

REVIEW ARTICLE

Integrated risk management: An approach for the Peruvian construction sector and cement plants

ABSTRACT

The construction industry is one of the main pillars of the Peruvian economy, characterized by its contribution to the country's Gross Domestic Product (GDP), and cement companies are an important part of the development of the construction sector. The objective of this paper is to provide an overview of the impact of the construction sector on the Peruvian economy and its approach to integrated risk management. Through the analysis of economic databases and the review of literary sources, it was possible to conclude that in the last 10 years the GDP of the construction sector has represented, on average, 6.28% of the country's GDP. Likewise, the State is interested in business organizations implementing an Integral Risk Management that helps them to minimize the materialization of threats and having an action plan before any uncertainty regarding the fulfillment of objectives.

Keywords: Risk Management; PBI; Construction Industry; Risk; ISO 31000.

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INTRODUCTION

The construction sector is one of the most important economic activities in Peru. It is a sector with one of the fastest and best recoveries from the COVID-19 pandemic. In recent years, except for 2020, the number of people formally employed in the construction sector has increased. According to the National Institute of Statistics and Informatics (INEI, 2022), the number of people employed in the construction sector increased by 4.7% compared to 2021.

Cement and cement producing companies are key players in the development of the construction sector. Large-scale construction, self-construction, and government construction projects use cement as the main input for their implementation. As shown by the analysis of data from the Banco Central de Reserva del Perú (BCRP, 2023) and the Asociación de Productores de Cemento (ASOCEM, 2023), cement consumption is directly related to GDP growth in the construction sector.

The process of cement production and commercialization involves risks at various stages, including transportation, storage, raw material extraction, and grinding. Thus, the Ministerio de Energía y Minas (MINEM, 2019) states that “el 89% de la energía usada en industria cementera provienen de combustibles” [89% of the energy used in the cement industry comes from fuels] (p. 15). These fuels can be oil, coal, and/or natural gas. The scarcity or unavailability of these resources poses a threat to the continuity of production. Similarly, there may be risks associated with political situations, environmental issues, customer relations, and the impact on neighboring communities, among others.

Therefore, there is a need to identify, mitigate and control those events that prevent the achievement of business ideals in this sector. This can be achieved through a comprehensive risk management process, which “plays a fundamental role in the creation of value for the company” (Fuentes and Zúñiga, 2010, p. 21).

PURPOSE OF THIS PAPER

The objective of this study was to analyze the importance of the Peruvian construction sector, which contributes significantly to the national economy. In this regard, the importance

of cement companies in the development of this economic activity was analyzed in depth. A review was made of risk management according to the international standard ISO 31000:2018, its guidelines and the purpose it poses to any organization.

In a complementary manner, an approach was made to the Risk Management Regulation published by the Superintendencia del Mercado de Valores (SMV, 2023).

ARGUMENTATIVE REVIEW

In March 2020, almost all economic activities were interrupted due to the spread of COVID-19. As a result, cement companies could not rely on various imported inputs for cement production. This event was a materialized risk that caused a decline in the national GDP. The construction sector was able to resume work in May 2020, after almost two months, as it was within the first phase of resumption of economic activities (Ministerio de la Producción [PRODUCE], 2020).

The construction sector has experienced sustained growth in recent years. According to data collected from the BCRP (2023), in the last 10 years the construction sector has presented an average growth of 3.60%. In 2020, due to the COVID-19 pandemic, the sector experienced a contraction of 13.29% compared to 2019. Unlike 2020, 2021 saw a rebound effect driven by a 34.86% growth in the construction sector.

According to data from the Ministerio de Trabajo y Promoción del Empleo (MTPE, 2020), the construction industry was the most affected during the lockdown due to COVID-19. Between the months of April and May 2020, the number of workers employed in the private construction sector decreased by an average of 34.8% compared to the previous months. For the months of June to December, due to the resumption of economic activity, the formal employability of the construction sector increased by 15.9%.

In line with these data, we have the following information, which relates the variability of GDP growth in the construction sector to the variability of shipments of cement companies for the period 2013-2022. This allows

us to see, according to Table 1, the positive relationship shown by both variables and thus understand the importance of cement companies for economic growth.

For the period from 2017 to 2019, there was an average growth of about 3% for the construction sector. According to Carreño and Moreno (2022), this growth was “debido a una aceleración de la inversión pública y privada” [due to an acceleration in public and private investment] (p. 34).

As can be verified in the table above, cement consumption, produced and shipped by cement companies, is key to the economic activity of construction in Peru. According to Apoyo & Asociados (2021), “el mercado local

de cementeras está compuesto fundamentalmente por cuatro grupos empresariales distribuidos en cinco empresas productoras de cemento” [the local cement market is basically made up of four business groups distributed among five cement producing companies] (p. 3). These companies are: Cementos Inka, Yura UNACEM Peru S.A., Cementos Pacasmayo and Cementos Selva.

In order to get a better picture of the importance of the construction sector in the economic development of the country, Table 2 has been prepared:

As can be seen in Table 2, for the period 2013-2022, the construction sector has an average share of 6.28% of the Peruvian GDP.

Table 1

Construction GDP growth - Cement consumption ratio

Years	Construction Sector Variation	Cement Consumption Variation
2013	9.41%	7.54%
2014	2.24%	1.58%
2015	-5.88%	-2.72%
2016	-3.19%	-2.77%
2017	2.17%	-0.16%
2018	5.31%	4.38%
2019	1.38%	2.71%
2020	-13.29%	-12.81%
2021	34.86%	38.45%
2022	2.98%	-1.52%

Note. Adapted from BCRP, 2023, and ASOCEM, 2023.

Table 2

Share of Construction sector in GDP

Year	GDP (millions PEN 2007)	Construction GDP (millions PEN 2007)	Construction / GDP
2013	456411.70	31504.23	6.90%
2014	467291.20	32210.01	6.89%
2015	482486.50	30317.28	6.28%
2016	501563.50	29349.57	5.85%
2017	514215.00	29987.54	5.83%
2018	534626.00	31580.00	5.91%
2019	546605.00	32014.72	5.86%
2020	486737.00	27759.19	5.70%
2021	551714.00	37437.00	6.79%
2022	566514.50	38552.30	6.81%

Nota. Adapted from BCRP, 2023, and ASOCEM, 2023.

Currently, the Peruvian construction sector does not carry out a comprehensive treatment of the risks associated with this economic activity, which limits the achievement of the strategic objectives of the companies participating in it. Therefore, it is necessary to have an efficient integral risk management of the main companies contributing to the construction sector, such as cement companies. To date, there is already a regulation on integral risk management that, according to the SMV, will come into force in June 2024 for those companies that do not belong to the financial sector, such as cement companies.

Risk management

Risk is defined by ISO 31000:2018 as uncertainty about the organization's objectives. In this sense, Torres (2021) states that risk management "es un enfoque estructurado para manejar la incertidumbre relativa a una amenaza, a través de una secuencia de actividades humanas que incluyen evaluación de riesgo, estrategias de desarrollo para manejarlo y mitigación del riesgo utilizando recursos gerenciales" [is a structured approach to managing uncertainty related to a threat, through a sequence of human activities that include risk assessment, development of strategies to manage it, and risk mitigation using managerial resources] (p. 12). This enables organizations to understand and manage the behavior of these uncertainties.

Risk management "permite a la alta dirección de una empresa tomar decisiones con conocimiento del riesgo y no basados en el azar de los eventos" [enables an organization's top management to make decisions based on risk knowledge rather than on the randomness of events] (Cisneros, 2006, p. 4). The International Organization for Standardization (ISO), in the ISO 31000:2018 Management System, seeks to enable organizations to define their strategies to achieve their objectives and make decisions in an informed manner. This international standard presents a common approach that allows all organizations to manage their own risks and make decisions at all levels, without differentiating between specific sectors or industries (ISO, 2018).

According to Menéndez *et al.* (2020), risk management will be successful if it is considered

"como un componente de los procesos de gestión del crecimiento sectorial" [as a component of sectoral growth management processes] (p. 3). The effectiveness of risk management will depend on the commitment of those responsible for the top management of organizations.

To achieve effective and efficient management, it is necessary to integrate risk management into all operations and processes of the organization. A structured and comprehensive approach must be in place to achieve the desired results. The process must also be easily adaptable to all types of organizations and activities.

All stakeholders must be actively involved in risk management so that it is inclusive at all levels. Risk management must be dynamic over time, as reality changes. Management is based on improving and anticipating day-to-day events so that the best available information is available to support decision making. The global environment, including human and cultural factors, influences all aspects of risk management. Risk management should enable continuous improvement of organizations through experience gained through continuous learning.

Risk management provides senior managers of organizations with the ability to make informed and accurate decisions through the knowledge and experience gained about the uncertainties that would affect their organizations, so as not to rely on chance facts of possible events to materialize. As mentioned by Flores (2010), "el riesgo depende de las decisiones que se tomen o que se omitan" [risk depends on the decisions made or not made] (p. 40).

In 2018, risk management guidelines were updated by the International Organization for Standardization (ISO, 2018).

Comprehensive risk management regulations

In January 2023, the Peruvian Government, through Resolution SMV No. 001-2023-SMV/01 (SMV, 2023), approved and published the Integrated Risk Management Regulation. The purpose of this regulation is to establish guidelines, parameters and minimum standards for the institutions supervised by the SMV to

design and implement a comprehensive risk management for their organizations. The guidelines for the publication of this regulation are based on those established by the International Organization for Standardization (ISO) in the International Standard ISO 31000:2018

It is imperative that organizations establish behavioral guidelines that adequately guide the operation of risk management. Risks must be recognized and identified for each of the specific scenarios present in the organization's processes. To achieve comprehensive risk management, organizations must consider: the internal environment, the pursuit of objectives, the identification of risks that cause uncertainty to their objectives, the treatment of these uncertainties, the reporting and communication of risk treatments, and the monitoring with constant review of the risk management they implement.

The regulation states that each organization supervised by the SMV must have a comprehensive risk management manual that includes policies and procedures; organizational alignment; internal terms on the residual values of risks to be considered more significant; recognition of inherent risks; generation of policies or procedures for communicating any changes in risk management; and an annual training plan mapped to a procedure or policy. This manual should be reviewed at least annually (SMV, 2023).

Risk management must be documented and retained for at least 10 years. Thus, annual reports on this management must be submitted to the SMV on March 31 of each year. In this context, companies must have a risk committee composed of members of the board of directors and an independent director. Specialized risk committees may be established as required by the board of directors. The board of directors is also responsible for establishing risk management policies and procedures, approving risk management codes of conduct, approving the composition of the risk committee, validating the organization's risk appetite, and approving the signing of the Declaration of Compliance (SMV, 2023).

Non-financial organizations have until June 30, 2024 to implement the Integrated Risk Management Regulation.

CONCLUSIONS

Economic growth, measured by GDP, shows the importance of the construction sector in the national economy. The companies that contribute significantly to this sector are the cement companies. These companies mainly use imported materials in their production processes, which, since they come from international markets, create uncertainty in the results of these organizations. Likewise, in each of their production stages, there are several risks that, if they materialized, would not allow the continuation of the different processes of these organizations.

During the last 10 years, the average contribution of the construction sector to the national GDP has maintained an average of 6.28%, considering the contraction of the construction sector in 2020 of 13.29% and the recovery in 2021 with a growth of 34.86%. These variations have been aligned with the GDP contraction of 10.95% in 2020 and the rebound effect of the national economy of 13.35% in 2021. As can be seen, the effect of construction has been more than evident for the economic growth that occurred during 2021.

Currently, the construction sector and Peruvian cement companies have adopted the implementation of a comprehensive risk management system to mitigate the materialization of events that may pose a threat to the achievement of their objectives. The achievement of these objectives contributes to the growth of the national economy. Thus, risk management appears as a measure of action to determine the path to be followed by organizations through the approach of strategies and more informed decisions based on the experience gained. The update of the international standard ISO 31000 in 2018 led the Peruvian State, through the SMV, to publish the Comprehensive Risk Management Regulation.

The Integrated Risk Management Regulation, published in January 2023, establishes the guidelines, criteria and minimum parameters to be followed for the implementation of risk management in all entities supervised by the SMV. In the first phase, organizations that are part of the financial conglomerate must implement this regulation by December 2023. On the other hand, companies that are not part

of this conglomerate, including participants in the construction sector, such as cement companies, have a maximum deadline of June 2024 to implement this regulation.

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Conflicts of interest

The author has no conflicts of interest to declare.

Author contributions

Julio Javier Arellano Ramirez (lead author): conceptualization, data curation, research, methodology, resources, writing (original draft, proofreading and editing, etc.).