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GLOSSARY

Critical thinking is defined as “all or part of the process of questioning, analysis, synthesis, interpretation, inference, inductive and deductive reasoning, intuition, application, and creativity”.¹

Critical thinking is an intellectual discipline that involves the following elements of thought: purpose and problem identification, concept clarification, discovery of assumptions, consideration of points of view, detection of implications/consequences, validation of evidence, and reflection.²

Creative thinking is the ability to produce responses that are both original and useful. Like other complex thinking processes, creative thinking draws on higher-order cognitive resources.³

Value creation is a process for the companies to enter an industry, react to imitators, and co-evolve with product market strategies and with environmental factors.⁴

CRITICAL THINKING IN BUSINESS

Critical thinking (CT) is purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based. CT is essential as a tool of inquiry. As such, CT is a liberating force in education and a powerful resource in one's personal and civic life. While not synonymous with good thinking, CT is a pervasive and self-rectifying human phenomenon. The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused on inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. Thus, educating good critical thinkers means working toward this ideal. It combines

¹ Seibert, 2021

² As above

³ Redifer, et.al., 2021

⁴ Climent, Haftor, 2021

developing CT skills with nurturing those dispositions which consistently yield useful insights, and which are the basis of a rational and democratic society.⁵

Some authors, like Subir Bandyopadhyay, Jana Szostek define critical thinking as a three-step process. Critical thinking was defined simply as the ability to identify relevant facts, to identify and analyze options, and to reach an appropriate final decision.⁶

1 table

Behavior classifications for critical thinking

Behaviour	Explanation
Issue identification	<ul style="list-style-type: none"> • Involves skills such as identifying key issues, identifying urgent matters, following directions, and paying attention to details; • Involves evaluating assumptions and explaining why an issue is important.
Information gathering	<ul style="list-style-type: none"> • involves the skills of asking questions, adding comments, and seeking clarification; • includes seeking input from others and evaluating credibility of others.
Option exploration	<ul style="list-style-type: none"> • Involves identifying alternative approaches and discussing the pros and cons of each approach; • Includes evaluating an implemented decision and having an alternative plan.
Reaching a final decision	<ul style="list-style-type: none"> • involves synthesis of all the information into a sound decision; • includes being able to justify the decision and properly planning the implementation of the decision.

Source: Bandyopadhyay, Szostek, 2018

Proficiency in new technologies is only one part of the future skills equation, however, as “human” skills such as “creativity, originality, and initiative,” “critical thinking,” persuasion, and negotiation will likewise retain or increase their value, as will attention to detail, resilience, flexibility, and “complex problem-solving.”⁷

Concerning “Critical thinking,” this skill is also in line with the ISO 9001 standard, because whenever it is important to improve the product or the process, it is also necessary to consider critical thinking when analyzing problems, thus allowing one to find the correct solutions. The big difference is whether innovation refers to production processes, very

⁵ Facione, 1990

⁶ Bandyopadhyay, Szostek, 2018

⁷ Santos et al., 2021

common in developing countries, or to product innovation, more common in developed countries.⁸

Development is more important today than it has been in the past in order to attract and retain talent within organizations. Critical thinking skills and leadership skills such as leading change, creating vision, engaging others top the list of skills imperative to success. Leaders are expected to lead teams, build talent, develop business strategy, run meetings, and handle disagreements, often with busy calendars, without much designated time to think. In a complex environment, the ability to assimilate information and make high quality decisions quickly in the face of uncertainty and pressure is essential to the success of the leader. Critical thinking skills require intellect, knowledge, time and practice. President John F. Kennedy said it best “Too often we ... enjoy the comfort of opinion without the discomfort of thought”.⁹

Critical thinking requires the ability to draw in information and analyze data from a team perspective, as well as considering the impact on the organization at all levels. This requires greater transparency in decision making, the openness to inquire and learn and the ability to work with the next generation. Many leaders are struggling with this shift from top-down authority to an inclusive, learning environment.¹⁰

Critical thinking is the necessary competence for the processes of cognition, decision-making, and taking-action by managers. Its importance is increasing as fast, and relatively easy access to information of different quality and importance in terms of its possible impact can lead to decision paralysis or cognitive dissonance or result in an easier manipulation and influence.¹¹

Many authors consider critical thinking necessary for the current corporate and business environment, which forms the basis of managers’ professionalism. As part of the conception of models of education and development of managers, it is essential to continually discover, explore, and verify methods that will lead to professional mastery development and support. An essential aspect of professional mastery is critical thinking. The issue of cognition, thinking, and decision-making of managers is a topic we have been dealing with for a long time.

The importance of critical thinking for cognition, correct decision-making and effective action in challenging, complex, and dynamically changing conditions is currently growing. These reasons include the quantity and availability of information and its timeliness, reliability, and validity.¹²

⁸ As above

⁹ Hagemann, Stroope, 2013

¹⁰ Knap-Stefaniuk, Ambrozova, 2021

¹¹ As above

¹² As above

Critical thinking can be viewed from different angles. In the broadest sense, critical thinking can be defined as careful and judicious decisions about whether to accept, reject, or abandon a statement with some degree of certainty. Critical thinking presupposes understanding information, grasping an idea and examining it thoroughly, comparing it with other opinions and what we already know about the problem, and resulting in an opinion and responsibility. Critical thinking examines assumptions, identifies hidden values, evaluates evidence, and assesses conclusions. It includes the ability to investigate a problem, question, or situation and integrates all available information to reach a decision or test a hypothesis.¹³

Critical thinking is independent thinking. Purely individual, non-transferable. It is related to the ownership and authorship of ideas. It is about the feeling of freedom to think for oneself, conscious independence. Gaining information is the starting point, not the goal of critical thinking. In this sense, thinking about the ability to use the information and experience gained is critical. Critical thinking begins with questions and problems to be solved. It is about curiosity, the ability to see, perceive and actively solve problems. Critical thinking is based on reasonable arguments. Good arguments admit that there may be counter-arguments, different-angle views. Critical thinking is thinking in society. Ideas are verified and refined as we share them with others.¹⁴

CREATIVE THINKING IN BUSINESS

The current study found that entrepreneurial leadership positively related to employee **creativity**. Moreover, it was found that psychological empowerment and psychological safety mediated the relationships between entrepreneurial leadership and employee creativity.¹⁵

As organizations encounter fierce global competitions and rapid changes in technology and economics, **employee creativity** has been regarded as a potential resource for organizations' survival, this refers to the generation of novel and useful ideas of products, practices, services, and procedures in the workplace. Among the abundant factors, leadership has been proved to play an essential role in facilitating employee creativity.

When leaders' transparent behavior is high, they will share relevant information to employees, openly communicate with employees, and give feedback to employees, which enriches the resources for employees' engagement in creative activities. Hence,

¹³ As above

¹⁴ Knap-Stefaniuk, Ambrozova, 2021

¹⁵ Mehmood, Jian, Akram, Tariq, 2021

leaders' transparent behavior will contribute to employee creativity by providing information for employees and building a transparent climate.¹⁶

Design thinking is a systematic process of **creative innovation**. It has been using to solve problems and create innovations through products and services, consists of 3 main components:

- 1) understanding the problem - this process requires time to understand the problem deeply, which plays a large role in determining the direction to solve the problem.
- 2) thinking outside the box - to generate ideas and evaluate the possibility,
- 3) learning through experiments by creating prototypes to communicate and generate clear concepts.¹⁷

In addition, the design thinking process is also a process that **combines creative thinking and business thinking** to develop new things and innovation based on customers' satisfaction and problem-solving (Human-Centered). The process of design thinking consists of empathize, define, ideate, prototype, test. In conclusion, the design thinking process is a process that leads to the development of innovations to solve problems to meet the needs of customers or clients. The design thinking process must be acted repeatedly until achieving the best innovation before putting it into use.¹⁸

Digital entrepreneur refers to business owners who are actively using digital technology to develop skills and management, business strategy planning as well as creating competitiveness by applying technological knowledge to improve business processes.

The entrepreneurs who turn into digital entrepreneurs must create product value or services, workplaces look like digital organizations, digital markets. Digital entrepreneurs must have digital competence, digital entrepreneurship competence, and creative digital economy innovation. Creative digital economy innovation consists of 2 components: (1) creating prototypes of creative digital economy innovation to respond to customer needs, including the use of digital knowledge in customer service, (2) development of creative digital economy innovation to connect between customers and products.

There are many definitions of creativity, but in business it refers to finding insights into problems. Any person seeking to further the interests of their organization needs to be able to think creatively. It is not surprising that interest in creative problem solving has continued to be high. In a world that is constantly changing and presenting new challenges, pathways to the solution of new kinds of problems are always in demand. However, creative thinking should not be seen as the 'universal antidote' capable of curing all, but it offers ways of

¹⁶ Yi, Hao, Yang, Liu, 2017

¹⁷ Proctor, 2021

¹⁸ Proctor, 2021

examining problems that force us to question fundamental issues. It makes us challenge basic assumptions.

Creative problem-solving involves exploring alternative mental pathways to develop new ideas. For routine tasks, this is often the most effective approach. However, for tasks requiring creative problem-solving, a consolidated schema may lower performance because creative ideas require avoidance of high-frequency responses.¹⁹

BASIC TRENDS FOR VALUE CREATION

Authors propose four value-creation survival categories which a firm might make use of during disruptive change:

- 1) firm growth,
- 2) generation of additional revenue,
- 3) a competitive and sustained advantage,
- 4) increased profit.

Corporate foresight could therefore create value by enhancing the ability of a firm to create superior incremental and radical innovations that allow the firm to gain and maintain a competitive advantage.²⁰

A number of value creation groups were identified in literature as can be observed in 2 Table.

2 Table

Potential value creation groups from corporate foresight

¹⁹ Rosseel, Anseel, 2022

²⁰ Rohrbeck, 2012

<i>Group</i>	<i>Code</i>	<i>Potential value contribution</i>	<i>Description</i>
<i>Trigger responses</i>	VC 1	• Identify relevant external change	Based on a continuous scanning of the environment, the corporate foresight activity ensures that the firm responds adequately to meet threats and grasp opportunities.
	VC 7	• Trigger new innovation initiatives	
	VC 9	• Challenge innovation development to ensure state-of-the-art	
<i>Start and facilitate strategic discussions to enable strategic change</i>	VC 4	• Challenge and change existing mental models	The corporate foresight activity motivates, orchestrates, and drives strategic discussions that—through active participation of relevant internal stakeholders—lay the foundation for strategic corporate change.
	VC 5	• Moderate strategic discussions	
	VC 6	• Promote participation	
	VC 8	• Support breaking away from path dependency	
<i>Identify and support acquisition of needed strategic resources</i>	VC 2	• Search resources	The corporate foresight activity identifies resources that are needed to generate a competitive advantage in changed environments and support their acquisition
	VC 3	• Decide on development or acquisition of resources	

Source: Rohrbeck, 2012

Consideration actions can contribute to value however the following are a number of general recommendations to increase the impact of corporate foresight:

- Design the foresight activity based on committed individuals, putting particular emphasis on using mutually valuable exchange relationships such as in the scouting network where all parties profit from the activity;
- Ensure a high level of communication and participation such as in the case of the consumer-scouting activity;
- Use methods that allow for modeling and interpreting of the system of influencing factors (such as the scenario technique), rather than rely on methods that build on linear cause-effect relationships
- Experiment with methods and processes until you have found a practice that works for your company and takes in to account the special requirements in your context.²¹

PARTNERS AND ACTIVITIES FOR VALUE CREATION

²¹ Rohrbeck, 2012

The **Value Creation Wheel** (VCW) helps to identify, analyze, and solve problems by providing a step-by-step dynamic process for creating value for society and all the stakeholders involved in the value chain (e.g., customers, employees, suppliers, distributors, investors, and shareholders). VCW is helpful for some reasons **VCW can help to select from among a variety of complex options, dealing with the paradox of choice**. Teams and people require tools with systematized paths. Empirical evidence demonstrates that the variety of choice can be daunting and demotivating and might create tensions at the personal level. Similarly, the lack of tools to deal with the variety of choice can create divisions, a wide range of tensions and may ultimately prove harmful to organizations, individuals, and society.²²

- 1) **VCW can help rethink the traditional approach to decision making and problem solving**, namely by helping to overcome several limitations of the traditional use of brainstorming, such as frequent judgment, fear of judgment, and those talkative participants tend to dominate the sessions.²³
- 2) Practitioners, public policy makers, professors, and researchers generally agree that the **traditional theoretical frameworks do not provide all the answers** and tend to build on trade-offs rather than on paradoxes. The advantage of the VCW is that "[it] **is adaptive, not ticking boxes, is structured but allows creativity**, and applies well to tech-based innovation." Finally, VCW "**presents a solution** for the tech-push and market-pull paradox. Normally people and frameworks come from one side..."

VCW presents a dynamic approach that helps to generate and select ideas, move from an abstract challenge to a focused value proposition with a clear unique selling point (USP), and generate customized business models.

3 table

Phases of VCW

Phase	Description
Tap	<p>Necessary to define the space and clarifying the problem/challenge in the specific context to analyze.</p> <p>To start is essential to gain market, technical and/or practical knowledge about the value chain and topic at hand.</p> <p>One also needs a clear vision, goals, understand the trends, and have a precisely defined research question.</p>

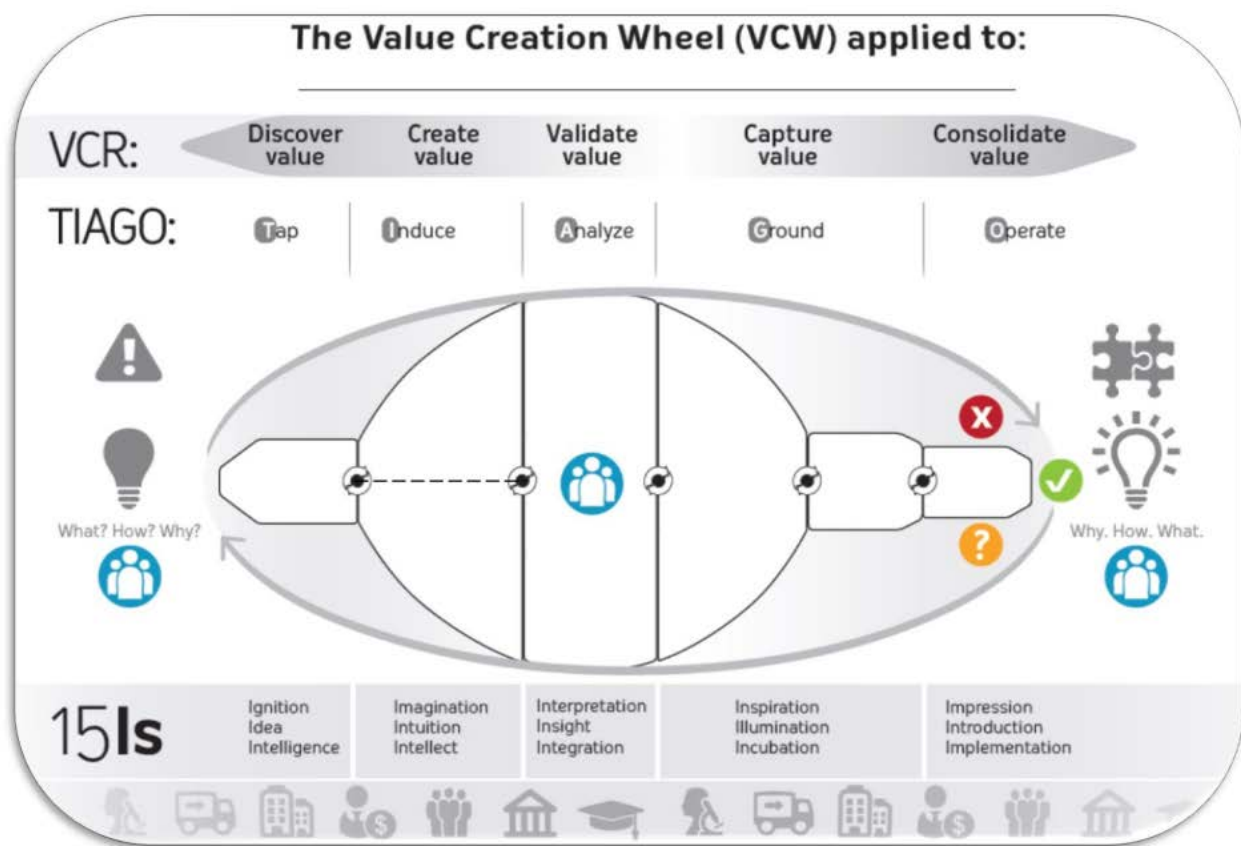
²² Lages, 2016

²³ McCaffrey, Pearson, 2015

	<p>This process might take from minutes (e.g., when a CEO is very acquainted with the theme and has a very clear problem to be solved) to several years.</p>
Induce	<p>The aim is to achieve as many ideas for solutions and filters as possible using various stakeholders. People cannot kill ideas and it is important involve all the critical internal and external stakeholders. Idea generation should be supported by multiple approaches (e.g. bank of ideas, brainstorming, crowdsourcing, networking, open-innovation, and workshops), instead of exclusively traditional approaches, in which hierarchy and bureaucracy kill individual creativity.</p> <p>All incremental and breakthrough ideas and those resulting from benchmarking, need support. At this stage, there are no good or bad ideas. This phase branches into two areas that after an in-depth analysis must remain separate: a) solutions and b) criteria/filters.</p> <p>The filters are the acceptance/rejection criteria, the reasons (e.g., problems, challenges, threats, opportunities, strategies) why a solution might or might not be suitable for future implementation.</p> <p>Filters often reflect the characteristics of product/service/technology/person (e.g., technology readiness level, price, positioning, attributes), market/competition (e.g., market size, market growth, red- or blue-ocean), team/company (e.g., vision, capabilities, resources, size), and environment (e.g., political-economical, socio-cultural, technological, ecological, and legal forces- PESTEL).</p>
Analyze	<p>The key decision makers identify the potential of each solution and filter coming from the previous phase. The output in this phase greatly depends on the hierarchy and control systems within the organization, and the number of internal and/or external stakeholders involved in the process.</p> <p>To make this phase extremely effective, we recommend using the POKER method, developed by Lages and Hartmann.</p> <p>The POKER method consists in informing, validating, refining, multiplying, and/or eliminating existing solutions and filters. Key decision makers should then select and rank the filters from the most to the least important.</p>
Ground	<p>The team builds the Value Creation Funnel (VCF). The VCF results from applying the ranked filters (e.g. behavior- and outcome-based control systems) to the solutions coming from the previous phase.</p> <p>This allows ones to identify the solutions with the highest potential in a particular context and leads to one or more solutions for operationalizing the issue (e.g., through a concept or prototype).</p> <p>Although the VCF is an efficient and effective tool to narrow a wide range of solutions, the team should be open and flexible, and the VCF tool should not be rigid.</p> <p>The VCF team should give the space to consider the human factor, emotions, ideas, solutions, and strategic filters that sometimes are</p>

	<p>intangible and hidden codes that top management are not willing to share in public.</p> <p>At the end of this phase, the team must present concept(s) and/or prototype(s) for the final idea(s). Keep all the excluded solutions from the VCF in a database for a new VCW cycle or for future projects.</p>
Operate	<p>IT is the development and implementation of the solution(s) emerging from a business model, where applicable.</p> <p>The board needs to decide on Go, No Go, or Check (i.e., go back to any of the previous stages). Board members might outsource, or delegate to a subsidiary or a department inside the company the decision to define a roadmap and/or implement.</p>

Source: Lages, 2016



2 Figure. Value creation model/tool

Source: Lages, 2016

During all five phases, a critical action is to incorporate internal and external stakeholders' feedback regarding solutions, filters, key decisions, business viability, product feasibility, customer desirability, and environmental forces. Common sense suggests that skeptics and those resistant to innovation should not participate in idea generation. However, they often

play the devil's advocate and present many reasons (i.e., filters for the Value Creation Funnel: VCF) to justify why the proposed solutions would not work. As a Wall Street Journal reporter mentions, when commenting on the "Lag-User Method", late-adopters are relevant because they "tend to want simple, cost-effective products focused on specific uses."²⁴ Companies can use late-adopters' input to identify critical filters that explain why products/services might succeed in the market.

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