

Adaptive supply chain strategies under fiscal shocks and digital transformation: the case of Romania

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Abstract— In the context of increasing fiscal pressures in Romania including the upcoming tax policy changes effective August 1st, 2025, such as the increase in VAT rates, additional excise taxes on fuels and the increase in corporate taxes – companies are facing much greater cost volatility along the entire supply chain. All these internal developments, superimposed on global economic uncertainties and the instability of energy prices (see US policy in relation to the European Union), require an urgent strategic rethink in the field of logistics and supply chain management (SCM). The article analyzes how logistics companies in Romania and the rest of Europe can adapt their operational strategies to mitigate the impact of fiscal shocks, while using modern digital tools such as large-scale linguistic models (LLM), ERP systems and predictive analytics.

The results show that digital integration not only allows for better cost control but also strengthens supply chain resilience and accelerates all decision-making processes in times of fiscal instability. By framing Romania as a case study within the broader context of emerging economies, this research contributes to the global discussion on how regional fiscal policy changes shape logistical competitiveness and supply chain agility. It also proposes policy-level recommendations for fiscal buffering mechanisms and incentive-driven digital adoption in SCM-intensive sectors.

Keywords— digital transformation, emerging economies, fiscal shocks, supply chain, Romania.

INTRODUCTION

The logistics chain includes manufacturers, suppliers, carriers, warehouses, wholesalers and retailers, and other intermediaries, as well as the customers themselves. Any product sold on the consumer goods market, in its evolution from raw material to finished product, goes through a series of successive transactions on the business-to-business market.

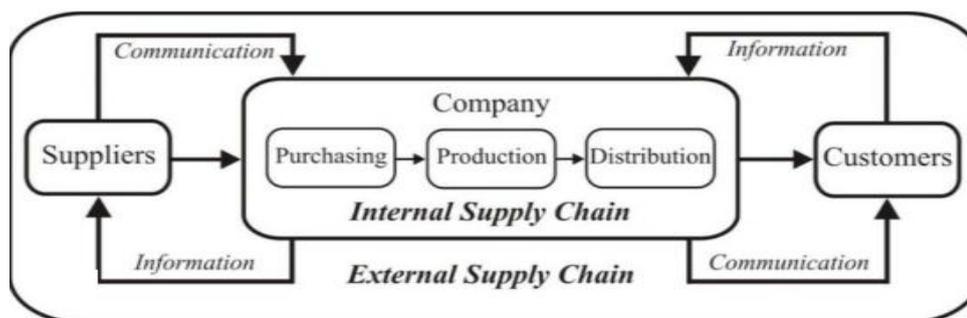


Fig. 1 A company's supply chain

The supply chain can have varying degrees of complexity depending on the number of members and the variety of business processes, but there is always central organization. This organization can manage the entire supply chain, and even if the supply chain is not managed, it - as a business phenomenon - continues to exist. In the competitive business landscape, achieving business performance is crucial for any company. To succeed in the market, retailers are adopting Industry 4.0 solutions for logistics, which involves using technologies to design, plan, and optimize supply chains.

The automation of an increasing number of processes, as well as the widespread adoption of technologies such as blockchain, Internet of Things (IoT), augmented reality (AR) and artificial intelligence (AI), are bringing paradigmatic changes to the logistics and international transport sector, creating new opportunities for those who adopt these technologies and at the same time widening the gap with sectors that fail to adapt in a timely manner to the new context.

The term “Logistics 4.0” refers both to the effects of technological developments in Industry 4.0 on logistics, as well as to the contribution of logistics to the creation and support of Industry 4.0. Logistics 4.0 is the result of

integrating into the supply chain complex software solutions for process management and optimization, along with the use of Artificial Intelligence (AI), Big Data, and the Internet of Things (IoT). The integration of next-generation technologies plays a crucial role in significantly improving a company's efficiency, performance, and competitiveness by connecting customers, processes, devices, material resources, and supply chain partners through a digital network, thus ensuring constant communication and precise control of workflows. In the global economy, the success of a company is obviously built on modern principles, in which an important role is played by those of a managerial and logistical nature. Only in this way can a company hope to penetrate and maintain itself on the national or international market, both plans, without distinction, being highly competitive. Supply chain management (SCM) is crucial in establishing long-term partnerships that are pivotal for achieving sustained business success. Effective SCM demands rigorous criteria and decision-making processes, which significantly impact the overall outcomes. Recent studies highlight cloud-based market analysis as a valuable tool for assessing supply chain dynamics, offering insights into the benefits and challenges of SCM.

However, when major and frequent government fiscal changes occur, they affect and disrupt the supply chain not only in that country but in the entire area.

I. ROMANIA'S FISCAL FRAMEWORK EFFECTIVE FROM AUGUST 1, 2025

Romania's fiscal situation as of August 1 reflects increasing pressure on the private sector due to the comprehensive package of fiscal measures. In the context of global geopolitical uncertainties (such as the trade wars initiated by the United States and ongoing conflicts across various regions), Europe is generally anticipating a state of recession. However, because of its significant budget deficit, Romania is the first country to adopt a strict fiscal package.

The Government's motivation is to increase budget revenues, reforms requested by the PNRR, otherwise Romania risks blocking significant amounts of money from the EU budget.

Main changes in the fiscal package:

- Increase of VAT from 5% to 21% for the delivery of apartments and houses.
- Increase of VAT from 19% to 21% for most goods and services.
- Increase of VAT from 9% to 11% for certain products (food, accommodation, events, medicines, etc.).
- Increase of excise duties on gasoline and diesel by 10%, with a direct effect on transport costs and a significant impact on distribution chains.
- Increase of excise duties on alcohol and tobacco by 10%.
- Higher corporate taxation: increase of labor-related taxes, higher corporate income tax, and an increase in the dividend tax from 10% to 16%.

Estimated sectoral impact on logistics and transportation:

- Fuel costs may increase by 5–12%, depending on route and volume.
- Pressure on small subcontractors (courier companies, local transport, etc.).
- Need to renegotiate contracts with partners and suppliers.

Retail and FMCG (fast-moving consumer goods):

- Higher VAT → increased product prices → decline in consumption.
- Challenges in storage, transportation, and price adjustment.

SMEs:

- Those operating with low margins will be most affected by the turnover tax.
- Increased need for digitalization to control costs and improve efficiency.
- International supply chains:
- Romania risks becoming less competitive as a logistics/regional hub compared to Bulgaria and Hungary (which may maintain lower tax levels).

The 2025 fiscal reforms introduce additional pressure on economic actors in Romania, particularly those in the logistics, transport, and distribution sectors. These changes compel companies to adopt rapid adaptation strategies, such as route optimization, process digitalization, and the renegotiation of contractual relationships. In the absence of proactive measures, the competitiveness and resilience of supply chains are seriously affected.

The Fiscal Council and consultancy firms such as PwC Romania and Deloitte have published fiscal impact reports, according to which the new tax measures applicable from August 2025 will generate a direct increase in the tax burden on companies, particularly in sectors with high turnover and low profit margins, such as transport and logistics. It is estimated that the new excise duties and VAT rates will lead to operational cost increases of between 6% and 12%, depending on the size and typology of the company. Furthermore, the introduction of a minimum turnover tax directly affects SMEs, especially those operating in domestic distribution chains, which risk becoming uncompetitive compared to foreign operators or companies from countries with more favourable tax regimes.

II. METHODOLOGY

To assess the real impact of the 2025 tax changes on supply chains, this research uses a mixed methodology, combining quantitative analysis of national and sectoral statistical data with an applied case study and economic-financial simulations. Thus, it aims both to quantify the effect of the new measures on logistics costs and to understand

the adaptation strategies practiced by economic operators. Based on a hybrid methodology – combining secondary data analysis, interviews with SCM specialists and fiscal impact simulations – the research identifies critical pressure points in the case of a transport company and proposes adaptive management solutions.

As a research method, a mixed methodology (quantitative and qualitative) is employed, structured along three directions:

- Analysis of publicly available economic and fiscal statistical data.
- Development of a case study applied to a company active in the logistics/distribution sector.
- Design of ‘what-if’ economic simulations, in which possible scenarios of fiscal variable changes and their impact on costs are analysed.

For the quantitative component of the research, official and specialized sources were consulted, such as:

- National Institute of Statistics (INS) – data on fuel consumption, cost structure in transportation, and the consumer price index.
- Ministry of Finance and ANAF – official communications on changes to VAT, excise duties, and the turnover tax.
- Eurostat – comparative data at the regional level.
- Sectoral reports by PwC, Deloitte, and the Fiscal Council – estimates regarding the fiscal impact on sensitive economic sectors, such as transport and logistics.

For the applied part, the research is based on a case study conducted in collaboration with the company RT LLC. active in the field of national transport / industrial logistics. RT LLC was selected as the case study because it is part of the leadership of the Transport and Logistics Association and provided full access to its accounting data, allowing for an in-depth analysis of the impact on the business environment. The following aspects were analyzed:

- The current structure of operational costs.
- The estimated impact of VAT and excise duty increases on profit margins.
- Measures already implemented to offset fiscal pressures (e.g., route optimization, contract renegotiation, digitalization of management processes).
- The level of technology adoption (ERP, routing software, integrated logistics platforms).
- Semi-structured interviews with managers responsible for logistics, finance, and operations.

The results of the study provide a detailed perspective on concrete adaptation mechanisms, with relevance for SMEs in Romania in a similar fiscal situation.

Important limitations:

- Limited access to detailed accounting data and sensitive information on firms' internal costs.
- Uncertainty regarding the evolution of taxation in the second half of 2025.
- Generalization of results from a single case study may be limited to other industries.
- Lack of long historical series on the combined impact of taxes on SCM.

However, the combination of methods provides a robust, balanced and useful picture for managerial and decision-making analysis in the current fiscal context.

III. RESULTS AND ANALYSIS

RT LLC. is a logistics operator based in Constanța, specialized in domestic and international road transport of general cargo and containers. The fleet consists of 30 Euro VI trucks and 10 vans for local distribution, covering more than 15 EU countries. The company also provides temporary warehousing services at its own terminal in Constanța city.

Impact of fiscal measures on RT LLC.:

- The additional excise duty led to an increase of €0.114/liter for diesel fuel.
- For an average monthly consumption of approximately 95,000 liters, this generated an additional cost of around €10,830 per month, equivalent to +8.5% in fuel expenses compared to 2024.
- The VAT increase from 19% to 21% for related services (warehousing, handling, port operations) added approximately €1,900 per month to operational costs.
- Additional turnover tax:

As a company with an annual turnover exceeding €20 million, RT SRL is subject to the 16% corporate income tax and will be further impacted starting 01.01.2026, when the dividend tax will rise from 10% to 16%, representing an estimated €100,000 per year (based on 2024/partial 2025 revenues).

TABLE 1 Estimated Financial Performance: Q2 vs. Q4 2025

Cost Component	Q2 2025 (euro)	Q4 2025 (euro)	Difference (%)
Fuel	400.000	432.490	+8,4%
Warehousing & Handling	50.000	55.700	+10,0%
Taxes and Duties	252.000	276.000	+10,2%
Total	702.000	764.190	+~9%

Measures taken by RT LLC to mitigate the impact:

- Route optimization using a Transport Management System (TMS), which reduced empty mileage by approximately 12% in Q4, according to simulations.

- Negotiation of contracts with fuel suppliers for volume discounts (up to –€0.02/liter).
- Testing of intermodal transport (truck + rail) on the Constanța–Oradea–Budapest route to reduce cost per ton-km.
- Introduction of an automatic price adjustment clause in client contracts, linked to the fuel price index.

Even though RT SRL managed to mitigate some of the impact through optimization and renegotiations, the increase in costs from taxes and fuel alone requires a constant adaptation of commercial policy. In the absence of compensatory measures from the state, the pressure on margins will continue in 2026.

IV. CONCLUSIONS

The purpose of this research is to evaluate the impact of the new fiscal policies implemented in Romania starting August 1, 2025, on supply chains and logistics, with a focus on operational costs, company behaviour, and the adaptation strategies adopted. The study aims to provide an integrated analysis between current economic realities and the digitalization directions required for ensuring the resilience and competitiveness of companies in the sector.

In conclusion, adaptive supply chain strategies should be explicitly linked to the direct effects of fiscal shocks, and can be structured as follows:

- a. Cost optimization through intelligent fiscal management
 - Reassessment of supplier contracts to include automatic price adjustment clauses in line with tax changes.
 - Outsourcing certain logistics services to providers with more advantageous fiscal structures (e.g., hubs in other EU countries).
- b. Reducing fuel dependency through green and telematics solutions
 - Implementation of telematics for route optimization and fuel consumption reduction.
 - Energy mix in the fleet – gradual introduction of electric/hybrid vehicles where routes and infrastructure allow, and negotiation with fuel suppliers for fixed short- and medium-term prices (operational hedging).
- c. Reconfiguration of the logistics network
 - Consolidation of distribution hubs to reduce kilometers per route and use of cross-docking to minimize warehousing costs.
 - Horizontal collaboration between companies in the same sector to share transport capacity and storage facilities.
- d. Full digitalization of processes
 - Integrated ERP systems to connect procurement, warehousing, transport, and billing in real time.
 - Use of predictive analytics to anticipate the impact of fiscal changes on prices and inventories.
 - Automation of repetitive processes (invoicing, fiscal reporting, customs document management).
- e. Diversification of supply sources and flexible contracting
 - Identification of alternative suppliers from other EU or non-EU countries to reduce exposure to domestic fiscal changes.
 - Short and flexible contracts that allow for rapid renegotiation depending on new economic conditions.
- f. Periodic scenario-building and simulations
 - Development of a “Fiscal Shock Response Plan” with working scenarios: 5%, 10%, or 15% increases in major costs.
 - Stress-testing the supply chain through software simulations to identify vulnerable points.”

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