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Gestão Empresarial e a Viabilidade Econômica: ênfase aplicada na Construção Civil

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Resumo: O ambiente da indústria da construção civil é definido como complexo sob vários aspectos quando comparado com outros segmentos industriais. A gestão empresarial tem papel de destaque pois possibilita que a organização tenha condições de melhor gerir as situações, tomar decisões fundamentadas e alcançar uma qualidade na gestão. Além desses aspectos, fornece condições para lidar com as incertezas, acuracidade nos custos dos projetos manter-se competitiva no mercado. A análise da viabilidade econômica e a gestão de riscos também são importantes e atuam em papeis importantes na gestão da organização. O estudo da viabilidade econômica traz a efetividade da aplicação do recurso econômico, fluxo e caixa estabilizado, identificação e seleção das melhores opções de investimento. A gestão de risco oferece a análise de riscos, a gestão dos riscos e como melhor dispor dos recursos. Esse artigo busca entender quais são as contribuições da gestão empresarial, viabilidade econômica e gestão de risco na indústria da construção civil. Duas hipóteses foram constituídas para contribuir no esclarecimento do problema de pesquisa. Como método aplicou-se uma pesquisa exploratória e pesquisa qualitativa foi conduzida usando a base Scopus e o software VOS Viewer. As conclusões em relação as contribuições para a indústria da construção civil são de grande valia e podem contribuir de forma agregadora para esse importante segmento da economia do país, pois agregam valor na gestão empresarial, na gestão dos recursos financeiros e dos riscos.

Palavras-chave: Gestão empresarial, viabilidade econômica, construção civil.

Business Management and Economic Viability: enhance applied in the Civil Construction

Abstract: The construction industry's environment is defined as complex in several aspects compared to other industrial segments. Business management plays an important role because it allows the organization to manage situations better, make informed decisions, and achieve quality management. In addition to these aspects, it provides conditions to deal with uncertainties, the accuracy of project costs to remain competitive in the market. Analysis of economic viability and risk management is also important and plays an important role in its management. The study of economic viability brings the effectiveness of applying the economic resource, stabilized cash and flow, identification, and selection of the best investment options. Risk management offers risk analysis,

risk management, and how to best dispose of resources. This article seeks to understand business management's contributions, economic viability, and risk management in the construction industry. Two hypotheses were created to help clarify the research problem. As a method, exploratory and qualitative research was carried out using the Scopus database and VOS Viewer software. The conclusions regarding contributions to the construction industry are of great value and can contribute in an aggregating way to this important segment of the country's economy, as they add value in business management in the management of financial resources and risks.

Keywords: Business management, economic viability, civil industry

1. Introduction

The country's economic sectors have experienced market retraction moments and sometimes recession for about the last fifteen years. The construction industry sector, considered a thermometer of the economy, did not receive different treatment.

According to the National Confederation of Industries (CBIC, 2017), in the period from 2014 to 2017, it presented a reduction of around twenty-four percent in the number of civil construction establishments in Brazil. It should be noted that this series accumulated until 2014, an average annual increase of around ten percent.

In this scenario, that has as a backdrop an economic situation that nowadays seeks strength to resume growth with quality and sustainability. Within this scope, two hypotheses are presented for analysis:

Hypothesis1: With what aspects can business management cooperate with the construction industry?

Hypothesis 2: Would economic viability and risk management be relevant in the construction industry's business management?

Therefore, this article's objective is to identify the collaborative relationships that incorporate aspects of business management, economic viability, and risk management applied in the civil construction sector can contribute assertively in this segment.

2. Literature review

2.1 Business management in civil construction

Management in the construction industry demands attention due to the peculiar characteristics of the business. For Sacks et al. (2017), production management requires an approach focused on construction management. The construction's peculiarities as the work teams move while the product is stationary; therefore, there is no apparent product flow. Construction is project production and includes the planning, assembly, and disposal of the project's facilities and construction projects involve complex, temporary projects.

According to Vrijhoef and Koskela (2000), the construction industry's inefficiency is related to weak or lack management and commitment among the participants. The construction industry still suffers from poor project performance because its nature is fragmented between different stakeholders and different sub-processes, forming a difficult network to integrate into view of the complex communication channels involved.

The construction industry's activity must think about quantifying, visualize, and simulate the components that affect construction work. There is a need for a conceptual framework to reflect on the variables influencing the construction business (DEMIRKESEN and OZORHON, 2017).

The construction industry is dynamic and fragmented. It requires well-defined strategies and practices to deal with uncertainties and risks, organizational integration of knowledge, process, and project performance to remain competitive. (BERTEAUX and JAVERNICK-WILL, 2015; DEMIRKESEN and OZORHON,2017).

The information integration with business partners and clients leads to improvements in civil construction performance, and knowledge management in the construction industry can improve internal knowledge management and competitiveness (SARAF et al. 2007; LIN, CHANG, and LIN, 2011).

The project management is also highlighted by Cerezo-Narváez et al. (2020) reiterates that noting that the schedule is not being respected causes budget difficulties. Management can also assist in the accuracy of project cost estimates and risk responses. And the integration of knowledge, process, and strategy improves the project's performance (BERTEAUX and JAVERNICK-WILL, 2015).

An important aspect of management is stakeholder satisfaction, and it is directly associated with performance management in construction. There is a pressure to improve quality in the market and customer satisfaction. The organization needs to reduce inefficiency, errors; gain and retain customers. But different conceptions, methods, and tools must be used to maintain quality and assist in continuous development in the company. (KAGIOGLOU, 2001; SMETKOWSKA and MRUGALSKA, 2018).

2.2. Economic viability

According to Assaf Neto (2012), the pioneering work in economic engineering called The Economic Theory of Railway Location was prepared by A. Wellington in 1887; configuring the first study of applying the financial mathematical process to analyze the viability of investment projects. In this design, Hellvig and Benatti (2017) corroborate that economic engineering consists of evaluating economic agents such as companies, families, and governments that decide on a process of acquisition, investment, or financing of inputs, products, and services. Therefore, economic engineering aims to make decisions regarding investment alternatives; because the manager must adopt it to achieve results, using the financial resources available. Decision-making uses mathematical tools that provide solutions for the correct application of the often finite financial resource.

The decision-making aspect of asset management is also supported by Hess et al. (1992), with engineering economics being understood as techniques and principles demanded to define decisions related to the purchase and availability of capital goods; that is, it is an instrument in the analysis of advantage and disadvantage in the face of an organization's investment options.

An economical alternative is the economic appreciation of preconceived ideas. If there is more than one option, they must be listed according to some chosen economic criterion, as decision-making incurs risk. These decisions result from analyses of economic positions in the present, future, and eventually intermediate (HIRSCHFELD, 2000).

For Ehrlich and Moraes (2005), in decision making, the greater the uncertainties in decision making in a certain aspect, the greater the requirements for expected return should be. Effectiveness in using an organization's capital is a shared responsibility at the different companies; post-decision audits taken the lead to analyze the decision process itself and its continuous improvement in future decisions. The evaluation and selection of investment projects examine the economic and financial aspects using quantitative parameters. There is a dispute over investment capital and seeks the economic analysis of investment decisions (EHRLICH and MORAES, 2005; SOUZA and CLEMENTE, 2008). The assertive

choice for applying the finite resource and the dispute between the projects with each other as a destination of capital should focus on the manager's attention in the organization (EHRLICH and MORAES, 2005).

According to Hellvig and Benatti (2017), every enterprise aims at maximum technical and economic efficiencies. In terms of technical efficiency, it is characterized when, when using a certain production method, it is possible to produce a certain product with the least amount of production factors such as people, equipment, and raw materials. However, economic efficiency occurs when it is possible to produce a certain quantity of products at the lowest possible cost. Consequently, by aligning technical efficiency with economic efficiency, the production process is carried out in the best way, together with the correct actions from the financial perspective.

Souza and Clemente (2008) highlight that it is necessary to calculate the decision's costs and benefits when there are investment alternatives. Some criteria must be observed as financial, economic, and imponderable.

The profitability and economic viability of a project, or the planning of operations, or even the definition of the capacity to pay a debt, can be known by the cash flow, which represents the inflows and outflows of money of an organization in a certain period of time (HOJI, 2009; SAMANEZ, 2007; HIRSCHFELD, 2000).

It should be noted that the objective of an economic-financial investment evaluation seeks to evaluate the future cash flow from an investment made; being that the cash flow of an investment project is the launching of net income, not counting items that affect cash such as amortization and depreciation, with the addition of fixed investments and disbursements (HOJI, 2009).

The organization seeks to analyze how to better dispose of its financial resources must not give up identifying, analyzing, and selecting the best investment option for its capital, also known as capital budgeting or capital budgeting, which is a long-term capital investment program related to the strategic plan, deals with permanent investments; according to the contribution of (HOJI, 2009). And Samanez (2007) articulates that this analysis process assumes that a project or several projects will yield the relevant economic return with the goals of the administration in the long term, as well as providing value for the organization; thus, the greater the profitability, the greater the risk to which it is exposed.

Thus, the analysis of capital investments requires economic knowledge and projection of future conditions. A project has greater value. The greater its capacity to generate economic income; thus, the investment analysis can be compared only if monetary results are measured at a common point in time (SAMANEZ, 2007).

There are several methods used to measure profitability and examine the economic viability of an investment, as presented (SAMANEZ, 2007):

a) Net present value (NPV);
b) Internal rate of return (IRR) method;
c) Discounted payback method (PB);
d) Cost-benefit method (C/B);
e) Equivalent uniform annuity (AE) method;
f) Equivalent annual cost method (CAE).

To complement the line of reasoning about the theme addressed in this article, we understand risk management in the company.

2.3 Risk Management

In engineering, economic risk is analyzed and studied from the design phase, feasibility study, design, bidding, and construction. The risk analysis of economic engineering, the project proposal, feasibility study, and stage of the project involves the rules of economic engineering risks and risk control technology. It presents precautionary measures and suggestions to reference the engineering design and engineering of economic risk management (YE, 2017).

Understanding the determinants of additional costs in projects involving civil works is a study of several studies, and the factors are related to the various participants in the construction industry. In risk management, the difference between a project's planned and actual results is attributed to a risk event, such as the financial goal; and the identification of risk is part of the organization's recognition of events that may distance it from reaching its objectives (BRANDSTETTER, RIBEIRO, 2020).

The concept of risk management is a process by which the organization develops a broad and formal plan to identify, analyze, evaluate, manage, or mitigate and monitor risks. Organizational risk management was reflected as a process to eliminate, transfer, mitigate or accept specific risks; and assume a corporate scenario to optimize solutions and maximize integrated risk management (SILVA, FERNANDES, 2019).

According to Silva, Fernandes (2019), studies on business risk management visas consider how it works, the mechanisms that guarantee its effectiveness, and how it improves organizational performance. Porter (1994) defined the strategy as the way the company positions itself in the market. For Ferreira and Otley (2009), an organization's strategic posture can influence its management control systems; it is essential to discern how it collaborates with the corporate risk management system.

The organizational structure represents the arrangements that influence the work's efficiency and effectiveness, flow information, and the control system. In this case, there must be an interrelation with the corporate risk management system (CHENHALL, 2003).

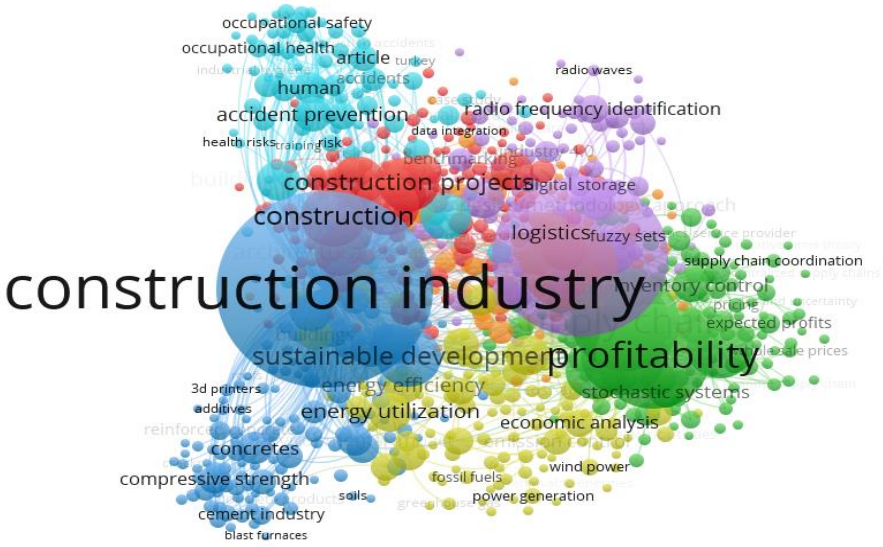
3. Method

To achieve this work's objective of identifying elements for reflection on business management, economic viability, and risk management complement each other, and applied, exploratory and qualitative research was carried out. According to Oliveira (2010), the qualitative approach allows the presentation of reviews, detailed descriptions of facts, and observed phenomena, being applied when information on a given subject cannot be quantified, making interpretation necessary (TRIVIÑOS, 1987).

Also, research was carried out after detailing the refined research results using the Scopus database. Analyzes are performed with other software applications in partnership for detailing bibliometrics.

The analysis sequence comprises the use of VOS Viewer software. The VOS Viewer software (VOS VIEWER, 2020) was used to map the most used words in the title and summary of documents, as shown in Figure 1.

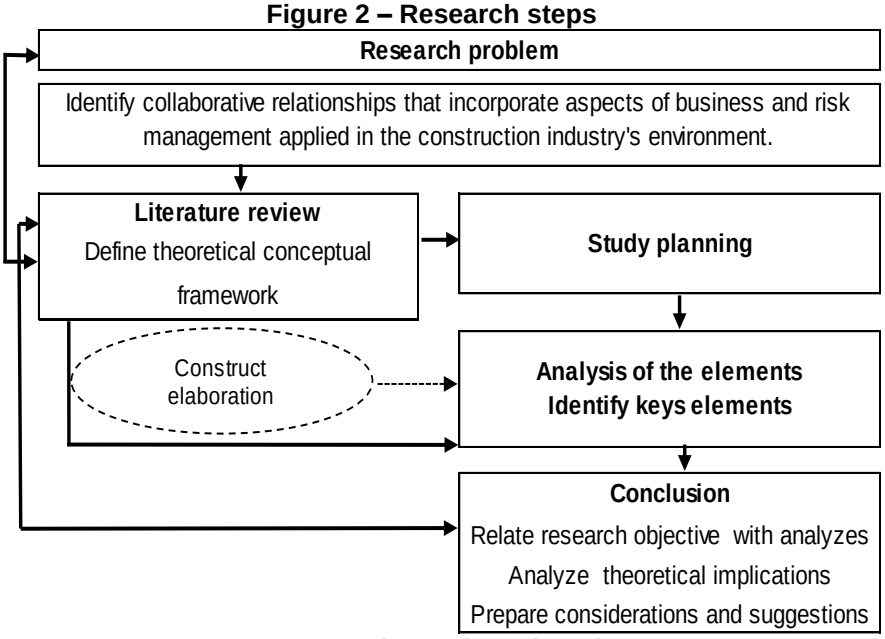
Figure 1 - Most used words mapped



Source : Vos Viewer (2020)

The research steps of this research is represented in figure 2:

Figure 2 – Research steps



Source: The Authors (2020)

4.Analysis and Results

This article aims to elaborate, cooperate with the questions presented in Hypotheses 1 and 2, and contribute positively to the analysis of the contribution of business management, economic viability, and risk management. Thus, we have:

Hypothesis1: With what aspects can business management cooperate with the construction industry?

Business management in the civil construction industry is relevant because it is a complex, fragmented, and economically important industry, as previously stated.

Table 1 Business management list

Characteristics	Authors	Benefits
Quantify, visualize, and simulate the components that affect the construction work.	Demirkesen and Ozorhon, 2017.	To build a conceptual framework to reflect on the variables that influence the construction business.
It requires well-defined strategies and practices to deal with uncertainties and risks; organizational integration of knowledge, process.	Berteaux and Javernick, 2015; Demirkesen and Ozorhon, 2017	To improve project performance and helps the organization to remain competitive
The information integration with business partners and clients.	Saraf et al. 2007; Lin, Chang and Lin, 2011.	Leads improvements in civil construction performance; and competitiveness
The project management.	Cerezo-Narváez et al. (2020)	Can also assist in the accuracy of project cost estimates and risk responses.
Management is stakeholder satisfaction.	Kagioglou 2001; Smetkowska and Mrugalska, 2018.	Directly associated with performance management in construction

Source: The Authors (2020)

As shown in Table 1, significant aspects of the construction industry's business management are presented by several authors. These aspects can contribute uniquely to the company's performance, involving characteristics from aspects that affect construction work with the reflection of these variables. Defining strategies to deal with business uncertainties. Integrated information, which brings advantages to competitiveness. Project management and stakeholder satisfaction can play an important role in the construction industry's business management.

Hypothesis 2: Would economic viability and risk management be relevant in the construction industry's business management?

Economic viability in any business segment is a factor worthy of managers' attention and the construction industry. The analysis must be thorough to achieve the expected results and bring profit to the organization. Likewise, risk management plays a fundamental role in terms of managing the organization.

Table 2 Economic viability and risk management list

Characteristics	Authors	Benefits
Economic engineering aims to make decisions regarding investment alternatives.	Hellvig and Benatti, 2017	Provide solutions for the correct application of the often finite financial resource.
Economic appreciation of preconceived ideas.	Hirschfeld, 2000	Analyses of economic positions.
The decision making expected economic return.	Ehrlich and Moraes,2005; Souza and Clemente, 2008.	Effectiveness in using an organization's capital.
The profitability and economic viability of a project.	Hirschfeld, 2000;Samanez, 2007; e Hoji 2009.	The cash flow controlled.
The organization seeks to analyze how to better dispose of its financial resources	Samanez, 2007; e Hoji 2009	Identifying, analyzing, and selecting the best investment option for its capital.
The risk analysis of economic engineering.	Ye, 2017.	It presents precautionary measures and suggestions to reference.

Understanding the determinants of additional costs in projects.	Brandstetter and Ribeiro, 2020	The difference between a project's planned and actual results is attributed to a risk event, such as the financial goal
The concept of risk management is a process by which the organization develops a broad and formal plan to identify.	Silva and Fernandes, 2019	studies on business risk management consider how it works, the mechanisms that guarantee its effectiveness, and how it improves organizational performance.
The organizational structure represents the arrangements	Chenhall, 2003	Influence the efficiency and effectiveness of the work.

Source: The Authors (2020)

As shown in Table 2, the aspects of economic feasibility are presented first, how economic engineering assists in the analysis of investments, the appreciation of options, decision-making in the expectation of financial return, and the project's economic efficiency and viability. Also, there are highlighted aspects such as analyzing how to dispose of your financial resources, choosing the best option, analyzing risk in economic engineering, understanding the determinants of risk in projects, and the influence of organizational structure on business effectiveness.

5.Conclusion and outlook

The construction environment is characterized as a segment of significant demand for investments, inputs, and labor, and prominence in the country's economy's representativeness. The construction industry's organization is subject to pressures from the competitive market, customers, and other stakeholders. The connection between these three business management areas, economic viability, and risk management, favors the construction industry's organization to enjoy unique market conditions. The incremental contributions in terms of quality in management are significant as they contribute to the organization's management, financial resources, and risk assessment in management. These elements have fundamental roles in any organization and can contribute to the company in the construction industry and offer conditions for the company to become more competitive and obtain better financial results due to adequate business management, risk analysis, and investments.

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