

Preparedness Perspective of the Conceptual Reference Framework for Enterprise Resilience Enhancement

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
-Inter	Customer	Demand	Unpredictable changes in demand	Study of changes in the demand pattern
				Study of demand historical outliers
				Study of the prospective forecast
				Implementation of demand forecasting systems
				Search for additional production capacity
				Search for alternative providers
				Implementation of adequate commercial management
				Implementation of marketing and sales practices that minimise changes in demand
				Implementation of flexible production systems
				Study of changes in the demand pattern
-Intra -Inter	Customer	Demand	Errors in the demand forecast	Quantitative analysis of the demand forecast errors
				Comparison of the different methods of demand forecast with regard to the demand errors
				Implementation of demand forecast systems
				Implementation of demand-driven systems
				Review of the reliability of the input and output information of the demand forecast
				Periodic review of the mathematical / technical models used to perform the demand forecast
-Inter	Customer	Loyalty	One of our key customers changes the manufacturer	Definition of strategies of credibility and image of the focal firm
				Definition of strategies (barriers) that make difficult for customers to move from manufacturer
				Definition of the diversification strategies of the sources of incomes
				Definition of customers loyalty strategies
				Definition of promotion / price negotiation strategies ...
				Implementation of policies that promote the strategy of "offering services"
				Implementation of customer relationship management systems (CRM) and data analysis

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
				Implementation of an adequate and efficient contracting management through the establishment of long-term agreements / contracts with customers.
-Inter	Customer	Financial	Financial problems of our customers	Third party insurance contracts covering such disruptive events Definition of strategies to monitor the customers financial risk Definition of strategies for negotiation and renegotiation of the payment terms
-Intra	Customer	Innovation / Requirements	Lack of innovation to meet customers' needs	Analysis of the optimal way to protect intellectual / industrial property rights Training and coaching of human capital Definition of planned obsolescence policies by determining the end of the lifecycle of a product Implementation of R+D+i (Research, Development and Innovation) Implementation of open innovation strategies
-Inter -Extra	Customer	Location	Geographic dispersion of our customers	Guidance of the focal firm in different cultures and customers' characteristics depending on their geographical location Definition of ICT communication systems (asynchronous and synchronous) Definition of a sales force structured by territories
-Inter	Customer	Deadlines	Our customers require increasingly demanding delivery times	Classification ABC-XYZ Definition of negotiation policies about delivery deadlines with customers Study of changing the order fulfilment strategy, for example, from MTS to MTO or ATO Study and implementation of policies that promote more flexible and faster production systems Outsourcing part of the production Safety stocks Utilization of overtime labour and idle production capacity Assessment of the urgent transport cost

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
-Inter	Customer	Innovation / Requirements	New requirements of our customers to customize products	Considering the change of order fulfilment strategy, e.g. from a MTS to MTO/ATO strategy
				Establishment of co-design systems
				Implementation of continuous R&D+i (Research, Development and Innovation)
				Implementation of regular monitoring systems of analysis trends
-Inter	Customer	Innovation / Requirements	Critical changes in our customers' requirements	Design and production engineering and production processes prepared for product customization
				Establishment of monitoring policies and periodic analysis of the needs and requirements of customers (general changes)
				Establishment of monitoring policies and periodic analysis of market trends (changes in products)
				Implementation of R+D+i activities (Research, Development and Innovation) (changes in products)
-Intra	Production	Capacity	Limiting changes in the capacity of production	Promotion of policies to create a diversified offer (products, services, business models) so that if the offer is wide and dynamic, the customer can choose between the solutions already proposed
				Concurrent engineering in the design of products (changes in products)
				Analysis of the production capacity constraints
				Study of changing the order fulfilment strategy, for example, from MTS to MTO or ATO
-Intra	Production	Capacity	Limiting changes in the capacity of production	Implementation of demand forecasting systems
				Introduction of strategies for reducing setting-up times
				Introduction of advanced predictive maintenance systems to increase the availability of production resources
				Production detailed Planning - Optimization of the Master Plan Scheduling
				Safety stock

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-Intra - Inter	Production	Equipment and machinery	Breakdown / failure of machines and / or key equipment	Definition of alternative routes and flexible equipment purchases
				Establishment of product-service systems contracts with equipment suppliers
				Backward vertical integration of the technical service
				Total preventive maintenance
				Modernisation of the technical service through technology
				Negotiation with competitors (orders to competitors)
				Nearest technical service
				Utilisation of the maximum capacity of other similar machines
-Intra - Inter	Production	Process / Requirements	The process of new products development does not meet the requirements of our customers	Adjustments of existing products to meet customers' requirements
				Development of prototype or pre-production activities before the launching of new products
				Testing of new products by external agents (taking into account confidentiality issues)
				Establishment of shared risk policies in the development of new projects / products
				Implementation of co-design systems
				Implementation of collaborative information exchange systems
				Use of formalized and known methods for the development of new products (for example, Quality Function Deployment - QFD, theory of the resolution of invention-related tasks - TRIZ, etc)
				Adoption of design approaches for manufacturing and assembly processes
-Intra	Production	Processes	Production operations that become increasingly complex	Adoption of modularization and postponement strategies
				Training of human capital on operational aspects of the production department.
				Professional recycling
				Detailed definition of tasks, roles and responsibilities
				Development of prototyping or pre-production before the launch of new products
				Implementation of advanced technologies for production planning and control
				Rationalization of the products' offer
				Reviews of the design concept and development of new products

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-Intra - Extra	Production	Product	Our products are subjected to new and stringent storage restrictions to maintain its integrity and purity	Agreements with 3PL (Third Party Logistics) and 4PL operators
				Implementation of optimization algorithms based on the storage criteria required
				Implementation of warehouse management systems taking into account the criteria for loading trucks (according to the above restrictions)
				Constant monitoring of the legislation and regulations concerning the sector
				Implementation of traceability and control systems in real time (RFID, barcodes, GPS ...)
-Intra	Production	Product / quality	Production of defective or poor quality products	Supplier qualification. Inspection and Testing of raw materials
				General training for quality
				Quality control at every point of the production line
				Implementation of concerted quality systems with our suppliers
				Total preventive maintenance of equipment
-Intra - Inter	Production	Product / quality	Delivery of defective (poor quality) products to our customers	System of quality assurance
				General training for quality
				Quality control at every point of the production line
				Exhaustive control and inspection in the shipment area
				Total preventive maintenance of equipment
-Extra	Production	Product / competitors	Significant product innovations of our competitors	System of quality assurance
				Market analysis on needs and what customers/consumers really value
				Benchmarking
				Research, innovation and continuous development
				Opportunities identification systems through the sales department
-Extra	Production	Product / prices	Sudden and strong competition in prices of our products	Implementation of co-design systems
				Periodic analysis of competitors
				Search for alternative suppliers
				Improved image and reputation of the company (advertising, respectful environment, social actions ...)
				Introduction of differentiating values to our products (innovation)
				Outsourcing of part of the production

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
				Improvement in production or distribution processes
				Reduction in costs through efficiency and quality techniques
-Intra -Inter	Distribution	Capacity	Limited capacity of the distribution	Agreements with 3PL (Third Party Logistics) and 4PL operators
				Optimization of the planning and distribution processes
				Outsourcing of capacity to external logistics agents
-Extra	Distribution	Prices	Increase in fuel prices	Agreements with Third Party Logistics (3PL) and 4PL operators
				Monitor oil prices evolution constantly
				Definition and implementation of the costs range that the enterprise would like to bear
				Definition and implementation of a protocol to negotiate prices of finished products
-Extra	Distribution	Transport	Disruptions related to railway transport	Agreements with 3PL (Third Party Logistics) and 4PL operators
				Search of alternative routes
				Search of alternative transport means
				Constant monitoring of the rail transport situation through the agencies responsible for providing such information (e.g. RENFE in Spain) as well as the weather forecast
-Extra	Distribution	Transport	Disruptions related to road transport	Agreements with 3PL (Third Party Logistics) and 4PL operators
				Search of alternative routes
				Search of alternative transport means
				Constant monitoring of the rail transport situation through the agencies responsible for providing such information (e.g. DGT in Spain) as well as the weather forecast
-Extra	Distribution	Transport	Disruptions related to air transport	Agreements with 3PL (Third Party Logistics) and 4PL operators
				Search of alternative routes
				Search of alternative transport means
				Constant monitoring of the rail transport situation through the agencies responsible for providing such information (e.g. AENA in Spain) as well as the weather forecast
-Extra	Distribution	Transport	Disruptions related to maritime transport	Agreements with 3PL (Third Party Logistics) and 4PL operators
				Search of alternative routes
				Search of alternative transport means

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
				Constant monitoring of the rail transport situation through the agencies responsible for providing such information (e.g. Maritime Agency in Spain) as well as the weather forecast
-Intra -Inter -Extra	Energetic	Supply	Interruption in the supply of water, gas, electricity, etc...	<p>Definition and implementation of formal protocols to proceed when supply interruptions occur</p> <p>Viability study and implementation of redundant systems (electric generators, etc.) to keep the enterprise running</p> <p>Implementation of real-time communication systems with energy supply providers</p> <p>Vertical backward integration (especially for electrical energy, e.g. solar panels)</p> <p>Negotiation with energy suppliers about penalty clauses if the energy supply is interrupted</p>
-Extra	Energetic	Prices	General increase of the prices of the supply of water, gas, electricity, etc...	<p>Definition and implementation of the costs range that the enterprise would like to bear</p> <p>Definition and implementation of a negotiation protocol about final products' prices</p> <p>Vertical backward integration (especially for electrical energy, e.g. solar panels)</p> <p>Constant monitoring of the energetic supplies prices evolutions (legislation, taxes, etc...)</p> <p>Have negotiated prices and conditions of supply with an alternative supplier</p>
-Intra	Environmental	Accidental	Fire	<p>Risk analysis and modification of production processes according to the results of the analysis</p> <p>Training of the human capital on security measures for fire protection</p> <p>Constant revision, maintenance of fire hoses, ...</p> <p>Construction of the warehouse/facilities where the focal firm is located with high resistance to fire materials</p> <p>Insurance contracts that include clauses anti-fire</p> <p>Definition of firefighting policies in the case of storing flammable materials</p> <p>Definition of emergency evacuation protocols of the focal firm</p> <p>Implementation of anti-fire measures</p>

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
-Extra	Environmental	Competitors	Increase of competitors	Periodic fire drills
				Periodic analysis of the competition
				Benchmarking
				Definition of differentiation strategies from competitors
				Definition of strategies that promote the competitive advantages of the focal firm
				Definition of policies to focus efforts on providing better customer service
				Implementation of policies for research, development and innovation
-Extra	Environmental	Competitors	Entry of new competitors in emerging countries	Analysis of potential patents and intellectual property rights to protect the products/processes of the focal firm
				Definition of policies that foster the creation of a high reputation and brand loyalty of the focal firm
				Definition of product differentiation policies
				Establishment of regulatory barriers related to product safety, working conditions, etc.
				Robust access establishment to distribution channels
-Inter	Environmental	Natural	The facilities of our customers are exposed to severe natural disasters	General increase in the customer base in different geographical locations
				Study by the focal enterprise of the most common natural disasters in the countries where our customers have facilities and give feedback to them
				Promotion performed by the focal company to take out insurance contracts by the customers to face up to natural disasters
				Simulation of different disaster scenarios and establishment of specific measures based on the simulation results

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
-Inter	Environmental	Natural	The facilities of our suppliers are exposed to severe natural disasters	General increase in the supply base
				Search for alternative raw materials or components
				Search for alternative suppliers
				Study by the focal enterprise of the most common natural disasters in the countries where our customers have facilities and give feedback to them
				Promotion performed by the focal company to take out insurance contracts by the customers to face up to natural disasters
				Promotion by the focal firm to implement measures on suppliers facilities f. ex. having emergency supplies such as batteries, fuel, water and alternative communication systems, periodic inspection of the elements of the facilities, etc ...
				Simulation of different disaster scenarios and establishment of specific measures based on the simulation results
-Intra	Environmental	Natural	Our facilities are exposed to severe natural disasters	Safety stock
				Definition of business continuity plans
				Definition of emergency evacuation protocols
				Train human capital in security measures for fire protection
				Periodic drills
-Intra	Environmental	Policies	Geopolitical instability in countries where our enterprise has facilities	Simulation of different disaster scenarios and establishment of specific measures based on simulation results
				Definition of a structured, analytical and comparative approach of potential political changes and government policies around the world.
				Definition and analysis of indicators related to the degree of uncertainty in strategic countries that could lead adverse changes in the operations of the focal firm
				Strategic planning regarding the location of new facilities of the focal firm considering the situation of the governments in such countries
				Simulation of different geopolitical scenarios and establishment of specific measures based on the simulation results

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-Inter	Environmental	Policies	Geopolitical instability in countries where our customers have facilities	<p>General increase of the customer base in different geographical locations</p> <p>Development of geopolitical risk maps and analysis by pessimistic and optimistic criteria</p> <p>Simulation of different geopolitical scenarios and establishment of specific measures based on the simulation results</p>
-Inter	Environmental	Policies	Geopolitical instability in countries where our suppliers have facilities	<p>General increase in the supply base</p> <p>Search for alternative raw materials or components</p> <p>Search for alternative suppliers</p> <p>Simulation of different geopolitical scenarios and establishment of specific measures based on the simulation results</p> <p>Safety stock</p>
-Intra	Environmental	Crime	Industrial espionage	<p>Definition of policies to change periodically passwords and protocols that allow access to different levels of information.</p> <p>Definition of employment contracts with a formal description of the activities that can be considered as espionage (or that may favor due to the absence of due diligence) and specify the consequences for the worker</p> <p>Have specific and constantly updated protection programs (antispymware, antivirus, firewall)</p> <p>Implementation of vigilance systems</p> <p>Establishment of an appropriate information policy about the consequences of inappropriate behavior</p>
-Intra	Environmental	Crime	Sabotage, theft, vandalism, kidnapping and extortion	<p>Development of an educational programme for physical protection of facilities</p> <p>Control and registration of dissatisfied employees or those who often assume a negative attitude against the regulations established by the focal firm.</p> <p>Establishment of policies to promote human capital satisfaction of the focal firm.</p> <p>Establishment of vigilance and monitoring activities.</p> <p>Establishment of an efficient system of identification, registration and control of persons, packages and vehicles.</p>

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				Registration of information about people with a history of subversive activities or sabotage. It would be desirable to establish coordination activities with State Security Agencies (if possible).
-Extra	Financial	Credit	Restricted access to credit	<p>Create a reserve fund and define policies that maintain a percentage of the monetary reserve</p> <p>Study on the viability of turning to supply chain financing instruments</p> <p>Study and analyse policies supported by public institutions to fund companies (e.g. ICO, Enisa in Spain)</p> <p>Outsourcing and change of strategy to focus on those activities that provide added value</p> <p>Request for credit through reciprocal guarantee companies that act as guarantors of financing, assuming credit risks</p>
-Extra	Financial	Interest	Changes in the interest rates	<p>Negotiation with banks about the variable interest rate</p> <p>Study the advisability of investing in products with a fixed interest rate</p> <p>Study the advisability of investing or asking for funding to foreign entities or foreign currency (e.g. CHF)</p>
-Inter -Extra	Financial	Foreign exchange	Changes in the currency exchange rates	<p>Detailed analysis of the currency exchange rates and definition of negotiation strategies</p> <p>Definition of a standard conversion method to the reference currency when registering the accounting information</p> <p>Definition of hedging strategies to neutralize or reduce the risk of exposure to fluctuations in exchange rates</p> <p>Signature of contracts for commercial transactions in the future at a exchange rate agreed upon in the present</p>
-Intra	Financial	Cash flow	Cash problems	<p>Search for a sponsor</p> <p>Creating a reserve fund and definition of policies that maintain a percentage of the monetary reserve</p> <p>Debt issuance</p> <p>Study on the viability of turning to supply chain financing instruments</p>

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				Inventory liquidation with discount
				Request for a loan
				Agreements with 3PL (Third Party Logistics) and 4PL operators
				Classification ABC-XYZ
-Intra -Inter	Inventory	Capacity	Limited storage capacity	Development of supply systems aligned to production needs (JIT, Kanban, ...)
				Study of feasibility to use distribution centers
				Study and evaluation of the physical layout of the warehouse and its percentage of utilization
				Study and evaluation of the optimal level of stock
				Training of the human capital for the early failure detection in the information related to inventory management
				Design and development of secure and reliable software
				Quality control of computer programs to ensure the reliability of the information
				Identification and measurement of all the necessary key performance indicators and the required level of aggregation of data analysis
-Intra -Inter	Inventory	Distrust	Loss of time in the inventory management due to mistrust in the system	Implementation of the Internet of Things technology to increase data reliability and real-time updating (eg, radio frequency identification infrastructure)
				Implementation of analysis procedures to detect failures in the consistency of information
				Implementation of robust procedures to control the inputs and outputs of the warehouse
				Implementation in the inventory management software development of a complete congruence between the requirements of the focal company and the information needs
				Redundant handling equipment
-Intra	Inventory	Equipment and machinery	Breakage of handling equipment	Establishment of open contracts with suppliers that supply / rent equipment for maintenance (with or without operators).
				Total Preventive Maintenance
				Close technical service

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-Intra	Inventory	Mistakes	Errors in products' identification	Human capital training in both the operational and the analysis and understanding of the reasons that cause the misidentifications
				Outsourcing of inventory management practices
				Promotion of suitable facilities, equipment and personnel (lighting, room temperature, noise, drafts, work position, physical effort, stress, security, etc.) in order to identify correctly the products or the following phases
				Implementation of the Internet of Things technology to increase data reliability and real-time updating (eg, radio frequency identification infrastructure)
				Implementation of a computer support system for the correct identification of products
				Implementation of a proper methodization and a high degree of formalization of the process of identifying products
-Intra	Inventory	Inefficiency	High times in the search for materials, components and / or products necessary for the successive phases	Promotion of incentive and improvement programmes of the warehouse staff
				Automation of the location of materials / products to physical locations of the warehouse
				Classification ABC-XYZ
				Definition of inventory management indicators in each of the operations to track real time status to detect inefficiencies
				Study and selection of the suitable storage equipment and the proper movements for the early identification and characterization of products
				Implementation of information systems (e.g. RFID) to speed up the operations performed in the warehouse
-Intra	Inventory	Inefficiency	Reiteration of movements in the picking process	Human capital training related to picking and movement aspects
				Study the time spent on the routes to perform picking
				Study and evaluate the storage pattern of products for picking
				Systematic study and evaluation of the method used for picking to minimise the operator's movements, among others

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
				Implementation of the Internet of Things technology (e.g. Radio Frequency Identification - RFID, Global Positioning System - GPS, etc.) to support storage and picking activities
				Implementation of intelligent systems to optimise the picking process (guided to operators, movement of stacker cranes, etc.)
				Maintenance of handling equipment to effectively manipulate products
-Intra	Inventory	Traceability	Loss of products' traceability within the storage area	Human capital training in inventory management
				Classification ABC-XYZ
				Implementation of appropriate management practices
				Implementation of a monitoring system to control the mobility of items in real time (RFID, barcode)
-Extra	Legislation	Imports / exports	New and more restrictive legislation of imports / exports	Design and development of flexible processes and fast and easily reconfigurable ones
				Design and development of easily adaptable products that meet the most stringent requirements of new regulations (weight, composition, presentation, identification, labeling ...)
				Participation in lobbying activities exerting pressure to influence decisions about legislation
				Constant monitoring of the different import and export trade regimes
				Constant monitoring of the countries under embargo and study of alternatives for such countries
-Extra	Legislation	Processes	Changes in legislation involving changes in our processes	Training of the company's employees in legal issues
				Creation of an office of Sustainability and Energy Management (in the case of changes in the environmental legislation)
				Definition and implementation of publicizing activities among customers about potential changes in the focal company's processes from a positive approach: processes more environmentally friendly, ...
				Definition and implementation of formal protocols to deal with new legislation that concern the company's processes

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
				Design and development of flexible processes and fast and easily reconfigurable ones
				Implementation of efficient communication systems among different functional units such as quality; research, development and innovation; legislation, production; etc....
				Implementation of continuous monitoring systems to control new or existent regulations / laws that could potentially have effects in the company's processes
				Participation in lobbying activities exerting pressure to influence decisions about legislation
				Training of the company's employees in legal issues
				Definition and implementation of publicizing activities among customers about potential changes in the focal company's products from a positive viewpoint: higher security...
				Definition and implementation of formal protocols to deal with new legislation that concern the company's products
-Extra	Legislation	Products	Changes in legislation involving changes in our products	Design and development of easily adaptable products that meet the most stringent requirements of new regulations (weight, composition, presentation, identification, labeling ...)
				Implementation of efficient communication systems among different functional units such as quality; research, innovation; legislation; new products development; etc....
				Implementation of continuous monitoring systems to control new or existent regulations / laws that could potentially have effects in the company's products
-Intra	Social	Lack of staff	Absenteeism	Establishment of information systems to warn about the causes (sanctions and legal actions) that the enterprise would take in case of absenteeism so that all parties are familiar with the consequences of absenteeism
				Promotion of social responsibility policies
				Implement changes in human resources management policies to involve workers and their opinions more

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
				Research of the causes of absenteeism by implementing monitoring and control procedures of the staff
				Definition and implementation of policies to perform the most favourable negotiations with the enterprise staff
				Definition and implementation of "security and maintenance services" (if there are machines that need daily human control to avoid an interruption of such a machine)
-Intra -Inter	Social	Lack of staff	Strikes	Definition and implementation of "minimum services" (if the enterprise provides services to meet fundamental rights, public freedoms and constitutionally protected rights, both from the public or private sector)
				Definition and implementation of policies to strengthen the corporate culture and generate motivation so that the human capital could feel identified with the enterprise and its strategy
				Implementation of policies that promote the affiliation of workers to labor unions
				Implementation of policies of action to provide the enterprise with the necessary staff (f.ex. overtime perfectly paid ...)
				Safety stock of both raw materials and / or components, and finished products
				Clear definition and implementation of the enterprise values through the mission and vision
				Definition and implementation of strategies to develop the organizational culture and welfare of the enterprise
-Intra	Social	Culture	Changes in the organizational culture of the enterprise	Definition and implementation of policies that create better relationships with both employees and customers
				Crisis management in a participatory manner
				Implementation of strong leaders to manage, lead and support the enterprise guidelines and to delegate to other employees giving them responsibility
				Implementation of measures that promote the autonomy and responsibility of workers

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-Intra -Inter -Extra	Social	Diseases	Pandemic affecting our staff	<p>Definition and implementation of policies to protect the human capital and the reconciliation of the working life</p> <p>Definition and implementation of the annual work calendar specifying holidays and festivities</p> <p>Implementation of preventive work/accidents risk policies</p> <p>Implementation of strong leaders to manage, lead and support the enterprise guidelines and to delegate to other employees giving them responsibility</p> <p>Implementation of policies for the prevention of risks and accidents</p> <p>Implementation of protocols and information / training tools to limit the spread of the pandemic</p> <p>Limitation of the human capital overtime ratio</p>
-Intra	Social	Errors	Serious errors of staff in the enterprise operations	<p>Implementation of training and coaching programmes for the human capital</p> <p>Definition and implementation of reward policies for the personnel based on the productivity level and the minimization of mistakes</p> <p>Implementation of improvements in the communication systems in order to properly inform the human capital</p> <p>Mapping and adaptation of the workers' skills with assigned tasks</p> <p>Redefinition and update of the processes and instructions assigned to each process</p> <p>Detailed monitoring of all the activities performed</p>
-Intra	Social	Hostility	Hostile environment at the enterprise	<p>Implementation of training and coaching programmes for the human capital</p> <p>Clear definition and implementation of the enterprise values through the mission and vision</p> <p>Definition and implementation of negotiation policies with the enterprise human capital</p> <p>Definition and implementation of incentives when employees submit suggestions or even complaints</p> <p>Definition and implementation of a protocol when an employee makes a formal complaint, including in this protocol a procedure of feedback to the employee about the decision taken</p>

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				Establishment of visible indicators about contributions, complaints, actions taken, etc ...
				Establishment of employees' representing bodies (labour union, etc ...)
				Implementation of strong leaders to manage, lead and support the enterprise guidelines and to delegate to other employees giving them responsibility
				Implementation of improvements in communication systems so that human capital is duly informed
				Implementation of policies that promote social events
				Implementation of suggestions/complaints boxes
				Definition and implementation of policies for employment promotion within the enterprise
				Definition of performance indicators and monitoring their fulfilment
-Intra	Social	Critical Personnel	Key personnel leaving the enterprise	Definition of tasks, roles, responsibilities and performance and monitoring indicators of the achievement of such definition
				Implementation of emphasis policies for recruiting and retaining outstanding employees
				Implementation of policies that promote the social events
				Registration of the human capital know-how
				Search for alternative raw materials or components
				Search for alternative suppliers
-Inter	Supply	Quality	Poor quality of the raw materials or components supplied	Certification (audits) of quality in suppliers
				Implementation of quality systems agreed with our suppliers
				Implementation of systems to constantly monitor suppliers/materials
				Pre-production inspection
				Safety stock of raw materials and/or components
				Search for alternative suppliers
-Inter	Supply	Capacity	Limiting changes in the capacity of suppliers	Definition of long-term contractual agreements with suppliers
				Implementation of continuous monitoring systems of suppliers / materials
				Backward vertical integration

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-Inter	Supply	Location	Geographic dispersion of our suppliers (time difference, language, proximity)	Search for alternative suppliers
				Promotion of closer relationships
				Implementation of real-time communication systems
				Implementation of continuous monitoring systems of suppliers / materials
-Intra -Inter	Supply	Raw materials and components	Delay in the supply of raw materials or components	Encourage a common culture and argot for the entire supply chain
				Implementation of penalties for delay
				Search for alternative suppliers
				Encouragement of collaborative work with suppliers and joint problem solving to establish realistic replenishment systems
-Intra -Inter	Supply	Raw materials and components	Shortage of raw materials	Implementation of continuous monitoring systems of suppliers / materials
				Safety stock
				Search for alternative raw materials or components
				Definition of products' new compositions
-Intra -Inter	Supply	Raw materials and components	Shortage of raw materials	Definition of complementary products that do not require the scarce raw materials and replace the current products
				Implementation of Research, Development and Innovation operations to replace the existing raw materials by other complementary
				Implementation of reverse logistics and recycling systems
				Analysis of the seasonality and trend (supply-demand balance) of raw materials prices
-Inter -Extra	Supply	Prices	Price fluctuations of the materials supplied	Search for alternative raw materials or components
				Search for alternative suppliers
				Definition of long-term contractual agreements with suppliers
				Vertical backward integration of part or all of the supply function
				Negotiation with suppliers
-Inter	Supply	Supplier	Withdrawal of a key supplier	Close monitoring of commodity markets. Strategic purchases
				General increase in the supply base
				Partnership with suppliers (temporary union of companies ...)

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
				Search for alternative suppliers
				Implementation of continuous monitoring systems of suppliers / materials
				Vertical backward integration of part or all of the supply function
-Intra -Inter	Technology	Technological base	Lack of technological infrastructure to support business needs	Analysis of the technological needs of the focal firm to define the new requirements
				Definition of maintenance, renovation and modernization policies of the technological infrastructure
				Definition of support programs and technological training for the human capital of the company in order to encourage the maintenance and management of the technological infrastructure
				Establishment of professional services contracts with technology providers (for example "pay-per-use" contracts or performance-based contracts)
-Extra	Technology	Competitors	Technological leap from our competitors	Benchmarking
				Creation of barriers that hinder the entry of competitors in the development of our products
				Definition of technological research, development and innovation policies
				Promotion of an attitude of Early Adopters, incorporating technological solutions and products and using them in a pioneering way
-Inter -Extra	Technology	Crime	Cybercrime (hacking, viruses, malicious code)	User training in computer security issues to try to prevent attacks in which the user would unwittingly giving authorization
				Definition of standards, protocols, methods and rules to minimize potential risks of the computers or the information infrastructure.
				Definition of the users access rights policy in order to avoid oversized rights.
				Definition of actions to be taken when a computer vulnerability is detected and selection of human resources to be contacted in case of discovering a possible intrusion
				Definition of maintenance policies of the IT infrastructure of the company
				Implementation of anti-virus software and firewalls systems
				Performing regular backups

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
				Constant monitoring of national laws, which require to implement security policies by the enterprises, public institutions... (f.ex. in Spain, the Organic Law on Data Protection).
				Constant monitoring of the different and current types of computer threats: viruses, computer worms, trojans, logic bombs or spyware.
-Intra -Inter	Technology	Failures	Communication failures (Internal and/or with customers and/or suppliers)	<p>Analysis of the historical failures suffered by the communication systems</p> <p>Definition of maintenance policies of the communication systems</p> <p>Definition of continuous improvement and reengineering policies for the communication systems</p> <p>Definition and establishment of training policies of the focal enterprise human capital in ICT</p> <p>Implementation of the periodic reliability testing of the communications systems</p>
-Intra	Technology	Failures	Unexpected failures in our internal information systems	<p>Analysis of the historical failures suffered by the information systems</p> <p>Training of human capital in ICTs</p> <p>Definition of maintenance policies of the information systems</p> <p>Definition of continuous improvement and reengineering policies for the information systems</p> <p>Definition, design and development of reliable, robust, ergonomic and efficient information systems</p> <p>Implementation of the periodic reliability testing of the information systems</p> <p>Definition of backups procedure</p>
-Intra	Technology	Obsolescence	Obsolescence of our IT equipment and systems	<p>Analysis of the costs involved in supporting ICT equipment and systems</p> <p>Establishment of professional services contracts with technology providers (for example "pay-per-use" contracts or performance-based contracts)</p> <p>Continuous study of the information systems updates that support the applications of the focal company and the launch of new versions</p> <p>Implementation of open source systems</p> <p>Total preventive maintenance of ICT equipment</p>

Level	Origin	Suborigin	Disruptive event	Preventive actions / Preparedness Capacity
				Planning during the software development of future migrations to other operating systems and/or more advanced equipment
