



Verticalization as a productive survival strategy: the VIARE case of industrial resilience in the face of Brazilian deindustrialization

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Summary

In recent decades, Brazil has undergone an accelerated and silent process of deindustrialization, aggravated by structural factors such as high tax burdens, legal instability and the massive invasion of low-cost imported products. In this adverse scenario, the verticalization of production — historically seen as costly and unfeasible — is reemerging as a strategy for resilience, innovation and corporate sovereignty. This article presents a case study of the VIARE (Integrated Verticalization of High Corporate Resilience) methodology, successfully applied by a national company in the sports accessories sector, which reversed the logic of outsourcing and rebuilt its entire value chain in an integrated and self-sufficient manner. Developing and implementing such a robust model required an unusual level of technical mastery, systemic vision and multidisciplinary integration capacity. Perhaps this is why, to date, it has not been developed or applied on a large scale: it is a complex system that demands a multifaceted professional, with technical, scientific and strategic training capable of understanding 100% of the production and logistics chain. Using an approach that combines production engineering, strategic logistics, and organizational psychopedagogy, the VIARE project has achieved measurable and extraordinary results: a 27% increase in operational efficiency, a growth in net margin from 2.5% to 11% in five years, and consolidation as the largest manufacturer in the segment in Latin America. The model challenges the dominant narrative of external dependence and proposes a new paradigm of industrialization based on systemic intelligence, technical mastery, and internal strengthening. This article therefore aims to shed light on companies that face the same challenges and as a reference point for universities, entrepreneurs, and public policymakers interested in rebuilding Brazil's industrial capacity. It also seeks to encourage complementary studies that can enhance and improve the efficiency of the VIARE method.

Keywords: productive verticalization, business resilience, deindustrialization in Brazil, integrated value chain, production engineering.

Abstract

In recent decades, Brazil has undergone an accelerated and silent process of deindustrialization, intensified by structural factors such as high tax burden, legal uncertainty, and a massive influx of low-cost imported products. In this adverse scenario, productive verticalization—historically perceived as costly—reemerges as a strategy for resilience, innovation, and business sovereignty. This article presents the case study of the VIARE methodology (Integrated Verticalization for High Business Resilience), successfully implemented by a national company in the sports accessories sector, which reversed the outsourcing logic and rebuilt its entire value chain in an integrated and self-sufficient manner. Through a multidisciplinary approach that combines production engineering, strategic logistics, and organizational psychology, the VIARE project achieved measurable and extraordinary results: a 27% increase in operational efficiency, net margin growth from 2.5% to 11% in five years, and consolidation as the largest manufacturer in its segment in Latin America. The model challenges the dominant narrative of external dependence and proposes a new paradigm of

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industrialization based on systemic intelligence, technical mastery, and internal strengthening. This article aims to serve as a reference for companies, universities, and public policies focused on rebuilding Brazil's industrial capacity. Its extraordinary depth may explain why it had not yet been developed or tested, as it demands a multifaceted professional with technical and scientific training capable of understanding the entire production and logistics chain. The author presents this method as a beacon for companies facing similar challenges and as a call for further research to enhance its effectiveness.

Keywords: productive verticalization, business resilience, deindustrialization in Brazil, integrated value chain, production engineering.

1. Introduction

Over the past two decades, Brazil has undergone an unprecedented process of deindustrialization, marked by a continuous erosion of the country's productive capacity. Although the phenomenon has been widely diagnosed by agencies such as CNI, IEDI and IBGE, it still lacks practical and methodological responses with high impact that are accessible, replicable and sustainable within the real context of Brazilian companies. What has been observed is an increase in external dependence, aggravated by factors such as the appreciation of the real in certain periods, the relaxation of customs barriers, the high internal tax burden and the complex legal and labor instability of the country. In this scenario, outsourcing and, later, fourth-party contracting, have become widely adopted practices as palliative attempts to reduce costs and mitigate operational risks.

However, over time, these practices revealed their structural weaknesses. The lack of control over critical processes in the production chain exposed Brazilian companies to total vulnerability in the face of international competition, especially from products originating from Asian markets with incomparable cost structures and subsidies. As a result, the national industrial sector began to suffer, with factories closing down, know-how being lost, jobs being eliminated and Brazilian industrial culture being diluted. The country, once aspiring to technological and productive self-sufficiency, became hostage to imports in practically all segments.

This study is set in this context of silent collapse, bringing to light a counterintuitive but technically sound approach: broad, strategic and intelligent verticalization of the production chain as an instrument for survival, recovery and industrial protagonism. Developed and applied by the author, the **VIARE methodology – Integrated Verticalization of High Business Resilience** arose from the concrete need to create a self-sustainable production system, capable of withstanding external chaos and recovering profit margins through absolute control of the value chain.

VIARE is not limited to the integration of manufacturing processes. It is a comprehensive model, designed based on the fundamentals of production engineering, integrated logistics, systemic analysis and organizational psychopedagogy. During its implementation in a national sports accessories industry, the model proved capable of reversing the downward curve of profitability, optimizing internal resources and positioning the company as the largest manufacturer in its segment in all of Latin America — an unusual feat in a country where the industrial park has been systematically weakened.

This article therefore proposes an in-depth analysis of the VIARE model, presenting its conceptual foundations, application methodology, measurable results and practical implications. In doing so, it seeks to contribute to scientific production and the strategic debate on possible paths for the reindustrialization of Brazil, offering a real example of how technical intelligence, combined with entrepreneurial courage, can redesign the productive destiny of a nation.



2. Theoretical framework

The consolidation of models of vertical production, such as VIARE, requires direct dialogue with the main theories that govern industrial dynamics, the supply chain and contemporary organizational models. This section presents the scientific foundations that support the methodological proposal, articulating classic concepts of industrial administration, integrated logistics and corporate psychopedagogy.

2.1 Brazilian deindustrialization: causes and effects

Deindustrialization in Brazil is a multifactorial phenomenon characterized by a reduction in the share of manufacturing in GDP and the systematic closure of factories. According to studies by the Institute of Studies for Industrial Development (IEDI) and the National Confederation of Industry (CNI), factors such as the “Brazil Cost,” tax complexity, legal instability, and international competition with low-cost products have eroded the national production base (CNI, 2020; IEDI, 2021). This trend was aggravated after the economic opening of the 1990s, when the country opted for liberalization policies without structural counterparts for the national industry.

2.2 Theory of the firm and transaction costs

Ronald Coase (1937), when introducing the theory of transaction costs, demonstrated that companies exist to internalize processes whenever the cost of contracting them out is greater than doing them in-house. In unstable environments, with high uncertainty and information asymmetry, verticalizing critical processes is a rational way to reduce dependencies and risks. The VIARE model, by recovering and expanding this logic, proposes a verticalization that is not only financial, but also strategic, connected to the concept of operational resilience.

2.3 Value chain and competitive advantage

Michael Porter (1985), when proposing the value chain model, argued that sustainable competitive advantage is built on technical and strategic mastery over each link in production. Outsourcing, although efficient in some contexts, can compromise the uniqueness of the product and dilute essential competencies. VIARE, by reintegrating previously fragmented functions, regains control over technical differentiation and customer experience — two pillars of competitive advantage.

2.4 Integrated logistics and supply chain management

Authors such as Martin Christopher (2016) and Chopra & Meindl (2019) approach the supply chain as a complex system where integration, visibility and speed are critical success factors.

VIARE internalizes this logic, establishing a productive ecosystem where the flows of information, materials and capital are managed with precision, predictability and the ability to adapt quickly to external shocks.

2.5 Organizational innovation and continuous learning

Joseph Schumpeter (1942) already pointed out that innovation is the lifeblood of capitalism, and that companies that break with current models are the true drivers of progress. At VIARE, innovation lies in the very architecture of the system, which incorporates practices of continuous organizational learning, agile prototyping, internal training and field feedback. This approach connects with contemporary studies on *learning organizations* (Senge, 1990) and *continuous improvement* (Imai, 1986).

2.6 Business psychopedagogy and team reengineering



The application of psychopedagogy in organizations, although recent, has gained ground by addressing learning in the workplace in a structured manner, respecting individual rhythms, skills and experiences. The author, by applying psychopedagogical methodologies in his industry, promoted a behavioral and technical reconfiguration of teams, increasing engagement and efficiency. This practice dialogues with Ausubel's (1968) approaches to meaningful learning and with Fleury & Fleury's (2001) integrated competency models.

3. Methodology

This article adopts the **longitudinal case study** methodological approach, focusing on the in-depth analysis of a real process of organizational transformation that occurred over the course of a decade. The choice of this method is based on the need to investigate, in a detailed and contextualized manner, how the application of the VIARE (Integrated Verticalization of High Corporate Resilience) methodology was able to promote a strategic and operational turnaround in a national company in the sports accessories sector.

The study was conducted in a qualitative and quantitative manner, using multiple data collection and analysis tools:

- **Participant observation:** the author is the creator and executor of the VIARE model, which provided privileged access to all phases of the production process, strategic decisions and internal results.
- **Technical documentation:** internal production reports, financial spreadsheets, key performance indicators (KPIs), logistics flow maps, organizational charts and implementation schedules were used.
- **Measurable indicators:** the main data analyzed include variations in net margin, operational efficiency (OEE), reduction in fixed and variable costs, average delivery time, customer satisfaction level, and number of active distribution and resale points.
- **Systemic mapping:** a mental and structural map was created with more than 500 distribution points, integrating areas such as engineering, R&D, manufacturing, quality, logistics, sales, marketing, training and after-sales.
- **Comparative analysis:** pre-VIARE performance (based on outsourcing and fragmented processes) was compared with results after full implementation of the model.

The VIARE structure was modeled based on three main methodological axes:

1. **Progressive technical integration of the production chain** – replacement of outsourced processes with internal structures, with total control over design, testing, production, packaging and logistics.
2. **Continuous learning and organizational training system** – development of a technical training and psychopedagogical training center for all employees, distributors and representatives.
3. **Strategic management based on engineering and performance analysis** – application of tools such as PDCA, SWOT analysis, Kaizen, Lean Manufacturing and Value Engineering for constant optimization.

The time frame between 2015 and 2023 allows us to assess not only the immediate impacts of the change, but also the effects accumulated over time, offering a systemic perspective on the viability and scalability of the model.

This methodology, therefore, not only describes a successful business experience, but proposes a **replicable technical protocol** that can be adapted by companies of different sizes and segments that face the same structural dilemmas as the Brazilian production sector.

4. Presentation of the practical case: application of the VIARE methodology



The origin of the VIARE methodology is directly linked to the chaotic reality faced by national companies in the context of Brazilian deindustrialization. During the first years of the author's business life, between 2005 and 2015, the environment was dominated by the logic of outsourcing and subcontracting. These practices, then considered modern, promised to reduce fixed costs, minimize labor liabilities, and increase operational flexibility. During this period, the author structured his company based on these pillars, delegating critical stages of the production chain to third parties, in line with the prevailing mentality.

However, this strategy began to collapse rapidly when the Brazilian market began to be invaded by imported products — notably from Asia — with unbeatable prices and mass production. Predatory competition, combined with high internal taxes, political instability, legal uncertainty and rising logistics costs, compromised the viability of maintaining outsourced operations with increasingly compressed margins. The company's net margin reached the critical limit of 2.5%, signaling an imminent collapse.

It was at this point that the disruptive decision arose: instead of continuing to shrink or migrating to pure imports (as 90% of companies in the sector did), the author opted for an **internal revolution**,



beginning the radical process of **total verticalization of the production chain** — the embryo of the methodology that would become VIARE.

4.1 Implementation steps

The VIARE model was built in phases, each guided by process engineering, logistics analysis, technical expertise and human empowerment. The main stages were:

- **Market research and strategic product analysis:** technical mapping of real consumer demands, identifying flaws in competing products, identifying market gaps and opportunities for innovation.
- **Internal development of projects and prototypes:** all designs, practical tests and technical validations are now carried out internally, reducing the time between design and production and allowing for more agile and precise iterations.
- **Implementation of in-house production engineering:** creation of internal production lines with direct quality control, customization capacity, real-time adjustments and reduction of rejects.
- **Internal manufacturing of packaging and own logistics management:** elimination of external suppliers of critical inputs, such as packaging and promotional materials, and implementation of storage logistics integrated with production.
- **Creation of an internal technical and commercial training center:** direct training of employees, representatives, distributors and store owners based on psychopedagogical methodologies and meaningful learning.
- **Development of own distribution and sales channels:** construction of a network with more than 1,400 active points among resellers, store owners and specialized professionals, with internal CRM and complete technical support.
- **Implementation of an after-sales and reverse logistics system:** structuring a dedicated channel for customer service, product warranty and technical reanalysis, ensuring reputation control, technical feedback and loyalty.





4.2 Results obtained

The impact of verticalization was massive and measurable. In a five-year period (2018–2023), enterprise:

- **Reduced operating costs by 27%**, even with increased volume.
- **Increased its net margin from 2.5% to 11%**, transforming a risky business into a profitable and sustainable operation.
- **It has established itself as the largest manufacturer in its niche in Latin America**, being one of the very few industries in the sector with a 100% national production chain.
- **Created an ecosystem of production, sales, training and support**, based on intelligence organizational, process engineering and operational autonomy.

These results were obtained **without external capital contributions, without government incentives and without tax breaks**, which demonstrates the practical effectiveness of the VIARE model even in the most hostile environments.

4.3 Inflection Point

The difference was not only in the courage to verticalize, but in the extraordinary nature of how this was done, with technical precision, systemic vision and integrated psychopedagogical management of the teams. The complexity of the model required a multifaceted professional, with technical and scientific training and the ability to see 100% of the production and logistics chain in a connected way. The internal cultural reconfiguration was based on continuous training, collaborative leadership and strategic clarity of purpose, which transformed the company into a living, adaptive and resilient organism. This point marks not only an operational turning point, but the concrete manifestation of a methodology with the potential to inspire new industrial paradigms.

5. Critical analysis

The VIARE model presents itself as a conscious antithesis to the logic of massive outsourcing that has dominated the Brazilian business scene in recent decades. The decision to verticalize, in a hostile environment such as the country, goes against conventional management manuals that advocate decentralization as a way to optimize operations and reduce risks. However, it is precisely this **strategic inversion**, combined with deep technical expertise, that makes VIARE not only viable, but **exceptionally effective**.

5.1 The failure of the outsourced model

Companies that remained dependent on outsourced supply chains systematically faced the following problems:

- **Loss of control over quality and deadlines**, generating instability in delivery and dissatisfaction of the end customer.

- **Progressive increase in external costs**, due to exchange rate adjustments, international freight, shortage of inputs and lack of predictability in supply.
- **Legal and labor vulnerability**, including due to co-responsibility for irregular practices by suppliers.
- **Difficulty in innovation**, since the creation and development of new products depend on external and slow structures.
- **Dilution of brand identity**, as outsourced production limits real differentiation and makes the product easily substitutable.

Many companies that followed the traditional outsourcing model ended up becoming mere resellers of generic products with very low added value. As a result, they became hostages to prices and to their own suppliers, who, in large part in Brazil, began to operate as true “factory stores”, limited to logistics, commercial policy and the brand of the industry that centralized distribution. This format compromises strategic autonomy, hampers operations and increases vulnerability to external competition and market volatility.

5.2 VIARE as a model of resilience and sovereignty

The VIARE proposal rescues the classic concept of **strategic autonomy**. By reintegrating critical processes, the model:

- **Regains control over the value chain** and enables rapid and accurate adjustments.
- **Creates short feedback cycles and continuous improvement**, favoring innovation and constant technical improvement.
- **Ensures greater control over operating costs**, enabling more sustainable margins even in crisis scenarios.
- **Strengthens internal human capital**, with training, technical qualification and building a culture of excellence.
- **Reinforces the brand identity** and reliability perceived by the end customer, expanding the loyalty and perceived value.

While most companies have adapted by stripping their structure down to the bone, VIARE has created a **muscular, coordinated and adaptive structure**, capable of reacting to market variations without compromising its operational integrity.

5.3 Implications for the national production sector

VIARE's success challenges the idea that Brazil can no longer manufacture. On the contrary, it shows that **reindustrialization is possible**, as long as it is done with technical intelligence, logistical rationality and pedagogical expertise on the part of the team.

By applying the fundamentals of production engineering, supply chain, organizational psychopedagogy and systemic innovation, VIARE establishes a new paradigm: **verticalization as a defense weapon against the collapse of the national industry**.

Furthermore, the VIARE model can be adapted to different sizes and segments, becoming a **real reference for small and medium-sized companies** that wish to recover their productive independence and escape from chronic dependence on the resale model.



6. Conclusion

In a country historically marked by cycles of industrial euphoria and collapse, verticalization is no longer just a strategic choice and has become, in many cases, a condition for survival. The VIARE model, developed and applied by the author over the course of a decade, represents a pragmatic, structured and highly technical response to the failure of the outsourced model that dominated Brazilian industry.

By rebuilding the production chain internally, with absolute control over processes, people and products, VIARE breaks with the logic of external dependence and demonstrates that it is possible — even in one of the most hostile business environments on the planet — to increase efficiency, recover margins and build a self-sufficient and scalable production ecosystem.

The results are not just operational; they are symbolic. VIARE proves that Brazil can still manufacture, innovate, train, distribute, guarantee and evolve based on its own intelligence and workforce. It points a new path for companies that are on the brink of productive bankruptcy, but still have the courage and vision to reverse the dominant logic.

More than a business model, VIARE represents a strategic alternative to the Brazilian industrial crisis, based on the reconstruction of productive autonomy and the valorization of technical knowledge as a central axis of competitiveness. This article proposes that managers, entrepreneurs and public policy makers consider the systematization of integrated production chains as a tool for resilience and operational efficiency. Although VIARE is not publicly available, its successful application demonstrates the potential of similar approaches,



encouraging the deepening of technical studies and the adoption of models that prioritize sustainable industrialization in Brazil.

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