important).

Internalization. In the literature on the adoption of quality systems, some authors have shown a special interest in the concept of internalization (Escrig-Tena et al., 2019; Nair & Prajogo, 2009; Naveh & Marcus, 2005; Tarí, Heras-Saizarbitoria, & Pereira, 2013). We used Tarí, Heras-Saizarbitoria, and Pereira (2013) three-item scale, originally applied by Christmann and Taylor (2006). These items evaluate the integration of the evaluation into the company's routines, the use of evaluated practices in the day-to-day management, and the improvement plans derived from the evaluation; they are assessed on a 5-point Likert scale (1 = Not at all; 5 = To a very large extent).

Table 3
Characteristics of the companies that make up the sample.

	Characteristics	Number	%
Organization size (number of employees)	Fewer than 10	6	7.7
	Between 10 and 149	35	44.9
	Between 50 and 250	32	41
	>250	5	6.4
Years with SQAS	Less than three years	35	44.87
	More than three years	43	55.12
Other Certifications	ISO 9001	72	92.3
	ISO 14001	58	74.35
	EFQM	1	1.28
	OSHAS 18001	28	35.9
	HS 8000	2	2.56
	IQ Net SR_10	1	1.28
Respondent's position	Quality Manager	52	66.67
	Director (CEO)	16	20.51
	Safety Adviser	13	16.67

Performance. Following previous work (Çankaya & Sezen, 2019; Govindan, Khodaverdi, & Jafarian, 2013; Wu et al., 2015), we measured sustainability performance according to environmental, economic and social performance. The items used to evaluate environmental performance were adapted from Zhu, Sarkis, Lai, and hung. (2008); economic performance was measured with items adapted from Zhu et al. (2007) and Yook, Choi, and Suresh (2018); finally, we drew on measures proposed by Paulraj (2011) to evaluate social performance, which we complemented with specific items on internal social outcomes (Huo et al., 2019; López & Ruiz-Benítez, 2019). The three performance types were evaluated on a 5-point Likert scale that measured the degree of impact of the SQAS system on performance (very low to very high).

Common method bias. The first way to control common method bias is through the questionnaire design (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). First, the questionnaire guaranteed the anonymity and confidentiality of the responses. Second, the questions measuring the dependent, mediating and independent variables appeared on different pages throughout the questionnaire. Finally, we used different measurement scales for the different variables (not at all important/very important; agree/disagree; not at all/to a very large extent; low/high; never/always). In addition, we ran a Harman factor test (Podsakoff et al., 2003), which extracted 5 factors; the first factor represented 31.685% of the variance, thus verifying that there was no single factor that explained most of the variance. Therefore, common method bias does not appear to be a threat in our study.

3.3. Statistical procedure

Descriptive statistical techniques using SPSS were applied to identify the motivations that lead companies to undergo an evaluation through the SQAS system.

Partial least squares (PLS) was used to validate the research model, using SmartPLS software (v. 3.3.3) (Ringle, Wende, & Becker, 2015). This method was chosen because it is a powerful instrument to analyze small samples (Hair, Risher, Sarstedt, & Ringle, 2019), as is the case of the present research.

In relation to the sample size, the G*Power analysis establishes a minimum size of 75, basing the calculation on a size effect of 0.27 and an alpha of 0.95. Therefore, a sample of 78 companies is considered appropriate as it implies a statistical power of 0.95996 for this sample size (Green, 1991; Mayr, Erdfelder, Buchner, & Faul, 2007).

4. Results

4.1. Motivations for the Safety & Quality Assessment for Sustainability (SQAS)

A descriptive analysis of the motivations that lead companies to undergo the SQAS system (Table 4) reveals "respond to customer pressures" as the main motivation, which answers the *research question* raised and is consistent with the feedback obtained from the pretest interviews, and the condition of requirement to access certain customers. It is followed, in order of relevance, by the intention to "enhance

Table 4
Mean score in motivations for assessment.

Motivation	Mean	SD
Respond to customer pressures	4.564	0.612
Enhance the organization's image	4.462	0.634
Comply with legal requirements	4.167	0.883
Respond to pressure from other stakeholders (shareholders, partners...)	3.692	1.371
Become a role model for the transport sector	4.090	1.002
Improve service quality	4.308	0.756
Improve processes and practices	4.282	0.732
Focus on continuous improvement	4.449	0.710

the organization's image", which various authors consider as another external motivation (Melão et al., 2018; Qi et al., 2012). Among the internal motivations, "focus on continuous improvement" is the most outstanding, followed by "improving the quality of service", which denotes a willingness to improve on the part of the sample companies.

The analysis of the measurement model, which is explained in the following point, reveals two explanatory factors of the motivations, referring to internal and external motivations. However, the motivation relating to customer pressure does not load on either of the two extracted factors and can be considered a third explanatory factor of the motivations leading to SQAS. This result corroborates the relevance of customer pressure as a fundamental aspect in the SQAS system.

4.2. Analysis of the measurement model

Since the items used to evaluate the different variables are reflective, the analysis of the measurement model involves examining the individual reliability of the items, the reliability of the construct, as well as the convergent and discriminant validity.

In relation to the individual reliability of the items, the value of the factor loadings must be above 0.707 (Hair et al., 2019). From the analysis of the measurement model we obtained a loading of 0.101 for the motivation "to respond to customer pressure" which is much lower than the recommended value. Given its relevance in the research, we considered it appropriate to incorporate this item as a third explanatory factor of the motivations for adopting SQAS. In turn, the item "meeting the requirements of other stakeholders" was eliminated from the external motivations, since it presented a loading of 0.282. Three groups of motivations are therefore considered: internal motivations, external motivations and the individual item "responding to customer pressure". One item was also eliminated from the internalization construct (To what extent are submissions to the SQAS system prepared at the last minute?) and two items from environmental and economic performance (General improvement of the environmental situation and Improvement of service quality). All were removed because they had loadings below 0.5. Table 5 shows that the loadings for the rest of the items in this study are higher than the recommended value.

Construct reliability was analyzed by taking into account composite reliability, which must have values >0.70 (Hair et al., 2019). As can be seen in Table 5, all the values of this indicator are higher than the threshold. Convergent validity was analyzed by examining the average variance extracted (AVE), which in all cases exceeds the value of 0.50, accepted as admissible in the literature (Hair et al., 2019).

Finally, two methods were used to analyze discriminant validity. The first of these (Fornell-Larcker) requires that the square root of the AVE for each construct be greater than the correlation coefficient between the constructs (Table 6). This method can be problematic when the differences between the loadings are small, which led Hair et al. (2019) to suggest that the heterotrait-monotrait (HTMT) ratio may be more reliable, with values below 0.90 being admissible. Compliance with both criteria can be seen in Table 6.

4.3. Structural model analysis

To evaluate the results of the structural model, two evaluation criteria were taken into account: the coefficient of determination (R^2) and blindfolding-based cross-validated redundancy measure (Q^2), the summary of which is shown in Table 7. It should be noted that all measures of R^2 are above 0.21. In turn, the values of Q2 for all constructs are above 0 (Hair et al., 2019). Therefore, both values suggest that the PLS model has relevance.

A bootstrap test was also carried out with 5000 subsamples and a tail to yield the β values, the t values and the 95% confidence interval to obtain the significance. The results of the estimation of the structural model can be seen in Table 8. Internal motivations have a positive and significant relationship with the internalization of the SQAS system, thus

Table 5
Measurement model results.

Variable	Item	Loading	Average variance extracted (AVE)	Composite reliability (CRI)
Customer pressures	Respond to customer pressures			
External motivations	Enhance the organization's image	0.74	0.55	0.79
	Comply with legal requirements	0.72		
	Become a role model for the transport sector	0.78		
Internal Motivations	Improve service quality	0.93	0.85	0.94
	Improve processes and practices	0.91		
	Focus on continuous improvement	0.91		
Internalization	To what extent are the practices and improvement programs derived from the assessment taken into account in daily practice?	0.97	0.94	0.97
	To what extent are SQAS issues considered in the routine of the organization?	0.97		
Environmental performance	Reduction of atmospheric emissions	0.84	0.71	0.94
	Reduction of liquid waste	0.86		
	Solid waste reduction	0.85		
	Reduction in the consumption of dangerous, toxic or harmful products	0.79		
	Reduction in the frequency of environmental accidents	0.87		
	Reduction of energy consumption	0.86		
	Improvement of process efficiency and productivity	0.83		
Economic performance	Increase sales margins	0.86	0.76	0.93
	Reduction of operational and environmental costs	0.93		
	Reduction of costs for purchases of materials	0.93		
Social performance	Increased employee motivation and engagement	0.92	0.81	0.95
	Reduction in stress in the work environment	0.90		

(continued on next page)

Table 5 (*continued*)

Variable	Item	Loading	Average variance extracted (AVE)	Composite reliability (CRI)
	Increased health and safety in the work environment	0.88		
	Increase in the skills and training of workers	0.91		

corroborating H1. However, there was no evidence of a relationship between internalization and the factor that collects external motivations or with the factor "responding to customer pressure", thus validating H2. In addition, internalization has a positive and significant relationship with all sustainability performance, which corroborates hypotheses H3, H4 and H5.

5. Discussion and conclusion

This study analyzes the motivations for undertaking an evaluation through the SQAS system among road transport companies carrying dangerous goods and the internalization of this assessment in their day-to-day operations, in an attempt to evaluate its usefulness as a management system for sustainability beyond its function to evaluate suppliers.

The results show that companies are mainly driven by external motivations when deciding to evaluate through the SQAS system. They are influenced to undergo the assessment in the first place by external pressures, since it gives them access to a logistics market in which it is a requirement. In contrast, internal motivations are what drive the internalization of the assessment. This internalization is manifested in the integration of the SQAS system into the company's daily activities, generating a culture of continuous improvement in the organization and facilitating a positive impact on its environmental, economic and, especially, social performance. In this sense, the SQAS system seems to behave similarly to the quality, environmental, and health and safety certifications, the effectiveness of which, beyond the mere adoption of the standard, is conditioned by the commitment to and internalization of the practices associated with them.

5.1. Theoretical implications

First, the SQAS system was developed and is used solely by the chemical industry. No logistics providers undergo such an assessment other than to access that market. Consequently, the main reason for its adoption is external, based on the need to respond to these customer

pressures. As with this customer pressure, the second motivation that drives the evaluation is also external, and responds to image issues that are in line with the main neoinstitutionalizing motivations (Boiral et al., 2017; DiMaggio & Powell, 1983). This interest in improving image leads us to consider the possibility that the evaluation is an attempt at *CSR-washing* (Boiral et al., 2017), or in this case, *security-washing,* given the particular nature of the goods.

Secondly, the study shows the importance of internal motivations in the internalization of the SQAS system, in line with previous research addressing the internalization of other practices or management systems (Heras-Saizarbitoria et al., 2016; Qi et al., 2012; Tarí, Heras-Saizarbitoria, & Pereira, 2013). However, we cannot affirm that external motivations lead to internalization, a conclusion that coincides with those of studies analyzing the internalization of other models, such as Escrig-Tena et al. (2019) or Testa, Boiral, and Iraldo (2018). Thus, pursuing a favorable SQAS report because of external motivations could lead to a more symbolic than a substantial use of the assessment.

The results of our research also confirm that the internalization of the SQAS system contributes to improving sustainability performance. This result coincides with some prior studies (e.g. Çankaya & Sezen, 2019; Roehrich, Hoejmose, & Overland, 2017), which consider that in order to have an impact on performance, management systems, certifications or evaluations depend directly on how committed the company is to using them. An examination of the different dimensions of sustainability reveals similar results that support the positive relationship between internalization of practices and environmental (Qi et al., 2012; Tarí et al., 2021; Testa, Iraldo, & Daddi, 2018), economic (Aslam, Elmagrhi, Rehman, & Ntim, 2021; Hernandez-Vivanco, Domingues, Sampaio, Bernardo, & Cruz-Cázares, 2019) and social performance (Shou, Shao, Lai, Kang, & Park, 2019; Testa, Boiral, & Heras-Saizarbitoria, 2018).

5.2. Practical implications

This study and its results provide evidence of potential lines of action that managers of the organizations assessed in SQAS can follow to take advantage of the inertia generated by the assessment. Crucially, companies assessed in SQAS should integrate into their daily operations the practices included in the evaluation, in order to obtain more competitive advantages and more significant improvements in sustainability performance. Road transport companies should regard the SQAS system report as a way to continuously improve the assessed practices such as

Table 7
Validity of the structural model.

Construct	R2	Q2
Internalization	0.250	0.200
Economic performance	0.210	0.130
Environmental performance	0.240	0.130
Social performance	0.260	0.320

Table 6
Discriminant validity. Fornell-Larcker / HTMT.

	Fornell-Larcker							HTMT					
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[1]	[2]	[3]	[4]	[5]	[6]
Customer pressures [1]	**1.00**												
External motivations [2]	0.07	**0.74**						0.12					
Internal motivations [3]	−0.17	0.55	**0.92**					0.18	0.74				
Internalization [4]	0.02	0.32	0.49	**0.97**				0.02	0.43	0.52			
Environmental performance [5]	0.04	0.49	0.55	0.49	**0.84**			0.08	0.64	0.60	0.51		
Economic performance [6]	0.18	0.43	0.47	0.46	0.74	**0.87**		0.19	0.58	0.51	0.48	0.81	
Social performance [7]	0.05	0.40	0.52	0.67	0.81	0.68	**0.90**	0.05	0.54	0.56	0.72	0.87	0.73

Notes
The diagonal values (bold) are square roots of AVE. The other values of the matrix are the correlations between the constructs. To check discriminant validity, the diagonal values in bold must be greater than those not in bold.
To check discriminant validity based on HTMT criterion, HTMT values should be <0.90.

Table 8
Test results of hypotheses.

Hypothesis	Path	Path coefficient	Standard Deviation	t-value (1-tailed)	*p*-values	Accepted
H1	Internal motivations to Internalization (+)	0.47	0.13	3.63	0.000	Yes
	Customer pressures to Internalization	0.09	0.12	0.78	0.22	Yes
H2	External motivations to Internalization	0.06	0.12	0.53	0.30	Yes
H3	Internalization to Environmental performance (+)	0.50	0.10	5.25	0.000	Yes
H4	Internalization to Economic performance (+)	0.46	0.10	4.52	0.000	Yes
H5	Internalization to Social performance (+)	0.67	0.07	9.34	0.000	Yes

risk management, health of employees, the protection of the environment, emergency preparedness and response, equipment inspection, safety of all operations, or meeting the customer's requirement at all times. In addition, these practices are compatible with other standards and certifications and may lead to complementary synergies that generate greater impacts on performance, as other authors have shown (Hernandez-Vivanco et al., 2019).

For customers who require their transport providers to have an SQAS report, the evidence indicates that the strategy to generate impacts on performance must involve obtaining the commitment to the assessment by their logistics providers, their safety advisors, and their environmental, health and safety managers. Therefore, if for the chemical industry the purpose of the assessment is to generate sustainability, it is more relevant to obtain the commitment of its logistics suppliers, thus achieving internal motivations, than to include the assessment as a contracting requirement, namely an external motivation. This is consistent with other studies showing that collaboration is the best way to improve outcomes for both parties involved (Foo, Lee, Tan, & Ooi, 2018; Sancha, Wong, & Gimenez, 2019; Sancha, Wong, & Gimenez Thomsen, 2016). Hence, if the evaluation includes this collaboration, the impact on performance would probably be greater (Giménez, Sierra, & Rodon, 2012).

5.3. Limitations and future lines of research

Several factors should be considered to interpret the results. The study is limited to SQAS Transport Service companies, so all conclusions are limited to this context. In addition, the study is a snapshot in time and does not allow analysis of the dynamics of the relationship between motivations, evaluation through the SQAS system and performance. Future research should consider longitudinal studies in order to assess the internalization and its relationship with performance more precisely. Such studies would shed light on how the SQAS system can generate certain organizational routines and improvement plans and the way in which they can improve performance. In addition, analysis of the years from the first assessment would identify differences in the internalization of the assessment depending on the experience gained. Certain constructs such as social outcomes could also be examined, differentiating between internal and external outcomes as some authors have suggested. Likewise, future case studies of SQAS-assessed companies could analyze the dynamics of the assessment and improve its value proposal in terms of sustainability.

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CRediT authorship contribution statement

Juan-Luis Torres-Rubira: Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing, Visualization. **Ana B. Escrig-Tena:** Conceptualization, Supervision, Methodology, Writing – original draft, Writing – review & editing, Visualization. **Miguel-Angel López-Navarro:** Conceptualization, Supervision, Methodology, Writing – original draft, Writing – review & editing, Visualization.

Declaration of Competing Interest

None.

Data availability

Data will be made available on request.

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