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Cost mechanism in the construction sector. Bankruptcy versus profitability of the construction company as a function of the costs generated

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***Abstract* – This study examines cost processes in the Romanian construction industry, focusing on their implications for profitability and bankruptcy risks among small construction firms. Through a case study of a microenterprise operating between 2005 and 2022, the research demonstrates that effective cost management strategies contribute significantly to profitability. However, the findings also highlight the substantial challenges posed by legislative and economic instability. The analysis emphasizes the critical importance of stable and supportive fiscal policies for the sustainability of small and medium-sized enterprises (SMEs) in the construction sector. By analyzing financial data and industry statistics, the study identifies a clear correlation between legislative changes and the financial performance of SMEs, reinforcing the need for a consistent regulatory framework to foster sustainable growth and employment opportunities within the industry.**

***Keywords – construction company, costs, financial management, micro enterprise*.**

1. INTRODUCTION

The construction sector constitutes a crucial component of the Romanian economy, encompassing enterprises of varying sizes, including large, small, medium, and micro-level businesses. The classification of these enterprises is governed by the European Commission, providing a standardized framework for comparison and assessment across all European Union member states. The definitions for micro, small, and medium-sized enterprises (SMEs) are specified in the Annex to the European Commission's Recommendation 2003/361, based on clearly defined criteria [1] [2] [11]. A medium enterprise is characterized by employing up to 250 individuals, generating a turnover of up to 50 million euros, and maintaining a total balance sheet of up to 43 million euros. Small enterprises, in contrast, are defined as having a maximum of 50 employees and a turnover not exceeding 10 million euros. A micro enterprise consists of a maximum of 10 employees and has a turnover or balance sheet total that does not exceed €2 million.

In addition to these legislative criteria that delineate the legal structure of an organization, construction enterprises must not overlook the distinctive characteristics inherent to this industry. Table 1 presents a comparative analysis of their characteristics relative to other engineering fields as follows:

Table 1 Characteristics of enterprises in the Construction sector compared to other engineering sectors

Feature	Construction	Other engineering
Design	Complex, long-term design for all building components	Design by product
Production/ Building	Mobile production process, on site and finished product - construction is fixed	Fixed, ex-factory
Type of production	Unique, both the project and the resulting construction on site	In series, several identical products in one transaction
Continuity of construction process on construction site	Discontinuous, depending on weather conditions, in uncontrolled climate	Continuous, workshop or factory manufacturing process in a controlled climate
Duration of production/ construction	The on-site construction process can take years to complete	Time taken to obtain a batch of finished products
Risk in the construction/ production process	Multiple unforeseen risks, such as beneficiaries, weather conditions, construction company employees, equipment involved, etc.	Fewer risks which are specific to the production activity in the factory and which can be better predicted and improved
Service life of the construction/ finished product	The lifespan of a building is very long and is legislated	Finished life, determined by the manufacturer
Operating conditions	Buildings are operated in the open - on site - which accelerates the ageing process	Finished products are exploited in a closed environment, according to the product fiche

Source: own lecture based on literary research

Table 1 highlights the significant differences between the characteristics of construction production and those of other industries. As a result, the costs associated with construction production are substantially higher and differ markedly from the costs of finished products in other engineering sectors.

2. LITERARY DESCRIPTION

This section addresses the fundamental components of construction production expenses. Specialized literature delineates the ideas of expense, cost, and price. There exists an interrelationship between them that, when considered strategically, renders the building enterprise profitable [4]. If an imbalance arises among the three specified concepts, the building company is on the path to insolvency.

K. Ebbeken et al. (2000) define expenses as “the monetary representation of the utilization of resources/goods for the purpose of acquiring a material good or service” [3].

It underscores that an expenditure possesses a financial aspect (the sums disbursed) and a techno-economic facet, encompassing the procurement and utilization of resources. Resources encompass the materials utilized in production, labor, and the equipment or tools employed. Expenditures may be categorized as direct production or ancillary.

The notion of cost encompasses the notion of spending. Cost represents a monetary measure that encompasses the expenditure associated with the production of a final product. Additionally, the collateral expenses associated with the product are included. If these ancillary expenses are not consistently managed, they may exceed the direct costs, resulting in the final product—in this instance, construction—being produced at a loss. This may lead to the enterprise's bankruptcy.

Costs, in turn, have changed throughout time. In construction production, we can discuss costs per unit of measurement, costs per category of work, and the overall cost of a construction project. The cost already encompasses the profit margin intended for the producer.

Price is a multifaceted notion encompassing the overall cost of a product and a subjective element associated with supply and demand, as well as the brand image the maker aims to establish or avoid for the product. When the price is equitable, the product can be marketed, and production remains uninterrupted.

Concerning the relationship between spending, cost, and pricing, it is important to note that both the environment in which construction businesses operate and the regulatory framework can have a significant impact on a construction company's profitability or bankruptcy. The peculiarity of construction production, as outlined in Table 1, is very susceptible to legislative alterations and unpredictability. The evolution of construction businesses from 2008 to 2022 was examined by evaluating the number of enterprises that ceased operations (Table 2) [8].

Table 2 Construction firms that closed between 2008 and 2022

	2008		**2009**		**2010**		**2011**	
Total Firm closures	**7,648**	-	**17,219**	-	**10,038**	-	**10,008**	-
Closures Firms with 0 employees	3,127	40.89%	5,858	34.02%	6,348	63.24%	7,809	78.03%
Business closures with 1-4 employees	3,937	51.48%	10,209	59.29%	3,308	32.95%	1,867	18.66%
Business closures with 5-9 employees	419	5.48%	804	4.67%	263	2.62%	217	2.17%
Business closures with more than 10 employees	165	2.16%	348	2.02%	119	1.19%	115	1.15%
	2012		**2013**		**2014**		**2015**	
Total Firm closures	**9,643**	-	**4,249**	-	**7,473**	-	**5,627**	-
Closures Firms with 0 employees	5,622	58.30%	3,952	93.01%	5,440	72.80%	3,157	56.10%
Business closures with 1-4 employees	2,886	29.93%	282	6.64%	1,707	22.84%	2,181	38.76%

Business closures with 5-9 employees	664	6.89%	12	0.28%	183	2.45%	195	3.47%
Business closures with more than 10 employees	471	4.88%	3	0.07%	143	1.91%	94	1.67%
	2016		**2017**		**2018**		**2019**	
Total Firm closures	**6,012**	-	**6,981**	-	**7,697**	-	**9,470**	-
Closures Firms with 0 employees	3,409	56.70%	3,703	53.04%	3,657	47.51%	5,260	55.54%
Business closures with 1-4 employees	2,293	38.14%	2,846	40.77%	3,633	47.20%	3,893	41.11%
Business closures with 5-9 employees	213	3.54%	275	3.94%	281	3.65%	213	2.25%
Business closures with more than 10 employees	97	1.61%	157	2.25%	126	1.64%	104	1.10%
	2020		**2021**		**2022**			
Total Firm closures	**6,061**	-	**6,930**	-	**6,580**	-		
Closures Firms with 0 employees	2,907	47.96%	3,145	45.38%	3,612	54.89%		
Business closures with 1-4 employees	2,746	45.31%	3,365	48.56%	2,690	40.88%		
Business closures with 5-9 employees	279	4.60%	304	4.39%	198	3.01%		
Business closures with more than 10 employees	129	2.13%	116	1.67%	80	1.22%		

Source: Own processing based on Eurostat data [8].

Table 2 illustrates that between 2009 and 2012, the repercussions of the economic crisis were experienced alongside the legislative and fiscal ramifications instigated by policymakers during that timeframe. Data was obtained from Eurostat and analyzed based on staff count. This case study examines the period from 2005 to 2022, focusing on a firm engaged in small-scale construction with minimal equipment. It is legally designated as a microenterprise.

3. EXPERIMENT DESCRIPTION

The case study is conducted through the lens of an enterprise's evolution in the construction industry. The economic data were gathered from the accounting records and official papers of the examined microenterprise, subsequently subjected to analytical

scrutiny. Furthermore, the legislative information was obtained from pertinent official sources that offer reliability, including ANAF (National Agency for Fiscal Administration), legal portals, and financial magazines. The employed methodologies were the comparison method and the establishment of financial indicators for benchmarking purposes.

The construction firm, engaged in the execution of works, commenced operations in 2005. The company is managed by a sole administrator, and its operations do not incur significant administrative costs due to a limited workforce. The firm does not possess any substantial equipment or apparatus that requires extensive storage space. To be classified as a microenterprise - SME, the business must employ no more than 10 individuals. Consequently, from 2005 to 2022, the company achieved the following values (Fig. 1):

Fig. 1. Evolution of revenues, expenses and net profit, 2005 - 2022

The data in Figure 1 were obtained from the yearly reports documented in the annual balance sheets and consolidated profit and loss statements. Figure 1 illustrates that the company's operations exhibited a variable and distinct trend. During the initial three years, expenditure remained stable while revenues experienced substantial growth. Beyond the persistent costs, the price factors were able to rise due to the dynamics of supply and demand. The corporation reported a profit.

Turnover, and consequently total revenue, also rose, particularly between 2007 and 2009, when it reached its zenith at RON 161,856. This phenomenon can be attributed to the expansion of the building sector in Romania, bolstered by pre-crisis economic growth and market liberalization. In 2009, the global financial crisis began to significantly impact the local economy.

Following the economic crisis, from 2011 to 2015, the corporation endeavored to stabilize among variable profitability. Total expenses declined post-2010, however turnover exhibited volatility. This suggests a difficult context for small firms in terms of access to resources and capital. It also illustrates the prolonged duration required for a microenterprise to recuperate following a significant economic disruption compounded by governmental mismanagement.

Throughout this timeframe, the tax legislation had numerous modifications [12] [13] [14] [15] [16] [17]. In 2013, the threshold for tiny firms was lowered to €65,000, then in 2016, the duty on dividends was raised. This legislative instability necessitated continual adaptation by businesses, particularly in managing the cost-price relationship, which had a direct impact on profitability.

In 2016, the threshold for micro-enterprises was raised once more, and the company experienced a phase of stability during this time. The company entered the prosperous phase referenced by the Tax Council in its 2019 research. Debts were settled, revenues tripled relative to the 2014 level, new workers were recruited, and expenses were sustained at 45% of total revenues.

The results indicate a positive phase for the business environment, bolstered by the elevation of the tax threshold to €1 million for microenterprises in 2018 and the reduction in dividend tax rates. The implemented tax policies and resultant outcomes have motivated entrepreneurs to augment their expenditures for business development, resulting in an 86% increase in 2019.

The year 2020 experienced an additional economic shock resulting from the COVID-19 pandemic, which significantly impacted the operations of businesses in Romania. Staff shortages and mandatory sick leave rendered the completion of the task unfeasible. Simultaneously, the costs of materials and transportation surged dramatically. This resulted in a rise in the cost of executing the work without the ability to proportionately raise the stipulated price for the beneficiary. A considerable discrepancy exists between the contracted price for the execution of the project (on-site construction) and the costs incurred.

Consequently, the analyzed company reported a net loss of RON 36,043 in 2020, indicative of the challenges faced in sustaining operations as well as the intended expansion under pandemic conditions. Expenses continued to increase, and turnover fell dramatically. No impetus existed for construction activity regarding fresh investments. The restrictive restrictions and economic constraints evidently impacted the firm's revenues due to the disparity between costs and selling prices.

Fig. 2 Bankruptcy risk evolution of the analyzed firm, Anghel model, 2005–2022

The bankruptcy of a company signifies its condition of financial insolvency. It denotes the juncture at which a firm can no longer meet its financial obligations, often stemming from a persistent deterioration in its financial condition [20]. The Anghel technique utilizes many financial indicators to predict bankruptcy risk, particularly in Romania, focusing on company statistics related to solvency, profitability, and liquidity. A score of 2.05 indicates financial stability, but a score below zero implies impending insolvency [19]. The Anghel model is tailored for Romania, customized to the nuances of the local market. Simultaneously, it is predominantly utilized by small and medium-sized enterprises. In the examined firm, the outcomes generated by this model varied, exhibiting negative values in 2010 and 2020 (-2.39 and -6.30), signifying significant financial challenges. This aligns with the firm's challenging financial circumstances throughout that period. Nevertheless, the score rebounded in 2022, attaining 4.49, signifying enhanced financial stability.

From 2021 to 2022, the overall economic environment prompted substantial work requests, enabling the company to achieve a 156% increase in net profit in 2022 relative to 2021. Between 2005 and 2022, the statistical data revealed the following elements (Fig. 3).

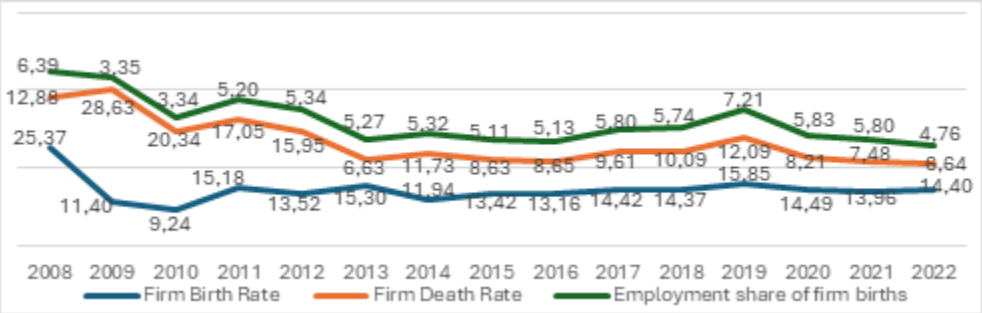

Fig. 3 Evolution of start-up and closure rates and the share of employees in start-ups in total net employees, 2005–2022, Eurostat [8]

The statistical data illustrated in Fig. 3 regarding the quantity of newly founded and closed enterprises suggests that the condition observed in the investigated firm is prevalent on a broader scale. Through effective cost management, the examined organization has successfully evaded a concerning figure. In 2009, 28.63% of enterprises in the Romanian construction sector ceased operations. At the same time, in 2010, the newly established firms represented only 9.24% of the total number of firms active in the Romanian construction sector. The numbers stabilized over time. Also, the pandemic no longer had such an intense impact on the sector, unlike the economic crisis in 2009.

4. RESULTS AND SIGNIFICANCES

Analysis of Eurostat data indicated that 2009 experienced a decline of about 14 percentage points in start-up rates and an increase of approximately 16 percentage points in closure rates, indicative of a challenging economic environment and legal ambiguities. This aligns with substantial losses reported by the examined company, underscoring the challenges encountered by small business owners.

Statistical data reveals a stabilization of trends post-2013, reflecting a renewal of entrepreneurial confidence in Romania's economic conditions, alongside an improvement in the ability to manage businesses effectively, particularly in terms of cost management, despite the challenges posed by the pandemic and subsequent legislative changes. The role of newly established enterprises in job creation within the construction sector has remained consistently stable, with their contribution consistently surpassing 5% throughout the majority of the period under investigation.

The analysis indicates that discrepancies among expenditures, costs, and selling price, driven by adverse economic conditions or fiscal policies, can heighten the likelihood of bankruptcy. The application of the Anghel model demonstrates that small enterprises are frequently the initial victims of external shocks, underscoring the necessity for legislative interventions to alleviate bankruptcy risks in this vital sector.

A company specific to the construction sector and the private sphere, particularly regarding liberal professions, can serve as a model for inclusion in a best practice manual for fiscal-legislative projections and activity planning for the execution of small construction projects.

From a legislative perspective, new regulations must be accompanied by comprehensive and substantial impact studies, as any legislative change—whether positive

or negative—can significantly influence, by more than 50%, the financial outcomes of a small or medium-sized enterprise (SME).

Simultaneously, upon juxtaposing the study results with sectoral statistical data pertaining to construction enterprises in Romania, one may affirm the presence of analogous evolutionary trends to those observed in the investigated firm.

The following abbreviations have been defined in this article:

SME: small and medium-sized enterprises, defined according to turnover and number of employees, in specific Romanian legislation,

ANAF (National Agency for Tax Administration).

5. CONCLUSIONS

The research objectives were structured around three comprehensive directions. The first direction focused on conducting a detailed financial analysis of the selected micro-enterprise. Its activity in the field of construction design was evaluated over its entire operational period, spanning from 2005 to 2022.

The second research direction aimed to observe and highlight the legislative changes in recent years that had a clear impact—whether positive or negative—on the financial performance of the microenterprise. Additionally, this direction sought to quantify the extent of this impact.

For the third research direction, the analysis was expanded to the sectoral level. By examining statistical data on all construction firms, the objective was to identify general industry trends and assess how well these trends aligned with the financial outcomes of the examined microenterprise following the legislative changes.

The study by Nastac, Isaic-Maniu, and Drăgan (2017) [9], referencing the SME Sector Annual Report 2013-2014 (2014), as well as the work by Drăgan and Isaic-Maniu (2012) [10], discusses notable features of Romania's economic structure.

The financial analysis conducted on the construction company, emblematic of the SME category within the Romanian construction sector, demonstrates the capacity of these tiny, agile enterprises to adjust to a very dynamic economic and regulatory landscape.

The projects undertaken by the microenterprise encompassed essential components of complex construction tasks, including finishing works, the installation of floor and wall tiles, and masonry. This enabled the microenterprise to maintain a consistent operational front for its employees. The periods of economic expansion and contraction were closely linked to legislative changes and the broader economic context, such as the global financial crisis of 2009 and the COVID-19 pandemic.

Despite facing numerous challenges, the company has exhibited considerable resilience, successfully recovering from various external disruptions, in part due to tax policies supportive of SMEs. However, this adaptability incurred certain costs, revealing the company's susceptibility to significant changes.

The construction sector, within the technical engineering domain, is a specialized field characterized by distinctly defined activities governed by prevailing technical norms and laws. This is one of the factors that contribute to the logistical equipment expenses necessary for executing activities in the construction sector.

The comparative study of statistical data validates the trends identified among the examined enterprises, highlighting the significance of legislative stability for the survival and success of SMEs.

Fiscal and legislative initiatives that have aided small enterprises have positively influenced their establishment and sustainability rates, hence fostering job creation and economic stability. Nevertheless, further legislative attention is essential to avert additional volatility that could threaten these specialized technological engineering enterprises vital to the national economy.

The comprehensive financial analysis of the company, along with the bankruptcy score derived from the Anghel model, elucidated the economic and legislative effects on its performance, while the assessment of sectoral statistical data facilitated the recognition of analogous trends throughout the construction sector.

The research demonstrated a direct correlation between legislative changes and the financial performance of small enterprises, affirming the significance of legislative assistance for their survival and growth.

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