

Ilyos S. Abdullayev
Ruzanna M. Hajoyan
Igor V. Denisov
Dmitry A. Lipinsky¹

BALANCING LEGAL AND CORPORATE RESPONSIBILITY WITHIN A SYSTEMIC APPROACH TO STATE AND BUSINESS MANAGEMENT OF PRODUCT QUALITY

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Abstract: *The research aims to develop a systemic approach to state and entrepreneurial management of product quality in developing countries. To this end, empirical evidence on quality management in developing countries in 2026 from regions such as Europe, Central Asia, East and South Asia, Latin America and the Caribbean, the Middle East and North Africa, and Sub-Saharan Africa is systematized and reinterpreted from the perspective of facilitating the transition to ISO 9001 and ISO 14001 standards. Using correlation analysis, the authors quantitatively assessed the contribution of various legal and corporate responsibility measures to aligning national products of developing countries with international quality standards. The principal conclusion of this research is that the effectiveness of quality management measures varies significantly across domains (state and entrepreneurial governance) and across world regions. In light of this, the proposed systemic approach to product quality management is distinguished by the integrated implementation of measures in state and entrepreneurial governance and by a focus on those measures that yield the highest returns in terms of product quality. This approach ensures an optimal balance between legal and corporate responsibility in managing product quality.*

Keywords: *legal responsibility, corporate responsibility, responsibility for quality, systemic approach, public administration, entrepreneurial management, product quality management.*

1. Introduction

Product quality is a complex scientific and economic category. Although its meaning is defined in the academic literature, particularly in the works of Hejazi (2025) and Lazic et al. (2025), it is difficult to measure quantitatively because such measurement is influenced by the “human factor.” The socio-cultural and economic-institutional environment largely shapes how market

participants subjectively perceive product quality. For this reason, pronounced differences exist in the perception of the quality of the same product among representatives of different countries, reflecting the specifics of their national consumer preferences, and even among consumers within a single country, considering their individual preferences.

Different categories of stakeholders apply their own criteria to assess product quality.

¹ Corresponding author: Dmitry A. Lipinsky

Email: dmitri8@yandex.ru

Manufacturers evaluate quality in terms of compliance with internal corporate standards (i.e., the absence of defects). In turn, government regulators monitor product quality in the markets under their jurisdiction to ensure compliance with existing national quality standards. Counterparties require their business partners to adhere to the quality standards they have established, often uniform across a shared supply and distribution chain. Meanwhile, consumers judge product quality based on their personal tastes, sometimes changing their assessments with shifts in mood.

As a result, evaluative measurements of product quality are inherently vague, international comparisons of quality are difficult, and the interests of stakeholders are not fully considered because each assessment focuses on a single stakeholder group without considering the views and interests of others, which are often conflicting. For example, a product may be free of defects, comply with national requirements, and be unattractive to consumers and receive low ratings from them, or sell well in one country while facing weak demand in another.

Most product-related indicators available in official statistics are quantitative rather than qualitative in nature. For instance, GDP volume and economic growth rates reflect quantitative increases in production and exports, which are not necessarily driven by high product quality. In a market environment, price and quality are closely intertwined, and demand is usually shaped by a subjective assessment of how attractive and advantageous the price-quality ratio is.

Strong domestic sales may occur not because of high product quality but due to limited competition resulting from protectionist foreign trade policies. Likewise, stable export sales may be driven less by product quality than by favorable exchange rates or intergovernmental trade agreements governing the supply of such products.

The most universal, accurate, and objective criterion of product quality is its compliance

with international standards, confirmed by official certification. The advantage of this criterion lies in its ability to enable cross-country comparisons of products while abstracting from the specifics of the socio-economic environment, to “purify” the assessment from the influence of the human factor, and to comprehensively incorporate the interpretations of quality held by all stakeholder groups.

However, a key problem is that the managerial aspects of product quality remain insufficiently developed in the scientific and economic literature. This weakens the methodological support for ensuring high product quality, hinders its achievement in business practice, and reduces the effectiveness of quality management. International quality standards are based on best practices from developed countries, whose economies provide favorable conditions for compliance with these standards.

Unlike developed economies, developing countries lack a favorable environment and are therefore compelled to make substantial efforts to implement international product quality standards. Owing to the misalignment between public and entrepreneurial quality management, the transition of developing countries to international quality standards is slow. This results in low global competitiveness of companies from these countries, hampers their entry into world markets, constrains the realization of their export potential, and slows economic growth, thereby exacerbating global economic inequality.

Countries in each region of the world economy require their own methodological frameworks that account for regional-specificities in product quality management. The foregoing establishes the relevance of the conducted research, which aims to develop a systemic approach to public and entrepreneurial management of product quality in developing countries. Achievement of this objective is supported by addressing

the following research tasks, which are sequentially pursued in the article and define its structure and content.

The first task is to measure and compare the contribution of various legal and corporate responsibility measures to aligning national products with international quality standards across regions of the world economy. The second task is to assess the balance between legal and corporate responsibility, as manifested in product quality management, across developing countries from different regions of the world economy. The third task is to formulate recommendations to ensure a more balanced approach to legal and corporate responsibility in product quality management, aimed at improving product quality across different regions of the global economy, while considering their identified specificities.

2. Literature Review

2.1. The Terminological Framework for Research on Public and Entrepreneurial Management of Product Quality

The theoretical foundation of the research presented in this article is formed by the scientific and economic concept of product quality management, according to which two domains of such management are distinguished based on the nature of the managing actors:

- Public administration, within which the managing actors are public economic authorities that define the regulatory and legal framework and create regulatory incentives for product quality certification in accordance with international standards. These actors exercise legal responsibility for product quality (Buryk et al., 2025; Margaryan & Terzyan, 2023; Mayilyan & Torosyan, 2023);
- Entrepreneurial management, within which business entities act as the managing actors, marketing their products and aligning their activities with international quality standards. These

actors exercise corporate responsibility for product quality (Mkrtchyan et al., 2023).

In general, product quality management is understood as the implementation of managerial measures to ensure product quality compliance with international standards and to formally confirm this compliance through quality certification (Charvi et al., 2025).

2.2. The Existing Approach to Product Quality Management in Developing Countries: An Analysis of Its Shortcomings and Gaps in the Literature

The existing approach to product quality management in developing countries involves the isolated implementation of management within its two identified domains, as well as the selection of measures based on their availability. In the domain of public management of product quality, the following key measures are applied:

- Ensuring high-quality government regulation of the economy, which simplifies and accelerates product quality certification (Bogoviz et al., 2018);
- Guaranteeing the rule of law in the resolution of economic disputes, thereby enhancing the investment attractiveness of product quality certification (Salnazaryan et al., 2022);
- Maintaining the stability of state regulation of entrepreneurship, which enables the implementation of long-term investment projects aimed at improving product quality (Morhachov et al., 2024);
- Promoting the development of a progressive business culture that creates regulatory incentives for quality standardization in line with international standards (Sozinova et al., 2023).

In the domain of entrepreneurial management of product quality, the main measures include the following:

- Financing innovative projects aimed at improving product quality (Raymbaev et al., 2017);
- Increasing the knowledge intensity of jobs to more fully unlock the potential of intellectual resources in improving product quality and achieving its certification (Bratukhina et al., 2025);
- Cooperation with universities in the field of innovation to support growth in product quality (Mamurova et al., 2025);
- Business integration through the formation of economic clusters of enterprises to pool efforts and resources in joint initiatives to improve product quality and obtain their certification (Litvinova et al., 2015).

Product quality is measured in terms of its certified compliance with the following standards:

- The organizational and technical quality standard ISO 9001 (Adedej, 2025; Susanto et al., 2025);
- The environmental quality standard ISO 14001 (Riillo, 2025; Song et al., 2026).

Based on the review of the existing research literature on the topic, it is concluded that the considered problem has been extensively studied and rests on a solid theoretical foundation. Simultaneously, a gap in the literature is identified, related to the lack of clarity regarding the benefits of implementing specific management measures for product quality across regions of the world economy. In this context, the research poses the research question of what contribution each management measure makes to ensuring product quality and how this contribution differs across regions of the world economy. Selected examples of empirical experience in product quality management in developing

countries are presented in the works of Bogoviz et al. (2016), Hakhverdyan and Badadyan (2023), and Melkamu (2025), which note significant regional differences in this management. On this basis, the following hypothesis (H) is advanced in the article: “the effectiveness of quality management measures in developing countries is strongly differentiated across management domains (public and entrepreneurial) and across world regions.”

3. Materials and Methods

3.1. Research Sample and Its Scientific Rationale

This research is conducted across six regions of the world economy, with three developing countries examined in each region. The countries were selected based on the criterion of the greatest completeness of available statistical data for 2026 (as of the beginning of the year, based on 2025 results) in the WIPO (2025). materials. The sample includes countries from the following regions: Europe (Armenia, Russia, and Serbia), Central Asia (Kazakhstan, Kyrgyzstan, and Uzbekistan), East and South Asia (China, India, and Indonesia), Latin America and the Caribbean (Brazil, Ecuador, and Peru), the Middle East and North Africa (Iran, Saudi Arabia, and the UAE), and Sub-Saharan Africa (Rwanda, South Africa, and Zambia). The research sample is presented in Table 1.

The indicators of product quality are the monetary valuations of valid product quality certificates under the ISO 9001 (StfQlt₁) and ISO 14001 (StfQlt₂) standards. The indicators of public quality management include the quality of government regulation of the economy (SMqm₁), the strength of the state guarantee of the rule of law (SMqm₂), the stability of state regulation of entrepreneurship (SMqm₃), and the intensity of government support for the development of a progressive business culture (SMqm₄).

Table 1. Statistics of public and entrepreneurial product quality management across regions of the world economy in 2026

Region of the world economy	Country	ISO 14001 environment, bn PPP\$ GDP	ISO 9001 quality, bn PPP\$ GDP	Regulatory quality, score 0–100	Rule of law, score 0–100	Policy stability for doing business, score 0–100	Entrepreneurship policies and culture, score 0–100	GERD financed by business, score 0–100	Knowledge-intensive employment, %	University-industry R&D collaboration, score 0–100	State of cluster development, score 0–100
		StfQt1 _t	StfQt2 _t	SMqm ₁	SMqm ₂	SMqm ₃	SMqm ₄	PMqm ₁	PMqm ₂	PMqm ₃	PMqm ₄
Europe	Armenia	0.3	0.1	47.8	49.3	45.9	54.9	16.7	29.4	17.9	36.9
	Russia	0.1	0.3	20.9	23.4	36.8	20.3	29.2	45.8	33.8	48.2
	Serbia	11.0	19.9	49.9	50.4	41.4	41.4	0.9	31.8	27.2	41.5
Central Asia	Kazakhstan	0.3	0.5	48.3	41.4	39.4	49.5	47.4	0.0	18.1	27.7
	Kyrgyzstan	0.1	0.2	32.5	23.7	33.7	0.0	6.9	20.9	21.5	34.1
	Uzbekistan	4.2	5.5	33.4	32.0	59.7	92.8	42.4	0.0	33.5	60.1
East & South Asia	China	9.8	18.3	38.5	51.3	73.0	69.2	79.3	0.0	65.3	96.9
	India	0.9	4.0	43.6	56.8	38.7	69.7	40.6	11.6	28.2	41.9
	Indonesia	0.8	2.3	53.7	48.5	77.4	72.2	8.0	11.1	64.8	86.6
LAC	Brazil	0.8	4.1	39.9	44.7	14.3	18.7	43.2	25.1	29.5	40.6
	Ecuador	0.8	4.5	30.2	29.0	21.2	18.9	0.0	13.0	23.4	23.0
	Peru	2.8	4.9	53.5	39.2	31.2	23.9	0.0	15.8	18.8	29.2
MENA	Iran	0.2	1.2	7.8	26.5	9.1	6.2	0.0	20.6	17.0	32.4
	Saudi Arabia	1.1	2.4	58.7	62.3	77.1	81.8	39.4	0.0	53.0	92.9
	UAE	4.4	8.1	70.8	73.7	85.1	100.0	0.0	33.9	59.0	89.6
Sub-Saharan Africa	Rwanda	0.3	1.0	49.6	57.2	85.2	0.0	0.6	9.5	41.4	60.3
	South Africa	1.4	5.3	41.6	54.3	33.6	16.3	28.7	24.0	44.1	50.7
	Zambia	0.2	0.4	35.3	39.4	72.1	0.0	0.0	11.3	42.9	67.0

Source: Developed by the authors based on the materials from WIPO (2025).

The indicators of entrepreneurial quality management include the scale and effectiveness of financing innovative projects aimed at improving product quality (PMqm₁), the share of knowledge-intensive jobs (PMqm₂), the level of enterprise-university collaboration in innovation activities (PMqm₃), and the intensity of business integration through the formation of economic clusters of enterprises (PMqm₄).

3.2. Research Sequence and Methods

The first task consists of measuring and comparing the contribution of various legal and corporate responsibility measures to aligning national products with international quality standards across regions of the world economy. To address this task, the method of correlation analysis is applied, through which the correlations between product quality indicators (StfQt₁₋₂) and the indicators of public (SMqm₁₋₄) and corporate (PMqm₁₋₄) management of this quality are calculated for

each of the six regions of the world economy under study.

The most effective management measures, those with the highest correlation coefficients, are identified in each region. Multiple correlation coefficients are also calculated, combining measures within each of the two examined domains of quality management; these coefficients are then compared. Hypothesis H is tested using the method of variance analysis. Within this method, the variation of correlation coefficients across regions of the world economy is calculated for each management measure. Hypothesis H is considered confirmed if the coefficients of variation take high values, exceeding 50% in absolute terms.

The second task is to assess the balance between legal and corporate responsibility manifested in product quality management in developing countries across different regions of the world economy. To solve this task, the comparative analysis method is employed, in which the arithmetic means of the quality indicators and the selected management measures for each region are compared with the arithmetic mean for the entire sample presented in Table 1.

The third task involves formulating recommendations to ensure a more balanced approach to legal and corporate responsibility in product quality management, with the aim of improving product quality across different regions of the global economy, while accounting for their specificities. To address this task, the selected management measures (identified as the most practically useful) are determined for which regional values fall below the sample average and, accordingly, are in greatest need of intensified application in the respective region.

4. Results

4.1. The Contribution of Various Legal and Corporate Responsibility Measures to Improving Product Quality Across World Regions

To address the first task (i.e., to measure and compare the contribution of various legal and corporate responsibility measures to aligning national products with international quality standards across regions of the world economy), the authors conducted a correlation analysis of the statistics presented in Table 1. The results of this analysis are presented in Table 2.

Table 2. Results of the Correlation Analysis

World region	Calculated indicators	Values of the calculated indicators in relation to							
		SMqm ₁	SMqm ₂	SMqm ₃	SMqm ₄	PMqm ₁	PMqm ₂	PMqm ₃	PMqm ₄
Europe	Correlation with StfQlt ₁	0.5684	0.5444	0.0224	0.1417	-0.9046	-0.3929	0.0816	-0.1226
	Correlation with StfQlt ₂	0.5478	0.5234	-0.0024	0.1171	-0.8937	-0.3699	0.1063	-0.0979
Central Asia	Correlation with StfQlt ₁	-0.4165	0.0074	0.9861	0.8684	0.4380	-0.5370	0.9677	0.9735
	Correlation with StfQlt ₂	-0.4100	0.0145	0.9873	0.8719	0.4444	-0.5430	0.9658	0.9718
East & South Asia	Correlation with StfQlt ₁	-0.7638	-0.1751	0.3985	-0.6361	0.8940	-0.9989	0.5018	0.6373
	Correlation with StfQlt ₂	-0.8171	-0.0887	0.3171	-0.7009	0.9296	-0.9909	0.4246	0.5678
LAC	Correlation with StfQlt ₁	0.9101	0.1703	0.9139	0.9994	-0.5000	-0.2962	-0.8229	-0.1682
	Correlation with StfQlt ₂	0.5810	-0.3452	0.9944	0.8825	-0.8660	-0.7341	-0.9967	-0.6385

Table 2. Results of the Correlation Analysis (continued)

World region	Calculated indicators	Values of the calculated indicators in relation to							
		SMqm ₁	SMqm ₂	SMqm ₃	SMqm ₄	PMqm ₁	PMqm ₂	PMqm ₃	PMqm ₄
MENA	Correlation with StfQlt ₁	0.7898	0.8204	0.7342	0.7910	-0.3133	0.6583	0.7585	0.6288
	Correlation with StfQlt ₂	0.7637	0.7960	0.7054	0.7650	-0.3524	0.6889	0.7308	0.5960
Sub-Saharan Africa	Correlation with StfQlt ₁	0.0066	0.4317	-0.9486	0.9972	0.9984	0.9821	0.7883	-0.9407
	Correlation with StfQlt ₂	0.0439	0.4650	-0.9362	0.9937	0.9956	0.9744	0.7647	-0.9527
Variation across regions, %		416.86	146.09	201.40	123.51	1085.83	-573.13	185.34	580.58
Arithmetic mean of the coefficients of variation: 270.81									

Source: Developed by the authors.

According to the results presented in Table 2, the most effective managerial measures in Europe (as indicated by the highest correlation coefficients) are ensuring high-quality government regulation of the economy (correlation with ISO 14001: 0.5684; with ISO 9001: 0.5478) and guaranteeing the rule of law (correlation with ISO 14001: 0.5444; with ISO 9001: 0.5234). Both measures fall within the sphere of public governance of product quality and provide a moderate benefit for the adoption of international quality standards.

In Central Asia, the range of effective managerial measures is broader: it includes a larger number of measures from both governance domains, and the benefits derived from these measures are more pronounced. In the area of public governance, two product quality management measures yield a clearly significant effect: maintaining the stability of government regulation of entrepreneurship (correlation with ISO 14001: 0.9861; with ISO 9001: 0.9873) and promoting the development of a progressive business culture (correlation with ISO 14001: 0.8684; with ISO 9001: 0.8719).

In the area of entrepreneurial management of product quality, three measures are available. Two of them are core measures – cooperation with universities in innovation to support improvements in product quality (correlation with ISO 14001: 0.9677; with ISO 9001: 0.9658) and business integration through participation in economic clusters of

enterprises (correlation with ISO 14001: 0.9735; with ISO 9001: 0.9718). The third is an additional measure (with a less pronounced but still promising effect): financing innovative projects aimed at improving product quality (correlation with ISO 14001: 0.4380; with ISO 9001: 0.4444).

In East and South Asia, the most significant contribution to the transition toward international product quality standards comes from measures related to entrepreneurial management. In particular, the primary measure (with a strong effect) is financing innovative projects aimed at improving product quality (correlation with ISO 14001: 0.8940; with ISO 9001: 0.9296), alongside two measures with a moderate effect: business integration through participation in economic clusters of enterprises (correlation with ISO 14001: 0.6373; with ISO 9001: 0.5678) and cooperation with universities in innovation to support improvements in product quality (correlation with ISO 14001: 0.5018; with ISO 9001: 0.4246).

The only effective measure of entrepreneurial management of product quality is maintaining the stability of government regulation of entrepreneurship (correlation with ISO 14001: 0.3985; with ISO 9001: 0.3171). The benefit of this measure is moderate, indicating its secondary importance.

In LAC, only measures from the sphere of public governance are effective. There are three such measures, and all of them generate

a strong effect: maintaining the stability of government regulation of entrepreneurship (correlation with ISO 14001: 0.9139; with ISO 9001: 0.9944), promoting the development of a progressive business culture (correlation with ISO 14001: 0.9994; with ISO 9001: 0.8825), and ensuring high-quality government regulation of the economy (correlation with ISO 14001: 0.9101; with ISO 9001: 0.5810).

In MENA, the range of available product quality management measures is the broadest, encompassing both governance domains. In the sphere of public governance, all four of the considered measures are effective, and all of them provide a strong effect for the certification of product quality according to international standards. These include ensuring high-quality government regulation of the economy (correlation with ISO 14001: 0.7898; with ISO 9001: 0.7637), guaranteeing the rule of law (correlation with ISO 14001: 0.8204; with ISO 9001: 0.7960), maintaining the stability of government regulation of entrepreneurship (correlation with ISO 14001: 0.7342; with ISO 9001: 0.7054), and promoting the development of a progressive business culture (correlation with ISO 14001: 0.7910; with ISO 9001: 0.7650).

The set of effective measures in the field of entrepreneurial management is less extensive, and their impact is somewhat less pronounced, though still quite substantial. These measures include cooperation with universities in the field of innovation (correlation with ISO 14001: 0.7585; with ISO 9001: 0.7308), increasing the knowledge intensity of jobs (correlation with ISO 14001: 0.6583; with ISO 9001: 0.6889), and business integration through participation in economic clusters of enterprises (correlation with ISO 14001: 0.6288; with ISO 9001: 0.5960).

In Sub-Saharan Africa, measures belonging to the sphere of entrepreneurial management of product quality are markedly more effective, particularly the financing of innovative projects (correlation with ISO 14001: 0.9984; with ISO 9001: 0.9956),

increasing the knowledge intensity of jobs (correlation with ISO 14001: 0.9821; with ISO 9001: 0.9744), and cooperation between enterprises and universities in the field of innovation (correlation with ISO 14001: 0.7883; with ISO 9001: 0.7647).

Two product quality management measures from the sphere of public governance are also effective: promoting the development of a progressive business culture (correlation with ISO 14001: 0.9972; with ISO 9001: 0.9937) as a primary measure (with a strong effect) and guaranteeing the rule of law (correlation with ISO 14001: 0.4317; with ISO 9001: 0.4650) as a secondary measure (with a moderate effect).

The multiple correlation between the cost of certificates of conformity to the organizational and technical quality standard ISO 9001 and the four considered measures from the sphere of public quality governance amounted to 0.4002; with the four considered measures from the sphere of entrepreneurial quality management, it was 0.3896 (arithmetic mean: $(0.4002 + 0.3896) / 2 = 0.3949$); and with the full set of eight studied measures, it reached 0.4751.

Similarly, the multiple correlation between the cost of certificates of conformity to the environmental quality standard ISO 14001 and the four considered measures from the sphere of public quality governance amounted to 0.3960; with the four considered measures from the sphere of entrepreneurial quality management, it was 0.3769 (arithmetic mean: $(0.3960 + 0.3769) / 2 = 0.3864$); and with the full set of eight studied measures, it reached 0.4370.

Therefore, the integrated application of measures from both spheres of quality management creates a “synergistic effect,” whereby the association of these measures with international product quality certification is stronger than when they are implemented in isolation – 0.4751 instead of 0.3949 for ISO 9001, and 0.4370 instead of 0.3864 for ISO 14001. At the same time, the variation of correlation coefficients across

regions of the global economy for each studied managerial measure proved to be very high (exceeding 50% in absolute value), while the arithmetic mean of the coefficients of variation across all measures amounted to 270.81%, thereby confirming the proposed hypothesis.

Thus, the existing approach to product quality management in developing countries is insufficiently effective because not all applied measures are effective across all regions of the global economy, and the most beneficial measures in many regions belong to both spheres of management.

Adherence to the existing approach leads to a dispersion of managerial efforts and slows the transition of developing countries to international product quality standards. As a preferable alternative, a new (systemic) approach to public and entrepreneurial management of product quality is proposed.

The developed approach provides for the joint implementation of management in its two identified spheres, as well as the selection of measures based on their contribution to quality.

4.2. Monitoring the Balance Between Legal and Corporate Responsibility in Product Quality Management Across World Regions

To address the second objective and assess the balance between legal and corporate responsibility manifested in product quality management in developing countries across different regions of the global economy, this balance was monitored by comparing the arithmetic means of quality indicators and selected indicators of managerial measures with the arithmetic mean for the entire sample from Table 1. The results of this monitoring are presented in Table 3.

Table 3. Monitoring results (Source: Developed by the authors)

Region of the global economy	Arithmetic mean values by region of the world									
	StfQlt ₁	StfQlt ₂	SMqm ₁	SMqm ₂	SMqm ₃	SMqm ₄	PMqm ₁	PMqm ₂	PMqm ₃	PMqm ₄
Europe	3.80	6.77	41.37	39.53	41.03	38.87	15.60	26.30	42.20	35.67
Central Asia	1.53	2.07	44.27	38.07	32.37	47.43	32.23	24.37	40.63	6.97
East & South Asia	3.83	8.20	63.03	45.27	52.20	70.37	42.63	52.77	75.13	7.57
LAC	1.47	4.50	22.23	41.20	37.63	20.50	14.40	23.90	30.93	17.97
MENA	1.90	3.90	57.10	45.77	54.17	62.67	13.13	43.00	71.63	18.17
Sub-Saharan Africa	0.63	2.23	63.63	42.17	50.30	5.43	9.77	42.80	59.33	14.93
Global averages	2.19	4.61	48.61	42.00	44.62	40.88	21.29	35.52	53.31	16.88
Region of the global economy	Ratio of regional averages to global averages, %									
	StfQlt ₁	StfQlt ₂	SMqm ₁	SMqm ₂	SMqm ₃	SMqm ₄	PMqm ₁	PMqm ₂	PMqm ₃	PMqm ₄
Europe	73.16	46.75	-14.89	-5.87	-8.03	-4.92	-26.74	-25.96	-20.84	111.32
Central Asia	-30.13	-55.18	-8.93	-9.37	-27.46	16.04	51.37	-31.40	-23.78	-58.72
East & South Asia	74.68	77.83	29.68	7.78	17.00	72.14	100.21	48.55	40.93	-55.17
LAC	-33.16	-2.41	-54.26	-1.90	-15.65	-49.85	-32.38	-32.72	-41.98	6.45
MENA	-13.42	-15.42	17.48	8.97	21.40	53.30	-38.33	21.05	34.37	7.64
Sub-Saharan Africa	-71.14	-51.57	30.92	0.40	12.74	-86.71	-54.14	20.49	11.30	-11.52

As shown in Table 3, the quality of government regulation of the economy and the strength of the rule-of-law guarantee in Europe are below the sample average by 14.89% and 5.87%, respectively. However, the cost of certificates of conformity to quality standards in Europe is significantly above the sample average, exceeding it by 73.16% for ISO 14001 and by 46.75% for ISO 9001.

In Central Asia, within the sphere of entrepreneurial management of product quality, the volume of financing for innovative projects aimed at improving product quality exceeds the sample average by 51.37%, while the prevalence of business integration through participation in economic clusters of enterprises is below the sample average by 58.72%. Additionally, the intensity of cooperation between enterprises and universities in innovation to improve product quality is 23.78% below the sample average.

In the sphere of public governance of product quality, the intensity of promoting the development of a progressive business culture is 16.04% above the sample average, whereas the stability of government regulation of entrepreneurship is 27.46% below the sample average. At the same time, the cost of certificates of conformity to quality standards in Central Asia is significantly below the sample average, by 30.13% for ISO 14001 and by 55.18% for ISO 9001.

In East and South Asia, within the sphere of entrepreneurial management of product quality, the volume of financing for innovative projects aimed at improving product quality exceeds the sample average by 100.21%, and the intensity of cooperation between enterprises and universities in innovation to support improvements in product quality exceeds the sample average by 40.93%. At the same time, the prevalence of business integration through participation in economic clusters of enterprises is 55.17% below the sample average.

In the sphere of public governance of product quality, the stability of government regulation of entrepreneurship is 17.00% above the sample average. Alongside this, the cost of certificates of conformity to quality standards in East and South Asia is significantly above the sample average: by 74.68% for ISO 14001 and 77.83% for ISO 9001.

In LAC, within the sphere of public governance of product quality, the stability of government regulation of entrepreneurship is 15.65% below the sample average, and the intensity of promoting the development of a progressive business culture is 49.85% below the sample average. The quality of government regulation of the economy is 54.26% below the sample average. As a result, the cost of certificates of conformity to quality standards in LAC is below the sample average by 33.16% for ISO 14001 (a substantial lag) and by 2.41% for ISO 9001 (almost at the global average level).

In MENA, within the sphere of public governance, the quality of government regulation of the economy exceeds the sample average by 17.48%, the strength of the guarantee of the rule of law by 8.97%, the stability of government regulation of entrepreneurship by 21.40%, and the intensity of promoting the development of a progressive business culture by 55.30%.

Within the sphere of entrepreneurial management, the intensity of cooperation between enterprises and universities in innovation exceeds the sample average by 34.37%, the knowledge intensity of jobs by 21.05%, and the intensity of business integration through participation in economic clusters of enterprises by 7.64%. Despite this, the cost of certificates of conformity to quality standards in MENA is substantially below the sample average: by 13.42% for ISO 14001 and 15.42% for ISO 9001.

In Sub-Saharan Africa, within the sphere of entrepreneurial management of product quality, the volume of financing for innovative projects is 54.14% below the sample average, while the intensity of

cooperation between enterprises and universities in innovation is 11.30% above the sample average.

Within the sphere of public governance, the intensity of promoting the development of a progressive business culture is 86.71% below the sample average, whereas the strength of the guarantee of the rule of law is 0.40% above the sample average. The cost of certificates of conformity to quality standards in Sub-Saharan Africa is significantly below the sample average: by 71.14% for ISO 14001 and 51.57% for ISO 9001.

4.3. Recommendations for Strengthening the Balance Between Legal and Corporate Responsibility in Product Quality Management

To address the third objective and formulate recommendations for achieving a more complete balance between legal and corporate responsibility in product quality management, so as to enhance product quality across different regions of the global economy, considering their identified specificities, the selected (most practically useful) managerial measures were examined to identify those for which regional values fall below the sample averages and which therefore most urgently require a greater intensity of implementation in the respective region of the global economy.

For Europe, it is recommended to improve the quality of government regulation of the economy and strengthen the guarantee of the rule of law. In Central Asia, within the sphere of entrepreneurial management of product quality, a wider diffusion of business integration through participation in economic clusters of enterprises is proposed, along with the further development of cooperation between enterprises and universities in innovation to support improvements in product quality; and within the sphere of public governance of product quality, strengthening the stability of government

regulation of entrepreneurship is recommended.

In East and South Asia, within the sphere of entrepreneurial management of product quality, a wider diffusion of business integration through participation in economic clusters of enterprises is recommended. In LAC, within the sphere of public governance of product quality, it is necessary to ensure greater stability of government regulation of entrepreneurship, intensify efforts to promote the development of a progressive business culture, and improve the quality of government regulation of the economy.

In MENA, a comprehensive increase in the intensity of applying product quality management measures is required across both governance domains. In Sub-Saharan Africa, within the sphere of entrepreneurial management of product quality, it is recommended to increase financing for innovative projects, and, within the sphere of public governance, to intensify efforts to promote the development of a progressive business culture.

5. Discussion

The results obtained continued the line of research by Adedej (2025), Buryk et al. (2025), Charvi et al. (2025), Hejazi (2025), Lazic et al. (2025), Margaryan and Terzyan (2023), Mayilyan and Torosyan (2023), Mkrtchyan et al. (2023), Riillo (2025), Song et al. (2026), and Susanto et al. (2025), and enriched the scientific and economic concept of product quality management by providing an improved understanding of the contribution of each managerial measure to ensuring product quality, as well as of regional differences in this contribution across the global economy (Table 4).

As noted in table, the contribution of managerial measures to ensuring product quality varies substantially across governance domains and world regions.

Table 4. The contribution of managerial measures to ensuring product quality, refined by governance domains and world regions

Product quality control measures by area of control		Literature describing these measures	Contribution of these measures to quality	The extent to which these measures are applied	Recommendation on the active application of these measures
Government measures	Ensuring high-quality government regulation of the economy	Bogoviz et al. (2018)	Europe	insufficient	increase
			LAC	insufficient	increase
			MENA	sufficient	increase
	Guaranteeing the rule of law	Salnazaryan et al. (2022)	Europe	insufficient	increase
			MENA	sufficient	increase
			Sub-Saharan Africa	sufficient	-
	Maintaining the stability of government regulation of entrepreneurship	Morhachov et al. (2024)	Central Asia	insufficient	increase
			East & South Asia	sufficient	-
			LAC	insufficient	increase
	Promoting the development of a progressive business culture	Sozinova et al. (2023)	MENA	sufficient	increase
			Central Asia	sufficient	-
			East & South Asia	sufficient	-
LAC			insufficient	increase	
Business management measures	Financing innovative projects aimed at improving quality	Raymbaev et al. (2017)	MENA	sufficient	increase
			Central Asia	sufficient	-
			East & South Asia	sufficient	-
	Increasing the knowledge intensity of jobs	Bratukhina et al. (2025)	Sub-Saharan Africa	insufficient	increase
			MENA	sufficient	increase
	Cooperation with universities in the field of innovation	Mamurova et al. (2025)	Sub-Saharan Africa	sufficient	-
			MENA	sufficient	increase
			Central Asia	insufficient	increase
	Business integration through participation in enterprise clusters	Litvinova et al. (2015)	East & South Asia	sufficient	-
			Central Asia	insufficient	increase
			East & South Asia	insufficient	increase
				MENA	sufficient

Source: Developed by the authors.

In the sphere of public governance:

- Unlike Bogoviz et al. (2018), the quality of government regulation of the economy proves to be an effective measure only in Europe, LAC, and MENA;
- Unlike Salnazaryan et al. (2022), guaranteeing the rule of law improves quality only in Europe, MENA, and Sub-Saharan Africa;
- Unlike Morhachov et al. (2024), maintaining the stability of

government regulation of entrepreneurship yields quality benefits only in Central Asia, East and South Asia, LAC, and MENA;

- Unlike Sozinova et al. (2023), promoting the development of a progressive business culture demonstrates a notable return in terms of product quality only in Central Asia, East and South Asia, LAC, and MENA.

In the sphere of entrepreneurial governance:

- Unlike Raymbaev et al. (2017), financing innovative projects aimed at quality improvement is an effective measure only in Central Asia, East and South Asia, and Sub-Saharan Africa;
- Unlike Bratukhina et al. (2025), the knowledge intensity of jobs enhances quality only in MENA and Sub-Saharan Africa;
- Unlike Mamurova et al. (2025), cooperation between enterprises and universities in the field of innovation benefits quality only in Central Asia, East and South Asia, MENA, and Sub-Saharan Africa;
- Unlike Litvinova et al. (2015), business integration through participation in enterprise clusters exhibits a notable return in terms of product quality only in Central Asia, East and South Asia, and MENA.

These findings confirm hypothesis (H) and, in support of Bogoviz et al. (2016), Hakhverdyan and Badadyan (2023), and Melkamu (2025), demonstrate that the returns

from quality management measures in developing countries are highly differentiated across governance domains (public and entrepreneurial) and across world regions.

6. Conclusion

Thus, as a result of the research, the contribution of various measures of legal and corporate responsibility to bringing the national products of developing countries into compliance with international quality standards was quantitatively assessed. An original conclusion was drawn that this contribution is strongly differentiated across quality management domains (public and entrepreneurial governance) and across world regions (Europe, Central Asia, East & South Asia, LAC, MENA, and Sub-Saharan Africa).

Building on this conclusion, a systemic approach to public and entrepreneurial product quality management was developed. The new approach provides for the integrated implementation of measures from public and entrepreneurial governance domains and focuses on those managerial measures that deliver the most significant returns in terms of product quality.

The key advantage of the proposed approach lies in its balanced treatment of legal and corporate responsibility in product quality management and in its consideration of the specific characteristics of developing countries across world regions, for each of which tailored practical solutions for improving quality management are proposed.

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Ilyos S. Abdullayev
Urgench State University,
Urgench, Uzbekistan
Ilyos-1970@mail.ru
ORCID 0000-0002-9601-7434

Ruzanna M. Hajoyan
Armenian State University of
Economics, Yerevan, Armenia
ruzanna.hajoyan@asue.am
ORCID 0009-0008-3837-6202

Igor V. Denisov
Moscow Metropolitan
Governance
Yury Luzhkov University,
Moscow, Russia
denisov.id@gmail.com
ORCID 0000-0002-8718-9023

Dmitry A. Lipinsky
Togliatti State University,
Togliatti, Russia
dmitri8@vandex.ru
ORCID 0000-0003-1870-069X
