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MODULAR SYSTEM FOR BUSINESS RESILIENCE

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INTRODUCTION

Relevance of enhancing enterprise resilience and business continuity

Over the past decades, the number of factors capable of significantly affecting business operations has increased regardless of an enterprise's size, industry, or level of development. Economic crises, disruptions in supply chains, shortages of raw materials and components, shifts in consumer demand, workforce-related challenges, pandemics, and other external influences have demonstrated that even financially sound companies may face a sharp decline in performance or a complete disruption of certain business processes.

Practical experience shows that the loss of enterprise resilience is often caused not by large-scale external disruptions themselves, but by the absence of internal mechanisms for adapting to changing conditions. In many organizations, certain departments perform exclusively supporting functions and are viewed merely as cost centers. When disruptions occur within such units, their effects quickly spread to other business processes, creating a chain of interconnected constraints. As a result, even a localized problem may lead to reduced production volumes, deterioration in customer service quality, revenue losses, and workforce reductions.

This problem becomes particularly acute under conditions of seasonal fluctuations in demand. During periods of reduced workload, enterprises are forced to maintain underutilized capacity, continue paying employee wages despite insufficient volumes of work, and bear the costs associated with maintaining their infrastructure. Such circumstances result in lower profitability, increased employee turnover, and reduced investment capacity. At the same time, during periods of heightened demand, these same enterprises often face resource shortages and have limited ability to rapidly scale up production or service delivery.

Traditional approaches to enhancing resilience are typically based on building inventories, securing reserve financing, diversifying suppliers, or reducing costs. Despite their practical importance, these measures are primarily aimed at mitigating the consequences of adverse events and do not always address the underlying sources of enterprise vulnerability. Moreover, maintaining reserves often entails additional costs and may be perceived by management as a reduction in the current efficiency of the business.

State of research on the problem

Issues related to ensuring enterprise resilience have long been the focus of researchers and practitioners in the fields of economics, management, and production organization. A substantial body of scholarly literature has been devoted to crisis management, improving the efficiency of business processes, supply chain management, risk diversification, and the development of competitive advantages for enterprises.

A significant contribution to the development of the concept of enterprise resilience has been made by research in the fields of strategic management, operations management, and the theory of constraints. Within these areas, particular attention has been given to identifying factors that limit enterprise development, improving resource utilization, ensuring supply stability, managing production capacity, and enabling organizations to adapt to changes in the external environment.

A distinct area of research has focused on business continuity. These studies examine mechanisms for building reserves, diversifying suppliers, maintaining safety stocks, distributing risks among supply chain participants, and enhancing the flexibility of production and logistics systems. Considerable progress has also been made in developing approaches aimed at strengthening business resilience under conditions of crisis, abrupt shifts in demand, and disruptions to established economic relationships.

In recent years, interest in this field has grown considerably under the influence of events associated with the COVID-19 pandemic, disruptions to international logistics routes, shortages of certain types of raw materials and components, and increasing instability across many markets. Practical experience has demonstrated that enterprise resilience is determined not only by a company's financial position, but increasingly by its ability to rapidly adapt internal processes to changing operating conditions.

Purpose and objectives of the methodological guide

The purpose of this methodological guide is to develop and describe a modular business framework methodology aimed at enhancing enterprise resilience and ensuring business continuity through the transformation of existing processes into module-assets capable of simultaneously performing the organization's internal functions and generating additional sources of revenue through the commercialization of reserve resources.

To achieve this objective, the following tasks are addressed in this study:

1. To examine the main causes of declining enterprise resilience under conditions of an unstable external environment.
2. To review existing approaches to ensuring business continuity and identify their limitations.
3. To reveal the essence of the modular business framework as an organizational model for enhancing enterprise resilience.

Methodological foundation

The methodological foundation of this guide lies at the intersection of theoretical approaches to enterprise resilience and practical experience in business development under changing external conditions. The proposed methodology is not the result of modeling a hypothetical organizational structure; rather, it is

based on the systematic analysis and transformation of existing business processes that have undergone various stages of development, scaling, and adaptation to external constraints.

In developing the modular business framework, the study draws upon concepts from strategic and operations management, the theory of constraints, supply chain management, risk management, production systems organization, and business continuity management. Particular attention has been devoted to identifying factors that constrain organizational development, as well as to exploring mechanisms for enhancing resilience without a substantial increase in fixed costs.

The methodological foundation of the study is based on the methods of systems analysis, comparative analysis, organizational process modeling, structural-functional analysis, and the practical validation of managerial decisions. The application of these methods made it possible to view the enterprise as an integrated and interconnected system in which changes in individual processes affect the overall resilience of the business.

Practical significance of the modular approach

The practical significance of the modular approach presented in this guide lies in its potential for direct application to enhance enterprise resilience and ensure business continuity across organizations of different sizes and industries. Unlike solutions that require substantial changes to the organizational structure, the establishment of new legal entities, or significant capital investments, the proposed methodology is based on the use of existing processes, resources, and infrastructure within the enterprise.

A key feature of the modular approach is the transformation of an organization's internal processes into module-assets capable of simultaneously supporting core business activities and generating additional sources of revenue. This makes it possible to view resilience not as a set of costs associated with maintaining

reserves and protective mechanisms, but rather as a system capable of creating additional economic value on its own.

The practical application of the methodology enables enterprises to reduce their dependence on individual suppliers, seasonal fluctuations in demand, limited sales channels, shortages of production resources, and other factors that may adversely affect organizational performance. Of particular importance is the possibility of commercializing reserve capacity without compromising the core functions of the business.

The proposed approach makes it possible to identify processes with the potential for further transformation into resilience modules, determine directions for their development, and assess the economic efficiency of managerial decisions. As a result, enterprises gain additional tools for reducing operational risks, increasing the utilization of existing resources, and creating new sources of cash flow.

CHAPTER 1.
THEORETICAL FOUNDATIONS OF ENTERPRISE RESILIENCE

1.1. The concept of enterprise resilience and business continuity

Under contemporary conditions, the operations of any enterprise are influenced by a wide range of internal and external factors that may affect organizational performance. Changes in market conditions, disruptions in supply chains, rising resource costs, labor shortages, seasonal fluctuations in demand, and other constraints can significantly reduce business efficiency. Accordingly, an enterprise's ability to maintain operational continuity, fulfill its obligations, and achieve its objectives regardless of the nature of emerging changes has become a factor of critical importance.

In the economic literature, enterprise resilience is traditionally defined as an organization's ability to maintain stable operations and achieve its planned outcomes under the influence of adverse factors. Depending on the specific area of research, attention may be focused on financial resilience, production resilience, workforce resilience, market resilience, or the resilience of the management system. Despite differences in emphasis, most definitions share a common characteristic: the ability of an enterprise to continue its operations in the presence of constraints and deviations from normal operating conditions.

In practice, enterprise resilience cannot be reduced solely to the availability of financial resources or the size of accumulated reserves. Experience has shown that even companies with substantial revenues and significant assets may encounter serious difficulties when faced with supply disruptions, labor shortages, overloaded production capacity, or the loss of individual sales

channels. Under such circumstances, the ability of an organization to rapidly adapt its processes to new conditions and reallocate available resources without a significant decline in operational efficiency becomes critically important.

1.2. Causes of the loss of operational resilience in business

The operational resilience of an enterprise is determined by its ability to ensure the stable execution of key business processes regardless of changes in the internal and external environment. In practice, a decline in resilience rarely results from a single major event. In most cases, adverse consequences arise from the accumulation of individual constraints, each of which may appear insignificant when considered in isolation. However, as these constraints multiply, the enterprise gradually loses its ability to respond to emerging problems in a timely manner, ultimately leading to disruptions in business continuity.

One of the most common causes of the loss of operational resilience is a high degree of dependence on individual suppliers. When an enterprise relies on a limited number of sources for critical materials, raw inputs, or components, any disruption in supply may result in production stoppages or a substantial decline in operational activity. Particularly risky is a situation in which a supplier effectively becomes the sole channel through which essential resources are obtained. Under such conditions, the enterprise loses its ability to promptly compensate for disruptions and becomes highly vulnerable to external circumstances.

Demand concentration is another factor with a significant impact on operational resilience. Many organizations rely on a limited number of customers, product lines, or sales channels. During periods of rapid growth, such a model may prove highly effective; however, changes in market conditions can lead to a sharp decline in sales volumes. The absence of alternative sources of revenue

Table 1

Main causes of declining operational resilience in enterprises

Cause	Manifestation in enterprise operations	Potential consequence
Dependence on suppliers	Limited number of sources for raw materials, materials, or components	Production disruptions, increased production costs, failure to meet delivery deadlines
Seasonality of demand	Uneven workload throughout the year	Idle capacity during the off-season, overload during peak periods
Employee turnover	Loss of employees possessing critical skills	Decline in quality, increase in errors, higher training costs
Limited production capacity	Inability to accept additional orders	Lost profit, loss of customers
Insufficient warehouse infrastructure	Insufficient storage space, inventory errors, delays in order processing	Disruptions in logistics, slower sales
Dependence on a single sales channel	The majority of revenue is generated through a single source of demand	Sharp decline in revenue if market conditions change
Lack of time buffers	Order fulfillment deadlines are planned without a safety margin	Missed deadlines, reduced customer confidence
Low workforce interchangeability	Employees are assigned to only one function	Increased vulnerability in the event of illness, resignation, or overload of individual employees

Description: The table summarizes the main causes of declining operational resilience in enterprises and illustrates the consequences that may arise in the absence of managed reserves and a modular process organization.

substantially increases the likelihood of financial difficulties and constrains opportunities for further development.

Seasonality poses a significant threat to business resilience. Many enterprises experience uneven demand patterns throughout the year. During periods of high activity, shortages of resources, equipment, and personnel may arise, whereas during downturns a substantial portion of the infrastructure remains underutilized. As a result, enterprises are required to address two opposing challenges simultaneously: maintaining sufficient capacity during peak demand periods while preserving economic efficiency during periods of reduced business activity.

1.3. Transforming a bottleneck from a source of risk into a resilience module

Within any enterprise, there are processes that, to varying degrees, constrain the organization's development potential. In management practice, such elements are commonly referred to as bottlenecks. They may arise in different areas of business activity, including procurement, production, logistics, sales, workforce management, or information support. Regardless of their origin, these constraints affect the performance of the entire system, as they represent critical points through which essential flows of resources, information, or managerial decisions pass.

The traditional approach to managing constraints involves identifying them and subsequently eliminating them. Once a problematic area has been identified, the enterprise seeks to increase the process capacity, allocate additional resources, expand the workforce, or replace the existing technology with a more efficient solution. While such measures do help reduce the negative impact of the constraint on organizational performance, in most cases the process ends at this stage.

Practical experience shows that eliminating a constraint often provides the enterprise not only with a more resilient process, but also with a new resource possessing independent economic

value. It is precisely this stage that remains largely overlooked in traditional management models. The resulting reserve is typically viewed solely as a safeguard intended to prevent the recurrence of a similar problem in the future.

Within the proposed methodology, a constraint is viewed not as an object to be eliminated, but as a potential point for the formation of a new resilience module. Once a dependency has been removed, process capacity has been expanded, or the necessary reserve has been established, the enterprise gains the ability to use the resulting resources not only to support its own operations but also to address external needs. As a result, the process ceases to perform a purely supporting role and begins to contribute to the generation of additional cash flows.

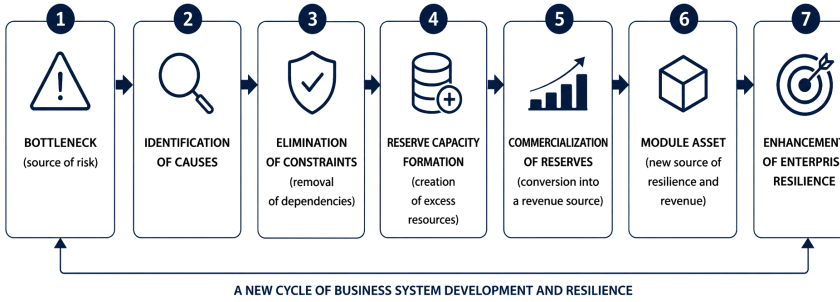

Figure 1. Transformation of a bottleneck into a resilience module

Description: The figure illustrates the sequence through which a constraint within a business system is transformed into a module that provides an additional source of revenue while enhancing the resilience of the enterprise.

1.4. The impact of seasonality, employee turnover, and supplier dependence on enterprise operations

Among the many factors affecting enterprise resilience, seasonality of demand, employee turnover, and dependence on

suppliers occupy a particularly important place. Despite their different origins, these factors share a common characteristic: each has the potential to limit an enterprise's ability to fulfill its obligations and create conditions conducive to systemic disruptions. In most cases, their adverse effects emerge gradually, accumulating within the organization and reducing its capacity to adapt to changes in the external environment.

Seasonality is a characteristic feature of many enterprises regardless of their industry. Fluctuations in consumer demand throughout the year lead to uneven utilization of production, storage, and labor resources. During periods of increasing demand, organizations are required to operate under heightened workloads, expand procurement volumes, recruit additional personnel, and accelerate order fulfillment. In the absence of adequate preparation, such periods are often accompanied by a higher incidence of errors, delivery delays, and a deterioration in the quality of customer service.

The opposite situation arises during periods of declining demand. Production capacity is not fully utilized, part of the workforce becomes underemployed, while infrastructure maintenance costs remain largely unchanged. As a result, the enterprise experiences a deterioration in its economic performance, a decline in resource utilization efficiency, and the need to offset emerging losses through previously accumulated reserves. Prolonged periods of low utilization can significantly slow organizational development and constrain opportunities for further growth.

The greatest challenges arise when the structure of the business depends on a single pronounced seasonal segment. In the absence of alternative sources of demand, the enterprise becomes effectively tied to a limited period during which the majority of its annual revenue is generated. Such dependence makes the organization more vulnerable to changes in market conditions and significantly increases its exposure to unforeseen disruptions.

1.5. Limitations of the traditional linear management model

For many years, most enterprises have been organized according to a linear management model based on the sequential allocation of functions among separate departments. Within such a system, each functional unit is responsible for a clearly defined set of tasks, while interactions between departments follow predetermined pathways. This approach offers several advantages, including a clear distribution of responsibilities, relative ease of control, and the ability to standardize individual processes.

The linear management model emerged under conditions of a relatively stable external environment, where changes occurred gradually and enterprises were able to plan their activities over extended periods. Under such circumstances, the primary focus was placed on improving the efficiency of individual departments, reducing costs, and ensuring the uninterrupted execution of operational activities. As organizations expanded, their management structures became more complex; however, the underlying principle remained unchanged: each department performed its own function and participated only to a limited extent in addressing the needs and challenges of other units.

The effectiveness of such a model largely depends on the stability of every link in the organizational chain. If one element of the system begins to operate with disruptions, the consequences gradually spread to other processes. Supply disruptions lead to reduced production utilization, production delays affect order fulfillment, and logistics-related problems negatively impact customer service levels. As a result, the resilience of the entire system is determined by the resilience of its most vulnerable element.

1.6. Contemporary approaches to ensuring enterprise resilience

Enhancing enterprise resilience is among the key challenges of modern management. Intensifying competition, accelerating technological change, instability in supply chains, and the growing dependence of businesses on a large number of interconnected factors have led to the emergence of various approaches aimed at maintaining organizational performance under conditions of uncertainty. Most of these approaches have evolved as responses to specific threats and constraints encountered in the course of business operations.4

One of the most widely adopted approaches is the creation of financial reserves. The availability of cash resources enables organizations to offset temporary declines in revenue, maintain ongoing operations in the face of unforeseen expenses, and preserve financial solvency during challenging periods. Although financial reserves remain an important component of resilience, they are not, by themselves, capable of addressing the underlying causes of organizational constraints or providing protection against operational disruptions.

The practice of diversifying suppliers and sourcing channels has also become widely adopted. The use of multiple independent sources of supply reduces the risk of operational disruptions caused by problems affecting a particular counterparty. This approach has demonstrated its effectiveness across many industries, especially under conditions of instability in international logistics networks and an increased likelihood of disruptions in the supply of materials and components.

Considerable attention has also been devoted to the establishment of safety stocks of raw materials, components, and finished goods. Such reserves make it possible to mitigate the effects of temporary supply disruptions and maintain the fulfillment of obligations to customers. At the same time, maintaining large inventories entails additional costs associated with storage, warehouse management, and the provision of adequate working capital.

CHAPTER 2.
METHODOLOGY OF THE MODULAR BUSINESS FRAMEWORK

2.1. The essence of the modular business framework

Traditionally, an enterprise is viewed as a set of interconnected processes that ensure the creation of products or the delivery of services. Procurement provides the necessary resources, production performs their transformation, warehousing is responsible for storage, logistics organizes distribution, and sales units manage interactions with customers. Such a structure makes it possible to organize business operations and allocate responsibilities across different functional areas. At the same time, in most cases, each element of the system is viewed exclusively through the lens of its primary function.

As an enterprise grows, the number of processes increases, the interconnections among them become more complex, and the dependence of some departments on others becomes more pronounced. As a result, the effectiveness of the organization is determined not only by the performance of individual employees or departments, but also by the ability of the system as a whole to maintain its functionality in the presence of constraints. A disruption affecting a single critical process may influence several interconnected areas and ultimately lead to a decline in the overall resilience of the enterprise.

The modular business framework represents an organizational model based on the transformation of key enterprise processes into relatively autonomous modules capable not only of supporting internal functions, but also of contributing to the creation of additional economic value. Unlike the traditional approach, in which a department is viewed solely as a supporting

element of core operations, the modular approach enables a broader utilization of accumulated resources, competencies, and infrastructure.

Within the context of this guide, a module is defined as an organizationally structured process or a group of interconnected processes possessing a specific function, a set of resources, measurable performance outcomes, and the capacity to generate additional value beyond the core activities of the enterprise. At the same time, a module does not constitute a separate company, subsidiary, or independent business. It remains an integral part of a unified management system and operates in the interests of the enterprise as a whole.

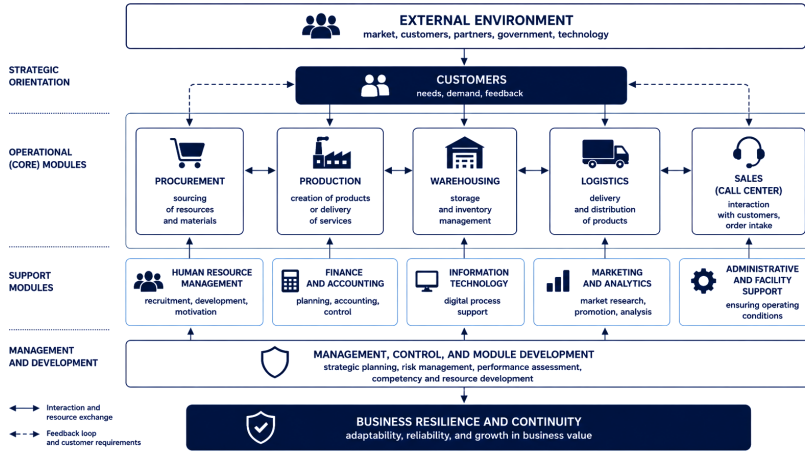

Figure 2. Architecture of the modular business framework

Description: The figure illustrates the overall structure of the modular business framework, highlighting the interrelationships among its core modules and their role in ensuring organizational resilience and business continuity.

2.2. The module as an internal business unit

The module represents the key element of the modular business framework. It is through modules that the mechanisms for enhancing enterprise resilience, creating reserves, and generating additional sources of revenue are implemented. For a proper understanding of the proposed methodology, it is important to distinguish between a traditional department and a module, as fundamental differences exist between them that determine the organization's potential for further development.

In a traditional organizational structure, a department is established to perform a specific function. A production unit manufactures products, a warehouse provides storage, the procurement department is responsible for purchasing activities, and the sales department manages interactions with customers. The performance of such departments is typically assessed based on the quality of the tasks assigned to them and the level of resources they consume. At the same time, the activities of each department are largely confined to the boundaries of its immediate functional purpose.

Within the framework of the proposed methodology, a module is viewed as an internal business unit possessing its own function, resource base, measurable performance outcomes, and the ability to create additional value for the enterprise. Unlike a traditional department, a module is regarded not merely as an executor of a specific set of tasks, but as an autonomous element of the resilience system, capable of contributing to the generation of additional sources of revenue and reducing the enterprise's dependence on external constraints.

An essential characteristic of a module is the existence of a clearly defined output that can be evaluated either quantitatively or qualitatively. For a production module, this output is represented by the manufacture of products; for a warehousing module, by the execution of storage and cargo-handling operations; for a service module, by the provision of services; and for a procurement module, by ensuring the availability of the resources required by

the enterprise. The presence of measurable outcomes makes it possible to objectively assess the performance of a module and determine its contribution to the overall resilience of the enterprise.

2.3. Scope of application of the modular methodology

One of the key advantages of the modular approach is that it is not tied to a specific industry, business size, or organizational structure. The proposed methodology is focused not on a particular type of activity, but on the principles governing the organization of internal processes, the creation of reserves, and the enhancement of resilience. For this reason, it can be applied across a broad range of organizations, from small companies with a limited workforce to large enterprises with complex departmental structures and multi-level management systems.

In small businesses, resilience often depends on a limited number of employees, suppliers, or lines of activity. The loss of a key specialist, supply disruptions, or a temporary decline in demand can have a significant impact on the performance of the entire organization. Under such conditions, the modular approach makes it possible to identify the most vulnerable processes, create additional sources of workload, and gradually establish a system of internal reserves without requiring substantial investments or large-scale organizational restructuring.

For medium-sized enterprises, the ability to make more effective use of existing resources becomes particularly important. As businesses grow, they develop dedicated departments, specialized equipment, warehousing infrastructure, service units, and accumulated expertise. A significant portion of these resources is typically utilized solely to support the core activities of the enterprise. The modular methodology makes it possible to view such processes as a potential foundation for creating additional sources of resilience and generating new cash flows.

2.4. The principle of a module's dual functionality

One of the central principles of the modular business framework is the principle of dual functionality. Its essence lies in the fact that, once a certain level of maturity has been achieved, an internal enterprise process can be used not only to support the organization's core activities, but also to generate an additional source of revenue. Unlike a traditional department, which performs a single designated function, a module assumes a broader role within the management system: it simultaneously supports the enterprise's ongoing operations and contributes to enhancing its resilience through the commercialization of available resources.

In the traditional organizational model, most departments are established to support core business activities. A warehouse stores the company's own products, a production unit fulfills internal

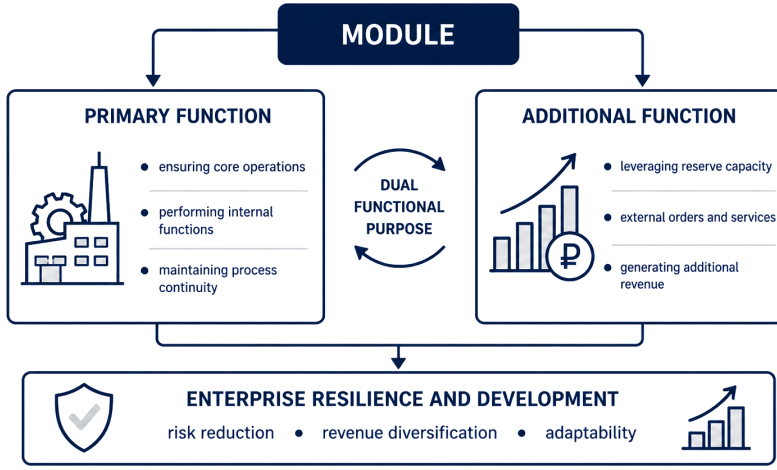

Figure 3. Principle of a module's dual functionality

Description: The diagram illustrates the dual role of a module, demonstrating its function in supporting the enterprise's core operations while simultaneously generating an additional source of revenue through the utilization of reserve resources.

orders, the procurement department acquires the necessary materials, and a call center handles customer inquiries. Within this framework, a department is evaluated primarily on the basis of how effectively it performs its internal function. If a portion of its resources remains unused during a particular period, such underutilization is typically viewed either as a temporary deviation or as excess capacity requiring reduction.

The modular approach offers a different logic. Available capacity, accumulated expertise, established infrastructure, or a well-developed process should not be viewed solely as a reserve for use in the event of a disruption. While preserving the priority of the enterprise's core activities, these resources can serve as a foundation for additional commercial utilization. In this way, reserves cease to be passive elements of protection and begin to function as productive assets of the enterprise.

2.5. Commercialization of reserve operating capacity

The commercialization of reserve operating capacity is one of the key mechanisms of the modular business framework. In the traditional management model, reserves are typically perceived as a necessary stock of resources intended to protect the enterprise against disruptions, overloads, or seasonal fluctuations. Such reserves may take the form of unused production capacity, underutilized warehouse space, partially idle personnel, additional sourcing channels, logistics capabilities, or accumulated organizational competencies. Under the conventional approach, these resources either remain idle in anticipation of periods of peak demand or are viewed as excessive costs that should be reduced.

The modular methodology offers a different perspective on reserves. Reserve operating capacity is viewed not only as a means of protection against potential disruptions, but also as a potential source of additional economic value. If an enterprise already

maintains a particular resource to ensure its own resilience, the next step is to determine whether this resource can be utilized more broadly without compromising core operations. If the answer is affirmative, the reserve ceases to be a passive element of the system and becomes part of a commercially viable module.

In the context of this guide, the commercialization of reserve operating capacity is understood as the managed utilization of the enterprise's idle or partially utilized resources to fulfill external orders, provide services to third-party clients, sell additional products, or develop new revenue streams, while preserving the priority of the organization's core activities. This mechanism makes it possible to reconcile two objectives that are often viewed as conflicting within traditional management approaches: enhancing resilience and increasing the economic return generated by existing resources.

Particular importance should be attached to the term *managed*. The commercialization of reserve capacity should not turn into the indiscriminate acceptance of any external orders. If additional workload begins to compete with the enterprise's core activities, disrupts the fulfillment of internal obligations, or places excessive strain on personnel, such an approach loses its methodological rationale. Within the modular business framework, external utilization is permissible only when supported by clearly defined constraints, established priority rules, capacity calculations, and continuous monitoring of its impact on core operations.

2.6. Mechanism of cross-resilience among modules

The practical value of the modular business framework arises not only from the creation of individual module-assets, but also from the mutual support they provide within an integrated organizational system. If each module develops in isolation, the enterprise may gain several independent lines of activity, but this

does not necessarily result in a high level of overall resilience. More substantial benefits emerge when modules begin to compensate for each other's constraints, redistribute workloads, support cash flows, and reduce the enterprise's dependence on any single critical process.

In the context of this guide, cross-resilience among modules is defined as the ability of individual internal business units to support one another in response to fluctuations in demand, operational disruptions, reduced workloads, or the emergence of new market opportunities. Such resilience is achieved not through complete autonomy of the modules, but through their managed interdependence. Each module retains its own function while remaining capable, when necessary, of reinforcing other elements of the business system.

In traditional organizational structures, departments are typically linked through sequential dependencies. A disruption in procurement constrains production, production delays affect warehousing and logistics, and problems in sales reduce the workload of all subsequent processes. In such a model, interdependencies among departments often amplify the enterprise's vulnerability, as disruptions occurring in one link are quickly transmitted throughout the system. In a modular framework, however, the relationships among processes are intended to function differently: they should not merely transmit workload, but also provide mechanisms for mutual compensation.

For example, a production module may enhance the enterprise's resilience by fulfilling external orders during periods of declining internal demand. The additional revenue generated in this way helps preserve the workforce, maintain equipment utilization, and partially offset infrastructure maintenance costs. At the same time, a warehousing module may provide storage and handling services not only for the enterprise's own products but also for goods belonging to external clients, thereby reducing the financial burden on the organization during periods of downturn in its core line of business.

2.7. Centralized management and a unified KPI system

The creation of modules within an enterprise does not imply a transition toward the complete autonomy of individual units. On the contrary, the modular business framework requires a higher degree of managerial coordination than a traditional linear structure. Once modules are granted the ability to serve external customers, utilize reserve capacity, and generate additional revenue streams, the risk of internal competition for resources, personnel, production time, warehouse space, and managerial attention increases. Preventing such conflicts requires a centralized management system that establishes common principles for module development and a unified framework for setting priorities.

Centralized management within the modular methodology does not imply manual control over every individual operation. Its purpose is to define the boundaries of module autonomy, establish common objectives, monitor key performance indicators, and maintain a balance between the enterprise's internal activities and external commercial utilization. A module may possess its own area of responsibility; however, it must operate within the broader interests of the organization as a whole. Any decision regarding the acceptance of external orders, the expansion of capacity utilization, or the use of reserve resources should be evaluated not only in terms of the benefits to the individual module, but also with regard to its impact on the overall resilience of the enterprise.

2.8. Conditions for the application of the modular model

The modular model can deliver significant managerial and economic benefits only when a certain level of organizational readiness is present. The mere transformation of processes into modules does not, by itself, enhance business resilience unless it is

supported by a mature management logic, a clear understanding of internal constraints, the existence of measurable performance indicators, and the ability to maintain the priority of core business activities. Therefore, before implementing the modular approach, it is necessary to assess not only its potential benefits but also the enterprise's readiness for such a transformation.

The application of the modular model is possible only when there are existing processes that already support the enterprise's core activities. A module is not created in isolation, nor is it an artificial business line introduced solely for the purpose of expansion. Its foundation must be a real process that has demonstrated its importance to the organization, such as procurement, production, warehousing, service operations, distribution, workforce management, logistics, or any other function upon which the enterprise's resilience depends. If a process does not play a meaningful role in supporting core operations, its transformation into a module will not contribute to strengthening the business system as a whole.

Equally important is the ability to identify a constraint, reserve, or underutilized resource within such a process. The modular methodology is based on the premise that an enterprise first identifies a bottleneck, dependency, underutilized capacity, or hidden opportunity and then systematically transforms that element into a managed source of resilience. If a process contains no clearly identifiable problem, no reserve capacity, and no potential for further development, prematurely assigning it the status of a module may result only in increased managerial complexity.

CHAPTER 3. DEVELOPMENT OF MODULES AS CENTERS OF RESILIENCE AND PROFITABILITY

3.1. Sustainable procurement module

Procurement is one of the processes upon which the continuity of enterprise operations directly depends. Even when demand exists and the organization possesses adequate production capacity, personnel, and sales channels, business activity may still be constrained if the required materials, raw inputs, or components are supplied irregularly, purchased at unstable prices, or sourced from a limited number of suppliers. Under such circumstances, procurement ceases to be merely a supporting function and becomes one of the key determinants of the enterprise's overall resilience.

In the traditional management model, procurement is most often viewed as a supporting process whose primary purpose is the timely acquisition of the resources required for the enterprise's core operations. The effectiveness of this process is typically evaluated based on procurement costs, material availability, adherence to delivery schedules, and the quality of relationships with suppliers. However, as market volatility increases, this approach becomes insufficient. Enterprises must not only procure the necessary resources, but also actively manage their dependence on suppliers, delivery lead times, currency fluctuations, intermediary pricing policies, and the availability of materials in the marketplace.

A sustainable procurement module is established when the procurement function evolves beyond a purely supporting role and assumes a broader objective: reducing operational risks, creating material reserves, developing direct supply channels, and, under certain conditions, becoming an independent source of revenue. This is the fundamental distinction between a procurement

module and a conventional purchasing department. Its value is determined not only by its ability to supply the enterprise with the resources it requires, but also by its capacity to create additional resilience for the business system as a whole.

3.1.1. Reducing dependence on intermediaries and supplier diversification

Dependence on intermediaries is one of the most common constraints affecting enterprise resilience. In the early stages of business development, working through intermediaries can be convenient, as it provides faster access to materials, eliminates the need to independently identify manufacturers, avoids the complexities of building logistics networks, and reduces the burden of additional organizational responsibilities. However, as an enterprise grows, this model begins to create hidden risks that become particularly evident when order volumes increase, quality requirements become more stringent, and the need to maintain stable production schedules intensifies.

The principal weakness of the intermediary-based model lies in the fact that the enterprise does not control a significant portion of its supply chain. It remains dependent on the intermediary's product range, inventory levels, delivery schedules, pricing policies, quality of communication, and ability to fulfill commitments in a timely manner. If the intermediary changes its terms of cooperation, delays a shipment, or is unable to provide the required volume of materials, the enterprise is forced to adjust its own processes only after the problem has already occurred. In manufacturing operations, this is particularly critical, as the absence of a single type of fabric, component, or consumable material may halt the fulfillment of a large number of orders.

For product-based businesses, procurement cannot be regarded as a secondary administrative function. It directly affects production costs, lead times, product quality, and the enterprise's ability to accept new orders. When supply is unstable, production

loses the ability to plan capacity utilization effectively, employees face periods of forced downtime, and commitments to customers become less reliable. Therefore, reducing dependence on intermediaries should be viewed not only as a means of cost reduction, but also as one of the first steps toward building a resilient operational system.

3.2. Adaptive production module

Production is one of the most sensitive elements of a business system, as it is the point at which procurement, personnel, equipment, technology, order fulfillment schedules, and product quality converge. If the production process is organized inefficiently or operates with instability, an enterprise may possess demand, materials, and sales channels, yet still be unable to manufacture products in the required volumes and within the necessary timeframes. For this reason, the production module occupies a central position within the modular business framework.

In the traditional model, a production unit is typically viewed as a process dedicated exclusively to manufacturing the enterprise's own products. Its performance is evaluated through metrics such as production volume, cost efficiency, labor productivity, defect rates, and adherence to delivery schedules. While this approach is necessary, it does not fully capture the potential of production as a resilience module. When reserve capacity, trained personnel, equipment, and a well-managed production system are available, a production unit can perform not only internal functions but also serve as a source of additional cash flow.

An adaptive production module differs from a conventional production unit in its ability to adjust capacity utilization, accommodate additional types of orders, and, when necessary, reconfigure itself to meet new demand without disrupting the enterprise's core operations. Its value lies not only in the manufacture of products, but also in its capacity to maintain production

continuity during seasonal fluctuations, declines in primary demand, changes in product assortment, or the emergence of new market requirements.

3.2.1. Commercialization of reserve production capacity

The commercialization of reserve production capacity is one of the primary mechanisms through which a production unit is transformed into an asset module. In conventional management logic, unused capacity is typically perceived as underutilization, temporary downtime, or inefficient use of equipment and personnel. Within the modular framework, however, such reserve capacity is viewed differently: if it has been created without compromising core operations and remains under effective managerial control, it can become a source of additional revenue while simultaneously enhancing the enterprise's resilience. For manufacturing enterprises, reserve capacity may arise in a variety of circumstances. It can emerge during periods of seasonal demand decline, following production expansion, as a result of uneven order inflows, through the deliberate creation of capacity buffers for peak-load periods, or after the optimization of specific operations. In a linear management model, such reserves are often reduced because they are associated with ongoing costs related to facilities, equipment, personnel, and the maintenance of production processes. However, the complete elimination of reserve capacity makes an enterprise more vulnerable: when demand increases, supply disruptions occur, or urgent production requirements arise, the system can quickly become overloaded.

Within the modular approach, reserve production capacity should be neither excessive nor entirely absent. Its purpose is to provide the enterprise with operational flexibility. Such capacity enables the organization to accept additional orders, maintain workforce utilization, preserve production discipline, and respond more rapidly to changes in demand. At the same time, reserve

capacity is not an end in itself. Its value is realized only when the enterprise is able to utilize it in a controlled manner without disrupting its core production program.

In the context of this guide, the commercialization of reserve production capacity is defined as the utilization of available or partially utilized production capacity to fulfill external orders while preserving the priority of the enterprise's own products. This means that external orders must not occupy critical production time, disrupt the delivery schedules of core products, create material shortages, or reduce the quality of the team's performance. When these conditions are met, reserve capacity assumes a dual function: it protects the enterprise from overload while simultaneously generating an additional stream of revenue.

3.3. Warehousing and fulfillment module

Warehouse infrastructure is often perceived by enterprises as a supporting element required for the storage of materials, finished goods, packaging supplies, and the maintenance of day-to-day operations. Within a linear management model, warehousing is typically viewed primarily through the lens of cost: facility rental, personnel expenses, equipment maintenance, inventory management, packaging, and order-processing costs. Under this approach, the warehouse is rarely evaluated as an independent source of resilience, despite the fact that a significant share of the enterprise's material flows passes through it.

Within the modular business framework, the warehouse assumes a broader role. It ceases to be merely a storage facility and becomes a managed hub connecting procurement, production, sales, logistics, and customer service. The efficiency of warehouse operations directly influences order fulfillment speed, product integrity, inventory accuracy, the ability to handle multiple product lines, and the enterprise's capacity to serve both internal and external material flows.

A warehousing and fulfillment module is established when an enterprise utilizes its warehouse infrastructure not only for internal purposes but also as a source of additional economic value. If the warehouse has already been leased, equipped, staffed, and integrated into the enterprise's daily operations, its available or partially utilized capacity can be used to serve external clients. In such a case, the warehouse assumes a dual function: it supports the organization's core activities while simultaneously contributing to the generation of additional cash flow.

The availability of excess storage space is of particular importance. Many enterprises lease warehouse facilities with a capacity buffer, since a shortage of space during periods of growing demand can lead to serious operational challenges. At the same time, a portion of that space may remain underutilized during normal operating periods. In the traditional model, such unused space is typically regarded as an unnecessary expense. Within the modular framework, however, it can be viewed as reserve operating capacity suitable for controlled commercialization.

A simple example of this approach is the use of a portion of available warehouse space to store goods belonging to third-party clients. However, the value of a warehousing module is not limited to providing storage capacity alone. A far more resilient model emerges when the enterprise offers not only storage space but also related services, including goods receiving, inventory management, packaging, order picking, shipment preparation, and the transfer of orders to delivery providers. In such a case, the warehouse gradually evolves into a fulfillment module.

The organization of storage, packaging, and logistics operations constitutes the practical foundation of the warehousing and fulfillment module. While the dual-utilization model defines the economic rationale for leveraging warehouse infrastructure, storage, packaging, and logistics provide the operational capabilities necessary to sustain it. Without clearly established procedures, a warehouse cannot function as a resilient module; instead, it quickly becomes a repository of excess inventory, inventory-recording errors, operational delays, and conflicts between internal and external flows.

3.4. Service and distribution modules as sources of additional resilience

Service and distribution processes play a distinctive role within the modular business framework, as they represent the primary channels through which an enterprise interacts with customers, receives orders, supports sales activities, processes feedback, and allocates demand across different product lines. While procurement and production provide resource and operational resilience, service and distribution modules contribute to market resilience. They enable the enterprise to maintain customer relationships, accelerate the introduction of new products, and reduce dependence on any single sales channel.

In the traditional model, service functions are often perceived as supporting operations. A call center handles inquiries, confirms orders, provides customer consultations, and transfers information to other departments. The distribution system is responsible for delivering products through existing sales channels. As long as demand remains stable, such processes may appear largely technical in nature and not require separate methodological attention. However, during periods of seasonal fluctuations, shifts in demand, or the introduction of new business lines, these very processes determine how quickly an enterprise can adapt its operations and preserve revenue streams.

3.4.1. Commercialization of call center reserve capacity

Within the structure of an enterprise, a call center is often perceived as a supporting unit responsible for handling incoming inquiries, confirming orders, providing customer consultations, and transmitting information to other areas of the business. Under this logic, its primary purpose is to support ongoing sales activities and maintain an acceptable level of customer service. Within the modular business framework, however, a call center

can be viewed more broadly — as a service module possessing its own competencies, personnel, customer interaction technologies, and the potential for commercialization during periods of reduced internal workload.

Reserve capacity within a call center arises when the actual volume of internal inquiries falls below the available capacity of its operators. Such a situation may result from seasonal declines in demand, uneven order inflows, changes in advertising activity, fluctuations in sales across specific product lines, or temporary market downturns. At the same time, personnel, workstations, telephony systems, customer management platforms, operational scripts, and managerial oversight remain in place. If this reserve capacity is not utilized, the enterprise continues to incur the costs of maintaining the service function without receiving its full economic benefit.

The commercialization of call center reserve capacity involves the managed utilization of available service resources to support external projects, process orders on behalf of third-party clients, provide customer consultations for related product categories, or support newly introduced products of the enterprise. Importantly, this does not refer to occasional side work performed by operators. Rather, it involves transforming an already established service infrastructure into a module capable of generating additional revenue while simultaneously contributing to the resilience of the enterprise's core operations.

3.4.2. Distribution network as a mechanism for demand stabilization

Within the modular business framework, a distribution network is viewed not as an independent sales structure, but as a managed channel for allocating demand, capable of supporting the enterprise during periods of changing market conditions. While production is responsible for creating products, warehousing ensures their storage and handling, and service units maintain

communication with customers, the distribution network connects the enterprise's internal capabilities with external demand. Through this mechanism, the business gains additional flexibility when introducing new product lines, compensating for seasonal downturns, and expanding market reach without a significant increase in fixed costs.

In the traditional model, an enterprise often relies on one or several primary sales channels. These may include its own online store, a retail outlet, a marketplace platform, wholesale buyers, partner-based sales arrangements, or another established channel. As long as demand remains stable, such a model can operate effectively. However, dependence on a limited number of channels creates a significant risk of revenue decline in response to changes in platform policies, reduced interest in a product category, rising advertising costs, seasonal decreases in demand, or the emergence of new competitors.

The distribution module reduces this dependence by creating a distributed network of participants capable of promoting the enterprise's products, accepting orders, channeling demand into the system, and supporting the launch of new business lines. From a methodological perspective, the specific structure of such a network is less important than its ability to provide additional support for product distribution. In practice, this may take the form of a partner, agency, dealership, or other collaborative model in which external participants help the enterprise expand its market reach without requiring the establishment of a large internal sales department.

CHAPTER 4. ORGANIZATIONAL MECHANISMS FOR ENSURING ENTERPRISE RESILIENCE

4.1. Time Buffer as a Tool for Protecting Commitments

A time buffer is one of the fundamental organizational mechanisms that supports the resilience of a modular system. In enterprise operations, a significant share of risks is associated not only with resource shortages or insufficient capacity, but also with inaccurate estimates of the time required to fulfill commitments. When the deadline promised to a customer or partner coincides with the minimum possible completion time, the enterprise effectively eliminates its own room for managerial flexibility. Under such circumstances, any supply delay, personnel error, warehouse overload, change in the production schedule, or urgent internal order can immediately result in a failure to meet obligations.

In traditional practice, order fulfillment deadlines are often determined based on the technical feasibility of completing the work under normal operating conditions. Such an approach may be justified in a stable environment where all processes are predictable, supplies are delivered regularly, staffing levels are fully adequate, and workloads do not fluctuate significantly over short periods of time. In real-world business operations, however, normal conditions rarely persist indefinitely. Production may encounter delays in the delivery of materials, the warehouse may experience an increase in shipment volumes, the call center may face a surge in customer inquiries, and management may need to reallocate resources between internal and external priorities.

A time buffer helps mitigate the impact of such deviations. Its essence lies in incorporating additional time into the promised

order fulfillment period beyond the estimated time required to complete the work. This time allowance is not intended to artificially prolong the process, but rather to protect commitments when unforeseen changes occur. If the process proceeds without disruptions, the order may be completed ahead of the promised deadline. If delays arise, the time buffer enables the enterprise to fulfill its obligations without undermining customer trust.

4.2. Methodology for Calculating a Safe Order Fulfillment Lead Time

A safe order fulfillment lead time is a timeframe that enables an enterprise to meet its commitment to a customer without disrupting core operations or placing excessive strain on a module. Unlike the minimum technical lead time, a safe lead time takes into account not only the actual time required to perform an operation, but also potential deviations, including material delivery delays, changes in internal workload, the need to correct errors, increases in the volume of internal orders, temporary employee absences, and other circumstances that may affect the outcome.

In a modular system, the calculation of a safe lead time is particularly important when working with external customers. A module may utilize reserve capacity to generate additional revenue; however, this opportunity must not compromise the resilience of the enterprise. If an external order is accepted based solely on a lead time calculated according to the most favorable scenario, the enterprise effectively assumes an elevated level of risk. Under such circumstances, any deviation can transform the order into a source of pressure on production, warehousing, procurement, or service operations.

The methodology for calculating a safe lead time begins with determining the actual time required to complete a standard operation. For a production module, this may include the time needed for material preparation, cutting, sewing, quality control,

packaging, and the transfer of finished goods to the warehouse. For a warehousing module, it may include receiving, storage allocation, order picking, packaging, and shipment. For a service module, it may include request processing, order confirmation, information transfer, and subsequent customer support. Actual processing time should be determined based on the enterprise's normal operating practice rather than on an ideal-case scenario.

Formula 1. Safe order fulfillment lead time

$$T_{safe} = T_{actual} + T_{operational} + T_{management}$$

Description: This formula defines the safe order fulfillment lead time as the sum of the actual operation duration, the operational buffer intended to accommodate potential deviations, and the managerial buffer required to preserve the enterprise's internal priorities.

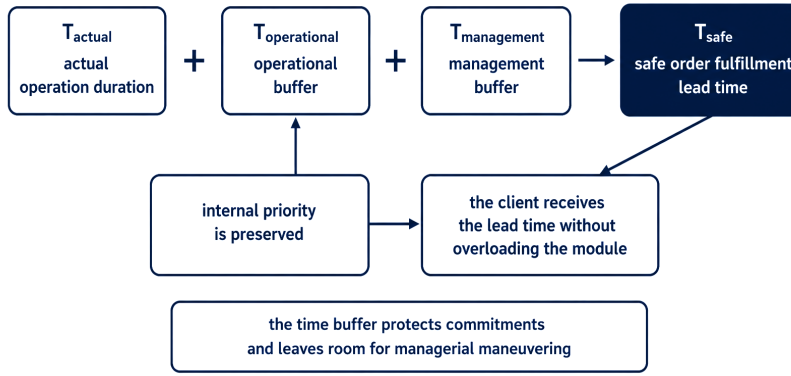

Figure 4. Calculation of a safe order fulfillment lead time

Description: The diagram illustrates how actual processing time, the operational buffer, and the managerial buffer combine to form a safe order fulfillment lead time without overloading the module.

4.3. Cross-functional workforce utilization

Cross-functional workforce utilization is one of the organizational mechanisms that enables a modular system to maintain resilience in the face of changing demand, seasonal fluctuations, and uneven workloads across individual processes. In the traditional model, each employee is typically assigned to a specific function, such as production, warehousing, packaging, order processing, customer service, procurement, or sales. While such specialization simplifies management and improves the quality of individual operations, it can also create vulnerabilities when workloads shift. One area may become overloaded while another remains underutilized, and the enterprise may not always be able to reallocate personnel between tasks quickly enough.

In a modular system, personnel are viewed not only as a resource of a specific department, but also as an integral component of the enterprise's overall resilience. When employees are capable of performing multiple related functions, the business gains additional reserve capacity without the immediate need to expand its workforce. Such interchangeability is particularly important for enterprises where demand is distributed unevenly and individual processes experience varying levels of workload over time. Cross-functional workforce utilization helps smooth these fluctuations and reduces the enterprise's dependence on a limited number of specialists.

In the context of this guide, cross-functional workforce utilization is defined as the managed allocation of employees across multiple modules or operations while maintaining work quality and preserving the priority of core business activities. It does not imply the arbitrary reassignment of personnel to any available task. Cross-functional workforce utilization must be based on functional compatibility, prior training, clearly defined responsibilities, and ongoing monitoring of actual workload. Only under these conditions does it become a mechanism for resilience rather than a source of errors and organizational disorder.

4.4. Management of reserve capacity

The management of reserve capacity is one of the central organizational mechanisms of the modular business framework. In conventional practice, reserve capacity is often perceived as the unused portion of an enterprise's resources: available production time, vacant warehouse space, underutilized personnel, partially idle equipment, or temporarily unused service capabilities. From this perspective, reserve capacity appears to be an excessive cost that should be minimized. However, the complete absence of reserves makes an enterprise fragile. Any increase in demand, supply disruption, staffing shortage, or surge in order volume can quickly push the system to its operational limits.

Within the modular methodology, reserve capacity is viewed not as an incidental surplus, but as a managed resource that contributes to organizational resilience. Its presence enables an enterprise to maintain operational flexibility, accept external orders during periods of underutilization, respond to seasonal fluctuations, and support core processes when disruptions occur. At the same time, reserve capacity must not remain unmanaged. If an enterprise maintains excess capacity without understanding its volume, cost, and potential applications, such reserves can indeed become a permanent financial burden.

In the context of this guide, reserve capacity is defined as the portion of an enterprise's production, warehousing, service, workforce, or organizational capabilities that is not occupied by current internal tasks but can be utilized either to protect core operations or to support additional commercial activity. Unlike simple idle capacity, reserve capacity must be identified in advance, measured, and incorporated into the enterprise's management system. Only under these conditions does it become an element of resilience rather than an indicator of inefficiency.

4.5. Balancing internal and external module utilization

Balancing the internal and external utilization of modules is one of the key conditions for maintaining the resilience of a modular system. When an enterprise uses its internal processes not only for core operations but also to serve external customers, it becomes necessary to continuously allocate capacity across multiple areas of activity. Without such allocation, the commercialization of reserve resources can quickly lead to overload, missed deadlines, and the weakening of the very processes that were originally intended to enhance business resilience.

Internal utilization is associated with the execution of tasks required to support the enterprise's core operations. These include the production of the company's own products, procurement of materials, inventory storage, order processing, customer service, support of sales channels, and the fulfillment of obligations to key partners. External utilization arises when a module employs a portion of its available capacity to serve third-party clients, fulfill additional orders, provide service-based projects, or support cross-seasonal business activities. A managed balance must be maintained between these two forms of utilization.

The most common mistake in managing external utilization is treating all available capacity as fully accessible for commercial use. In practice, this is not the case. A portion of capacity must remain dedicated to internal operations, another portion should be retained as a protective reserve, and only the remaining capacity can be allocated to external customers. If all available resources are immediately committed to external projects, the module loses its ability to respond effectively to changes within the enterprise.

4.6. Principle of complementary seasonality

The principle of complementary seasonality is based on identifying business activities whose periods of peak demand do not coincide with periods of declining demand for the enterprise's core products. Within the modular business framework, this principle is used to balance the utilization of internal processes, maintain cash flow, and enhance enterprise resilience throughout the year. Its importance is particularly significant for organizations whose primary revenue is generated unevenly and where a substantial portion of infrastructure remains underutilized during off-peak periods.

Conventional seasonality creates two distinct types of pressure on an enterprise. During peak seasons, the business experiences increased order volumes, a greater need for materials, higher workforce utilization, expanded warehousing activity, and increased demands on service functions. During off-peak periods, the situation reverses: demand declines, a portion of resources remains idle, infrastructure maintenance costs continue, and personnel may lose stable workloads. If the enterprise lacks a compensating line of activity, its financial and operational performance becomes heavily dependent on a limited period of active sales.

Complementary seasonality helps reduce this dependency. The essence of the approach lies in identifying an additional line of activity whose peak demand occurs during the period when demand for the enterprise's core business declines. In this way, the enterprise does not attempt to artificially stimulate demand for the same product during an unfavorable period. Instead, it utilizes existing modules to serve a different product or service category that is more in demand at that particular time.

For example, if the enterprise's core business is associated with products whose demand increases during the autumn and winter seasons, a cross-seasonal business line may be focused on products with peak demand during the spring and summer periods. In such a case, the warehouse, service team, distribution network, and certain management processes do not remain idle

during periods of reduced activity in the core business but instead shift their focus to supporting another product category. Importantly, this does not involve a random expansion of the product assortment. Rather, it requires the selection of a business line that is compatible with the enterprise's existing resources and capabilities.

To apply the principle of complementary seasonality, an enterprise must first determine the actual seasonal profile of its

Table 2

Additional sources of revenue by enterprise modules

Module	Internal function	Additional source of revenue
Procurement module	Supplying the enterprise with materials and reducing dependence on suppliers	Supplying and wholesale distribution of materials to external customers
Production module	Manufacturing the enterprise's own products	Fulfilling contract manufacturing orders for external customers
Warehousing and fulfillment module	Storage of materials and finished goods, and processing of internal orders	Warehousing, packaging, order fulfillment, and order processing for external customers
Service module	Processing inquiries and supporting the enterprise's own customers	External service projects and processing requests for third-party business activities
Distribution module	Marketing and distribution of the enterprise's products	supporting the introduction of new product lines and partner sales
Cross-seasonal business line	Mitigating seasonal declines in core revenue	Sales of products or services with an opposite seasonal demand pattern

Description: The table illustrates how internal enterprise processes can retain their primary functions while simultaneously generating additional sources of revenue within the modular business framework.

core business. It should clearly understand in which months the majority of revenue is generated, when periods of decline begin, how long they last, which modules become underutilized during those periods, and which costs remain regardless of sales volume. Without such an analysis, the selection of an additional business line will be based on assumptions rather than on the actual structure of demand.

CHAPTER 5.
SYSTEM OF RESILIENCE INDICATORS FOR A MODULAR ENTERPRISE

5.1. Principles of quantitative resilience assessment

Quantitative resilience assessment is necessary to ensure that the modular business framework does not remain merely a descriptive management model. If an enterprise limits itself to general discussions of reliability, reserves, and diversification, management may find it difficult to determine which processes genuinely strengthen the business and which merely create additional burdens. A system of indicators makes it possible to transform resilience from a matter of intuitive judgment into a domain of managerial decision-making based on measurable data.

The primary purpose of quantitative assessment is not to create a complex mathematical model, but to provide practical guidance for enterprise management. Decision-makers should be able to identify where critical dependencies remain, how much reserve capacity is available, how effectively that capacity is utilized, what proportion of revenue is generated by external customers, how significantly a particular bottleneck affects revenue generation, and whether the enterprise can maintain operational continuity in the event of changes in demand or disruptions in supply.

Within the framework of the present methodology, resilience indicators should assess not the standalone financial performance of a module, but its contribution to the preservation and development of the business system as a whole. A module may generate additional revenue while simultaneously overloading personnel, consuming protective reserves, disrupting internal deadlines, or increasing dependence on a single external customer. In such circumstances, revenue growth does not necessarily translate into

greater resilience. For this reason, resilience indicators should be evaluated collectively rather than in isolation from one another.

5.2. Capacity reserve ratio

The capacity reserve ratio is used to assess what portion of a module's total capacity remains available after the completion of the enterprise's current operational tasks. This indicator is of fundamental importance within the modular business framework because it makes it possible to distinguish managed reserve capacity from incidental underutilization. If an enterprise does not measure its reserves, it cannot accurately determine what share of capacity can be allocated to external customers, cross-seasonal business activities, or urgent internal tasks without creating a risk of overload.

In traditional management practice, high resource utilization is often regarded as a sign of efficiency. Production facilities are expected to operate at maximum capacity, warehouse space should be fully occupied, personnel should not remain idle, and equipment should be utilized as intensively as possible. While this logic may increase the immediate return on resources, it simultaneously reduces the enterprise's resilience. When a module consistently operates at its limits, it has little or no capacity to respond to changes in demand, supply delays, urgent orders, staffing disruptions, or the need to adapt to new operational requirements.

Formula 2. Capacity reserve ratio

$$CRR = ((Mmax - Mactual) / Mmax) \times 100\%$$

Description: The capacity reserve ratio indicates the proportion of the module's available reserve capacity. Mmax represents the maximum capacity of the module during the assessment period, while Mactual represents the module's actual utilization during the same period.

5.3. Capacity monetization ratio

The capacity monetization ratio is used to assess what portion of a module's available reserve capacity is actually converted into revenue-generating external utilization. While the capacity reserve ratio indicates the amount of capacity that remains available after the completion of the enterprise's internal tasks, the capacity monetization ratio makes it possible to determine whether this reserve is being utilized as a source of additional income or remains an inactive reserve.

Within the modular business framework, available capacity should not be viewed merely as idle time. When properly organized, it can be utilized for external customers, cross-seasonal business activities, additional service projects, or the supply of goods and services to third-party clients. However, the mere existence of reserve capacity does not mean that the enterprise derives economic value from it. To evaluate this process, it is necessary to determine what portion of the available reserve capacity is actually engaged in revenue-generating activities.

The capacity monetization ratio is particularly important for modules that incur substantial fixed costs, such as production facilities, warehouses, call centers, procurement functions, logistics operations, or distribution networks. When an enterprise already maintains premises, equipment, personnel, information systems, and managerial infrastructure, a significant portion of these costs remains regardless of the level of utilization. By allocating available capacity to external customers, the enterprise can partially offset these expenses and reduce the financial burden placed on its core operations.

Formula 3. Capacity monetization ratio

$$CMR = (Mext / Mfree) \times 100\%$$

Description: The capacity monetization ratio indicates what proportion of the module's available reserve capacity has been utilized for external commercial utilization. Mext represents the capacity allocated to external orders, while Mfree represents the module's total available reserve capacity.

5.4. Cross-functional workforce resilience ratio

The cross-functional workforce resilience ratio is used to assess an enterprise's ability to reallocate employees across multiple modules without compromising manageability or work quality. Within a modular system, personnel are viewed not only as the workforce of an individual department but also as a critical component of the enterprise's overall resilience. When employees are capable of performing related functions, the business is better able to withstand periods of seasonal workload fluctuations, temporary staffing shortages, increased order volumes, or the redistribution of tasks among modules.

In the traditional organizational model, each employee is typically assigned to a single primary function. Such specialization can improve the quality and efficiency of specific operations, but it also increases the enterprise's dependence on individual employees and narrowly defined areas of expertise. If a key employee is temporarily absent, leaves the organization, or becomes overloaded, the enterprise may face missed deadlines, declining quality, and the urgent need to find a replacement. The lower the level of workforce interchangeability, the greater the personnel-related vulnerability of the business system.

Within the modular methodology, cross-functional workforce resilience refers to the availability of employees who are capable, when necessary, of performing tasks across more than one module or supporting related operations. This does not imply the complete elimination of specialization. Production, warehousing, service, and procurement functions require different skills and levels of expertise. However, in any enterprise, it is possible to identify a set of compatible operations that can be mastered by certain employees without compromising the quality of their primary responsibilities.

Formula 4. Cross-functional workforce resilience ratio

$$CFWRR = (Nmulti / Nstaff) \times 100\%$$

Description: The cross-functional workforce resilience ratio indicates the proportion of employees trained to perform functions in more than one module. **Nmulti** represents the number of cross-trained employees, while **Nstaff** represents the total number of employees in the group being assessed.

5.5. Seasonal compensation ratio

The seasonal compensation ratio is used to assess an enterprise's ability to reduce the severity of off-season revenue declines through cross-seasonal business activities, external utilization of modules, and additional sources of income. This indicator is particularly important for businesses in which demand is distributed unevenly throughout the year and where a significant portion of expenses remains fixed regardless of sales volume. Under such conditions, enterprise resilience is determined not only by the total annual revenue generated, but also by the ability to withstand periods of declining demand without substantial workforce reductions, operational shutdowns, or loss of managerial control.

In the traditional approach, seasonal revenue declines are often viewed as an inevitable characteristic of the market. An enterprise may prepare in advance for the low season by building financial reserves, reducing procurement volumes, decreasing advertising activity, or postponing certain expenditures to a later period. While such measures can help reduce pressure on cash flow, they do not address the problem of underutilized internal processes. Production facilities, warehouses, call centers, distribution networks, and management systems may remain partially idle while continuing to generate ongoing operating costs.

Formula 5. Seasonal compensation ratio

$$SCR = (Rcomp / Rloss) \times 100\%$$

Description: The seasonal compensation ratio indicates what proportion of the seasonal decline in revenue is compensated

through cross-seasonal business lines, external utilization of modules, or other additional sources of revenue.

5.6. Integrated enterprise resilience index

The integrated enterprise resilience index is used to provide a comprehensive assessment of the condition of a modular business system based on a set of interrelated indicators. The previously introduced ratios make it possible to evaluate individual dimensions of resilience, including the availability of reserve capacity, the degree of reserve capacity monetization, workforce flexibility, seasonal compensation, modular revenue diversification, the severity of bottlenecks, and the scale of unrealized profit. For managerial decision-making, however, it is often necessary not only to examine each indicator separately but also to understand the overall condition of the enterprise as a unified system.

The integrated assessment does not replace the analysis of individual ratios. On the contrary, it is built upon them and makes it possible to evaluate the overall outcome of the modular business framework. If an enterprise maintains a high level of reserve capacity but makes little use of it for additional utilization, its resilience remains incomplete. If modular revenue increases while the severity of a critical bottleneck also grows, the overall protection of the business may remain weak. If the enterprise effectively compensates for seasonality but lacks workforce interchangeability, it remains vulnerable to the loss of key employees. Therefore, the integrated index should be regarded as a composite indicator that consolidates multiple dimensions of resilience assessment.

Formula 6. Modular revenue diversification ratio

$$MRDR = (Rmod / Rtotal) \times 100\%$$

Description: The modular revenue diversification ratio indicates the proportion of the enterprise's total revenue generated by additional modular sources. Rmod represents revenue generated

by modular activities, while Rtotal represents the enterprise's total revenue.

Formula 7. Bottleneck severity ratio

$$BSR = (Rrisk / Rtotal) \times 100\%$$

Description: The bottleneck severity ratio indicates the proportion of the enterprise's total revenue that is at risk due to dependence on a specific bottleneck. Rrisk represents revenue at risk, while Rtotal represents the enterprise's total revenue.

Formula 8. Lost profit attributable to a bottleneck

$$LPB = Qlost \times Pmargin$$

Description: The lost profit attributable to a bottleneck estimates the profit not earned because of a bottleneck. Qlost represents the lost volume of orders, products, or operations, while Pmargin represents the average contribution margin per unit of lost volume.

Formula 9. Integrated enterprise resilience index

$$IERI = (W1 \times SCRR) + (W2 \times SCMR) + (W3 \times SCFWRR) + (W4 \times SSCR) + (W5 \times SMRDR) + (W6 \times SBSR) + (W7 \times SLPB)$$

Description: The integrated enterprise resilience index combines the normalized scores of the key indicators of the modular system. SCRR, SCMR, SCFWRR, SSCR, SMRDR, SBSR, and SLPB denote the normalized scores of the Capacity Reserve Ratio, Capacity Monetization Ratio, Cross-functional Workforce Resilience Ratio, Seasonal Compensation Ratio, Modular Revenue Diversification Ratio, Bottleneck Severity Ratio, and Lost Profit Attributable to a Bottleneck, respectively. W1–W7 are weighting coefficients whose sum equals 1.

Formula 10. Normalization of a positive indicator

$$S = F / T$$

Description: This formula is applied to indicators for which an increase represents an improvement in resilience. F represents the

actual value, while T represents the target value. If the actual value exceeds the target value, the normalized score is set equal to 1.

Formula 11. Normalization of a risk indicator

$$S = T / F$$

Description: This formula is applied to risk indicators for which an increase represents a decline in resilience. T represents the acceptable (target) level of risk, while F represents the actual value. If the actual risk level is below the acceptable threshold, the normalized score may be set equal to 1.

5.7. Practical application of the indicator system

The practical application of the resilience indicator system consists of regularly assessing the condition of a modular enterprise and using the results to support managerial decision-making. The system of ratios should not be viewed as a formal calculation performed solely for reporting purposes. Its purpose is to provide management with a clear understanding of where the enterprise possesses manageable reserves, which modules have already become sources of resilience, which constraints continue to represent significant vulnerabilities, and which processes require priority transformation.

At the first stage, the enterprise identifies the set of modules to be evaluated. Depending on the structure of the business, these may include procurement, production, warehousing and fulfillment, a call center, a distribution network, cross-seasonal business lines, or other processes that perform a dual function. It is important to assess not only the enterprise as a whole but also each significant module individually, since a strong overall result may conceal weaknesses within a specific process.

At the second stage, baseline data are collected. To calculate the indicators, information is required on the maximum and actual capacity of modules, available reserve capacity, the volume of

Table 3

Interpretation of key resilience indicators of a modular enterprise

Indicator	Meaning of the indicator	Potential risk	Desired state
Capacity reserve ratio	Available reserve capacity of the module	Reserve capacity is too low	A managed reserve is maintained
Capacity monetization ratio	Utilization of reserve capacity for external workload	Reserve capacity is either unused or utilized beyond a safe level	External workload does not compromise internal priorities
Cross-functional workforce resilience ratio	Availability of employees trained to perform related functions	Dependence on individual employees	A workforce reserve exists for compatible functions
Seasonal compensation ratio	Compensation for seasonal revenue decline	Off-season revenue losses are only minimally compensated	Seasonality is partially mitigated
Modular revenue diversification ratio	Share of revenue generated by modules	Revenue depends on a single business line	Additional revenue sources support the business
Bottleneck severity ratio	Share of revenue at risk due to a bottleneck	The bottleneck affects a significant portion of revenue	The vulnerability has been identified and is under control
Lost profit due to a bottleneck	Profit not earned because of a bottleneck	Losses occur repeatedly	Losses are measured and linked to a specific process

Description: The table provides a practical interpretation of the key resilience indicators and helps identify which areas of the enterprise require managerial attention.

external utilization, the number of employees trained to perform related operations, revenue generated from core and supplementary business activities, the magnitude of seasonal decline, the share of revenue at risk, the number of lost orders, and average profit margins. In small and medium-sized enterprises, such data can be obtained from management accounting records, sales reports, production schedules, warehouse reports, and internal customer service statistics.

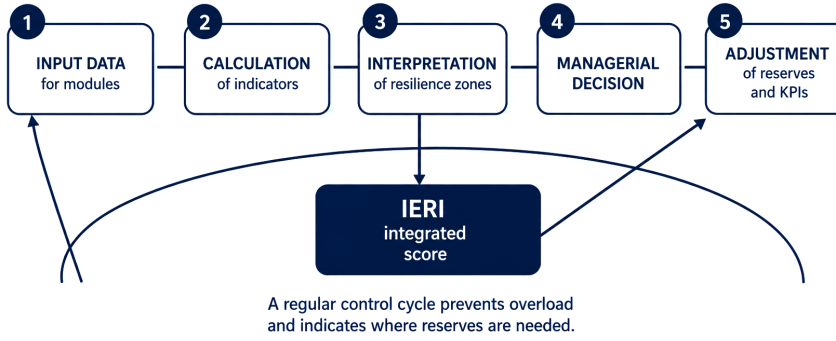

Figure 5. Resilience management cycle

Description: The diagram illustrates the continuous cycle of data collection, indicator calculation, result interpretation, and managerial decision-making aimed at the development and strengthening of enterprise modules.

CHAPTER 6.
PRACTICAL CASE OF IMPLEMENTING THE MODULAR BUSINESS FRAMEWORK

6.1. Initial business structure and key challenges

The practical application of the modular business framework is best illustrated through the example of an enterprise that evolved from a trading model into a more resilient system built around its own internal modules. Such a case is important for understanding the methodology because it demonstrates that the modules were not artificially created as independently designed business units from the outset. Instead, they emerged from existing enterprise processes that initially supported core operations, subsequently encountered operational constraints, and, through systematic development, were transformed into sources of resilience and additional revenue.

At the initial stage, the business was built primarily around a trading model. Its core activities consisted of sourcing products, procuring inventory, promoting product offerings, processing orders, managing storage, and ultimately selling goods to customers. This model enabled the company to begin operations quickly, without the immediate need to establish its own production facilities, while also providing an opportunity to test demand across different product categories. However, as business volume increased, a number of limitations typical of trading enterprises began to emerge, including dependence on suppliers, limited control over the product assortment, unstable delivery schedules, demand seasonality, and insufficient control over internal processes.

6.2. Creation of the sewing production module

The creation of the sewing production module became the next stage in the transition from a trading business model to in-house manufacturing. If the previous stage was focused on reducing dependence on suppliers' ready-made product assortments, this stage required the development of an internal production system capable of consistently manufacturing products, maintaining quality standards, meeting delivery deadlines, and gradually becoming an independent pillar of business resilience.

At the initial stage, the sewing production operation primarily performed a supporting function. Its purpose was to manufacture the company's own products, which could be better aligned with market demand than ready-made goods supplied by third-party vendors. This approach enabled the enterprise to independently select fabrics, product designs, size ranges, packaging, sewing quality, and other characteristics that influenced the final value of the product. As a result, in-house production provided a higher level of control over the product and reduced dependence on externally sourced assortments.

The formation of the sewing production module began with the establishment of basic manufacturing processes. The enterprise needed to define the product range, the technological sequence of operations, material requirements, procedures for cutting and sewing, quality control standards, packaging processes, and the transfer of finished products to the warehouse. At this stage, production had not yet evolved into a fully developed revenue-generating module. It functioned as an internal process that first had to demonstrate its stability, manageability, and ability to consistently support the enterprise's core operations.

6.3. Development of a resilient procurement system

The development of a resilient procurement system became one of the key stages in the evolution of the enterprise's modular business framework following the establishment of its own sewing production operation. The transition to in-house manufacturing provided the business with greater control over its product assortment and quality standards, but it also increased the importance of materials, fabrics, accessories, packaging, and other consumable components. Whereas the trading model depended primarily on the availability of finished goods from suppliers, the manufacturing model made the reliable supply of materials a critical condition for maintaining continuous production.

At the initial stage, procurement performed a conventional supporting function. Its primary responsibilities included sourcing the required materials, managing purchasing activities, monitoring deliveries, and supplying resources to the production operation. However, as manufacturing activity expanded, it became evident that a basic purchasing process was no longer sufficient. Any delay in fabric deliveries, price fluctuations, shortages of specific colors or materials, limited batch availability, or supplier delivery failures could directly affect the production schedule, order fulfillment, and the overall financial performance of the enterprise.

6.4. Commercialization of enterprise infrastructure reserves

The commercialization of enterprise infrastructure reserves became one of the most significant outcomes of the transition to the modular business model. Following the development of production, procurement, warehousing, and service functions, the enterprise acquired not only a more resilient internal system but also a set of resources that could be utilized beyond their original

purpose. Facilities, equipment, warehouse space, trained personnel, supplier relationships, service processes, and distribution capabilities were no longer viewed solely as expenses required to support core operations. Instead, they came to be regarded as infrastructure assets capable of generating additional revenue when managed and utilized effectively.

At the initial stage, a significant portion of the enterprise's infrastructure was developed out of operational necessity. Production capabilities were established to reduce dependence on suppliers' ready-made assortments. Warehouse facilities were required for the storage of materials and finished goods. Service processes supported order handling and customer interaction. Procurement functions were developed to protect production operations from supply disruptions. However, as the enterprise evolved, it became clear that these resources possessed a broader potential. Once created, funded, and maintained in operational condition, they could be partially utilized for external purposes, thereby reducing the financial burden on the enterprise's core activities.

The first avenue for commercialization involved the utilization of reserve production capacity. During periods when demand for the enterprise's own products was insufficient to ensure full production utilization, the production module could accept external orders that were technologically compatible with its core activities. This made it possible to leverage existing equipment, employee skills, quality control systems, and procured materials. Such an approach did not require the creation of a separate manufacturing business from the ground up, since external utilization was built upon an already established internal infrastructure.

6.5. Practical results of implementing the modular model

The practical results of implementing the modular model were reflected not in a single performance indicator, but in

a fundamental transformation of the enterprise's operating logic. The initial business structure was primarily based on a trading model and was highly dependent on external suppliers, seasonal demand fluctuations, and a limited number of internal processes. Following the development of the modular framework, the

Table 4

Practical changes following the implementation of the modular model

Area	Before implementation	After implementation
Product portfolio	Dependence on suppliers' finished products	Own products and greater control over the product
Procurement	Purchasing through a limited number of intermediaries	Supplier base, safety stock of materials, and external distribution of fabrics
Production	No in-house production capability	Sewing production module with internal and external workload
Warehousing	Storage of the enterprise's own products and materials	Warehousing and fulfillment module
Service	Processing of current orders	Service module supporting both internal and external activities
Seasonality	Decline in revenue and workload during the off-season	Cross-seasonal business lines and external workload
Workforce	Dependence on individual employees	Clearer allocation of responsibilities and cross-functional training
Resilience	Responding to disruptions after they occur	Proactive management of reserve capacity and constraints

Description: The table illustrates the key changes in enterprise operations following the transition from a linear trading model to a modular business framework.

enterprise acquired several interconnected pillars of resilience, including its own production capabilities, a resilient procurement system, warehousing infrastructure, a service module, distribution channels, and the ability to monetize reserve capacity. This system made it possible not only to sustain core operations but also to create additional sources of organizational resilience.

One of the most significant outcomes was the reduction of dependence on external suppliers of finished products. The transition to in-house manufacturing enabled the enterprise to independently develop part of its product assortment, control product quality, manage production schedules, and respond more rapidly to changes in demand. Although this transition did not eliminate all external dependencies — since manufacturing still requires materials, fabrics, and accessories — it fundamentally changed the nature of that dependence. The enterprise was no longer reliant solely on finished goods supplied by others and gained the ability to create a substantial portion of value within its own system.

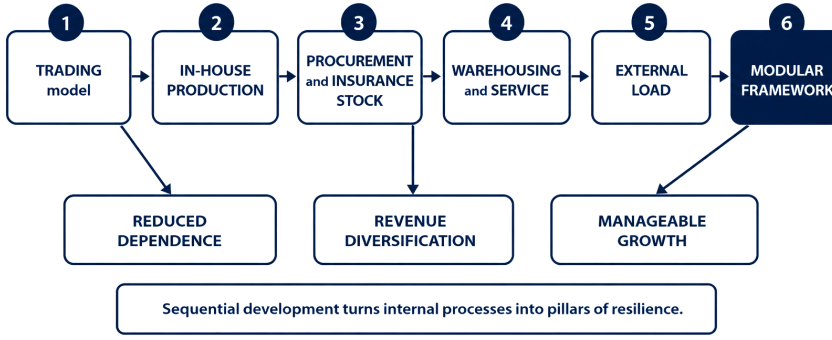

Figure 6. Stages of the practical transformation of a business into a modular framework

Description: The diagram summarizes the enterprise's sequential transition from a trading model to a system of interconnected modules that provide organizational resilience and generate additional sources of revenue.

The role of procurement also changed significantly. The development of a supplier network, the establishment of safety inventories of materials, and the accumulation of internal expertise in sourcing and working with fabrics reduced the risk of production disruptions caused by supply interruptions. Moreover, procurement gradually evolved beyond its traditional purchasing function and became an independent module capable of generating additional revenue through the supply and wholesale distribution of materials to external customers. This represented one of the clearest examples of transforming a former constraint into a valuable enterprise asset.

CHAPTER 7. METHODOLOGY FOR TRANSFORMING EXISTING ENTERPRISE PROCESSES INTO A MODULAR RESILIENCE SYSTEM

7.1. Analysis of existing enterprise processes

The transformation of an enterprise into a modular resilience system begins not with the creation of new business activities, but with the analysis of existing processes. This principle is fundamental to the proposed methodology. The modular framework does not assume that an enterprise should artificially introduce unrelated projects or activities that are disconnected from its core business model. On the contrary, the foundation of the transformation lies in processes that already operate within the enterprise, support its current activities, and at the same time contain hidden constraints, reserves, or opportunities for further development.

At the first stage, management should view the enterprise not as a collection of positions or departments, but as a system of recurring processes. Within such a system, it is important to identify the activities that are performed on a regular basis to create products, deliver services, process orders, manage procurement, store inventory, communicate with customers, coordinate personnel, and generate revenue. It is these processes, rather than the formal names of departments, that should become the focus of analysis. A single process may be distributed across several employees, while one employee may simultaneously perform functions that later become part of multiple modules.

7.2. Identifying processes suitable for transformation into modules

Following the analysis of existing processes, the enterprise proceeds to identify those activities that can realistically be transformed into modules. At this stage, it is important to avoid artificially expanding the organizational structure by assigning the status of an independent business unit to every area of activity without sufficient justification. A modular system should strengthen the enterprise rather than make its management more complex. Therefore, a process should be considered suitable for transformation only if it has a meaningful connection to organizational resilience, revenue generation, delivery performance, quality management, procurement, workforce utilization, or the enterprise's ability to adapt to changing conditions.

The suitability of a process for transformation is determined first and foremost by its criticality. If a disruption in the process can halt production, prevent the fulfillment of orders, lead to customer losses, interrupt supply flows, or significantly reduce revenue, that process requires particular attention. High criticality alone does not automatically make a process a module, but it does indicate that the process should not remain informal or weakly managed. The more heavily the enterprise depends on a given process, the greater the likelihood that it should be developed into a resilience module.

Equally important is the repeatability of the process. A module cannot be built around a sporadic or one-time activity. Its foundation must be a process that is performed on a regular basis, follows a defined sequence of actions, requires resources, and has a measurable impact on the enterprise's results. Activities such as material procurement, production, inventory storage, order processing, packaging, customer support, and partner management are examples of such repeatable processes. It is this repeatability that makes it possible to describe the process, measure its capacity, identify constraints, and manage it as an independent element of the system.

Table 5

Criteria for selecting a process for transformation into a resilience module

Criterion	What to assess	Indicators	Management decision
Dependence of core operations	The extent to which the process affects lead times, revenue, quality, and the fulfillment of obligations	Disruptions in the process quickly affect production, warehousing, service, or sales	Include the process in the initial bottleneck analysis
Repeatability of the function	Whether there is a regular flow of activities that can be described, measured, and assigned to responsible personnel	Activities are repetitive, with clearly defined inputs, outputs, and expected results	Formalize the process as an independent module
Availability of managed reserve capacity	Whether there is capacity, inventory, expertise, space, equipment, or time that can be utilized without affecting core operations	Reserve capacity can be measured, limited, and temporarily reallocated	Proceed with calculating a safe level of external utilization
Compatibility of external utilization	Whether external activities use the existing infrastructure and do not require disproportionate additional investment	External orders are similar to internal operations and do not undermine the enterprise's specialization	Launch a pilot project while maintaining the priority of internal operations
Measurability of results	Whether lead times, workload, additional revenue, overload risk, and impact on resilience can be monitored	KPIs are available and the evaluation period is clearly defined	Integrate the module into the overall performance measurement system

Risk of resource conflicts	Whether commercial utilization could displace core operations, consume protective reserve capacity, or worsen lead times	The risk is particularly high during peak demand periods or workforce shortages	Limit the transformation until reserve capacity and priority management rules have been strengthened

Description: The table helps determine which processes are suitable for transformation into resilience modules and which require further development and strengthening before such a transformation can take place.

7.3. Transformation of internal functions into revenue-generating modules

After identifying the processes suitable for transformation, the enterprise proceeds to the stage of converting internal functions and departments into revenue-generating modules. At this stage, it is important to understand that a module does not emerge simply as a result of renaming a department or process. If a warehouse is labeled a warehouse module, production is labeled a production module, and procurement is labeled a procurement module without any change in management logic, the enterprise's resilience will not improve. A module emerges only when a process is assigned a clearly defined function, measurable performance indicators, managed reserve capacity, accountability, and the ability to generate additional value without compromising the enterprise's core activities.

The transformation of an internal function into a revenue-generating module begins with defining its core role within the business system. It is necessary to establish and document the specific function that the process performs in support of the enterprise's core operations. Production manufactures the company's products, procurement ensures the availability of materials, the

warehouse stores and processes product flows, the service function handles customer inquiries, and the distribution network supports demand generation and product sales. Until this core function is clearly defined, it is impossible to determine the boundaries of the module correctly or assess which portion of its resources may be utilized for additional purposes.

The next step is to define the boundaries of the module. Management must determine which operations belong to the module, which resources it utilizes, which employees participate in its activities, what results it is expected to deliver, and how it interacts with other modules. For example, a production module may include material preparation, cutting, sewing, quality control, packaging, and the transfer of finished products to the warehouse. A procurement module may encompass supplier sourcing, material purchasing, delivery monitoring, safety stock management, and the allocation of materials between internal operations and external demand.

The purpose of defining module boundaries is not to increase bureaucracy, but to preserve manageability. When it is unclear where a module's responsibility begins and ends, operational gaps emerge within the organization: production may assume that a problem originates in procurement, the warehouse may attribute delays to production, and the service function may commit to delivery deadlines without considering the actual capabilities of the system. Clearly defined boundaries help reduce such gaps and ensure that each module is accountable for a specific and well-understood segment of the overall result.

7.4. Commercialization of reserve capacity within existing processes

The commercialization of reserve capacity within existing processes is the stage at which the modular system begins to provide the enterprise not only with organizational resilience

but also with additional economic value. Once a process has been analyzed, identified as suitable for transformation, and developed into a revenue-generating module, the enterprise can determine which portion of its resources is required for core operations, which portion should be maintained as a protective reserve, and which portion may be allocated to external commercial utilization.

It is important to emphasize that the commercialization of reserve capacity does not mean maximizing the utilization of all available resources. Within the modular methodology, available capacity is not equivalent to fully available capacity. A portion of the reserve must remain within the enterprise to protect against seasonal demand growth, urgent orders, supply delays, staffing disruptions, production errors, or shifts in market demand. Only the portion of capacity whose utilization does not reduce the resilience of the enterprise's core operations should be commercialized.

The commercialization of reserve capacity begins with determining the actual capacity of the process. The enterprise must understand how much output a production unit can generate, how many orders a warehouse can process, how many customer inquiries a service module can handle, what volume of materials the procurement function can supply, and how many external requests the distribution network can support. Without a clear assessment of capacity, commercialization will be based on assumptions rather than on a controlled and measurable management approach.

The next step is to assess the current level of internal utilization. The enterprise must determine what portion of the module's capacity is already required for core operations. Production capacity may be occupied by the manufacture of the company's own products, warehouse capacity by the storage and handling of internal product flows, the call center by the processing of customer inquiries, and procurement resources by supplying materials to the production module. Only by comparing total capacity with current internal utilization can the enterprise identify its actual reserve capacity.

7.5. Common mistakes in transforming processes into modules

The transformation of existing processes into revenue-generating modules requires consistency, managerial discipline, and a clear understanding of the boundaries of the modular approach. Despite its practical nature, the methodology cannot be reduced to simply renaming departments, adding external orders, or seeking any available resource for commercial utilization. When an enterprise violates the logic of transformation, the modular system may fail to improve resilience and, instead, increase organizational complexity, overload personnel, and create new constraints.

One of the most common groups of mistakes is associated with the formal implementation of the modular model. An enterprise may label production as a production module, the warehouse as a warehouse module, and procurement as a procurement module without making any substantive changes to the underlying processes. If functions, boundaries, performance indicators, reserve capacity, accountability, and links to core operations are not clearly defined, no actual transformation takes place. A module should

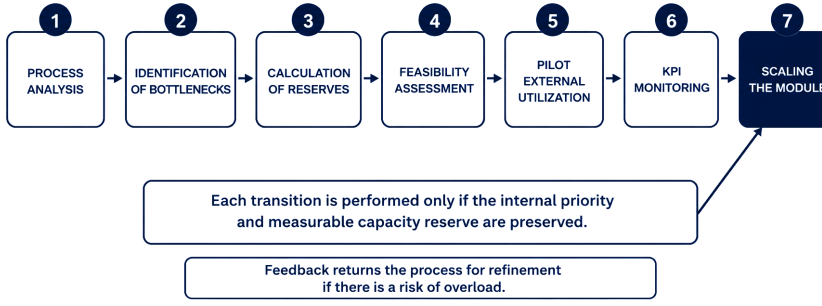

Figure 7. Sequence of process transformation into a resilience module

Description: The diagram illustrates the practical sequence of transforming an existing process into a resilience module, from process analysis and evaluation to pilot external utilization, KPI monitoring, and module scaling.

differ from a conventional department not by its name, but by its ability to perform its core function, maintain a managed reserve, and, where it is safe to do so, generate additional value without compromising the enterprise's primary activities.

This category of mistakes also includes attempts to transform every enterprise process into a module. Not every operation requires the status of an independent module. If a process is performed infrequently, has little impact on resilience, lacks measurable reserve capacity, and cannot be utilized beyond its primary function, it is sufficient to retain it as a standard operating procedure. An excessive number of modules increases managerial complexity, expands the number of indicators that must be monitored, and reduces management's focus on genuinely critical areas.

CONCLUSION

This methodological guide has presented a concise yet conceptually complete approach to the development of a modular business framework as a tool for enhancing enterprise resilience, business continuity, and organizational manageability. The final structure incorporates the theoretical foundations of resilience, the methodology of the modular framework, practical modules for procurement, production, warehousing, service, and distribution, organizational mechanisms, a system of resilience indicators, a practical implementation case, and a methodology for transforming existing business processes into revenue-generating modules.

The key conclusion of this work is that a recurring bottleneck within an enterprise should not be viewed merely as a localized operational problem. If a constraint affects delivery times, revenue generation, product quality, supply reliability, workforce utilization, or the organization's ability to fulfill its commitments, it can be transformed into a resilience module. Such a module retains its internal supporting function while also acquiring managed reserve capacity, measurable performance indicators, clear accountability, and the potential for safe commercialization.

The guide demonstrates that a module, as an internal business unit, differs from a conventional department through its dual functional purpose. Procurement reduces dependence on intermediaries and, when reserve capacity is available, can serve external demand; production supports the enterprise's own product portfolio while utilizing excess capacity for compatible external orders; warehousing and fulfillment modules maintain internal product flows and can also perform external logistics operations; service and distribution modules stabilize demand, improve the quality of customer interactions, and help leverage the benefits of counter-seasonal demand patterns through the principle of mirror seasonality.

The practical significance of the modular approach lies in the ability of an enterprise to utilize existing processes not only as cost centers but also as resilience assets. The commercialization of reserve capacity, cross-functional workforce deployment, supplier diversification, the calculation of safe lead times, a unified KPI system, and the maintenance of internal operational priorities make it possible to generate additional revenue without undermining the enterprise's core activities.

At the same time, the modular framework is not a universal template that can be mechanically applied to every enterprise. Its implementation requires the identification of critical processes, the assessment of actual capacity, the allocation of protective reserve capacity, the gradual introduction of external utilization, and the continuous monitoring of performance indicators. When these conditions are met, the modular model enables enterprises to move beyond reacting to disruptions and toward the proactive management of constraints, reserves, and opportunities for future development.

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