Dirk Meissner, Gustavo Hermínio Salati Marcondes de Moraes, Bruno Brandão Fischer, Miao Zongzhen, Yuan Zhou, Damaris Chierigato Vicentin

Being Innovative or Being on the Safe Side – Managing the Risk of Failure

BASIC RESEARCH PROGRAM
WORKING PAPERS

SERIES: SCIENCE, TECHNOLOGY AND INNOVATION

WP BRP /STI/2025

Editors

Dirk Meissner[1], Gustavo Hermínio Salati Marcondes de Moraes[2], Bruno Brandão Fischer[2], Miao Zongzhen[3], Yuan Zhou[3], Damaris Chierigato Vicentin[2]

Being Innovative or Being on the Safe Side – Managing the Risk of Failure

JEL Classification: O31, O32, O33, O36, Q16

Keywords: innovation, ecosystems, sustainability, regional development, sustainable development, society

[1] National Research University Higher School of Economics, HSE, Russia
[2] *School of Applied Sciences, University of Campinas, UNICAMP, Brazil*
[3] School of Public Policy & Management, Tsinghua University, China

Contents

Introduction

From Culture to Balance: Managing the Risk of Failure in Innovation

By Dirk Meissner, Gustavo Salati Moraes, Bruno Fischer, Miao Zongzhen, Yuan Zhou and Damaris Vicentin

Innovation has long been at the center of debates in economics, management, and organizational studies. As Schumpeter argued in his Theory of Economic Development, innovation drives qualitative changes in productive and managerial systems, reshaping the ways in which companies, institutions, and societies evolve. It challenges the status quo, disrupts established routines, and forces actors to adapt to new realities. It starts with an idea which might be ambitious or just marginal. What unites ideas as all starting points leading to innovation is that they're unique, novel, beyond the state of the art. Over time the initial idea evolves to a concept, prototype or beta version and finally a ready-made solution. However, this process is never free of uncertainty. Every act of innovation implies a departure from established paths and a willingness to embrace the unknown. It can generate breakthroughs with transformative potential, but it can also result in costly setbacks. From the beginning it's never clear if there is an audience which appreciates the innovation. This inherent exposure to uncertainty gives rise to the central dilemma of this collection: whether to be innovative or to play it safe, and how to manage the inevitable risk of failure.

The ways in which organizations and societies face this dilemma are profoundly shaped by culture. Cultural values and institutional norms determine how risk is perceived, how uncertainty is tolerated, and how failure is interpreted. In some contexts, experimentation is seen as a sign of strength and learning, fostering innovation through resilience. In others, failure carries a stigma, reputational damage, or even formal punishment, discouraging individuals and organizations from taking risks. Thus, risk-taking is not only an economic calculation but also a cultural act, embedded in systems of meaning that influence what is considered acceptable or forbidden.

Failure, in particular, is at the heart of this discussion. It can be understood as both a barrier and an opportunity. Where failure is reinterpreted as a source of learning, organizations are encouraged to test ideas, embrace trial and error, and adapt to changing circumstances. Underlying the learning from failure is the 'learn from mistakes to avoid repeating them' paradigm which is more or less similar to life-long learning and similar frequently discussed paradigms. Where failure is condemned, however, innovation is constrained by fear of sanctions and pressure to conform. Mechanisms of reward and punishment, therefore, become decisive in determining whether risk is seen as a path to creativity or as a threat to stability.

Beyond cultural meanings and institutional incentives, risk itself emerges as a multifaceted phenomenon. It involves measurable probabilities and uncertainties, as well as narratives of trust, legitimacy, and responsibility. As Ulrich Beck emphasized in his concept of risk society, modernity is defined not only by its capacity to generate wealth but also by its ability to produce new risks, which are global, systemic, and difficult to control. The more interconnected innovation becomes, the more fragile

systems can be, and the more urgent the challenge of anticipating, distributing, and containing risks becomes.

This interplay between ambition and prudence highlights the importance of striking a balance. Innovation cannot advance if all risks are avoided, but reckless exposure to uncertainty can threaten the very foundations of organizational and social stability. The balance between advancing and retreating is delicate and context-dependent, varying across time, sectors, and cultural environments. In times of crisis, bold innovation may be the only path to survival; In others, caution and consolidation become essential to preserve trust and resilience. Finding the "right level" of risk, therefore, becomes both a strategic and ethical challenge, requiring the alignment of creativity with responsibility.

In this collection, we seek to explore these dilemmas by bringing together diverse and complementary perspectives. The Work presents twenty carefully selected contributions that reflect on how risk and innovation intersect, how organizational cultures shape behavior in the face of uncertainty, and how societies seek to balance ambition and responsibility. These contributions have been organized into four chapters that reflect the central dimensions of the dilemma of being innovative or playing it safe.

The first chapter is dedicated to organizational culture and risk-taking. Here, the authors demonstrate how values, norms, and leadership practices influence the willingness to confront uncertainty. Cultures that are more tolerant of failure often create environments where experimentation is encouraged, while cultures in which mistakes are stigmatized promote conformity and caution. From different perspectives, this chapter reveals how cultural frameworks can stimulate or inhibit innovation trajectories.

The second chapter explores the mechanisms of reward and punishment. It examines how systems of incentives and sanctions influence the way individuals and organizations perceive and manage risk. If failure is reframed as an opportunity for learning, innovation flourishes through resilience and adaptation. However, when mistakes are penalized harshly, initiative is suppressed, and organizations tend to avoid bold moves. This chapter demonstrates that the interpretation of failure, whether as opportunity or transgression, lies at the heart of innovation capacity.

The third chapter focuses on the challenge of defining the right level of risk. Even in contexts open to experimentation, organizations must continually calibrate the acceptable level of risk. Too little risk leads to stagnation, while too much may threaten survival. The essays in this part offer models, criteria, and strategies that help firms and policymakers navigate uncertainty, showing how ambition and prudence can be aligned to create sustainable paths of development. This section emphasizes that risk management is less about eliminating uncertainty and more about establishing thresholds that allow for controlled exploration.

The final chapter turns to the broader task of balancing risk and safety. Here, the debate extends beyond organizations to encompass societal and global dynamics. Innovation is essential for confronting grand challenges such as climate change and inequality, yet it also generates systemic risks that must be effectively governed. Contributions in this section examine how various countries, sectors, and global initiatives, such as the Belt and Road, strive to balance opportunities with responsibility. These essays reveal that the dilemma of being innovative or staying safe is not confined to firms but is a condition of modern societies, demanding resilience, transparency, and ethical foresight.

Altogether, the structure of the Work underscores the journey from culture to balance: beginning with the cultural foundations of risk-taking, moving through the mechanisms that reward experimentation, addressing the strategic problem of defining acceptable levels of risk, and culminating in the societal task of punishing innovation with safety. This progression reflects the complexity of managing the risk of failure and underscores the need for solutions to be as multifaceted as the challenges themselves. The collective work has been prepared by fist year master level students at University of Campinas, Campinas, Brazil, HSE University, Moscow, Russia and Tsinghua University, Beijing, China. The chapters were prepared by students individually during their educational Master Programs. They all provide fresh views, free of constraints made by the next generation of scholars and professionals in related fields. We hope you enjoy reading this collection and that the contributions outlined throughout the Work can serve as a source of inspiration for both scholars and practitioners engaged in the study and practice of innovation, risk, failure, punishment, and organizational culture. We also hope that the diverse perspectives gathered here stimulate reflection and dialogue on how different contexts approach the balance between creativity, responsibility, and resilience.

References

Schumpeter, J. A. (1934). The theory of economic development (original work published 1911). Harvard University Press.

Schumpeter, J. A. (1942). Capitalism, socialism and democracy. Harper & Row, New York, 132-145.

Beck, U. (1992). Risk society: Towards a new modernity. Sage Publications, London.

Dirk Meissner is a Distinguished Professor and Head of the Research Lab for Economics of Innovation with the Institute for Statistical Studies and Economics of Knowledge, National Research University – Higher School of Economics, Moscow, Russia, and Academic Director of the master's program Science, Technology and Innovation Management and Policy. E-mail: dmeissner@hse.ru

Gustavo Hermínio Salati Marcondes de Moraes is an Associate Professor at the School of Applied Sciences (FCA), University of Campinas, Brazil, and a Research Collaborator at the National Research University Higher School of Economics, Moscow, Russia. E-mail: salati@unicamp.br

Bruno Brandão Fischer is an Associate Professor at the School of Applied Sciences (FCA), University of Campinas, Brazil, and a Visiting Scholar at the National Research University Higher School of Economics, Moscow, Russia. E-mail: bfischer@unicamp.br

Miao Zongzhen is a Professor at the School of Public Policy & Management, Tsinghua University, China. E-mail: zhongzhenmiao@mail.tsinghua.edu.cn

Yuan Zhou is a Professor at the School of Public Policy & Management, Tsinghua University, China. E-mail: zhou_yuan@mail.tsinghua.edu.cn

Damaris Chieregato Vicentin is a Postdoctoral Researcher at the School of Applied Sciences (FCA), University of Campinas, Brazil. E-mail: damarisv@unicamp.br

Chapter 1. Featuring organizational culture of risk taking

Risk Management in companies: are there influences of organizational culture?

By Herlisson Roberto Marques Ferreira

Abstract: This text examines the concepts of organizational culture, how it can be generated, and how it can interfere with risk-taking within organizations. He concludes that the elements generated from culture can influence the appetite, tolerance and limit of risks at different levels of the company and that, therefore, the culture must be considered when risk-based decisions must be made. It also opens gaps for ambidextrous organizations and their cultural fluidity and, therefore, that organizational behavior can vary internally, generating variability in the criteria for generating and managing risks.

Keywords: Organizational Culture, Decision-making, Risk.

School of Applied Sciences, University of Campinas. PhD student of the Postgraduate Program in Administration; E-mail: h016295@dac.unicamp.br

Organizational Culture

When faced with issues related to the theme of Organizational Culture, there is a need to first comment on its definition and its nuances. Much is said about the influences of an organization's culture on innovation, productivity, decision-making, and risk. Therefore, there is a need to first define it.

Schein (1984) brought the definition of culture at the levels of things that are done to such an extent that mechanics enter the area of the unconscious. He called them "fundamental assumptions". This will bring the necessary complement to the real way things happen in companies, as it removes the programmed way of how culture could happen. Values generate behaviors and these become the mechanics increasingly unconscious until they become embedded in the way a group operates. Including within companies.

Another important item brought up by Schein (1984) is related to transmission as a fundamental requirement to define the culture of the group. Passing solutions to new members is an excellent way to assess perpetuity, as it involves the "decision to transmit", the perceiving, thinking and feeling, and the validation of who is receiving it as "valid". Culture then settles into something that is transmitted to the other. In fact, there is no culture in what even becomes the broadcast agenda. Or if there is transmission, but it is not validated, then it will not be accepted. Soon it tends to die there. There is a mechanism almost of "corporate transmission genetics".

In this discussion, it seems very important to establish the difference between something more lasting and profound such as organizational culture and something more momentary, evaluative and superficial such as climate, which has factors being evaluated in each corporate survey (the term "satisfaction" is very elucidative here, since it is very strong in organizational climate surveys and is not at all part of an understanding of culture). The discussion also comes up against the definition of the strength of culture. This is because the meaning of strength (a strong or weak culture) means power and cannot have a value judgment (as if strong were good and weak were bad). It is almost as if it exists or not, but each one should evaluate what they want for themselves within the context of the company. The strength with which values and behaviors govern an organization is what will bring us the culture of a certain organization.

As for the measurement of all this, it is not yet clear, but apparently, the way to evaluate the potency of each cultural element, through even visible artifacts, becomes challenging.

That said, we need to know: how can cultural aspects of an organization be generated? The elements passed from employee to another due to their cultural strength are basically influenced by:

- Executive or C-level leaders: senior leaders or executives who belong to the C layer of companies are responsible for the macro strategy of organizations and therefore set the tone for it. As their power of influence is very broad and strong in the various layers and areas of companies, they can (even if unconsciously) be influencers in the way workers act and execute their deliveries.
- Niche of the company: some niches of activity can influence the culture of the organization, since they can be naturally more or less aggressive or competitive markets. As a result, the direction that the market forces some companies to take can affect layers within corporations, influencing organizational culture.
- Key employees: employees who are defined as key, that is, assume such importance and influence in companies, can affect how employees behave and how they perform their daily duties. Their local influence propagates like waves in water,

having an epicenter in themselves, and influencing the way people perform their tasks and where they circulate.

- Old employees: older employees can influence the organizational culture because they already know the processes, work methods, departments, the changes that have occurred in recent times, the leaderships and the job market (niche) in which they are inserted. This information can be passed on to new hired workers, as well as behaviors of those who already know the environment of the company where they are inserted. By the very definition of culture, this can be passed on fluidly to new employees and to those who are already within the company.
- Key areas: Some key areas, with or without the consent or direction of executive leadership, can set the tone in the organization. Usually, key areas are not explicitly named as such, but they end up receiving this nomenclature because of their importance in the management of the group or the way the executive shields them. Thus, the way of working can become strong enough to become cultural and passed from person to person.

Organizational Risk Taking

Risk is uncertainty, that is, an event with some probability of happening. Although the word risk can bring a certain negative meaning (of imminent problems or threats), not all of them are. Some risks can be beneficial and turn into opportunities, such as new customers, businesses, third-party attitudes, strategic decisions that will benefit from the context for good decision-making.

People and companies basically behave in three ways regarding risk: appetite, which means the willingness to accept risk; tolerance, which is how much of the impact of the risk is willing to accept if it materializes; And there is a limit, which means the extent to which people or organizations can be resilient to accept the impact of risk. As all these aspects involve people's behavioral decisions, they can be influenced by organizational culture.

Risk Taking and Organizational Culture

As we have seen, organizational culture is the way people work and perform their deliveries and tasks in such a way that this can be passed on fluidly from person to person. We have also seen how some cultural aspects of an organization are generated so that these assumptions can happen naturally.

One thing that culture and risk-taking have in common in a company is that both are carried out by people. There is no "company" entity that can evolve in both subjects alone. A company or institution by itself is something inanimate. Therefore, the two subjects are organic, and therefore subject to influence. We can say that organizational culture is even more organic, as it depends on more people to happen, as it needs to have a living and persistent maintenance force in a place. Based on each of the elements that have organic strength to influence culture, we have:

- Executive or C-level leaders: Executive leaders can have a broad influence on decision-making about risk appetite, tolerance, or limits. This can happen in a closer way, as they will discuss directly with each other about what will be done. Usually, there is a leader of this set of leaders who will be able to deliberate on the discussions. The biggest impact on culture is how these decisions will influence how the rest of the departments act. Seeing how the appetite, tolerance and risk limit of the "heads" of the organization are, the others may feel impelled to act on the same in their local risk taking, without prejudice to their impacts. In addition, the smaller risk takers may be coupled with the larger ones in a wave propagation effect, as they will mentally

follow an organizational strategic orientation. Departments can pass these influences on to each other and to new workers, and this becomes the predominant way of working in the organization. At first, it will not be known if this will be part of the organizational culture, and it may be a momentary effect. But it could be the epicenter of a lasting transformation, having enough power for a cultural hack.

- Company's niche: as the company's niche can dictate the rules of organizational culture, risk-taking will certainly be impacted according to the market. Some markets are bolder and more aggressive, risking more for their own survival. The risk limits are higher, as long as the opportunities have large impact on organizational metrics. Downside risks also have greater tolerance and greater appetite. People who work in such markets tend to be culturally bold by the strength of the organization itself, and so they are molded to take risks. The career seems promising to those who take more risks, and therefore, they tend to have greater results if they are well planned. There are other markets, however, that are more traditional and tend to give a more measured tone. The company responds with a more rigid culture, with a much lower risk limit. All departments follow this culture and end up risking less in their decisions and projects.
- Key employees: Key employees can shape risk appetite, even in more conservative organizations. A local culture can be formed based on the breadth of these workers' decisions, as it achieves positive results when they take calculated risks. Because they have greater influence, depending on their position in the organization, they can even sensitize senior leadership to make decisions they would not make, based on these impact and severity calculations. The opposite can also happen if key employees have a lower tolerance and appetite for risk, holding back decisions with greater impact if they see that the probability of failure is greater.
- Former employees: they can influence or can be consulted at each decision making that there are one or more risks. This is because they have a history of both past risks and projects, business, departments, and the market. They can set the tone as they can be seen with more respect in some organizations by influencing the culture with their expertise. There is no accuracy as to whether employees with more experience have more or less appetite for risk, as they are less tolerant of its impact. The important thing is that they can assume central positions in the acculturation of this type of organizational decision, in one way or another.
- Key areas: they can be left with big decisions in the organization and, therefore, can be one of the few opinions that really matter. Everyone, automatically, ends up acting in the same way knowing this behavior. As these are areas that generally have a lot of protection from senior leadership and that can directly or indirectly control other departments, they end up influencing people in risk-taking. In addition, they tend to be more judicious in the risks that the organization assumes, causing a great natural process when it comes to calculating impact and severity.

Therefore, organizational culture has many mechanisms to shape the way risks are generated and managed by organizations. Because it is organic (they depend on people who are living and complex organisms that will shape or be molded by the behaviors of colleagues) they will set the necessary tone for organizational and departmental risk-taking.

On the other hand, this shaping of culture about risk can be nonlinear: a very current and important topic that Chatman and O'Reilly (2016) brought up was in relation to ambidextrous organizations. This can bring companies and institutions that navigate various cultural types, according to the period (time) and the context. In the era of rapid information and the emergence of organizations in a format different from

the traditional and startups, this movement seems to be more fluid, bringing problems for identification through cultural labels. Therefore, they may also have ambidexterity in risk-taking in their organizations, having several decision-making lines with different appetites, tolerance, and limits.

References

Chatman, J.A. & O'Reilly, C. A. (2016). Paradigm lost: Reinvigorating the study of organizational culture. Research in Organizational Behavior, 36, 199-224. https://doi.org/10.1016/j.riob.2016.11.004.

Schein, E. H. (1984). Coming to a new awareness of organizational culture. Sloan Management Review, 25(2), 3-16. https://www.proquest.com/scholarly-journals/coming-new-awareness-organizational-culture/docview/206806372/se-2?accountid=8113.

Organizational Culture as a Framework for Risk Taking: Between Values, Norms, and Leadership

By Damaris Chieregato Vicentin

Abstract: This essay discusses the central role of organizational culture in risk acceptance and in promoting innovation within companies. From a critical and multidimensional approach, the chapter proposes that the willingness to take risks does not depend only on rational analyses, but also on deeply rooted cultural, historical and symbolic elements. One of the central aspects addressed is the influence of religion on organizational culture and, consequently, on risk behavior. Empirical evidence shows that companies in more conservative religious contexts tend to demonstrate a lower propensity for risk. In contrast, organizations located in predominantly Protestant regions tend to have greater tolerance for uncertainty and more openness to innovation. In addition to religion, cultural dimensions such as power distance, masculinity, individualism and time orientation also significantly affect the way risk is perceived and managed in organizations. The chapter also highlights the role of leadership, internal communication, and trust as essential elements in building an environment conducive to innovation and learning from mistakes. Organizational cultures that embrace risk strategically tend to develop greater resilience and adaptive capacity in uncertain and competitive environments. The contribution of this chapter is to offer a broader perspective on organizational risk-taking culture, incorporating debates on historical values, religion, and social variables. The study proposes that understanding this complexity is essential to fostering more innovative and balanced environments that reconcile performance, governance, and the ability to face future challenges.

Keywords: Organizational culture, Risk-taking behavior, Religion and risk, Innovation, Uncertainty tolerance.

School of Applied Sciences, University of Campinas (UNICAMP). Post-doc candidate, E-mail: damarisv@unicamp.br

Organizational culture plays a central role in how organizations deal with innovation and risk acceptance (Lok & Crawford, 2004; Bockius & Gatzert, 2024). In a global scenario marked by rapid change and constant uncertainty, companies that wish to remain competitive need to encourage innovative behaviors. This type of organizational behavior, in turn, requires not only a willingness to take risks, but also a culture that understands and manages them strategically (ALABDULHADI, 2024; Stam & van de Ven, 2021).

However, despite its relevance, there is still room for interesting discussions on understanding how cultural factors shape the acceptance or rejection of risk within organizations (Aldriweesh et al., 2022; Fritsch & Wyrwich, 2018; Van BurenIII et al., 2019). The way in which risks are perceived and managed does not depend solely on rational analyses, but is deeply rooted in historical, social, and symbolic constructions that vary between peoples, times, and contexts (Bockius & Gatzert, 2024).

Thus, this chapter proposes a reflection on how organizational culture can encourage or discourage risk acceptance. The aim is to discuss the importance of an institutional environment that promotes safety, trust among team members, and tolerance for failure as part of the organizational learning process. Furthermore, the influence of historical and religious elements will be discussed, with the aim of understanding how different forms of social symbolism influence tolerance for error and willingness to innovate in the organizational context.

Organizational culture can be understood as a system of shared values, symbols, beliefs and practices that shape the behavior of organizational members (Lok & Crawford, 2004). In relation to risk acceptance, this culture directly influences the way individuals make decisions in contexts of uncertainty. In organizations that encourage innovation, error is often perceived as part of the creative process, rather than as a failure to be punished. This encourages the exploration of new ideas, even when they involve risks (Bockius & Gatzert, 2024).

The way different cultures view error is also linked to history and social symbols. Foucault (1977) argues that institutions shape behavior through punishment and social control. This model of punishing mistakes is reflected in organizations, where failure is often interpreted as incompetence or moral weakness, limiting learning and creativity (Zilber, 2009; Raffnsøe et al., 2017).

In an innovative environment, it is essential that there is a space of trust. Employees need to feel safe to express their ideas and propose innovative solutions, even when these involve the possibility of failure. This safety and trust are strengthened when leadership values learning from mistakes and recognizes initiative, regardless of the result achieved (Putra et al., 2024).

Organizational leaders play a key role in building a culture that embraces risk-taking as a strategic element. Leadership based on trust, openness, and orientation toward long-term results tends to generate more innovative and responsive environments (Aldriweesh et al., 2022; Bockius & Gatzert, 2024). The way leaders communicate expectations, manage failures, and reward innovative behaviors directly shapes the behavior of other employees.

The way leaders interpret mistakes is often influenced by broader cultural values, including religious ones. Weber (2001) discussed how Protestantism influenced work ethics by associating success with predestination and failure with divine punishment. Although this view has become secularized, it persists in many organizations as a symbolic management model. In some cultures, marked by Christian tradition, the guilt associated with mistakes can generate more rigid environments that are averse to experimentation (Dion, 2012; Mazur, 2020).

Furthermore, religious beliefs influence corporate behavior, including the willingness to take risks. Studies show that companies located in more conservative religious contexts, such as Catholic or Islamic, tend to have lower levels of risk-taking, while those in Protestant regions demonstrate greater tolerance for risk (Díez-Esteban et al., 2019; Li & and Xu, 2020). In China, for example, the presence of traditional religious values has been associated with more cautious corporate environments, especially among female leaders (Li & and Xu, 2020). In the United States, companies located in regions with strong religious influence tend to have lower exposure to risk and lower investment rates, even though the market reacts positively to new investments in these areas (Hilary & Hui, 2009).

Cultural dimensions such as power distance, masculinity, individualism, and long-term orientation are also directly associated with the degree of risk-taking in organizations. On the other hand, high levels of uncertainty avoidance, often reinforced by religious values, tend to moderate risk-taking behaviors (Díez-Esteban et al., 2019). These cultural traits shape the fundamental assumptions and values within organizations, directly affecting their approach to innovation, error, and decision-making (Putra et al., 2024).

In companies where communication is transparent and goals are clearly shared, employees are more likely to feel engaged and empowered to make autonomous decisions. In this way, organizational culture becomes stronger as a catalyst for responsible innovation, since risks come to be understood as part of a structured process of continuous improvement. The history of each organization also influences its degree of risk acceptance. Organizations that have undergone restructuring processes, crises, or sudden technological changes tend to develop more cautious cultures. However, when these experiences are treated as learning opportunities, they can strengthen organizational adaptability and resilience (Fritsch & Wyrwich, 2018; Putra et al., 2024).

On the other hand, companies operating in highly dynamic and innovative sectors develop cultures that are more open to experimentation. These organizations understand that risk is inherent to growth and that mistakes, when analyzed critically, can generate important learning. Studies show that companies with a well-developed risk culture perform better in indicators of innovation and adaptation to unstable markets (Alabdulhadi, 2024; Bockius & Gatzert, 2024). This is because these organizations are able to mobilize their resources quickly and flexibly in the face of changes in the external environment.

The traceability of decisions, the formalization of learnings after failed experiences and the integration between areas are effective mechanisms to sustain risk-taking as an institutional practice. In this sense, culture not only influences individual behavior, but also structures the foundations of organizational competitiveness in the long term. It is worth remembering that this culture does not arise in a vacuum, but is shaped over time, influenced by historical processes, social structures and symbolic practices that give meaning to organizational actions (Zilber, 2009; Putra et al., 2024).

An organizational culture focused on accepting risk is one of the pillars for sustained innovation in corporate environments. Committed leaders, transparent communication, institutional learning and tolerance for failure are fundamental elements for the development of a culture that recognizes risk as an integral part of growth (Aldriweesh et al., 2022; Bockius & Gatzert, 2024).

Understanding the historical, social and symbolic elements that shape this culture is essential to promote environments that are more open to experimentation.

Thus, fostering an organizational culture that not only accepts, but also knows how to manage risks intelligently, is an essential strategy for companies that seek to stand out in a world in constant transformation.

References

Alabdulhadi, A. (2024). Exploring The Role of Organizational Culture in Risk Management Practices: A Qualitative Study of Small and Medium Enterprises (SMEs) in Emerging Economies. International Journal of Social Sciences and Management Review, 07, 228–241. https://doi.org/10.37602/IJSSMR.2024.7608

Aldriweesh, E., Zakuan, N., Bajuri, N., & Alshammakh, A. (2022). The Moderating Role of Organizational Culture on the Relationship between Enterprise Risk Management Dimensions and Financial Performance in Manufacturing Companies: A Theoretical Framework. International Journal of Academic Research in Accounting, Finance and Management Sciences, 12. https://doi.org/10.6007/IJARAFMS/v12-i4/15810

Bockius, H., & Gatzert, N. (2024). Organizational risk culture: A literature review on dimensions, assessment, value relevance, and improvement levers. European Management Journal, 42(4), 539–564. https://doi.org/https://doi.org/10.1016/j.emj.2023.02.002

Díez-Esteban, J. M., Farinha, J. B., & García-Gómez, C. D. (2019). Are religion and culture relevant for corporate risk-taking? International evidence. BRQ Business Research Quarterly, 22(1), 36–55. https://doi.org/https://doi.org/10.1016/j.brq.2018.06.003

Dion, M. (2012). Are ethical theories relevant for ethical leadership? Leadership & Organization Development Journal, 33(1), 4–24. https://doi.org/10.1108/01437731211193098

Foucault, M. (1977). Discipline and punish: The birth of the prison. Penguin.

Fritsch, M., & Wyrwich, M. (2018). Regional knowledge, entrepreneurial culture and innovative start-ups over time and space: An empirical investigation (Issues 2018–001). Friedrich Schiller University Jena. https://hdl.handle.net/10419/174378

Hilary, G., & Hui, K. W. (2009). Does religion matter in corporate decision making in America? Journal of Financial Economics, 93(3), 455–473. https://doi.org/https://doi.org/10.1016/j.jfineco.2008.10.001

Li, Y., & and Xu, X. (2020). Does religious culture matter for corporate risk-taking? Evidence from China. Asia-Pacific Journal of Accounting & Economics, 27(5), 511–530. https://doi.org/10.1080/16081625.2019.1566869

Lok, P., & Crawford, J. (2004). The effect of organisational culture and leadership style on job satisfaction and organisational commitment. Journal of Management Development, 23(4), 321–338. https://doi.org/10.1108/02621710410529785

Mazur, B. (2020). Organizational Culture under Religious Influence. https://doi.org/10.5772/intechopen.90898

Putra, C., Machdar, N., & Manurung, A. (2024). The Role of Organizational Culture, Market Competition, Mitigation Strategies and Information Systems on Risk

Management. Siber Journal of Advanced Multidisciplinary, 2, 367–382. https://doi.org/10.38035/sjam.v2i3.301

Raffnsøe, Sverre, Mennicken, Andrea, & Miller, Peter. (2017). The Foucault Effect in Organization Studies. Organization Studies, 40(2), 155–182. https://doi.org/10.1177/0170840617745110

Stam, E., & van de Ven, A. (2021). Entrepreneurial ecosystem elements. Small Business Economics, 56(2), 809–832. https://doi.org/10.1007/s11187-019-00270-6

Van BurenIII, Harry J, Syed, Jawad, & Mir, Raza. (2019). Religion as a Macro Social Force Affecting Business: Concepts, Questions, and Future Research. Business & Society, 59(5), 799–822. https://doi.org/10.1177/0007650319845097

Weber, M. (2001). The Protestant ethic and the spirit of capitalism. Routledge Classics.

Zilber, T. B. (2009). Institutional maintenance as narrative acts. In T. B. Lawrence, R. Suddaby, & B. Leca (Eds.), Institutional Work: Actors and Agency in Institutional Studies of Organizations (pp. 205–235). Cambridge University Press. https://doi.org/DOI: 10.1017/CBO9780511596605.008

Soft Nudges, Hard Barriers: Innovation in Risk-Averse Cultures: Lessons from Brazil and Russia

By Karina Kikuti

Abstract: This essay examines the cultural impact on innovation through Hofstede's cultural dimensions which explain the development of innovation in risk-averse nations. The study proposes that Uncertainty Avoidance along with Power Distance and Individualism and Long-Term Orientation affect how societies perceive and engage with innovation and risk. The paper investigates how leading nations establish institutional frameworks to promote innovation through cultural value systems using data from the Global Innovation Index 2023 and economic complexity theory. The study focuses on Brazil, Russia and Japan to analyze how these countries with high Uncertainty Avoidance develop institutional solutions to break down cultural barriers. The study concludes with a discussion about how innovation policies need to adapt to regional requirements in large continental countries and raises critical questions about multicultural and interdisciplinary teams promoting innovation in risk-averse societies.

Keywords: Innovation Culture, Brazil, Russia, Hofstede, Uncertainty Avoidance, Power Distance, National Culture.

School of Applied Sciences, University of Campinas. PhD student of the Postgraduate Program in Administration; E-mail: k289965@g.unicamp.br

Do you Why are certain societies more receptive to experimentation while others are more cautious when encountering change? Does culture play a significant factor in our shared fear of failure and could this fear explain why some nations find innovation challenging? Could it be that in societies characterized by greater Power Distance, individuals have less psychological safety to take risks or challenge authority?

These questions open a wider conversation regarding the connection between national culture and innovation. Culture can be described as the collective set of values, standards, and customs that influence how individuals understand the world, interact with others, and behave in group situations. It impacts behaviors, decision-making approaches, risk assessment, and acceptance of uncertainty—all of which are essential to the innovation process.

As a doctoral student from Brazil studying innovation ecosystems, I have noticed that national culture is crucial in determining how societies engage with innovation. Culture is not a minor aspect; it affects how individuals and organizations perceive uncertainty, handle risk and relate to institutional authority. These cultural factors determine whether innovation is seen as an open process or a regulated exception.

Geert Hofstede's cultural dimensions provide a comparative framework to understand these differences. Among the six dimensions, four are of particular importance for innovation: the Uncertainty Avoidance Index (UAI), Power Distance Index (PDI), Individualism versus Collectivism Index (IDV), and Long-Term Orientation Index (LTO).

The Uncertainty Avoidance Index (UAI) measures how societies deal with ambiguity. Cultures with high UAI often depend on established regulations, set methods, and organized settings to reduce unpredictability. These inclinations may limit spontaneous innovation, particularly in areas involving high-risk and disruptive elements. In the opposite way, cultures with low UAI are typically more comfortable to deal with uncertainty, therefore fostering more encouraging settings for experimentation and entrepreneurial behavior.

Power Distance Index (PDI) indicates the acceptance of hierarchical systems and unequal power distribution. Within high-PDI settings, those in subordinate positions may be reluctant to challenge authority or suggest unconventional concepts, which could stifle innovation at the foundational levels of a company. Psychological safety, the shared conviction that one can voice opinions without concern for reprisal, is more challenging to attain in these situations. On the other hand, low-PDI cultures are inclined to facilitate less rigid hierarchies and encourage wider involvement in inventive decision-making.

Individualism versus Collectivism Index (IDV) influences where responsibility and initiative lie in the context of innovation. Cultures that are individualistic usually encourage independent risk-taking and personal responsibility, while collectivist cultures frequently need wider support and validation from a group or an institution.

Long-Term Orientation Index (LTO) plays a significant role in shaping innovation strategies. Societies focused on long-term objectives tend to invest in research and development, education and infrastructure, preferring policies that emphasize future advantages over quick results.

These dimensions correlate with the data from the Global Innovation Index 2023. Countries that lead the global rankings, like Switzerland (1st), Sweden (2nd), the United States (3rd) and the Netherlands (4th), typically show low Uncertainty Avoidance and Power Distance, high Individualism, and a long term strategic

orientation. These conditions provide cultural and institutional environments where risk is tolerated, failure is seen as a learning process, and experimentation is integrated into policymaking and organizational strategy.

These cultural factors not only shape innovation capacity, but also strongly relate to wider development measures. An examination of these leading countries shows more than simply elevated levels of patent creation or R&D investment. These countries also consistently achieve high scores in economic complexity, a metric that demonstrates their capacity to create and export varied and advanced products based on deeply ingrained knowledge.

Hausmann and Hidalgo (2009) proposed the economic complexity theory, which suggests that countries that foster institutional settings that promote learning, gather implicit knowledge and integrate skills tend to experience more sustainable and inclusive growth. These nations have cultures characterized by low Uncertainty Avoidance and Power Distance, coupled with high Individualism and a robust Long-Term Orientation. These characteristics facilitate decentralized decision-making, tolerance for failure, and long-term investment in innovation systems.

In countries such as Switzerland and Sweden, innovation is integrated into the educational structure, industrial fields, and governmental policies rather than confined to specific institutions. These nations have created collaborative innovation cultures that value trust, independence, and experimentation from early stages of education to advanced industrial research and development centers. This approach leads to significant innovation, solid economic progress sustained by high-value sectors, reduced inequality and resilient social infrastructure.

This correlation between national culture, innovation ecosystems and economic sophistication emphasizes that innovation is a collective social process occurring within culturally consistent systems, not just a stand-alone technological event. The most prosperous innovative economies do not just invest more; they strategically align their cultural standards with institutional methods that stimulate knowledge generation, integration, and implementation.

Why is innovation so crucial, especially for developing countries?

Innovation is more than just a mechanism for technological change; it is a key factor in increasing income, industrial diversification and boosting competitiveness on a global scale. Countries that do not invest in innovation often remain dependent on commodity exports, limited productivity gains and are more at risk from global economic crises.

Lima and Crepaldi (2024) observed that cultural factors like reduced power distance, increased individualism and long-term perspective are strongly connected to economic advancement. Countries that demonstrate these features are more inclined to promote flexible organizations, innovation strategies, and economies centered on learning. On the other hand, countries with significant power distance and aversion to uncertainty may struggle to adopt and make use of new ideas unless they have organizational structures that reduce the perception of risk.

Public policies, especially in middle-income countries, are essential to this process. Brazil, as an example, has created government-led innovation initiatives, but it often encounters difficulties because of disconnections between research, business, and government operations. The study “Políticas de incentivo à inovação tecnológica no Brasil” emphasizes that innovation strategies should must be better integrated and less bureaucratic, offering secure environments for testing, connections between higher education and businesses and motivations that appreciate learning—including from unsuccessful attempts.

Japan offers a valuable example of how a nation with a very elevated Uncertainty Avoidance Index (UAI) of 92 and a moderate Power of Distance (PDI) of 54 has achieved robust innovation results, securing the 13th position in the 2023 Global Innovation Index. Through methods such as kaizen (continuous improvement)), innovation is implemented incrementally within highly structured routines. Japan's high Long-Term Orientation supports this process by fostering consistent investment in Research and Development and joint public-private efforts. Its collectivist cultural inclination also facilitates consensus-driven planning, which lowers perceived risk.

In contrast, Brazil (UAI = 76; PDI = 69; 49th position in the rank) and Russia (UAI = 95; PDI = 93; 51th position in the rank) encounter more significant obstacles. Both are upper-middle-income or developing economies with complex territorial configurations and institutional capabilities, yet their innovation systems are frequently restricted by cultural and bureaucratic elements. Nevertheless, both nations are proactively testing institutional responses to this issue.

The Brazilian innovation environment includes Unicamp Technology Park and Banco do Brasil Labs which promote innovation within set rules. The Russian government operates through centralized strategies which manifest in Skolkovo Innovation Center and Sberbank Innovation Lab that establish risk management systems across essential sectors. These methods maintain existing cultural constraints while restructuring innovation processes to fit within them.

The Russian Skolkovo Innovation Center functions as a government-created innovation space which the Russian government supports by removing standard regulations within its geographic and institutional boundaries. Start-up ventures receive tax incentives along with modern infrastructure and funding sources. Through formal innovation permissions this flexible zone operates successfully in a high uncertainty avoidance environment because it reduces risk perception. The Russian government supports Skolkovo to validate innovation which aligns with present cultural frameworks. The Unicamp Parque Científico e Tecnológico functions differently from Russian methods yet it shares main characteristics. The innovation park achieved its natural development through university leaders who prioritized scientific authenticity together with regional economic partnerships instead of national policy directives.

The case demonstrates how academic institutions can serve as reliable innovation facilitators within Brazilian environments which combine legalistic governance with complex public administration and cautious risk-taking. The Skolkovo Innovation Center (Russia) and the Unicamp Science and Technology Park (Brazil) function as national research institutions that transform scientific discoveries into practical technological applications. Unicamp developed its research park through academic initiatives which focus on industry relationships and distributed innovation methods while Skolkovo operates under state-directed political and geopolitical forces. The comparison shows two different paths toward uniting scientific and technological fields with societal needs in risk-conscious innovation environments.

State-owned banks in both countries implement innovation programs that provide additional understanding of their operations. The Banco do Brasil Labs operates as an experiment controlled environment which maintains compliance with all public sector rules in Brazil. Its innovation lab explores digital technologies, data analytics, and customer service enhancements while remaining firmly embedded in legal and procedural frameworks. The Sberbank Innovation Lab pursues blockchain technology together with artificial intelligence and fintech advancements in the Russian market. The lab receives funds from the Skolkovo ecosystem together with the bank's institutional reputation which allows it to develop innovations within politically

acceptable boundaries. The company implemented training programs to foster feedback culture and non-punitive error management, addressing the strong aversion to failure. Squads work semi-autonomously under looser norms, an intentional deviation from the broader Russian workplace culture.

These instances demonstrate a third approach in a world that is becoming more and more split between open innovation centers and regulated settings: structured innovation inside cultural boundaries. This paradigm is one of reconfiguration rather than revolt, and it merits considerably more consideration in the global conversation on innovation policy.

It is also critical to acknowledge that Brazil and Russia are continental-sized nations, distinguished by considerable internal diversity in aspects such as economic progress, institutional capabilities and cultural values. Innovation ecosystems may differ substantially between regions within each country, owing to local governance, infrastructure, academic-industrial connections, and historical paths. The presence of subcultures and localized institutional systems suggests that there is no one "answer" for transforming Brazil or Russia into innovation leaders. Instead, the challenge is to create context-specific strategies adapted to specific scenarios that take territorial complexity into account while fostering national coherence. While innovation policies should have a national structure, they should also encourage regional experimentation, decentralized management, and collaborative learning among innovation hubs. Institutional measures such as strengthening regional development banks, supporting local universities as knowledge hubs, and establishing adaptable innovation funds can help to bridge regional divides and extend local accomplishments to national levels.

This leads to a central question: would multicultural and interdisciplinary innovation teams help reduce resistance to risk and increase adaptability? The integration of diverse cultural approaches may enhance creativity and allow organizations to combine experimentation with structure. However, cultural variety can also cause conflict if coordination and shared understanding methods are lacking.

In order to enhance Brazil and Russia's leadership in innovation, given their size and stage of development, it is necessary to adopt coordinated and context-sensitive strategies.

1) Establishing public organizations that support innovation can boost their credibility and improve collaboration among different industries and areas.

2) Adjusting the educational system to align with future innovation objectives is crucial for building skilled workers and maintaining technological progress, following Switzerland and Sweden models;

3) Encouraging opportunities for partnerships between academic institutions and businesses can aid in converting research into tangible uses.

4) Nurturing a cultural environment that appreciates experimentation and accepts failure as a component of learning process;

5) Building international alliances can serve as a source of fresh ideas and help offset local cultural limitations, facilitating mixed innovation models that integrate international methods with national characteristics.

In conclusion, national culture influences both the execution and perception of innovation. In cultures that are hierarchical or resistant to risk, innovation is achievable but relies on the careful creation of institutions that transform cultural restrictions into joint efforts.

References

Hausmann, R., & Hidalgo, C. A. (2009). The building blocks of economic complexity. Proceedings of the National Academy of Sciences, 106(26), 10570–10575. https://doi.org/10.1073/pnas.0900943106

Hofstede Insights. (2023). Country comparison tool.https://www.hofstede-insights.com/country-comparison/

Lima, G., & Crepaldi, A. (2024). Complexidade econômica e cultura nacional: uma análise sob a perspectiva da renda. Universidade Federal do ABC.

Organização Mundial da Propriedade Intelectual. (2023). Global Innovation Index 2023: Innovation in the face of uncertainty. https://www.wipo.int/global_innovation_index/en/2023/

Secretaria de Desenvolvimento Tecnológico e Inovação – MCTI. (2023). Políticas de incentivo à inovação tecnológica no Brasil. Governo Federal.

Featuring Organizational Culture of Risk Taking

By Junaid Karim Khan

Abstract: This chapter explores the organizational dilemma between fostering innovation through risk-taking and maintaining stability through caution. Drawing on James March's exploration–exploitation framework, along with contemporary research on organizational learning and innovation cultures, the analysis highlights the benefits and drawbacks of both approaches. A risk-taking culture encourages experimentation, creativity, and adaptability, as shown in IBM's "fail-fast" philosophy, but may waste resources if undisciplined. Conversely, overly risk-averse cultures may ensure operational reliability but suppress innovation, conceal mistakes, and even foster unethical behavior, as evidenced by Volkswagen's emissions scandal. The chapter argues that neither extreme alone is optimal; instead, organizations must cultivate a balanced, context-sensitive culture that promotes "intelligent failures" and psychological safety while maintaining accountability and reliable execution of core tasks. This balanced approach enhances both innovation and resilience, equipping firms to thrive in uncertain environments.

Keywords: Organizational Culture, Innovation, Risk-taking, Intelligent failure, Psychological safety, Organizational learning.

Governance of Science, Technology and Innovation, HSE University. Master's student of the Postgraduate Program; E-mail address: dzkhan@edu.hse.ru

Introduction

Organizations face a fundamental trade-off between exploring innovation and retaining stability. On one hand, encouraging experimentation new ideas and risk-taking can bring creativity and long-term growth; on the other, failing to handle that risk can lead to pricy mistakes. Scholars note that firms must balance *exploration* of new opportunities with *exploitation* of present capabilities to survive and grow. James March, for example, different between the discovering of new possibilities and the exploitation of "old realities," and argues that keeping an appropriate balance of the two is a "primary factor in the prosperity of any corporate system" (London Business School, 2014). This essay examines the advantages and disadvantages of an innovation-oriented, risk-taking culture versus a more cautious, safe-oriented approach, drawing on academic theory and real-world examples (including IBM and Volkswagen). It argues that neither extreme alone is optimal; instead, a disciplined, context-sensitive approach to risk is needed.

Advantages of a Risk-Taking, Innovative Culture

A culture that handle risk and failure can significantly enhance innovation and flexibility. Research suggests that when employees feel safe to experiment, they developed more innovative ideas and push the boundaries of what is possible. Managers across industries convincingly say they value working in organizations where innovative behaviors are the normal. In such environments, people see *"tolerance for failure, willingness to experiment, and psychological safety"* as defining traits of success and grow. Indeed, Gary Pisano of Harvard Business School observes that these characteristics along with collaboration and minimal levels of management are consistently linked to higher innovative performance. In practical terms, companies that embrace a "fail-fast" mindset can learn and adjust more quickly. For example, IBM promotes incremental, hypothesis-driven experimentation (the "fail-fast" philosophy) in product development. Rather than falling resources into a large, untested project, teams create minimum feasible products and seek early feedback. This approach allows them to quickly scale good ideas and leave or adjust those that do not work, thus reducing wasted time and cost. As one IBM executive explains, quick cycles of testing and learning help the organization *"spend more time working on things that do work and less time on things that don't"*. Overall, a measured risk-taking culture can foster creativity and keep a company on the technological cutting edge (Harvard Business Review, 2019). However, even within an innovation culture, discipline is important. Too much unfocused new experimentation can waste resources, just as omitting innovation can cause decline. The exploration-exploitation framework applies here: completely pursuing new ideas (exploration) without also exploiting known capabilities can leave a firm with many undeveloped projects and little core competence. A notable example is Ericsson, which invested heavily in research (exploration) but eventually suffered extreme decline because it lacked focus on core business (exploitation). Similarly, organizations must ensure that risk-taking is meaningful and aligned with strategy. Amy Edmondson, a leading researcher on organizational learning, cautions that *"undisciplined experimentation can lead to a lot of activity for little benefit"(Edmondson, 2023).* In other words, smart risk-taking means quickly identifying and scaling successes while preventing aimless trial-and-error. When done correctly, though, a culture of "intelligent failures" becomes a source of new ideas and competitive advantage. Edmondson notes that good failures those from systematic experiments are important to learning and innovation, whereas unexamined mistakes should be minimized.

Drawbacks of a Risk-Averse or "Safe" Culture

Meanwhile, a culture that extremely prioritizes safety and stability can boost innovation. When leaders have a "failure is not an option" mindset, employees quickly learn to avoid risk at all costs. Edmondson warns that zero-tolerance for failure creates a "pervasive fear of failure and a lot less risk-taking," which in turn hinders innovation" *(Edmondson, 2023).* In such environments, people become capable at hiding mistakes rather than learning from them (or admitting them). In practice, this often means decisions are governed by short-term caution and strict processes, which limits creativity. It has been observes that managers who say they want experimentation can ironically undermine it by imposing "safe, predictable processes", thereby smothering the very curiosity they seek. The result can be a distant workforce that chooses routine over change and resists new ideas. There are also concrete costs to too much risk dislike. Maintaining only the status quo may produce efficiency in the short term, but it risks long-term overage. Firms trapped in a purely unfair mode often find themselves "going nowhere fast but efficiently". They may avoid the loud failures, but they also miss breakthrough opportunities. Moreover, when failure is bearable, necessary corrective feedback banned. It shows that organizations with punitive attitudes toward failure often fail to learn from mistakes and eventually pay a higher price. For example, hospitals invest heavily to prevent basic operational failures, but if any do occur, strict protocols mean they are quickly caught and fixed (to avoid tragedies). In less disciplined settings, however, minor errors can compile or be concealed, leading to major crises later. The Volkswagen emissions scandal explain a worst-case scenario of a fear-driven culture. Under leadership obsessed on ambitious goals, VW's engineers faced impossible deadlines to produce high-performance diesel cars meeting strict U.S. emissions standards. Rather than innovating safely within boundaries of ethics, the engineers resorted to fraud: they installed software that cheated emissions tests to meet targets. Investigations later revealed that VW's corporate culture was characterized by overbearing management and threat, where subordinates "were afraid to admit failure or contradict superiors". Executives demanded success without acknowledging difficulties, and negative news was suppressed. This created huge pressure and virtually no room for honest risk-taking or failure. The ultimate fallout was fatal: widespread legal, financial, and reputational damage. VW's case powerfully shows that an overly rigid, "safe" culture can not only kill innovation but also encourage unethical shortcuts when employees feel they have no other option

A Balanced, Context-Sensitive Approach

Given these pros and cons, the optimal strategy lies in balance. As March emphasizes, neither pure exploration nor pure exploitation is sustainable on its own. Leaders should aim for organizational flexibility, enabling teams to be aligned both with core operations and adaptive to new challenges. Practically, this means building a culture where people have the psychological safety to experiment, learn, and even fail intelligently, while also maintaining clear processes for what must go right (basic tasks). Edmondson highlights that successful leaders know when to encourage experimentation and when to enforce rigor. The goal is not an all-or-nothing mindset, but rather avoiding "bad failures" while learning from "good, intelligent failures" *(Edmondson, 2023).* In practice, organizations can formalizing actions or structures that balance these modes. For example, dedicated innovation units or experimental lab projects allow risk-taking in a controlled environment, while core functions follow

proven procedures. Companies like IBM often use pilot programs or prototypes to test innovations before full rollout, combining the fail-fast approach with oversight. At the same time, lessons from mistakes must be openly shared so the whole organization benefits. Edmondson's work on team learning suggests that when failure reframed as a learning opportunity, employees become more willing to take well-judged risks. This dual emphasis on safety and on innovation helps firms navigate uncertainty: they can adapt to change without ignoring stability *(Edmondson, 2023).*

Conclusion

In summary, the conflict between innovation and safety is not a simple either/or choice. A risk-taking culture can drive creative solutions and long-term growth, but it must managed to avoid excessive waste and unpredictable mistakes. A safety-first culture can ensure reliability and efficiency, but taken to an extreme it restricts innovation and hides problems until they become crises. Research and real-world cases (such as IBM's iterative testing philosophy and Volkswagen's emissions debacle) show that neither extreme alone works. Instead, companies need a balanced organizational culture that fosters intelligent risk-taking: one that encourages exploration and learning, but within a framework of clear goals and accountability. Such a culture where failures normalized as learning experiences yet basic tasks executed reliably will be best equipped to innovate without submitting to avoidable failures.

References

Edmondson, A. C. (2023). *Have zero tolerance of failure*. Harvard Business School Executive Education. https://www.exed.hbs.edu/documents/framing-failure-learning-innovation.pdf#:~:text=%E2%80%A2%20Have%20zero%20tolerance%20of,the%20failures%20that%20do%20occur

Harvard Business Review. (2017, March). *How to push your team to take risks and experiment*. Harvard Business Publishing. https://hbr.org/2017/03/how-to-push-your-team-to-take-risks-and-experiment

Harvard Business Review. (2019, January). *The hard truth about innovative cultures*. Harvard Business Publishing. https://hbr.org/2019/01/the-hard-truth-about-innovative-cultures

London Business School. (2014). *Organisational ambidexterity: Exploration and exploitation*. London Business School. https://www.london.edu/think/organisational-ambidexterity

University of Virginia Darden School of Business. (n.d.). *VW emissions and the 3 factors that drive ethical breakdown*. Darden Ideas to Action. https://ideas.darden.virginia.edu/vw-emissions-and-the-3-factors-that-drive-ethical-breakdown

Reward, Punishment, and Organizational Culture: Balancing Risk-Taking and Innovation

By Shahbaz Murad

Abstract: In today's dynamic business environment, organizations face the challenge of balancing innovation with the risks of failure. This chapter explores the role of organizational culture in shaping risk-taking behaviors, highlighting how values, beliefs, and leadership practices determine a company's ability to innovate and adapt. A risk-taking culture encourages experimentation, tolerates failure, and fosters open communication, enabling organizations to transform setbacks into opportunities for learning and growth. Conversely, overly conservative approaches, while providing short-term stability, often hinder innovation and long-term competitiveness. The discussion emphasizes leadership's responsibility in fostering a culture that rewards thoughtful risks while establishing mechanisms to avoid recklessness. Strategies such as risk assessment, "fail fast, fail small" approaches, and reflective practices are examined as tools for managing uncertainty. The chapter also addresses challenges such as resistance to change, cultural inertia, and short-term pressures, as well as counterarguments favoring caution in high-stakes industries like healthcare and aviation. By striking a balance between risk and prudence, organizations can turn risk into a strategic asset, positioning themselves for sustainable growth, resilience, and innovation in a rapidly evolving global economy.

Keywords: Organizational Culture, Risk-Taking, Punishment, Innovation Management, Failure Management.

Institute for Statistical Studies and Economics of Knowledge, HSE University. Master's student of the Postgraduate Program; E-mail address: smurad@edu.hse.ru

In today's fast-evolving business world, "Being Innovative or Being on the Safe Side – Managing the Risk of Failure: It is crucial because it features Organizational Culture of Risk Taking. Global competition and shifting customer demands; companies must therefore navigate technological change. Growth is driven by innovation, but that innovation comes with calculated risks. Organisations with a risk-taking culture are adaptive and learn from failures. But your decisions to make need to be risky, but managed well. Long term success, resilience to failures and being in a good position to capitalize on opportunities requires that we find a balance between innovation and caution.

Understanding Organizational Culture and Its Influence on Risk-Taking: The values, the beliefs and the behaviors of employees that they follow to act and make organizational decisions are the organizational culture. It especially impacts daily operations and long term strategy in terms of risk taking. A risk taking culture helps employees to step out of their comfort zone, try new ideas and move boundaries. However, that isn't always the case: Creative cultures can be stifling for conservative cultures because employees may be afraid to fail. In a risk taking culture, failure is an opportunity to learn. For this reason, the right type of organizational culture is important to encourage innovation and risk taking.

Key Features of a Risk-Taking Organizational Culture:

A risk-taking culture has distinct features that set it apart from more conservative environments:

- Encouragement of experimentation: Employees are not boxed in, they are encouraged to experiment and bend the rules, uncertainty is not avoided, uncertainty is part of the journey to success.
- Tolerance for failure: Employees are empowered to experiment without fear of a finger being pointed back at him, because failure is accepted as a stepping stone to success.
- Open communication and trust: Employees want to speak up with smart ideas they know will be nurtured, even if they're wrong, if they're open to dialogue and offer mutual support.

These traits overall promote innovation and enable organizations to use risk taking in a nonlinear way to achieve longer term growth.

Risk-Taking vs. Playing It Safe: The Pitfalls of a Conservative Approach

Risk taking is essential for driving innovation, but many organizations choose to take a conservative approach, reducing their long term potential. Such an avoidance of risk often leads to the loss of the opportunity of those markets in a fast changing climate resulting from consumer demands and technology changes, allowing competitors to adapt faster to changes in consumer demands and technology. Through time, this formula means stagnation because the effort in maintaining the status quo warps off new ideas of growth. Playing it safe may give short term stability but it limits a company's ability to innovate and evolve. A safety over creativity focus for organizations can lead to them being unable to ride the wave of emerging trends, and they lose the edge to disrupt and ultimately become and remain competitive. This means that risk aversion can prevent immediate failures, but it also limits a company's ability to grow and stay competitive in a fast changing business environment.

Leadership's Role in Fostering a Risk-Taking Culture

It is important to note that leadership is involved in creating a risk taking culture. Leader play is critical to how an organization perceives and manages risk. Taking calculated risks definitely sets the winning tone for leaders, inviting their employees to follow suit. Fostering a safe space for experimentation and encouraging risk taking is what they create because they don't discourage failure as a part of innovation process. This culture is created by recognizing and rewarding employees who take thoughtful risks, even if they don't always succeed. On the other hand, leaders have to strike a balance between accountability and it is making sure risks have something to do with the goal of the organization, and guidelines to discourage rash behavior. Leadership plays out in this way, effectively setting how the organization treats risk, encouraging risk taking, but also staving off the risk to which it is sometimes unavoidably linked.

Strategies for Managing the Risk of Failure in a Risk-Taking Culture

On the one hand, organizations want to be careful about the risk taking, so as not to cause catastrophic failures, but on the other hand, they are encouraged by innovation. A big part of one strategy is to do in depth risk assessments before taking any big steps. The process to undertake here involves weighing both the plusses and the minuses, and tallying rather than recklessly counting the risks. The other is to adopt the principle of 'fail small, fail fast.' It means taking small, manageable risks that can be tested quickly, and if they fail, containing the failure and minimizing damage to the organization. Then, these small failures can be used to learn from, and apply lessons learned to future efforts. Also, in a risk taking culture, failure is not an excuse to hit the roadblock
but a growth tool. Failure analysis is required by companies to understand what went wrong and how to fix it. And these reflective practices mean that even when risks don't pay off, the organization keeps growing and innovating. These strategies help organizations find a fine line between a culture that fosters bold experiments and risks that can naturally arise out of innovation.

Challenges in Building a Risk-Taking Organizational Culture

There are many challenges to building a risk-taking organizational culture. The resistance to change is certainly one of the biggest obstacles since resistance from employees and leaders may be common to deviate from the traditional, yet stable, way of doing things, especially in industries that have valued predictability. The fear is typically from a fear of job security and blame for failures. Also, can't afford innovation when facing short term financial pressures. Leaders may be reluctant to take long term risk because companies that focus on delivering immediate profits may prefer short term risk taking. There's a pressure to it that can stunt creativity and make you go more conservative.

The biggest challenge, though, is cultural inertia, especially in very large or long standing organisations with deeply rooted processes and hierarchical structures that inhibit encouraging a risk taking mind set. In such environments it can be hard to change the culture to a more dynamic, innovation driven one, as old habits and procedures are hard to break. To overcome these challenges, leadership needs to be strong and there must be a collective work to change mindsets, to shift priorities and build an environment where risk taking is invited, supported and seen as a route to future growth.

Striking the Balance: Risk-Taking Without Recklessness

But organizations need to avoid the pitfalls of reckless risk taking, while driving innovation requires a risk taking culture. When risks are taken without a full understanding of the consequences, that's recklessness, and can lead to unnecessary failures or even business collapse. Organizations must find a fine line between encouraging innovation and keeping control. Encouraging calculated risks —decisions that are made with data and are in line with the long term goals of the company is one way to achieve this. Risk analysis has to be careful so that risks are taken strategically and not impulsively and carefully studied. Furthermore, a risk management framework allows an organization a structured approach to identify, assess, and mitigate potential risk while enabling the organization to take bolder moves when needed. Equally important is having a long term vision. Organizations that achieve a balance between risk and safety have a clear direction in place that dictates their decisions, with risks in line with broader strategic objectives. Without this vision, risk taking can become chaos, but with it companies can fuel sustainable growth. By hitting this sweet spot it allows organizations to extract innovation from a culture of risk taking and keeps the chunk of risk in serving the public interest under control.

Counterarguments: The Case for a Cautious Approach

Risk taking is — and may need to be — essential for innovation, but there are cases where the opposite approach is warranted. Failure is expensive in certain industries. For example, in the healthcare, finance and aviation arenas, even slight error can cause life threatening consequences, or significant financial loss. Safety and reliability are more important than rapid innovation in these sectors, because the stakes are too high for bold risks. Sometimes incremental innovation is a better course than disruptive innovation.

Projects in fields like medicine have to undergo a lot of testing and regulatory approval before they're new technologies or new treatments become available. Such bold risks can be taken, but with no safety nets — that can lead to serious harm, and thus a more conservative and gradual approach is needed. Stability is a competitive advantage for some businesses, in addition. In most industries that rely on trust to build customers, like public utilities or traditional banking, consistency and reliability are needed. Taking risks in these sectors can undermine this trust, so innovation must be done in a risk averse framework. The view of risk taking as the fuel for many industries understands that while some companies need to be more cautious, balancing innovation with prudence to protect their core values and protect customer confidence.

Conclusion: Developing a Risk-Taking Culture for Future Success

This is because finally, organizations that would like to compete in the rapidly changing business landscape have to create a risk taking culture. In other words, companies that are willing to take a risk also tend to innovate, grow, and adapt more efficiently than companies that underplay risk. That risk taking however has to be balanced with good planning and good risk management to prevent organizations from falling into the trap of recklessness. This culture is shaped by leadership. If leaders encourage experimentation; tolerate failure; and allow employees to take controlled risk, they foster an innovation supportive environment. But at the same time they must be sure there are transparent guidelines and effective accountability mechanisms to control risks.

It is not easy to develop a risk taking culture. In order to create an environment of risk taking, organizations must overcome resistance to change, short term financial pressures and cultural inertia. But the costs of doing so are more than offset by the

rewards. Those companies that get this balance right are more likely to be successful over the long term, able to innovate, learn from mistakes, and adapt to an ever changing world. In the end, it's those organizations that understand the value of risk taking that will have the future. It's not like these companies are afraid to break new ground, to explore new territory, or to disrupt the status quo. Along with having one that encourages a commitment to calculate risk, organizations can position themselves for sustainable growth and long-term success in a more and more competitive international economy. This success is not about avoiding risk, it's about managing it well and learning from it. Doing so allows organizations to transform risk into their greatest asset and set the stage for an innovation and resilience future.

Chapter 2. Rewarding risk taking or punishment?

Beyond Reward or Punishment: Cultivating a Culture of Calculated Risk and Learning in Innovation

By Ricardo Cavalcanti Alves

Abstract: This essay explores the potential critical dilemma facing organizations: how to balance rewarding calculated risk-taking and managing unavoidable failures in the innovative initiatives. It highlights that an imbalanced approach, particularly excessive punishment for errors, can choke creativity, reduce productivity, and hinder talent retention. The core argument is not about choosing one over the other, but recognizing the nuances: rewards may apply for well-considered risks, while punishment might be justified for negligence or imprudence. The ideal is promoting a culture that distinguishes between different types of errors, viewing those arising from well-structured and researched projects as learning opportunities, even if they do not yield immediate success. This approach generates professional maturity and strengthens organizational adaptability, making the company more resilient and capable of transforming challenges into competitive advantages. Innovation and safety (risk mitigation) in organizational planning, and their apparently conflicting but interdependent nature in uncertain environments, will always be a concern and a challenge for organizations. Ultimately, adaptability, common sense, and a holistic approach to project planning and risk management are paramount for an organization's growth, relevance, and long-term feasibility.

Keywords: Reward, Risks, Punishment, Errors, Innovation, Safety, Uncertainty, Decision.

School of Applied Sciences, University of Campinas, UNICAMP. PhD student of the Postgraduate Program in Administration; E-mail address: r152584@dac.unicamp.br

Keeping or increasing the focus simultaneously on safety (risk mitigation) and innovation, may seem conflicting in the reality of an organization's planning. Both aspects, safety and innovation, emerge in an environment of uncertainty and some exogenous factors that are not under the company's control.

By planning to increase safety factors, the organization may be discouraged from being more aggressive in its innovation criteria. And similarly, by focusing more strongly on innovation and including innovation aspects in its business plan, the company may be encouraged to increase its attention to the safety of its processes in general, visualizing risks that perhaps did not exist until then.

Innovation presents itself as a necessity for the organization to become or remain competitive with other players, and especially relevant in the consumer market, by placing new and relevant products and services.

However, the higher technical and market-oriented focus that drives the company to focus and invest in innovation cannot motivate the company's strategic management to neglect the importance of process safety.

And it is in the balance between these two needs, that companies are challenged to creatively seek profitability and consistency in market share, avoiding to become their processes vulnerable to factors that may damage their own innovation work and the other company processes.

As already mentioned, the binomial innovation and risk cannot be understood in an exclusive way, as a choice between two extremes, but rather as a reflection on balance.

In innovation processes, it is implicit that there are risks and uncertainties to be assumed. Every initiative that aims to transform and improve realities involves, to a certain extent, some degree of uncertainty. Calculated risk, aligned with the organization's objectives, and taken based on consistent and documented analyses, certainly aims to find solutions that can generate competitive advantages. However, this is an activity intrinsically linked to the observance of risk mitigation factors.

The imbalance between innovative initiatives and security in terms of risks, can be quite harmful to an organization. Since it can lead to the loss of critical data, with a consequent loss of trust and both internal and external reputation. Hence the pressing need for a comprehensive view of the pros and cons of each initiative that involves aggressive innovations, including investing resources in internal communication and training (contemplated by controlled experimentation environments).

It is also important to pay attention to the company's past and current culture. If there is no balance between the intensity of innovation and the likelihood of risks, professionals may feel lead to rush in introducing products and services to the market at the wrong (and early) time. On the other hand, a company's exaggerated aversion to risk may harm the creative side of the more technical professionals, and thus shorten the chances of penetration/consolidation in their respective markets.

Past failures may restrain the organization's propensity to take risks for new things that could be implemented, as well as inhibit the creative process of the most skilled and energetic technicians, which may lead to general unproductivity among employees and even great difficulty for the organization in retaining talents.

However, excessive punishment and blaming for errors and failures that may arise in the company may also stagnate the employee's productivity and sense of excellence. In other words, it may be more “advantageous” for the employee to produce less, to try less, and consequently make fewer mistakes. This may compromise the organization’s adaptability to market changes. Errors and failures that are detected and well managed with those involved actors may become previously

unidentified learning opportunities, which could potentially lead the organization to improve processes and detect damage to the company's activities before they arise.

And it is under this context that the question arises: should risks that have been taken and mitigated be recognized and rewarded, or should failures resulting from risks that could not be mitigated be punished?

Depending on the case in question, that is, the size and reason for the risk taken, it may be more appropriate to reward some people for the risk taken, or to punish them for the failure that was not avoided by professionals who should have been aware of this. Or even both actions, reward at some times, and punish at others. There must be a formalized project, a business case, for each new or innovative action, and the appropriate analysis and prospection of the underlying risks. A poorly structured project, or one that does not involve all the agents directly or indirectly involved in the implementation of the project, impairs the company's ability to recognize or punish anyone. And in such case, no one wins, and no one loses – except the company itself!

The way an organization views the results of the risks it takes can have a decisive impact on the creativity and initiative of its employees. If innovative actions are encouraged by the company, but mistakes are not tolerated and are punished, teams may feel discouraged from making any progress or making any changes.

Recognizing and rewarding risks taken should not mean disregarding failures or irresponsibility. It basically means recognizing all the effort put into the innovation initiative, even if the results obtained were not as planned. A culture that rewards the courage to try tends to stimulate the ability to create improvements, in which the lessons learned from failures are converted into new, more lucid and productive attempts.

But in any case, it is important to identify the nature of the error. Errors due to negligence, recklessness or disregard for rules should not in theory be tolerated. However, errors that have occurred based on well-studied hypotheses in a project and a business case, even if they do not bring immediate success, must be understood as part of the creative process. It is essential to assess the magnitude (including the financial one) and importance of a successful (or unsuccessful) project, taking into account that well-structured attempts with a sense of consequence promote the professional development of internal agents, as well as of the organization as a whole.

The underlying challenge for companies is to retain innovative talented people in a culture that, at the same time, demands greater rigor in safety. Creativity with responsibility from those involved connects the company in a sense of consequence, in which punishing failures becomes less important, and much less of a priority than rewarding risks taken jointly within the scope of a well-structured corporate project.

Organizations that are strategically concerned with the development and improvement of processes are not necessarily focused simply on rewarding or punishing. Companies must encourage the critical sense of their internal agents, so that the structuring of a project, and its notion of completeness and feasibility, be exhaustively studied, understood, and communicated to those directly and indirectly are involved in such a project.

The search for technical partnerships with universities and other business partners can also expand horizons, both in terms of security and innovation, and thus become an important tool in the decision-making process.

Risks are associated more with future actions due to the element of the unknown, than with the company's past life. However, a company's culture in relation to risk is a critical factor in actions yet to happen. It is not just about punishing failures or rewarding well-taken risks, but about creating a culture in which those who make

mistakes faster, also learn faster. And not only the employees involved, but the entire organization must aim to have the capacity to recover adequately after failures.

Companies have their business plans, aim to adequately identify their main core business, maintain a fair concern with the competition, have their strategies in the way of market penetration. In short, there are several components that make up an organization's strategic planning.

But depending on the company's vulnerability to market acceptance, and its dependence on exogenous factors for its daily activities, it may become essential to constantly look at mitigating risks and failures, or even establish an internal department specialized in such concerns.

In financial institutions, for instance, we do not only talk about business risks, or profitability risks, or new markets, but also systemic risks. And therefore it becomes imperative to have a technical and professional approach to the risks inherent to the activity, due to the mandatory compliance with government agencies.

But in any sector of activity, whether an industry, commerce, or service provider, effective risk and failure management is crucial for the company's sustainability and success. Proactive identification and mitigation of threats ensures the continuity of operations and protects reputation.

The basic equation for risk mitigation involves identifying, assessing, and prioritizing risks, with the respective actions to avoid them. And then the organization can establish its contingency plan, aiming to detail the actions to be taken if necessary. The measures for this purpose are varied, such as contracting liability insurance policies (such as D&O insurance, among other modalities), financial provisioning of cash reserves, reassessment and alternation of suppliers, evaluation of systemic redundancy procedures, among others.

Therefore, the watchwords are adaptability and common sense, as innovation and security can be strong allies in contributing to the growth and sustainability of an organization in its market (or even in others!).

The dilemma of balancing innovation and risk tends to remain a central theme in business administration. The challenges are only known when structuring a strategic plan that includes innovation actions, and this requires the company to constantly reassess the advantages and disadvantages of maintaining innovation actions in its business plan for a given period.

Technological advances are unstoppable and difficult to assess and monitor, which makes the types of risks to which companies may be subject difficult to predict. Companies cannot stop using current technologies in the course of their business. But at the same time, they need to mitigate risks of several natures, in an environment of uncertainty and new factors that can really surprise. This is why a holistic view is essential in the preparation and execution of a business plan that contains some degree of innovation in its core.

An innovative project may not be advantageous in the face of imminent risks that cannot be well mapped and mitigated. It is up to each organization to seek alternatives of how to remain relevant to its stakeholders, even if with a lower level of aggressiveness in its innovation plans.

Before, or simultaneously with, excessively innovative projects, and consequently more risky or unsafe, there is a number of factors of operational excellence and resource optimization, which every company that values its relevance and sustainability must constantly monitor.

Companies that plan their perpetuity and economic sustainability, aiming to be strong in the face of competition and consumer market demands, must understand

that security is not a limiting barrier, but a strategic capability that drives responsible innovation plans to emerge in a sustainable way. There must be speed in adapting and foresight of strategies and processes for uncertain scenarios.

Finally, it is necessary to go beyond the dichotomy of rewarding risks taken, or punishing mistakes and failures. Before that, it is necessary to cultivate a culture that values calculated risk and learning from failures. And failures must be distinguished between errors arising from coherent actions (or exogenous factors), and problems caused by negligence or recklessness. The maturity of having a holistic view of projects and contexts unavoidably contributes to the company's adaptability to market dynamics, and its ability to retain talents and transform challenges into opportunities.

From Punishment to Progress: Rethinking Failure and Risk in Organizations

By Mohammad Elyas Karimi

Abstract: This text reflects on the tension between innovation and safety, highlighting how organizational culture shapes individuals' risk-taking behavior and, consequently, their creative potential. Drawing from personal experiences, the author shows that environments encouraging unconventional ideas and accepting failure as part of the learning process foster innovation and engagement. In contrast, punitive and failure-averse cultures restrict creativity and discourage independent action. The text further emphasizes the need to balance risk and safety, arguing that calculated risk-taking is essential for both individual and organizational development, and that failures, when constructively interpreted, provide valuable lessons.

Keywords: Risk-taking, Punishment, Innovation, Safety, Learning from failure.

Governance of Science, Technology and Innovation, HSE University. Master's student of the Postgraduate Program; E-mail address: mkarimi@edu.hse.ru

Introduction

Advancements in technology and globalization have brought about changes that leave many of us perplexed; do we proceed with innovation or stick to the status quo? Such a contradiction in a person's psyche usually affects not only their professional life but also their interactions with others. I have come to understand that from my own experiences, taking risks helps one to move further and enjoy more but being so careful on the other hand can work against any development whatsoever and eventually stifle any creativity that is to be seen.

Featuring Organizational Culture of Risk-taking

I believe that every organization can exert a powerful impact on the risk-taking orientations of the members and thus the level of innovativeness in the company. Circumstances, where employees are not shy to give their unconventional ideas, are quite common in organizational setups. Such behavior usually encourages engaging in activities and also belonging to a place. As an illustration, in my previous place of work, achievement required the active participation of my colleagues, me and the rest of the group was requested to come up with ways of improving engagement with the customers. The management gave us the space to think enabling failure was part of the process of learning. This enabled culture was not only a fire under my pants but also caused me to initiate several offerings that satisfied the client’s needs.

Furthermore, it has happened that I have been in such an environment where the anticipatory fear of failure was tangible. In the case of the scenarios described, it is difficult to venture beyond a certain point as most employees prefer to do things by the age-old known methods simply keeping their new ideas to themselves. There was a time when I doubted the idea of suggesting an innovative approach in a particular project due to the expected resistance from the management towards anything out of the ordinary. This was a critical learning point for me, as it showed the importance of nurturing a positive attitude that encourages reasonable risk-taking. This innovation supports not only the people facing tough decisions but also other groups as the potential of the whole team is unlocked.

Rewarding Risk Taking or Punishment?

Risk care in an organization is probably about the ways in which such care is conditioned. It is clear, that in my opinion the encouragement of endangerment is the basis of an innovative environment. If the fathers and mothers of management support bold and unconventional ideas and solutions the subordinates also become more prone to exhibitionism and uncontrolled daring. There was a case when one of my workmates introduced a not-so-common strategy in marketing, which appeared to be quite dangerous but was encouraged by the administration. Not much as anticipated was achieved following that campaign however that lady was respected for taking such a risk and was encouraged to polish it. All this fueled the urge to innovate while many of us had previously been intimidated by the thought of falling on our faces.

On the other hand, I have had the experience of how failure-oriented attitudes may kill creativity. For instance, in one corporation I had a stint with; aggression due to a mishandled project consumed quite a good number of employees, they then came to a consensus of keeping their job descriptions at easy levels. Obviously, all activities around appeared scary and the culture of innovation died. It raised the point that disappointing as it may be, one will not thrive in every risk they undertake, but the failures are worth their weight in gold. There is a need for organizations to transform

their understanding of negative reinforcement and recognize the importance and value of constructive criticism.

The Right Level of Taking-Risk

The subject of risk management in an organization touches upon various aspects of the operations of this particular organization. I strongly feel, and quite frankly, risk engagement brings about an environment of original thoughts. With both parents and managers in favor of novelty and originality, it has not been surprising that even the employees flaunt a certain level of boldness and recklessness, beyond what reason dictates. There was an incident when one of my colleagues came up with a very unique market strategy that seemed almost suicidal, but she was still allowed to present to the management the same and was given the go-ahead. There were no tangible results after this marketing effort however woman was appreciated for such high risks even to an extent assigned a new task. All of these factors only incited the element of creativity where many were too shy to do anything for fear of failure.

On the contrary, sometimes being failure-oriented can obliterate an individual's creative capability. At one particular employer that I worked for previously, the employees became so worried after one project went wrong, which claimed a substantial number, that they resorted to having basic job specifications. It was obvious that the majority of the activities were all about very safe systems and there was no room for any independent action as innovation stopped. It was then suggested that not all risks individuals take would lead to positive results, but mistakes also come with a lesson. There is a need for organizations to adopt a new approach towards the negative connotation that is given to feedback in order to understand and gain the value hidden in criticism levels which are helpful.

Balancing Risk and Safety

Balancing between risk and safety is a forever-existing challenge in pursuit of professional objectives and in a personal context as well. I was faced quite often with situations where it was about the level of security provided by what was known against the level of risk in which the unknown was. There have also been times when taking the middle course has worked out well, mainly owing to a complex set of circumstances. Nevertheless, I appreciate that being too precautionary can also be a hindrance when it comes to expansion and acquiring new experiences.

For example, during one period in my career shift, I decided to stay in a safe job instead of going for something gratifying although risky. Although this seemed like an okay choice, I realized at a later date that in me the non-pursuit of something due to fear felt worse than taking it and the Natural Risk Aversion consequences.

Growing my capability by managing risks safely and taking actions to support new ideas while backing away, when necessary, as well as enhancing stability to re-strategize, has been matched with failures or mistakes and successes.

Conclusion

Thinking about the importance of both innovation and caution, I hold the view that it is of paramount importance to practice risk-taking, rewarding hard work and efforts, correctly spotting down-to-the-wire borderline and surveying safety in a situation among other things to grow both an individual and an organization. Even though almost everyone is afraid of failure, considering that every risk failed was a lesson learned—taking a lesson that will not be forgotten is key. Ultimately, the

development of this philosophy can result in a richer and more innovative, both at home and at the office.

Safe Enough to Fail? Global Organizations Tiptoeing Through African Innovation

By Mbah Aaron Promise

Abstract: This chapter explores the paradox between innovation and caution in international development initiatives in Africa. While many global organizations introduce technologies and programs with noble intentions, their risk-averse approaches often hinder meaningful transformation. Case studies such as the failure of the Solar Cooker International project in Kenya and the success of grassroots solutions like mobile money illustrate the importance of context-sensitive innovation. The analysis highlights how donor expectations, rigid monitoring systems, and Western-centric paradigms frequently clash with African realities, leading to ineffective or unsustainable outcomes. Conversely, initiatives that embrace local knowledge, transparency about failure, and grassroots participation, such as Engineers Without Borders' failure reports or Ghana's Twig Light project, demonstrate that innovation thrives where psychological safety and community involvement are prioritized. The study argues for a redefinition of accountability in development, shifting focus from success metrics to learning metrics, and calls for a paradigm that values co-creation with local innovators. Ultimately, innovation without a willingness to fail becomes performative, and only by adopting a "safe enough to fail" mindset can global organizations truly foster transformative change in Africa.

Keywords: Risk-taking, Punishment, Innovation, Development failures, Development failures.

Governance of Science, Technology and Innovation, HSE University. Master's student of the Postgraduate Program; E-mail address: ambakh@edu.hse.ru

Introduction

In 1995, Solar Cooker International (SCI) initiated the “Cookit” solar cookers to the Kakuma Refugee Camp in Kenya. This was a well-intentioned project aimed at benefiting the communities with cooking their food and purifying their water whilst preserving the environment. Despite its noble aims, the project did not achieve sustainable uptake largely because it required the local users to change their culture and lifestyle instead of adapting to their needs.

Issues like the small design of the cooker to support small western families, not large polygamous ones, the necessity of fixed recipes and the constant availability of ingredients, difficulty of maintaining the solar panel, imposing a purchase fee in a resource-scarce society all made it have little impact and eventually failed. This stands in contrast with the often cited success story of the mobile money innovations in Africa, like Kenya M-PESA, which originated out of the natural needs and contexts of the communities. Such a gap demonstrates one of the fundamental contradictions such processes present: the fact that international organisations come to Africa with significant resources and bold mandates to innovate; at the same time, their fear of failure and their risk-averse style of work usually significantly diminish their ability to cause a breakthrough. Unless they adopt contextual risk, actively learning to fail, and redesign models of accountability, such institutions will only keep on tiptoeing around the ambitious locally-proud innovations that the continent desperately requires.

The Paradox of Innovation and Caution

Innovation, which has been characterized by economic thinkers such as Joseph Schumpeter as “creative destruction” and Clayton Christensen as “disruptive innovation” is no more than a risk. But international Non-Governmental Organizations (NGOs) and development organizations are usually risk-averse organizations. The caution has been necessitated by a number of factors categorized as donor expectations, tight monitoring and evaluation (M&E) systems, and concerns about political optics. Donors especially hate to be identified with failed programs, particularly in our world of the “results agenda”, which prioritizes measurable achievements.

Punishing admission of failure will not stop failures but will only discourage honesty and might prevent valuable lessons from being learned. This forms an irony in the sense that these organizations are mandated to be very innovative, yet they are financed to be very safe. Unlike the business world, where a product nobody buys is quickly dropped, development programs often lack such undisguised consequences, and this allows ineffective initiatives to continue or their failures to be “swept under the carpet”. This careful approach can stifle the very innovation they aim to encourage. Mainstream development discourse has also criticized the power dynamics which holds a bias that favors “safe” or Western-centric solutions regarding the myth of “neutral innovation”.

Culture of Risk-Taking vs. the African Operating Reality

The popular culture of “fail fast” is an expression often adopted in places such as Silicon Valley which greatly conflict with the intricacies of doing business in African markets. In most cases, African innovation is not a product of audacious innovation but a necessity. Mobile money, solar kiosks, and community lending platforms are the examples of solutions that have happened right out of the underserved populations in Africa. They tend to be grass roots innovations, home grown solutions, low cost, use local materials and are created by and to serve the particular community and solve immediate, urgent problems. International organisations nevertheless often transship

inflexible paradigms of innovation and do not sufficiently adjust to local feedback chains. This top-down planning, designing, and execution even happens without the actual consultation of local populations. A techno-economic orientation often impedes the capacity of seeing a more comprehensive picture which would take into consideration the socio-cultural, historical, economic and environmental effects. As an example, the Thaba-Tseka Development Project in Lesotho was a project aimed at enhancing agricultural production and livestock, but it failed simply because the managers of the project had a wrong understanding of the local cultural attachment and interest relating to a cow as the type of issue relating to some form of social capital investment and retirement fund, but not just a simple economic asset.

Equally, the Norwegian Agency for Development Cooperation (NORAD) Fish Processing Plant in Kenya went down because it did not consider the lifestyle of the pastoralists of the Turkana people (who did not consider fishing as a livelihood but as a survival mechanism). These are instances of the well-known one-size-fits-all approach that is one of the greatest shams of mainstream development theory to the effect that solutions are limitlessly applicable in any instance because they are successful in the West. This manner of doing things fails to respect local cultures and knowledge and is based on paternalism and a form of epistemic arrogance which dismisses other forms of knowledge systems.

Rewarding Risk-Taking or Punishing Failure?

The main fears of some reputational damage, donor backlash, or internal audits most times discourages bold experimentation within global organizations. Many pilot projects, despite being overhyped at their inception, are often "buried rather than studied" when they fail. This tendency prevents valuable learning opportunities. For example, the Maji Matone initiative in Tanzania aimed to use mobile phones to report broken waterpoints gained very high media coverage and attention for its innovative approach before it even started. However, the program received far fewer text messages than expected and was eventually shut down. Instead of burying this failure, the organization made a public declaration of its failure, striving to share lessons widely.

The transparency by the implementing organisation was met with both surprise and respect, which demonstrated that admitting failure with a focus on learning, can enhance credibility rather than diminish it. In general, development agencies have historically shied away from acknowledging failure, preferring to cherry-pick success stories to learn from “best practice”. However there is an emerging shift away from this approach. The Inter-American Development Bank (IADB) now explicitly highlights “FAILURE” more often than “success” in its Development Effectiveness

Overview, emphasizing that incentives should not penalize failure itself, but rather “failing to learn from failure”. Engineers Without Borders Canada, for instance, began publishing annual “failure reports” in 2008, and in 2011 launched admittingfailure.com, promoting “humility, innovation, and learning” across the international development sector. Similarly, SciDev.Net has proactively started looking at past initiatives that faded from the media spotlight to offer valuable insights from their shortcomings. This highlights the growing recognition that creating an environment of “psychological safety” is important for innovation to flourish especially within Africa.

The Right Level of Risk: Calibrating Innovation in High-Stakes Contexts

Striking a risk balance of being a “just right level” of risk to fuel innovation, yet not too much to trigger a collapse, is essential in high stakes development situations. The failure of global organizations is the tendency to either promote risky ideas with insufficient local basis or they end up withholding much because of the fear. This is in many cases reflected in the use of one-size-fit-all solutions and a rather too-narrow techno-economic dimension without taking into consideration the local socio-cultural realities.

A remarkable instance of context sensitive and well balanced risk exposure is the case of the Twig Light project in Ghana. Compared to the unsuccessful smokeless ethanol stoves, which villagers had failed to adopt due to availability of free firewood and the lack of realization of the significant impact of indoor smokes on health, the Twig Light was designed with extensive input of local people. The Twig Light was invaluable because it was a low-priced and easily portable piece of equipment that used waste heating sources after cooking to generate light and an added benefit of charging cell phones which was a high priority to the villagers. Beneficiaries were also ready to pay for the improvements they wanted done on the prototype even when it meant higher cost because they were directly included and involved in the process of the evolution of the prototype. This is an excellent example of how innovation should be built based on local needs and not donor interest. It notes the belief in intellectual humility and understands differences in knowledge systems and leaves behind the “abyssal thinking” where only the western knowledge is considered to be valid. Other paradigms such as the Latin American theory of Buen Vivir, of “living well” and holistic human-nature relationship provide useful alternatives to the development approach and rise above the inflexible western paradigm.

Balancing Risk and Safety: A New Logic for Innovation in Africa

African-led organizations show the intrinsic capability of balancing experimentation and community trust in a way that solutions can be gradually developed. The given strategy is in line with the concept of “frugal innovation” when the limited resources stimulate creative but low-risk solutions themselves. It happens very well through grassroots innovations, such as that of Made Kusuma, the fisherman who converted organic waste into soil through the use of black soldier flies, and thus prevented floods in Bali, or Omar Vazquez and his seaweed-based “Sargablocks”, which were used in building homes in Mexico. They are locally based, inherently parsimonious, are context-driven, and in most cases tend to be multipurpose, providing solutions to more than one issue, which is essential in the achievement of interdependent Sustainable Development Goals.

The African innovation ecosystem can be very helpful to global organizations if they can learn from it. This includes implementation of such practices as the inclusion of local feedback loops, the encouragement of peer-to-peer learning models, and the adoption of flexibility, of both time and the intended outcomes. The UNDP Accelerator Labs, for instance, are in the process of undertaking what they refer to as solutions mapping, in terms of identifying and learning with user-led innovations and so-called “positive deviants”, which involve people who come up with improved solutions given the apparently similar challenges and scarcity of resources. They know that innovation does not only happen in “shiny labs and the Silicon Valley” but also in villages and farming communities where individuals who are nearest to the challenges have the important insight. This bottom-top process of development is done to outgrow the business-as-usual top-down innovation processes. The redefinition of what it means to be safe is the most important thing: which should consider not only having a low

financial risk, but value and it must be sustainable within the communities. And this is in line with turning the unproductive success (short-term orientation of performance) into productive failure (failures as a source of learning to sustain over the long-term).

A Call to Reimagine Innovation Accountability

In order to really promote disruptive innovation in Africa, it will be necessary to change the paradigm of accountability. Funders should work past paying off success measures and instead they should reward learning measures and prioritize the same. This implies promoting an "innovations portfolio" where the risk is diversified between risky and non-risky initiatives. Also, monitoring and evaluation programs have to incorporate well-established failure documentation systems. As shown by the annual "failure reports" released by the Canadian organization Engineers Without Borders and the site admittingfailure.com, the lessons learned can be invaluable and cannot be underestimated as far as sharing information and examining what went wrong in a particular project. This openness instills confidence and trust as evident in some instances discussed earlier

More importantly, the global organisations should promote co-creation with local innovators, abandoning the top-down approaches. A step towards doing so is the UNDP Accelerator Labs solutions mapping project, to actively identify grassroots innovations and to surface and elevate such innovations, to help inform and modify programs to meet local unmet needs.

This entails a paradigm change: we consider innovation as being the concern of "external expertise", but we must learn to take notice and foster local partnership. Development policy in general must have a more intricate, inter-disciplinary, and multifaceted place in social systems, integrating the economic, social, cultural, and political institutions and the interactions over time. This shift towards appreciation of local knowledge and actual cooperation is fundamental in the attainment of more equal and efficient development.

Conclusion

Ultimately, innovation without the willingness to fail is only performative, as it lacks the ability to actually transform. Africa does not lack innovators and innovations; rather, it is only a scenario where the risk-taker, both at the local level and beyond is not provided with the frameworks and the support that they would require to ensure that their solutions scale up. The irreproachable history of those hundreds or thousands of failed, well-intentioned projects across the continent are a good reminder that as long as the failures are not identified, and their causes are not known, the future patterns of poor performance are unavoidable. Obviously, transforming the future of Africans will not be possible without transforming the global organizations relationship with failure first. Only when they are "safe enough to fail", that is, when they are risk-takers, when they place the value on learning through failure, and when they promote homegrown knowledge, will they become bold enough to nurture the kind of innovation Africa needs.

References

Ayelazuno, J. A., & Mawuko-Yevugah, L. (2019). Development failures in Ghana, miracles in Asia: Towards a comparative political economy of development failures and success. African and Asian Studies, 18(1-2), 124–152. https://doi.org/10.1163/15692108-12341413

Jones, S., & Turtle, R. (2020). Engineers and humanitarian intervention: Learning from failure. Journal of International Humanitarian Action, 5(1), 1–11. https://doi.org/10.1186/s41018-020-00073-5

Khulisa Management Services. (2022). Celebrating African evaluation failures. https://www.khulisa.com/celebrating-african-evaluation-failures/

Page, J. (2018, June 15). Africa's failure to industrialize: Bad luck or bad policy? Brookings Institution. https://www.brookings.edu/articles/africas-failure-to-industrialize-bad-luck-or-bad-policy/

SciDev.Net. (2021, March 5). EU–Africa research must start learning from failures. https://www.scidev.net/global/scidev-net-at-large/eu-africa-research-must-start-learning-f

Taylor, B. (2013, March 25). Let's make a success of failures. SciDev.Net. https://www.scidev.net/global/opinions/let-s-make-a-success-of-failures/

United Nations University – World Institute for Development Economics Research (UNU-WIDER). (2017). Learning to compete: Africa's industrialization. https://www.wider.unu.edu/publication/africas-failure-industrialize

White, H. (2013, February 6). Failure is the new black in development fashion: Why learning from mistakes should be more than a fad. 3ie Impact Blog. https://www.3ieimpact.org/blogs/failure-new-black-development-fashion-why-learning-mistakes-should-be-more-fad

Encouraging Innovation: The Role of Reward and Punishment in Risk-Taking

By Shaikh Salman

Abstract: This chapter examines how organizational culture shapes the balance between risk-taking and safety in innovation management. Companies need to innovate to remain competitive, but innovation always involves the possibility of failure. The discussion explores whether organizations should reward or punish employees for risky efforts, emphasizing the role of leadership in creating a culture where risk is seen as part of learning rather than a source of fear. Rewarding thoughtful risks encourages creativity, experimentation, and long-term adaptability, while punishment often leads to caution, stagnation, and lost opportunities. A real-life case study of Google's "20% Time" policy demonstrates how providing employees with freedom to pursue personal projects can generate groundbreaking innovations such as Gmail and AdSense. The findings highlight that successful companies balance creativity with accountability by supporting calculated risks while discouraging reckless decisions. Ultimately, managing innovation requires fostering a culture that embraces risk responsibly to sustain growth and competitiveness.

Keywords: Risk-taking, Creativity, Punishment, Innovation, Leadership, Competitiveness.

Institute for Statistical Studies and Economics of Knowledge, HSE University. Master's student of the Postgraduate Program; E-mail address: ssheikh@edu.hse.ru

Introduction

Managing innovation requires balancing creativity with caution. Companies need to innovate to grow, but trying new things always comes with a risk of failure. This essay explains how organizational culture encourages or limits risk taking, whether companies should reward or punish risky efforts, and the importance of finding the right risk level. We will also discuss a real-life example of how a company found success by managing innovation risks effectively.

The way a company works influences how much employees feel comfortable taking risks. Some companies have a flexible, open culture called an "adhocratic" culture where employees are encouraged to experiment. This essay explores how companies can create a culture that allows innovation while managing risks wisely. We will also look at whether it's better to reward or punish employees for their risky efforts. Finally, we will discuss the importance of finding the right level of risk to stay competitive. A practical example of Google will show how managing risks effectively can lead to great success.

Rewarding Risk-Taking vs. Punishment

One of the basic question companies' faces is whether one should reward or punish an employee for taking risks. Taking risk is a basic need for innovation, but no one will ever guarantee that plans will work out as expected. Should one reward employees for trying despite their failure, or should one punish them to avoid making mistakes? This has been a sticky issue and determines how employees act in such scenarios.

If employees are rewarded for experimenting, even if it does not work, they would think out of the box. If employees know their efforts will be appreciated even though they don't work they would take, chances and float innovative ideas. Research finds that when leaders reward employees for thoughtful risks, more innovations occur within the company. Employees are more likely to try out a new way because failure is considered a part of learning and not a failure on an individual level.

For example, when a marketing team runs a campaign that does not work out well, they can identify the key reasons for such an outcome and learn from it and include such learning in subsequent campaigns. The lesson learnt from such "failure" can benefit the company to improve. Leaders play an important role by demonstrating that failure is worth it the same way successes are. In acknowledging the effort, the employee will develop trust and confidence and try again. Because the employee feels their creativity is valued, it encompasses them to want to improve their productivity.

Punishing the employee for failure creates fear and risk aversion and therefore "employees will not take risks because there may be punishment". These employees, worried about being blamed or penalized for their mistakes, will make it safer. Thus, even if a potential new idea can bring great success, these employees will refuse to try it. It has been seen, over the passage of time, that this fear of failure builds a culture of caution wherein employees cling to old ways and avoid taking any risk. In such an environment, the company is vulnerable to behind competitors who can innovate.

Consider, for example, a development team that fears having its new features implemented, for fear of punishment in the event those features do not work. The company then loses potential new opportunities and cannot adjust to shifting current market trends. Punishing failure may well appear as incentive for controlling risks, but more probably has adverse effects on creativity by blocking potential future growth.

The answer is not to reward every risk or ignore every failure. Successful companies balance encouraging innovation with holding people accountable. Leaders

can reward thoughtful risks that is, risks that are aligned with the company's goals even if the outcome isn't perfect. At the same time, leaders will want to discourage reckless risks that ignore strategy or planning. This means that employees feel a drive to take smart risks but are held accountable for their own actions.

For example, it can give recognition or bonuses to a company for well planned projects which did not work out. At the same time, it can produce clear rules and regulations in place that can prevent employees from taking unnecessary risks which can compromise the business. A leader can even have post failure reviews to learn from mistakes hence turning failures into lessons for future projects.

Employees will embrace their ideas much more when they are assured that although risks are taken at calculated times, they will be in control of it. This is the kind of environment where people feel support and risk novel new things. In the long-term viewpoint, companies that reward thoughtful risk-taking but check recklessness grow faster and adapt better to change in the markets.

The only way successful innovation can be managed is by striking a balance between risk taking and accountability. Corporations should take those risks that bring them closer to their major long-term objectives. Leaders set the tone through rewards for prudent risks taken and by encouraging teams not to make rash decisions. Once companies have put into place mechanisms to measure and review ideas involving some amount of risk, they can learn from their mistakes without injuring themselves as they strive towards growth.

Real-Life Case Study: Google’s “20% Time” Policy

The best example of a company that balances the risk incurred and innovation is Google. It introduced a policy called "20% Time," whereby employees were allowed to spend 20% of their working hours on personal projects that they felt would be beneficial or interesting. This brought in innovation as the employees explored ideas without worrying about whether the ideas worked straight away. Some of the most successful products of Google- Gmail, Google News, AdSense - originated from this program.

Such an approach towards innovation clearly points to the necessity of having a risk-free space. At Google, no form of punishment was meted out to employees whose 20 percent projects did not work out. It viewed the failure as part of the process of finding good ideas. At the same time, Google used stronger systems for tracking progress with all risks aligned with the goals of the company. This helped the company grow and innovate without exposing it to too many risks. Google's case has demonstrated how companies can encourage creativity in their employees while at the same time maintaining stability.

In short, the case study of Google's "20% Time" presents practical evidence for how the creation of a risk space for experimenting by employees can be a source of innovation. At Google, part of the employee's time was dedicated to personal projects; some of the company's most successful products have found their roots. Going back to the people aspect of innovation at Google reveals where supporting the taking of risks merges with keeping it within the flow of the strategy of the firm.

Conclusion

Innovation is a very important factor of success for any company, it has risks that must be dealt with appropriately. The company culture and the way in which employees understand the nature of taking risks in operations is too obvious to ignore. Organizations that promote open flexible environments where failure is regarded as

part of learning enhance creativity and innovations. On the contrary, companies that are very rigid and that follow rules tend to knock out new ideas because risk-taking creates fear of failure.

Innovation management requires a strategy that properly balances creativity and caution. Companies that successfully breed a culture of risk-taking but do so within well-defined guidelines and lead strongly will likely remain competitive and grow in the face of accelerating business change. Rewarding thoughtful risks, learning from failures, and ensuring risks make sense in a larger strategy can help innovate without losing control. Here, balance is a highly delicate issue, which characterizes successful companies from the rest in today's competitive markets.

Reward, Punishment, and Organizational Risk Culture: Balancing Innovation and Safety

By Eze Joel Charles

Abstract: From the earliest stages of human history, risk-taking has been central to survival and progress. In modern organizations, the ability to balance risk and safety has become a decisive factor for sustaining competitiveness and fostering innovation. This essay examines how organizational culture shapes risk-taking behavior, exploring the tension between rewarding and punishing risk in business environments. By analyzing cases such as Apple Inc. and the Dangote Group, the discussion highlights how supportive cultures that encourage experimentation and recognize calculated risks can drive transformative innovation and long-term growth. At the same time, organizations must establish adequate safeguards to mitigate potential losses, ensuring that risk-taking does not compromise resilience and sustainability. The findings underscore the importance of developing a balanced organizational strategy that integrates innovation-driven practices with effective risk management, creating an environment where creativity, accountability, and safety coexist.

Keywords: Organizational culture, Risk-taking, Innovation management, Punishment, Business resilience, Sustainability.

Institute for Statistical Studies and Economics of Knowledge, HSE University. Master's student of the Postgraduate Program; E-mail address: jeze@edu.hse.ru

Introduction

Man from the beginning of time has always been a risk taker, the early man would go into the forest hunt down dangerous preys and in the end creates food for himself with the animals meat and clothing with the animals skin. Therefore, it is safe to say that risk taking breeds innovation. Mans ability to take risks has led to ground breaking discoveries that helped to shape humans thinking and bring about significant changes in the world. For organizations to thrive in a competitive business environment, they must continually create room for innovative thinking. This could be in the form of rebranding, introducing a new product to the market, creating a new process or method of production or even breaking into a new industry entirely. Organisations are always faced with the hurdle of being innovative at the risk of possible failure or playing it safe by adopting a more traditional approach that guarantees safety and sustainability. This essay examines the significance of promoting organisational risk culture and managing possible implications of failure. Organizations must be able to find a balance in promoting a supportive culture, rewarding risk-takers and finding the ideal level of risk in order to successfully navigate risk and innovation.

Featuring Organizational Culture of Risk Taking

Main aims of business enterprises are to satisfy their customers and maximise profit and in other to meet this objective, business heads are charged with the responsibility of being innovative and bringing up ideas that can lead to consumer satisfaction and product development. Organizations that promote risk-taking creates a safe environment for employees to share ideas, test new methods and explore new opportunities. This culture enables employees in an organization to express their views or ideas and take reasonable risk, which can lead to cutting-edge innovation. Studies have shown that employees are more likely to engage fully in their work when their opinions and contributions are always taken into consideration by their employers and this can lead to a more driven and productive workforce. Companies like Apple and Dangote serve as major examples of how promoting an organizational culture of risk-taking can lead to important innovation and organizational growth. Apples innovative products such as iPad and iPhone changed the game in the technological sphere, since its inception in 2007, the iPhone series has been upgraded to 46 distinct models, making Apple one of the worlds' leading smartphone manufacturers. These innovations did not just happen coincidentally; they were the outcome of a bold, innovative spirit that defined the companys values.

Similarly, Dangote Group, one of Africas largest conglomerates, demonstrates how promoting organisational risk culture can drive organizational growth and expansion. In 1977 the Dangote group, founded by Aliko Dangote initial products were soft commodities such as rice, sugar, cotton, vegetable oil and cement. However, the first product that helped establish Dangotes success was Cement which he began importing into Nigeria in 1981. This strategic step enabled him to establish connections with suppliers and distributors, paving way for his future business expansions. Overtime, the company diversified into various sectors; sugar refining, flour milling, pasta production, oil and gas, fertilizer production etc. Dangote's group approach involves assessing local market demands and supplying quality products with competitive prices. the companys willingness to take risks in its operational strategies has paid off, making it one of Africas largest conglomerates, with operations in over 15 countries.

Embracing risk-taking is crucial for innovation and success. By fostering an environment where employees can share ideas, think outside the box and encouraging calculated risks, organizations boost adaptability, competitiveness, and performance. In today's evolving markets, empowering teams to take risks is a key feature to success.

Rewarding Risk Taking or Punishment?

In decision-making, both individuals and organizations face a critical choice: whether to reward risk-taking or punish it. Risk is often seen as the fuel that drives innovation and growth, but it also comes with the potential for failure and loss. Societies, economies, and businesses must balance this tension, deciding how to treat those who take bold actions in pursuit of success. Rewarding risk can incentivize entrepreneurship and breakthroughs, while punishment can potentially discourage reckless behaviour. The outcome of this balance, shapes not only individual careers but also broader economic and social progress.

The reasoning behind rewarding risk-takers is straightforward. In today's rapidly changing business environment, companies need to innovate continuously to stay relevant. Punishing employees for taking risks can restrict creativity and prevent the exploration of new ideas. For instance, if an employee proposes a bold new feature and it fails, instead of punishment, they deserve recognition for their initiative. This behaviour encourages others to think outside the box and contribute their innovative ideas. Rewarding risk-takers in an organization fosters a culture of innovation and achievement, essential for a companys expansion and ability to compete. Apple Inc. exemplifies this philosophy. Under the leadership of Steve Jobs, the company actively encouraged its employees to embrace failure and treat it as a steppingstone towards success. This approach not only empowered individuals but also led to groundbreaking products like the iPhone and iPad, which have transformed the tech industry. By rewarding employees for taking calculated risks, Apple created an environment where creativity and innovation flourished.

Moreover, a culture that rewards risk-taking fosters a sense of ownership and accountability among employees. When employees know their efforts to innovate are appreciated, they become more invested in their projects. Apple has shown that this culture not only leads to innovative products but also attracts top talent seeking a dynamic and creative workplace.

Organizations like Apple demonstrate that rewarding risk-takers is vital for fostering innovation and maintaining a competitive edge. By embracing and encouraging risk-taking, companies can create a thriving environment where creativity drives success.

The Right level of Taking Risk

In today's dynamic business landscape, risk-taking is a crucial factor for organizational growth and innovation. Striking the right balance between caution and bold decision-making is essential for long-term success. Organizations that embrace too much risk can jeopardize their stability, while overly conservative approaches may hinder opportunities for growth and competitiveness. The key lies in understanding the level of risk that aligns with the company's strategic goals, market conditions, and risk tolerance. By fostering a culture of calculated risk- taking, businesses can innovate, adapt to changing environments, and create sustainable value. This theme explores how organizations can determine and manage the optimal level of risk to ensure resilience and progress.

Companies can balance risk-taking by focusing on two key strategies: effective risk assessment and promoting an innovation-friendly culture. Through thorough risk assessment, businesses can make informed decisions that align with their goals while minimizing potential liabilities. At the same time, fostering a culture that encourages calculated risks and views failure as a learning opportunity enables organizations to innovate and stay competitive without taking on excessive risk. This approach helps companies adapt to change while managing risk responsibly. Apple Inc. serves as an exemplary model of how embracing calculated risks can lead to significant rewards. One of Apples approach to risk-taking is its embrace of failure as an opportunity of growth. Steve Jobs famously stated that failure is an integral part of innovation. He believed that the best ideas often come from taking risks, analysing failures, and adjusting strategies accordingly. Apple's organizational structure supports this mentality by empowering employees at all levels to contribute ideas and make decisions. This decentralization encourages innovation, as team members are not limited by rigidity or bureaucratic constraints. Instead, they are allowed to experiment and think creatively, resulting in many successful product launches.

Effective risk management is not about eliminating risk but about understanding and exploiting it to foster innovation and growth. By combining thorough risk assessment with a culture that embraces calculated risk-taking, organizations can navigate uncertainty while remaining competitive. This balance allows companies to adapt to market changes, seize new opportunities, and drive sustainable success. Ultimately, managing risk responsibly is key to long-term resilience and progress in today's rapidly changing business environment.

Balancing Risks and Safety

In the modern business ecosystems, organizations must navigate a delicate balance between embracing risks and ensuring safety. Risk-taking is essential for innovation and growth, allowing companies to explore new opportunities and remain competitive. However, without adequate measures, these risks can lead to significant losses, legal liabilities, and reputational damage. Striking the right balance requires a strategic approach that incorporates risk management frameworks and safety protocols to mitigate potential threats while fostering an environment conducive to innovation. Under this theme, I will be discussing few methods on how organizations can effectively balance risks and safety, ensuring long-term sustainability and resilience in an increasingly uncertain world.

Organizations can balance risk and safety by implementing competitive risk management strategies while maintaining a culture of innovation. Apple Inc. serves as a prime example of a company that has managed this balance successfully over the years. Known for its cutting-edge products and innovative practices, Apple consistently takes risks by pushing the boundaries of technology, such as introducing the iPhone, Apple Watch, and pioneering in areas like augmented reality and health tech. However, these risks are calculated, supported by extensive research and development (R&D) investments, and market analysis, which ensures that innovation is grounded in sound strategies. To safeguard against potential failures, Apple incorporates comprehensive safety nets across its operations. The company maintains strict quality control and testing protocols to mitigate risks associated with product malfunctions or cybersecurity threats. This is evident in how Apple places a high priority on customer privacy and data security, setting industry-leading standards through features like end-to-end encryption and transparency in data handling. Additionally, Apple ensures legal and regulatory compliance to prevent reputational risks and potential lawsuits. For

instance, the company continuously adapts its policies to meet global standards on environmental sustainability, worker rights, and anti-trust regulations. In this way, Apple strikes a balance between taking the necessary risks to stay at the forefront of innovation while implementing safety measures to protect its brand, customers, and operations.

Balancing risk and safety is crucial for any organization. Balancing risk and safety is not about avoiding risks altogether, but about managing them strategically. Through innovation, comprehensive safety protocols, and regulatory compliance, Apple mitigates potential downsides while continuing to lead the technology industry.

Conclusion

In conclusion, taking risks and being innovative are essential for any organization aiming to succeed in today’s competitive market. History shows us that many significant discoveries come from those willing to step outside their comfort zones, just look at companies like Apple and Dangote Group. By creating an environment where employees feel encouraged to share bold ideas and take calculated risks, organizations can foster creativity and adaptability.

However, it's crucial to strike a balance between innovation and safety. Companies need to have solid risk management strategies in place to protect themselves while still allowing exploration of new possibilities. This means not only setting up safety protocols but also supporting employees in their efforts to innovate.

Ultimately, the ability to balance risks with safety measures is key to an organization's growth and resilience in a fast-changing world. By embracing a mindset that encourages creativity while managing risk wisely, organizations can ensure their long-term success and sustainability.

Rewarding Risk Taking or Punishment: How Punishing Initiative Stifles Innovation and Economic Growth in Russia

By Novozemtsev Valeriy

Abstract: In this essay, the author attempts to identify the essence of the emerging situation in the Russian business environment, which is characterized by a lack of initiative in the behavior of both management staff and common specialists, which in turn leads to unfavorable results, namely the low level of innovation component in the overall dynamics of economic growth. Among the factors that led to such an outcome are primarily historical, cultural and social, in particular, the influence of the Soviet background, the impact of military service, the nature of the educational system, the high average age of managers, and the dominance of the state in the economy. In addition, analysis and distinctions are made between various sectors of the economy, emphasizing peculiarities in management approaches depending on the type and scale of the entity. Major focus is placed on the absence of a risk promotion system as such as a key factor inhibiting the innovative development of the country. As a conclusion, the author comes to the perception of the need to create an environment in which the main priority will be on the stimulation of initiative and risk tolerance, which in turn will significantly increase both the innovation component of Russia's economic development and its competitiveness in the current conditions of the global economy as a whole.

Keywords: Risk-taking, Punishment, Innovation, Organizational culture, Russian economy, Soviet legacy.

Institute for Statistical Studies and Economics of Knowledge, HSE University. Master's student of the Postgraduate Program; E-mail address: vonovozemtsev@edu.hse.ru

Introduction

Economic development and the rise of national competitiveness are driven by innovation. However, Russian business culture—being focused on punishing risk and error, is highly restrictive of an employee's initiative and at the same time hinders new ideas. Lack of initiative does not improve just the dynamics of the individual company's growth, but it also affects the dynamics of the GDP of the country as a whole, which in turn stays low in the share of innovation. Therefore, Russia lags behind in developing particular technologies, burdens its progress in international competitiveness, and hence puts its rates of growth of economic growth lower. This essay seeks to investigate the causes for this phenomenon and provides suggestions for the formulation of a supportive environment that views risk and initiative as critical contributors to corporate growth (Terzić, 2017).

The Soviet Legacy: Control, Punishment, and Conservative Attitudes

Modern corporate culture in Russia has seen the effects of a Soviet legacy. Initiative was looked in the USSR as a dangerous deviation from state policies. Economic sphere was under strict government control and being penalized for mistakes was unavoidable. Initiative, risk, and as a consequence change itself were seen as a threat to stability and a source of more than their share of unnecessary problems. Mistakes were not natural, they were faults to be punished (Klochikhin, 2012).

The principles have been passed down to the post-Soviet business culture. Even long after the dissolution of the USSR it seems that managers learned in the Soviet era see initiative as something that disrupts the existing order. Yet their impact is still very significant in corporate culture and many employees hesitate to take initiative for fear that taking positive action could lead to negative consequences. Such mistakes are widely regarded as failures of the individual making them, rather than as opportunities for growth with analysis and lessons learnt (Cooper, 2008).

The Influence of Military Service on Attitudes Toward Initiative and Risk Cultural factors of military service are an important determinant of attitude toward initiative in Russia. Russian men are usually compelled to undertake compulsory military service; military discipline and total obedience to orders are put first. It is here that initiative and thinking for oneself invariably are squashed down and any deviation from the norm is viewed to be non-behavioral. The risk may be perceived as one of the potential problems arising from the experience of military service, during which, personal initiative has been significantly disciplined (García-Gómez et al., 2023).

Many veterans return to civilian life with these ingrained attitudes, only to take them with them to the workplace. The military's conservatism fosters such a conservatism culture of risk aversion. Such limitations impede not only innovative development but also employee's freedom in decision making. Management can see innovation and experimentation as a violation of corporate order that begs the question, why not avoid taking initiative (Gonzalez & Simpson, 2021).

The Role of the Education System: Lack of Critical Thinking

The education system also has an enormous influence on the attitudes toward initiative and mistakes. Traditionally, memorizing and reproducing the information have been the main concern of the Russian schools, and critical thinking and analytical skills have never been the main roads of Russian educational thought. From an early age students are ready to simply comply to rules and to complete tasks in order to not think out of the box or to take risks, that is the habit. As such students come to see deviations from the norm as unwelcome and mistakes as failures to be averted (Ivlev et al., 2021).

When these students become employees, they will carry habits of aversion to initiative into the workplace. Most employees are conditioned to follow instructions and standards rather than take on a task and think critically; making solutions that go beyond what's already been established by the company. Instead, it stifles innovative thinking, promotes a top-down risk minimizing, initiative suppressing culture (Kremer, 2024).

High Average Age and Gerontophilia in Management

In Russian corporate culture, the respect for seniority and experience is taken very seriously: it is gerontophilia. In Russia, compared with countries that's reputed for high levels of innovative activity, the average manager's age is 55 years old. However, as some managers are increasingly adopting cautious approaches to innovation, many still maintain conservative views, seeing risky initiative as unjustified, which feeds into the traditionalistic attitude (Balykina, 2013).

Additionally, unequal number of young professionals in decision making bodies limits the level of innovation. Younger employees tend to be more open to trying new things and bringing new ideas, though their lack of access to leadership prevents their full potential. Consequently, the prevailing culture of older generation inhibits the emergence of new ideas and promotes a system which conceives of risk as a threat rather than as a chance to grow (Muratbekova-Touron et al., 2018).

State Dominance and Differences Among Economic Sectors

Evolution of attitudes towards initiative and punishment for mistakes in Russia is influenced by the dominant role of state-owned companies and corporations in its economy. The structure of state organizations is controlled at ministerial and departmental levels and require management approval for any deviations from the standards. As a result, it is natural that state corporation employees are reluctant to initiative and any novelty requires long approval. Under such conditions, mistakes are naturally punished and only serve to broaden a culture of avoidance of risk (Nurgozhayeva, 2022).

Unlike large state-owned corporations small and medium sized businesses have greater flexibility in decision making but limited access to financing and other resource. These companies also often segregate from subsidies and government contracts, which then constrains them from taking more aggressive routes. Less dependent on government regulations, but still caught in bureaucratic grasp, large private companies undergo complications in introducing innovations and develop a culture of risk minimization (Barinova et al., 2020).

Issues with Motivation and Lack of Rewards for Risk-Taking

The lack of reward systems for initiative and risk taking is one of the main limitations of innovative activity. In the Russian corporate culture the way it works, there is almost no prethought motivational systems able to support people who are willing to experiment. If they cannot see the direct connection between their efforts and possible rewards, then employee's motivation to take the initiative decreases significantly (Elenkov et al., 2022).

In Western companies' bonus systems for innovative ideas are common, and unsuccessful attempts are seen as part of the natural learning cycle. Initiative, however, in Russia is not only unrewarded, but punished. This only further weakens employee's resistance to taking risks, as well as stifles any creative energy that may

exist. To foster innovation, we have to change our approach to motivation, uncovering the outcomes of the employees' efforts (Elenkov et al., 2022).

Overcoming Barriers: Creating a Culture that Encourages Initiative

Reforms are needed to build an environment of risk and of initiative as necessary elements of growth. The first is to restructure the employee motivation system such that rewards are given for initiative. If the atmosphere for growth is to be positive, then offering bonuses and recognition to employees who make new ideas will do to help create better ideas. It supports initiative—even when the ideas don't always work—so mistakes are supported and a culture is created where risk is a part of progress (Ledeneva, 2013).

In the education system, we should pay more attention to the development of critical thinking and analytical skills among young professionals so that they are used to making independent decisions as soon as possible. Regarding this approach, it will serve young employees better to make decisions and implement innovative projects. (Ledeneva, 2013)

A valuable step could be to simplify the approval of initiatives at the level of state corporations and budget organizations. Implementation of ideas would be speeded up, a streamlined project approval system and the delegating of authority to lower management levels would prevent bureaucratic control (Puffer & McCarthy, 2011).

Access to the resources and support is key for small and mediums businesses. These companies would be subsidized and their administrative burdens eased and they would be free to concentrate on innovation. It will foster a culture where initiative, and innovation are praised, and flow into a more competitive economy (Puffer & McCarthy, 2011).

Conclusion

The major obstacle to the creation of an innovation driven economy in Russia, one of the main ones, is still the culture of a punishing initiative. The bad old bugaboos of bureaucracy, the absence of reward for adventure, ropes, insecurity and gerontophilia in leadership all reinforce conservatism and establish a climate in which initiative is seen as a career risk, not an opportunity for growth. To overcome these barriers, we need to think anew about motivation, remake management practice and design systems that reinforce and reward initiative and innovation.

These changes — if they happen — could create a space for a more, well, flexible corporate culture, where risk and mistakes are just part of how business gets done. By giving support to employees who are ready to undertake initiative, Russian companies will be more able to adjust to global market changing, which in the long run will also boost the competitiveness of the country as a whole.

References

Balykina, G. (2013). Cultural Dimensions and Modern Russian Business. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2342954

Elenkov, D. S., Manev, I. M., & Kuntz, J. C. (2022). Harnessing subcultural identity to optimize workplace rewards: Evidence from Russia. Journal of Business Research, 153, 319–328. https://doi.org/10.1016/j.jbusres.2022.08.040

Fayyaz, A., & Bartha, Z. (2025). Research and development as a driver of innovation and economic growth; case of developing economies. Journal of Social and Economic Development. https://doi.org/10.1007/s40847-025-00438-9

García-Gómez, C. D., Zavertiaeva, M., & Lopez-Iturriaga, F. J. (2023). Do CEO Characteristics Matter for Corporate Risk Taking? Evidence From Russia. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4354724

Gonzalez, J. A., & Simpson, J. (2021). The workplace integration of veterans: Applying diversity and fit perspectives. Human Resource Management Review, 31(2), 100775. https://doi.org/10.1016/j.hrmr.2020.100775

Ivlev, V. Yu., Pozdnyakov, M. V., Inozemtsev, V. A., & Chernyak, A. Z. (2021). Critical Thinking in the Structure of Educational Programs in Russian Universities. Advances in Social Science, Education and Humanities Research. 1st International Conference on Education: Current Issues and Digital Technologies (ICECIDT 2021), Moscow, Russia. https://doi.org/10.2991/assehr.k.210527.008

Klochikhin, E. A. (2012). Russia's innovation policy: Stubborn path-dependencies and new approaches. Research Policy, 41(9), 1620–1630. https://doi.org/10.1016/j.respol.2012.03.023

Kremer, M. (2024). Economics and innovation. Finance & Development, International Monetary Fund. https://www.imf.org/-/media/Files/Publications/Fandd/Article/2024/03/how-econ-must-change-kremer.ashx

Ledeneva, A. V. (2013). Can Russia Modernise?: Sistema, Power Networks and Informal Governance (1st ed.). Cambridge University Press. https://doi.org/10.1017/cbo9780511978494

Muratbekova-Touron, M., Kabalina, V., & Festing, M. (2018). The phenomenon of young talent management in Russia—A context-embedded analysis. Human Resource Management, 57(2), 437–455. https://doi.org/10.1002/hrm.21860

Puffer, S. M., & McCarthy, D. J. (2011). Two Decades of Russian Business and Management Research: An Institutional Theory Perspective. Academy of Management Perspectives, 25(2), 21–36. https://doi.org/10.5465/amp.2011.61020800

SMEs and entrepreneurship policy in Russia. (2020). In V. Barinova, S. Zemtsov, & D. Smallbone, A Research Agenda for Entrepreneurship Policy. Edward Elgar Publishing. https://doi.org/10.4337/9781786430946.00015

Soviet and Russian Research, Development and Innovation. (2008). In J. Cooper, The New Palgrave Dictionary of Economics (pp. 1–5). Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_2289-1

Terzić, L. (2017). The Role of Innovation in Fostering Competitiveness and Economic Growth: Evidence from Developing Economies. Comparative Economic Research. Central and Eastern Europe, 20(4), 65–81. https://doi.org/10.1515/cer-2017-0028

Chapter 3. The right level of taking risk

Alternative to risk/reward modeling withing Neo-Schumpeterian literature: An agent-based modeling paradigm

By Pedro Henrique Gonçalves Silva N. Lima

Abstract: Within the Neo-Schumpeterian tradition, innovation has been modeled under an equilibrium paradigm, where risk/reward relations are framed by firms according to the classical paradigm of profit maximization.
Despite the rigorous theoretical development of this approach, when the economic system is considered as a complex adaptive system, equilibrium analysis fails to fully capture the dynamics of the risk/reward dynamics within the innovation process, particularly due to unaccounted-for non-linearities.
Within this context, a question arises: Are there alternative approaches to equilibrium analysis that better capture the risk/reward relations in innovation processes?
To address this research question, this work briefly proposes a solution: agent-based modeling (ABM). Under the ABM paradigm, this paper argues for the complementarity between equilibrium analysis and agent-based modeling, suggesting that ABM is particularly valuable in contexts where non-linearities and emergent phenomena cannot be neglected.

Keywords: Agent-based Modeling, Risk and Reward, Innovation Process, Neo-Schumpeterian Economics, Complex Adaptive Systems.

School of Applied Sciences, University of Campinas. PhD student of the Postgraduate Program in Administration; E-mail: p223354@dac.unicamp.br

Introduction

Neo-Schumpeterian growth theory has been a successful field of research within economics, proposing theoretical and empirical contributions to growth theory within an innovation paradigm, following the works of Joseph Schumpeter (Schumpeter, 1934, 1942).

Within the Neo-Schumpeterian paradigm, innovation is the main endogenous force generating economic growth (Aghion et al., 2015). Such models are an advancement from the first generation of endogenous growth models (Harrod, 1939; Domar, 1946; Solow, 1956). Indeed, the main merit of Neo-Schumpeterian growth theory is the endogenization of the innovation process, treated as exogenous in previous growth models (Solow, 1956).

The endogenization of the innovation process and its protagonism is better represented within the Neo-Schumpeterian literature in the seminal work of Aghion and Howitt (1992). Within their work, the authors successfully integrate innovation as an endogenous process within a dynamic general equilibrium model (DGE). Such integration was not only mathematically elegant but provided a framework that could be used as a base for the evolution of future Neo-Schumpeterian models (Aghion et al., 2015).

Despite such successful theoretical developments, Neo-Schumpeterian literature has locked itself within an analytical paradigm that does not allow for more realistic modeling assumptions due to the proposed analytical framework used. Henrekson and Johansson (2025) argue in favor of such a lock-in and call for a higher flexibilization of this paradigm. More specifically, withing the risk/reward firm decisions in relation to innovation, such methodological limitations are also present. Importantly, in the present context, risk/reward decisions are relative to the firm, highlighting the balance between drawbacks and benefits that can be obtained within the innovation process and how firms take such possible drawbacks and benefits into consideration when rationalizing action within the innovation realm.

Within the equilibrium paradigm of Neo-Schumpeterian theory, agents mathematically maximize functions based on some restrictions. To be able to maximize the proposed objective function, firms must have a notion of the future distributions of important state variables present in their maximization function. This assumption violates the premises of limited rationality and information, making Neo-Schumpeterian agents capable of correctly identifying future distributions of state variables and bringing them to the present, having complete information and rationality to do so. Therefore, within the present paradigm, risk/reward decisions are taken somewhat effortlessly due to unlimited modeled rationality and information—premises that do not hold in real life (Arthur, 2021). Thus, within the current Neo-Schumpeterian models, risk/reward decisions are modeled as simple maximization problems, forcing unlimited rationality and information upon the modeled economic agents.

These implicit premises of unlimited information and rationality can be considered acceptable approximations only if the system does not possess significant non-linearity of interactions or phase transitions. On the other hand, innovation has been marked by emergent phenomena and path defiency, making these premises difficult to reconcile with real-world phenomena observed in innovation processes (Dosi, 2023). In addition, if the economic system can indeed be considered a complex adaptive system (CAS) (Arthur, 2021), then such equilibrium models can only be considered simple short- to medium-term approximations of the modeled phenomena, being unable to generate out-of-equilibrium dynamics, phase transitions, and path defiency—typical of innovation dynamics (Dosi, 2023). Therefore, within this paradigm

of latent methodological inadequacy in Neo-Schumpeterian literature, the present work delves into the following research question: Are there alternative approaches to equilibrium analysis that better capture the risk/reward relations in innovation processes?

To answer the proposed research question in a conceptual manner, the present piece argues, within a CAS framework, in favor of the agent-based modeling (ABM) methodology as a natural successor to DGE for modeling innovation dynamics, providing a logical theoretical foundation for its use as a better way of modeling risk/reward decisions within the economic literature

The present short piece is divided into two sections: The first addresses the theoretical justifications for the use of ABM instead of DGE and presents already existing propositions within this paradigm. The second section concludes the argument and provides further advancements within the ABM field for risk/reward modeling.

Innovation and ABM: A complex adaptative systems paradigm

Within economic literature, complex adaptive systems have recently been recognized as a promising alternative to the mainstream equilibrium paradigm (Arthur, 2021). In this context, as emphasized by Haldane and Turrell (2019), agent-based modeling (ABM) becomes particularly valuable in situations where conventional modeling approaches are inadequate for representing the complexity of the system. This methodological choice is grounded in ontological considerations, as ABM is uniquely equipped to account for two defining features of complex systems: non-linear interactions and non-ergodic behavior.

Emergent phenomena—central to complex systems—are inherently the result of interactions among system components. While such phenomena can theoretically arise from linear dynamics, the dominant view in both the natural and social sciences is that they typically stem from non-linear interactions (Anderson et al., 1988; Bak, 1996; Dosi, 2023). This insight highlights the limitations of traditional mathematical models in adequately representing real-world complexity (Arthur, 2021).

In addition, the non-ergodic nature of many systems—even those considered relatively simple (Bak, 1996)—implies that initial conditions have a lasting impact on system trajectories. This characteristic reinforces the need for modeling approaches that explicitly incorporate and track the influence of such initial states over time.

Within such a paradigm, equilibrium models are inadequate for capturing phenomena within complex adaptive systems (CAS). In the specific case of risk/reward decisions, such micro-agent decisions are embedded within the economic system, itself a CAS (Dosi, 2023). Due to this systemic nature, the present work argues for the necessity of more realistic modeling of these risk/reward decisions by agents—respecting their ontological limitations in information and rationality—and contends that within such a new framework, emergent system dynamics can produce results that differ significantly from those of the equilibrium paradigm.

An important attempt in this direction is performed by a series of works from a recognized family of ABM models in economics: the Schumpeter Meeting Keynes (K+S) family of models (Haldane & Turrell, 2019; Dosi et al., 2010, 2017, 2018, 2020).

These models allow for risk/reward decisions at the firm level that respect agents' limited rationality and information, primarily grounded in backward-looking decision mechanisms (Keynes, 1936). Specifically, regarding the risk/reward decisions of firms, within the K+S family of models—unlike in Aghion and Howitt (1992)—firms do not maximize profit functions based on a Poisson distribution of innovation prospects. Instead, they follow a two-step innovation process drawn from Nelson and

Winter (1982), where, based on past investment decisions in research and development (R&D), firms obtain a chance to innovate. If successful, the innovation may lead to increased productivity—or possibly even deleterious outcomes.

Within this process, innovation is generated, as noted, as a function of past R&D expenditures, which are themselves proportional to a firm's past revenue. Using this simple heuristic—allocating a portion of past revenue to R&D—the agent automatically adjusts its risk/reward decisions: spending more when earning more, spending less on innovation during leaner phases. In this way, firms mitigate risk when resources are scarce and increase exposure when conditions are more favorable.

This approach is ontologically simple and yet already provides significant epistemological economy compared to the modeling premises assumed in equilibrium models.

Conclusion

The present short piece has logically argued in favor of alternative modeling strategies for Neo-Schumpeterian literature, highlighting the importance of the risk/reward innovation decision under the CAS paradigm through the ABM lens. In addition, the K+S family of models was presented as an important representative of attempts to provide alternatives to the maximization paradigm. Future works addressing risk/reward decisions in firms can focus on more accurately representing such micro-agent decisions, possibly drawing from psychology literature on agent decision-making under limited information and rationality.

References

Aghion, P., Akcigit, U., & Howitt, P. (2015). The Schumpeterian growth paradigm. Annual Review of Economics, 7(1), 557–575. https://doi.org/10.1146/annurev-economics-080614-115412

Aghion, P., & Howitt, P. (1992). A model of growth through creative destruction. Econometrica, 60(2), 323–351. https://www.jstor.org/stable/2951599

Anderson, P. W., Arrow, K. J., & Pines, D. (Eds.). (1988). The economy as an evolving complex system. Addison-Wesley.

Arthur, W. B. (2021). Foundations of complexity economics. https://doi.org/10.2139/ssrn.3811440

(Note: Please add publisher or source if available for complete APA compliance.)

Bak, P. (1996). How nature works: The science of self-organized criticality. Copernicus.

Domar, E. D. (1946). Capital expansion, rate of growth, and employment. Econometrica, 14(2), 137–147. https://doi.org/10.2307/1905364

Dosi, G. (2023). The foundations of complex evolving economies: Part one: Innovation, organization, and industrial dynamics. (Publisher information missing—please complete for full APA compliance.)

Dosi, G., Fagiolo, G., & Roventini, A. (2010). Schumpeter meeting Keynes: A policy-friendly model of endogenous growth and business cycles. Journal of Economic Dynamics and Control, 34(9), 1748–1767. https://doi.org/10.1016/j.jedc.2010.06.018

Dosi, G., Pereira, M. C., Roventini, A., & Virgillito, M. E. (2017). When more flexibility yields more fragility: The microfoundations of Keynesian aggregate unemployment. Journal of Economic Dynamics and Control, 81, 162–186. https://doi.org/10.1016/j.jedc.2017.02.005

Dosi, G., Pereira, M. C., Roventini, A., & Virgillito, M. E. (2018). The effects of labour market reforms upon unemployment and income inequalities: An agent-based model. Socio-Economic Review, 16, 687–720. https://doi.org/10.1093/ser/mwx054

Dosi, G., Pereira, M. C., Roventini, A., & Virgillito, M. E. (2020). The labour-augmented K+S model: A laboratory for the analysis of institutional and policy regimes. EconomiA, 21, 160–184. https://doi.org/10.1016/j.econ.2019.03.002

Harrod, R. F. (1939). An essay in dynamic theory. The Economic Journal, 49(193), 14–33. https://doi.org/10.2307/2225181

Haldane, A. G., & Turrell, A. E. (2019). Drawing on different disciplines: Macroeconomic agent-based models. Journal of Evolutionary Economics, 29(1), 39–66. https://doi.org/10.1007/s00191-018-0557-5

Henrekson, M., & Johansson, D. (2025). Neo-Schumpeterian growth theory: Missing entrepreneurs results in incomplete policy advice. Small Business Economics. https://doi.org/10.1007/s11187-024-00994-0

Keynes, J. M. (1936). The general theory of employment, interest, and money. London: Macmillan.

Nelson, R. R., & Winter, S. G. (1982). An evolutionary theory of economic change. Cambridge, MA: Belknap Press of Harvard University Press.

Schumpeter, J. A. (1934). The theory of economic development (original work published 1911). Harvard University Press.

Schumpeter, J. A. (1942). Capitalism, socialism and democracy. Harper & Row.

Solow, R. M. (1956). A contribution to the theory of economic growth. Quarterly Journal of Economics, 70(1), 65–94. https://doi.org/10.2307/1884513

Innovation management as a risk mitigation tool

By Lindinalva Candido Machado

Abstract: Innovation brings social and economic benefits to organizations, but it also presents risks and complexity. In view of this, innovation management becomes an important instrument for risk mitigation and the best way to reap the benefits of innovation. This essay reflects on the aspects involved in decision-making about innovation, highlighting the importance of innovation management for organizational sustainability.

Keywords: Innovation, Innovation Management, Risks, Organizational Sustainability.

School of Applied Sciences, University of Campinas. PhD student of the Postgraduate Program in Administration, E-mail: l083773@dac.unicamp.br

Organizations face different challenges when deciding to innovate, such as disruption, portfolio balancing, and organizational, technological, and commercial integration. Thus, managing these challenges requires combining resources across different business and organizational processes. In view of this, innovation management in an organization is extremely important to mitigate the risks inherent to innovation.

According to DODGSON et al. (2014), innovation contributes centrally to economic performance, business competitiveness, environmental sustainability, employment levels and nature, and, ultimately, to the overall quality of life.

However, in addition to the social and economic benefits, innovation also brings risks and complexity to the organization. Thus, the benefits of the decision to innovate will be reaped by organizations that are able to manage innovation in order to make the best decisions based on the given scenario and the capabilities of their leaders.

Considering the classic Schumpeterian notion of innovation as the recombination and reconstitution of resources, organizations can carry out both incremental and radical or disruptive innovations. The risks and uncertainties associated with innovation will depend on the type of innovation developed by the organization.

Thus, innovations called incremental are those that involve markets, technologies and ways of doing things that are close to the organizations' existing activities and, because they present a lower degree of risk, are the most common forms of innovation in organizations. DODGSON et al. (2014). Radical innovations, on the other hand, involve advances in markets, technologies and ways of doing things that are very different from those supported by an organization's established resources and capabilities. And, because they involve more risks, they are rarer, but they are the ones that bring the greatest returns, especially economic ones.

In view of this, innovation management requires knowledge and skills on how to apply new ideas and combine different resources with the aim of achieving new results, new forms, new processes or new products, observing the risks inherent in the decision to innovate in order to obtain the expected returns from innovation.

In the 1980s, innovation management focused on the automotive industry, in sectors such as technology and, later, in information and communication technology (ICT) sectors. For the service sectors, innovation management was directed towards new business models. Recently, the importance of innovation management has been highlighted in the study of the transition from the Traditional Business Model to the Sustainable Business Model, in which the organization must observe the three dimensions – economic, social and environmental.

However, regardless of the sectors and technology, innovation management strategies and practices must consider the environment in which innovation is inserted, in addition to understanding the nature and result of innovation and the economic context, in order to make the best possible decisions to mitigate the risks associated with innovation and the transition of the business model.

Assuming that innovation choices present different aspects that shape the strategies and practices of decision-makers in organizations, such as historical, social, economic, cultural, legal and technological aspects, innovation management becomes an important component for dealing with challenges of different natures. Such challenges, such as disruption, portfolio balance, integration of the innovation process, management of intangibles and encouragement of creativity and fun, if well managed, can promote an environment conducive to organizations reaping all the benefits of

innovation. Otherwise, they can represent a major risk factor for the sustainability of the organization.

Innovation management considers the relationship between context, strategy and practice. In this way, organizations create structures, practices and support processes to manage innovation and the risks arising from its implementation. Successful organizations are those that are able to balance existing business resources with new ways of creating and delivering value.

Organizations tend to innovate in small improvements, known as incremental innovations, which present lower risks but are exposed to new innovative participants. Hence the importance of portfolio balancing, through which the company can diversify its activities and create new business models to ensure sustainability in the market.

But these radical, disruptive innovations are those that present high risks for the organization that has decided to innovate. In this case, innovation management becomes important to decide how aggressive the organization can be and to know to what extent it can use the resources of the existing business model to create a new business or a new product.

In this way, organizations that decide to carry out disruptive innovations - with a certain degree of management - are able to learn from their mistakes and be better prepared for a new technological scenario and context.

References

Dodgson, M., Gann, D. M., & Phillips, N. (2014). The Oxford handbook of innovation management. Oxford and New York: Oxford University Press.

Innovation and operational risk: managing the paradox

By Lia Picoli

Abstract: This chapter delves into the balance between innovation and operational risk, presenting it as a paradox where two seemingly contradictory elements must coexist. Innovation is essential for competitiveness, yet it inherently brings risk. The paradox must be managed, not solved. Three central concepts frame the discussion: paradox, ambidexterity and dynamic Capabilities. Those concepts together can be tools to deal with innovation and operational risks, managing the paradox, cultivating ambidexterity, and developing dynamic capabilities are essential; its combination supports maintaining both innovation and operational integrity.

Keywords: Innovation, Operational risk, Paradox, Ambidexterity, Dynamic capabilities

School of Applied Sciences, University of Campinas. PhD student of the Postgraduate Program in Administration, E-mail: l168012@dac.unicamp.br

This chapter seeks to explore the balance between innovation and the risks associated with operational safety, using the concepts of paradox, ambidexterity and dynamic capabilities. On the one hand, innovation drives competitiveness; on the other hand, it introduces risks that can compromise safety and quality. How much risk is worth taking? This balance point is a business decision, to be defined on a case-by-case basis, depending on the industry, the context: which side of the "rope" to pull more — a more conservative or a bolder stance. It is worth reminding that not innovating at all also represents a huge risk: the risk of obsolescence.

Let's start by exploring the word paradox. What is a paradox? It is when contradictory elements are interrelated, existing simultaneously. Each of these elements makes sense on its own, but they seem illogical when they appear together (Smith & Lewis, 2011). It would be illogical to innovate but not be willing to deal with the related risks. Or, in the opposite direction, maintain everything unchanged and wait for innovation to flourish.

Within an organization, there are several examples of paradoxes. I remember my graduation in Business Administration (20 years ago!) and the paradox was already on the agenda. One professor cited a classic example: the warehouse area wanting to optimize inventories and the sales area wanting to have the product at hand to quickly deliver a sale. Paradoxes are an inherent characteristic of organizations, structured by different areas — marketing, human resources, operations, finance — each with its often-conflicting orientations and agendas.

Thus, the paradox appears when it is not a choice: either we innovate, or we maintain operational safety. There is no such possibility of choice! It will be necessary for both to coexist. Choosing innovation without mitigating operational risks can be fatal — just as maintaining operational security without innovating can also be. It is inevitable to admit that contradictory elements must exist simultaneously to guarantee the continuity of the organization. Somehow, it will be necessary to meet competing demands, manage the paradox — and not solve it.

Effective management of these paradoxes leads to organizational sustainability and favors learning, creativity, flexibility, and resilience, both at the individual and organizational levels. At the individual level, the paradoxical routine of an employee, needing to deal with stability and change simultaneously, requires cognitive, behavioral, and emotional skills. The stability-change duality can generate tensions such as: "learning versus efficiency", "flexibility versus compliance" and "autonomy versus control". These tensions persist because the contradictory demands to preserve and transform also persist (Rosales et al., 2022).

This debate leads me to the second word that deserves to be highlighted in this billiard: ambidexterity. I'm enthusiastic about this word noun since I discovered myself ambidextrous — when I broke my right arm as a teenager. For a month, because of the plaster, I studied, did homework and even tests with my left hand, which until then I believed to be unfit. I carry this "competitive advantage" to this day, at this very moment I have an injured right wrist, using the mouse on the left side. Ambidexterity, according to the dictionary, is the ability to use both hands with dexterity. In management, we are referring to the ability to do two things that are considered opposite.

Innovation literature uses ambidexterity to describe the balance between exploitation and exploitation. Exploitation is continuous improvement, seeking efficiency and incremental improvements in existing products and services. Exploration, on the other hand, is the search to develop something new, aiming at radical innovation (Andriopoulos & Lewis, 2009). Ambidexterity in innovation can be

seen from the perspective of paradox, as these two modes have different management processes, but they should not be conflicting activities. Instead, they should be understood as contradictory and interrelated elements, which coexist (Papachroni et al., 2015). Mirroring this debate to the paradox between innovation and risk that we have discussed here, my extrapolation of the term ambidexterity would be: the ability to innovate "with one hand" while managing operational risks "with the other", at the same time!

In addition to the concepts of paradox and ambidexterity, there is another important aspect: the risk related to the speed of the innovation process, from conception to launch, as opposed to quality. Would an innovation made in a hurry be less reliable due to lack of time for feedback and improvements? The relationship between speed and quality is complex. There are time and resource constraints. Whoever launches a product, service, or process first can get ahead of competitors and reap the rewards of this advantage. The "rush", in this case, comes from the pressure of the competitive market (Guo et al., 2020). On the other hand, speed does not necessarily mean more errors or lower quality. A cliché example, but accurate, is the pit stop of motor racing. In fractions of a second, in a scenario where hundredths make the difference, and lives and a lot of money are at stake. Maintenance is done on the vehicles with extreme coordination. This shows that with well-managed resources, speed can increase focus and discipline.

Moving away from the pit stop example, in business innovation, delivering an "unfinished" innovation can be a deliberate decision. In other words, it is a situation where speed does mean possible errors and lower quality, but this is done consciously. The idea is to collect feedback and co-create with users. Innovation project management methods provide for these constant rounds of iteration. Thus, the innovative product, service, or process should not be fixed, but constantly improved according to the use (or lack of use), the movements of competitors, and market dynamics (Cooper, 2019). Similarly, at the organizational level, it is necessary to establish a dynamic equilibrium model that allows you to simultaneously meet the demands for innovation and operational safety—through continuous adaptation rather than fixed choices. The goal is to sustain innovation without compromising safety and quality standards.

This balance poses a challenge in several sectors. Take, for example, the supply chain. Companies face a scenario full of uncertainties, risks and constant changes. To respond to market dynamism and logistics crises, it is necessary to rethink the structure of the supply chain. A company can source suppliers from all over the world, which reduces dependencies but increases complexity. More options, more cultural aspects to manage, more variables. This generates additional costs, not only financial, but also time, effort, and uncertainty (Choi & Krause, 2006) Innovation, in this context, can be an ally in facing the risks of global chains. Innovations in processes and technologies strengthen the ability of companies to resist and adapt to crises. A robust and resilient supply chain protects the operation and turns into a competitive advantage. Innovative companies, therefore, not only face risks better, they turn this readiness into strength in the market (Kwak et al., 2018)

How can companies adapt and remain competitive? Here comes the third and final keyword I'd like to discuss: dynamic capabilities. In contrast to fixed capabilities, they are organizational and individual skills that adapt quickly to changes in the environment and opportunities. It's about reacting fast, learning, redesigning processes, and making decisions with agility. Dynamic capabilities are a true toolbox

updated in real time, where the available tools are constantly changing, and are being used according to each situation, in an adaptable and continuous way.

The theory of dynamic capabilities originated in the field of organizational strategy, highlighting the critical importance of entrepreneurial ability of restructuring its competencies, internal and external, for effective market responsiveness. It is the business ability to identify (sensing) signs of change in the environment (new technologies, market trends, competitor movements), in the face of this alert comes the ability to learn (seizing) to take advantage of possible opportunities (make the necessary strategic decisions and adjust routes, reallocate resources), and then consequently reconfigure its resources and operations to the new reality (transforming) (Teece et al., 2016).

Paradox, ambidexterity, and dynamic capabilities are the three key-words I chose for discussing the balance between innovation and operational safety. Combined, they portray a management style that configures innovation and operational risk coexisting.

Innovation projects, by nature, involve risk. But overly tight management of these risks can inhibit creativity—the very engine of innovation. That is why it is important to know how to manage this paradox. It is necessary to adapt risk appetite throughout the stages of the project, maintaining an environment that fosters innovation, without giving up rigor in the most critical decisions (Bowers & Khorakian, 2014)

The risk is not only in the projects, but it is also in the people. Employees, with or without a leadership role, with a greater or lesser degree of decision-making, directly influence choices and the organizational climate. Managers with a greater willingness to risks tend to foster an environment more conducive to innovation, where employees feel safe to propose ideas, even if there is a chance of failure. The attitude of leadership shapes not only the direct behavior of the team, but also the culture and courage of the group (García-Granero et al., 2015). On the other hand, managers who are unprepared can propagate fear, coercion, and lack of dialogue. In business crises, with market loss or decline, the organizational climate suffers. In these scenarios, personal risk (losing the job, bonus, prestige) weighs heavily: bad managers may prefer to protect their own interests and avoid innovation (Latham & Braun, 2009). But people are complex, and there is an entire chapter in this book about them. I bring this point only to reinforce that we should always consider this aspect (and, of course, recommend reading all chapters of this book!).

To innovate is to take risks. A miscalculated risk can sink a company; a well-taken risk can transform it. And sometimes, the biggest risk is simply not innovating. In conclusion, although contradictory and challenging, it is necessary to promote innovation and, at the same time, ensure operational safety, through an approach that manages the balance of these two things.

References

Andriopoulos, C., & Lewis, M. W. (2009). Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. Organization Science, 20(4), 696–717. https://doi.org/10.1287/orsc.1080.0406

Bowers, J., & Khorakian, A. (2014). Integrating risk management in the innovation project. European Journal of Innovation Management, 17(1), 25–40. https://doi.org/10.1108/EJIM-01-2013-0010

Choi, T. Y., & Krause, D. R. (2006). The supply base and its complexity: Implications for transaction costs, risks, responsiveness, and innovation. Journal of Operations Management, 24(5), 637–652. https://doi.org/10.1016/j.jom.2005.07.002

Cooper, R. G. (2019). The drivers of success in new-product development. Industrial Marketing Management, 76, 36–47. https://doi.org/10.1016/j.indmarman.2018.07.005

García-Granero, A., Llopis, Ó., Fernández-Mesa, A., & Alegre, J. (2015). Unraveling the link between managerial risk-taking and innovation: The mediating role of a risk-taking climate. Journal of Business Research, 68(5), 1094–1104. https://doi.org/10.1016/j.jbusres.2014.10.012

Guo, F., Bo, Q., Tong, X., & Zhang, X. (2020). A paradoxical view of speed and quality on operational outcome: An empirical investigation of innovation in high-tech small and medium-sized enterprises. International Journal of Production Economics, 229, 107780. https://doi.org/10.1016/j.ijpe.2020.107780

Kwak, D. W., Seo, Y. J., & Mason, R. (2018). Investigating the relationship between supply chain innovation, risk management capabilities and competitive advantage in global supply chains. International Journal of Operations and Production Management, 38(1), 2–21. https://doi.org/10.1108/IJOPM-06-2015-0390

Latham, S. F., & Braun, M. (2009). Managerial risk, innovation, and organizational decline. Journal of Management, 35(2), 258–281. https://doi.org/10.1177/0149206308321549

Papachroni, A., Heracleous, L., & Paroutis, S. (2015). Organizational Ambidexterity Through the Lens of Paradox Theory: Building a Novel Research Agenda. Journal of Applied Behavioral Science, 51(1), 71–93. https://doi.org/10.1177/0021886314553101

Rosales, V., Gaim, M., Berti, M., & Pina e Cunha, M. (2022). The rubber band effect: Managing the stability-change paradox in routines. Scandinavian Journal of Management, 38(2). https://doi.org/10.1016/j.scaman.2022.101194

Smith, W. K., & Lewis, M. W. (2011). Toward a theory of paradox: A dynamic equilibrium model of organizing. Academy of Management Review, 36(2), 381–403. https://doi.org/10.5465/amr.2011.59330958

Teece, D., Peteraf, M., & Leih, S. (2016). Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. California Management Review, 58(4), 13–35.

Innovation Without Improvisation: Risk as a Conscious Strategic Choice

By Daniela Baldiviezo Rosas

Abstract: Between the pressure to innovate and the responsibility to preserve what gives stability, organizations face a deeper challenge: defining what risks are possible, necessary and acceptable. This essay reflects on how risk, far from being avoided or idealized, becomes part of the reasoning that underpins coherent strategic decisions. Innovating without improvising means acting with clarity, choosing what can be tested without compromising what must endure. Rather than accelerating blindly or retreating out of fear, it is about recognizing that exposure is inevitable, but its influence depends on how it is managed. Risk, understood in context, ceases to be a threat and becomes a form of discernment: a way to protect what matters and, at the same time, open space for transformation.

Keywords: Strategic risk, Innovation process, Uncertainty, Sustainability.

School of Applied Sciences, University of Campinas. PhD student of the Postgraduate Program in Administration, E-mail: l168012@dac.unicamp.br

Every strategic decision carries a degree of uncertainty, but the difficult part comes when trying to define how much risk an organization is willing and able to take. On one side lies the pressure to innovate and avoid falling behind; on the other, the need to protect what gives stability and meaning to the company. In this constant tension between driving change and preserving what is essential, progressive organizations don't deny risk, but they don't idealize it either. They understand that innovation implies assuming a certain margin of uncertainty, and that trying to avoid risk can be as harmful as taking unnecessary risks. In reality, it's about learning to identify what type of risk is worth taking on, to what extent, and with what support, without compromising what gives meaning to the organizational project.

In such a scenario, risk stops being an exception and becomes part of day-to-day management. But as Pomaza-Ponomarenko et al. (2023) warn, when decisions are made disconnected from context and without a clear objective, risk becomes a problem, affecting not only economic outcomes but also organizational sustainability. What matters, then, is not whether to move fast or slow, but knowing why the decision to move forward is being made.

There are no fixed models that define which risks are necessary and which should be avoided. Each organization moves at its own pace, with different margins and internal cultures that influence its decision-making. Therefore, viewing risk as a tool rather than a threat is a sign of institutional maturity. Liu (2023) complements this idea by pointing out that integrating sustainability and innovation not only reduces operational risks but also improves overall performance. From this perspective, managing risk is not about applying formulas; it is about having judgment. The speed with which one moves forward matters less than the direction one chooses.

Thinking about an appropriate level of risk that an organization can afford presumes accepting that uncertainty never completely disappears. But what is possible and necessary is to give it a clear place within the innovative process. Risk should not be seen as an interference, but as an unavoidable dimension that can, if well understood, be managed intelligently. Innovation always entails a certain degree of exposure. This does not imply that every attempt at change is justifiable or that moving forward means ignoring the consequences. Rather, innovation means leaving the zone of absolute control, walking carefully and testing without jeopardizing the fundamentals.

Risk makes sense when it is connected to the organization's real objectives. It is not about fearing it or pursuing it, but understanding it. What makes a risk productive rather than destructive is not just the end result, but how it was managed from the beginning. It's not necessary to avoid all risks, but it is necessary to comprehend them. Tools such as pilot projects, small-scale trials or prototypes do not exist to avoid error, but to contain it and learn from it.

Any organization seeking to innovate must align its decisions with what it can realistically support. This involves more than just materials and money. It is also about how prepared the team is, its ability to learn from failure, and the time it takes to adapt. As Nobanee et al. (2021) emphasize, the greatest challenge is often not the risk itself, but the gap between the exposure taken on and the actual structure meant to sustain it.

In this context, managing risk takes on an ethical dimension. It is not just a question of assessing the potential benefits. Non-negotiable repercussions must also be considered: aspects such as reputation, social ties, environmental commitments, and institutional coherence. Taking risks is not always a virtue if one does not know

what is truly at stake. Strategic risk is neither the boldest nor the most profitable. It is the one that responds to a clear intention, is measured with firm criteria and respects the pillars on which the project rests. The rest that can be corrected or adapted along the way can and should be tested. But never without a clear understanding.

Each organization with its own trajectory, previous experience and specific context, develops its own filters to determine what level of risk it can handle Defining risk in a growing organization is not the same as in an established one. Organizational maturity is not measured by avoiding failures, but by the judgment with which one defines which errors can be tolerated without destroying what has been built.

Achieving that maturity requires openness to adjustment. Decisions must be reviewed, criteria refined, and non-negotiable principles kept visible. In this light, Nobanee et al. (2021) point out that when risk is incorporated from strategic design and not as an improvised reaction, sustainability and resilience cease to be defensive responses and become active strengths.

But not all organizations are in the same position. A newly launched startup and an established company do not share the same margin for error. The important thing is that each be aware of what it can take on, what it shouldn't lose, and the real margin of error it can manage without compromising its legitimacy or its values. Acting meaningfully is more important than acting quickly. Because if failure is part of a conscious process, then it is learned. But if the risk is taken without a deep understanding, what is revealed is not boldness, but lack of preparation.

Sustainability In an environment dominated by haste, shifting markets and customers expecting immediate answers, speed has often become synonymous with efficiency. Companies are expected to launch products quickly, scale without delay, and respond with agility. Going faster doesn't guarantee greater progress. In fact, this same urgency often masks improvised and thoughtless decisions, turning what seemed like an innovative solution into nothing more than a superficial patch.

Conscious innovation doesn't necessarily require going slowly, but it does require clarity about what is being built. Some decisions demand rapid action, but others need deliberate pauses, deeper analysis, and time to mature. Knowing when to speed up and when to wait is one of the most complex skills in contemporary management and it can be difficult to distinguish between the two. Because when the pace exceeds reflection, the risks do not disappear: they are simply camouflaged until it is too late.

What enables organizations to sustain themselves over time is not their ability to react to everything, but their ability to decide when to act, why and from where. Discovering this intrinsic rhythm, one that is neither driven by fear nor held back by insecurity, is perhaps one of today's most profound strategic challenges. It is not about avoiding risk, but rather consciously choosing the perspective from which to approach it.

Treating risk and sustainability as opposing forces is an oversimplification that impoverishes strategic management. In practice, they complement each other. Taking risk is part of the innovative process, but doing so without taking care of what provides long-term stability can strip any progress of its fundamental meaning. Organizations that manage to evolve without breaking their fundamental principles do not eliminate risk, they interpret it. They see it 6262as one more piece of information that helps them make decisions, rather than as an alarm signal that paralyzes. Lopes et al. (2017) suggest that when innovation, knowledge, and sustainability interact within a single strategic framework, institutions gain adaptability without losing their underlying coherence.

The real problem is not making mistakes, but rather the risk assumed without awareness. Some decisions are reversible; others affect sensitive areas such as external legitimacy or internal trust. And this is not always easily rebuilt. Learning to use risk as a tool is one of the most important challenges of contemporary management. In fact, managing it with maturity requires a willingness to listen, adapt, and sustain decisions that respond to more than just numbers. In the end, taking a risk is not an isolated action, but a choice that reflects with what purpose, how carefully and how you decide to move forward.

Throughout this text, it has been argued that innovating with purpose is not about moving forward recklessly or being blocked by fear of making a mistake. Rather, it requires a reflective perspective that is able to distinguish between what can be exposed and what must be protected. It's not about following rules, but rather developing a refined discernment, one that is sustained even when decisions are made under. Risk ceases to be an obstacle only when it is incorporated as an active part of the innovative process. It ceases to be an abstract threat and becomes a guiding tool, as long as it remains in tune with the values the organization has decided not to compromise. When there is coherence between what is being sought, what is being risked and what is sought to be preserved, risk ceases to be uncomfortable and begins to make sense.

Innovating with coherence requires accepting that any meaningful transformation implies exposure, but it also requires knowing what to protect. This balance, more than a technical fact, is an expression of institutional maturity. Deciding how far it is worthwhile to innovate is not an exact calculation. It is a practice that combines intention, ethics, and lucidity. Ultimately, it is a way to preserve what matters while making space for what’s possible.

References

Liu, L. (2023). Green innovation, firm performance, and risk mitigation: Evidence from the USA. Environment, Development and Sustainability, 26, 24009–24030. https://doi.org/10.1007/s10668-023-03632-z

Lopes, C. M., Scavarda, A., Hofmeister, L. F., Tavares, A. M., & Roehe, G. L. (2017). An analysis of the interplay between organizational sustainability, knowledge management, and open innovation. Journal of Cleaner Production, 142, 476–488. https://doi.org/10.1016/j.jclepro.2016.10.083

Nobanee, H., Al Hamadi, F. Y., Abdulaziz, F. A., Abukarsh, L. S., Alqahtani, A. F., AlSubaey, S. K., Alqahtani, S. M., & Almansoori, H. A. (2021). A bibliometric analysis of sustainability and risk management. Sustainability, 13(6), 3277. https://doi.org/10.3390/su13063277

Pomaza-Ponomarenko, A., Kryvova, S., Hordieiev, A., Hanzyuk, A., & Halunko, O. (2023). Innovative risk management: Identification, assessment and management of risks in the context of innovative project management. Economic Affairs, 68(4), 2263–2275. https://doi.org/10.46852/0424-2513.4.2023.34

Sustainable Manufacturing: Drivers for Innovation and Risks in The Right Measure

By Marcos Antonio Guerra

Abstract: Manufacturing companies are becoming aware that the transition to sustainable business should already be a reality for most of them. Even if these are actions that do not bring about a break with conventional models, but that somehow, timidly, replace some process equipment, update their procedures and standards and include social aspects in their strategic planning. This is already a start, because many of them still maintain their main production equipment, products and raw materials completely associated with the business models of the last century. In view of this, some dilemmas arise, especially for shareholders, since the transition will not occur without investments. But investments would not be a big problem if they were not linked to risks and uncertainties. It is up to managers to present convincing proposals for continuous innovation towards sustainability, considering that the potential risks and uncertainties assumed will always be smaller than the potential rewards. This essay analyzes some drivers that can help managers to better reflect on the extent to which their manufacturing companies can support sustainability innovations.

Keywords: Sustainable Manufacturing, Investments, Risks, Uncertainties.

School of Applied Sciences, University of Campinas. PhD student of the Postgraduate Program in Administration, E-mail: m243492@dac.unicamp.br

Introduction

The reward of knowing that the decision was correct makes managers increasingly confident, especially when, in advance, the balance between potential rewards outweighed the potential consequences, and the risk taken was worth it. However, this balance is not so simple to achieve, since in sustainable manufacturing, managers have to deal with challenges such as resource and energy consumption, waste generation and emissions, among others, which depend on industrial activity. Currently, with concerns about these increasingly evident and urgent challenges, manufacturing companies are beginning to gradually integrate sustainability into their main business strategies. It is worth noting that pressure for increasingly stringent regulations on environmental and social issues, combined with growing consumer awareness, are signs that the way business is conducted in all sectors must change. What is observed is that manufacturers are becoming increasingly aware of sustainability, whether due to pressure from regulatory bodies or knowledge of models of companies that publicize their projects in the mass media. And so, increasingly aware of their role, manufacturers are incorporating environmental and social issues into their business plans. And so, innovation must be an attribute to be considered in the organization's strategic planning. Although entrepreneurship must be encouraged among employees, the company, to a greater or lesser extent, must make the right investments to support innovations in sustainability.

Risks and uncertainties

Risks can be identified in some way and, in some cases, their probability can even be calculated, and it is even possible to insure some risks through hedging. Uncertainties, on the other hand, are related to many possibilities; probabilities cannot be estimated and it is difficult to obtain insurance coverage for them. Uncertainties increase whenever there is a lack of knowledge related to the innovative project. For managers, although decision-making is one of the most important tasks in their daily lives, it is not always treated with the rigor it deserves. When it comes to investments, it is expected that there will be actions to mobilize financial resources, personnel, and structures, with the aim of realizing the planned opportunities. And, to do so, extra care must be taken. This is because these actions involve risks and uncertainties, which can impact the organization's results. In addition to financial decisions, risks can also be related to strategic, compliance, governance, and operational decisions. In this sense, for decision-making to have a greater chance of success, it is necessary to consider the levels of uncertainty, the complexity of the problem, the multiple objectives of the stakeholders in its achievement and the existence of different ways of achieving the objective that the decision aims to meet. The manager can broaden his field of vision by using as much information and alternatives as possible that can be used in the context analyzed. The decision must be made in such a way as to constitute a process in which the investment is evaluated with the aim of generating the best result.

Innovation in Sustainability

According to the UN, “innovations in sustainability are characterized as innovations that improve sustainability performance”. Considering that it only makes sense for a manufacturing company to be sustainable if ecological, economic and social criteria are treated equally. Although many managers still basically aim for economic results from investments in sustainability, it is noted that this vision, mainly of multinational organizations, is gradually changing, realizing that sustainability can be an opportunity for the company. In addition, it can increase its competitiveness in

an increasingly competitive market. The manufacturing sector is the one that consumes the most natural resources, combined with several other sustainability problems. Implementing sustainability is a challenge for many companies, since sustainability presents itself in a multivariate way and there is still not enough knowledge about the types of environmental and social innovations that cover the whole. And, many managers, initially when faced with a project, argue that not all projects focused on sustainable innovations have a justifiable commercial value. Furthermore, the answers to how and under what circumstances sustainability is profitable are not fully understood. Knowledge of the benefits of innovation in sustainability is not widely known or discussed among the various manufacturing sectors and, therefore, there is often no consensus among managers on which actions should be implemented as a priority. Given these findings, it is important to create opportunities for all professionals involved to acquire deeper knowledge about the possibilities of innovation in sustainability in the sectors under their responsibility, taking into account the benefits in value creation, cost reduction and risk reduction.

The theory of stakeholders

This theory states that investments should not be decided solely from the point of view of shareholders, but that all stakeholders should participate in their construction. From a broader point of view, many entrepreneurial opportunities may arise. Pressure from stakeholders such as suppliers, customers and regulatory companies can influence organizations in the transition to sustainability. The justification is that failing to meet the requirements of stakeholders, mainly governments, customers, suppliers and the media, can harm the company's credibility in addition to economic losses. On the other hand, meeting the demands of stakeholders can increase visibility and reliability, customer satisfaction, increase market share and, consequently, result in economic growth. The implementation or even implementation of innovations in sustainability requires financial investments and, in this regard, the stakeholder theory can argue that the return, even in the medium and long term, will be consistent and lasting, and that there will gradually be an increase in revenues and margins to offset the costs associated with innovations. Consequently, sustainable innovations adopted continuously in strategic planning will have a positive impact on companies' performance over time, seen through greater competitiveness, higher market value and profitability.

Drivers for decision-making with the right amount of risk

There is no model that always guarantees success in decision-making when it comes to sustainable innovations. After all, each manufacturing company has its own particularities, such as culture, values, beliefs, political and financial limitations, and so on. However, some insights selected and summarized below can serve as a reflection on the extent to which its implementation may be viable.

• Open innovation

Considering that knowledge flows beyond the traditional boundaries of a company that adopts open innovation, mutual collaboration with external entities acts as a driver for innovation. This is because an environment where information, knowledge, tools and the like are exchanged enhances the operational processes of all those involved. In addition, the costs involved can be reduced when it comes to developing new products or technologies. From this perspective, it is easy to

understand that the risks inherent to innovation are mitigated and shared across all links in the production chain.

• Focus on stakeholders

Involving stakeholders in research on innovation can direct effective actions in decision-making. The exchange of information between the organization and the main stakeholders, in addition to mitigating risks and uncertainties, will be important for everyone's engagement in the same project.

• Deeper understanding of processes and investments

Many managers invariably use the terms “bet” and “investment” without much distinction. And this can lead to mistaken decisions. In the highly competitive manufacturing sector, managers must think of innovative and differentiated solutions to be competitive. These solutions are not always presented in a clear and objective manner, with predictable returns and with the investment being amortized in the calculated time. Therefore, managers must have in-depth knowledge of the company's processes, products and market trends. In addition, they must be aware of the types of investments and consider the probabilities. They must be willing to analyze in greater depth what will be better than the competition. Consider some innovative aspects such as technology, sustainability, talent attraction and retention, reassessment of the supply chain, the transition to the factory of the future, among others. In addition to innovative solutions, the financial aspect of both the investment and the return must be widely evaluated and discussed. Investment analysis should be considered as an attitude of patience and endurance.

• Risk and uncertainty management in sustainable projects

Risk and uncertainty management significantly increases the chances of a project being successfully completed. To achieve this, the organization must have a team dedicated to sustainable projects and be aligned with the manufacturing company's strategic definitions. The analysis must be a process that must include the following steps to identify project risks: (i) risk identification, (ii) qualitative and quantitative risk analysis, (iii) response planning, (iv) response implementation, and (v) risk monitoring. Some of these processes may occur simultaneously, but it is important that they are analyzed separately because they use different tools and techniques.

Conclusion

Implementing innovative projects in the manufacturing industry and taking the right amount of risk is not an easy task for managers, because any change is accompanied by risks and uncertainties. While stakeholders support the changes and shape the company's strategies, shareholders and investors demand results. It is clear that both parties must be respected and somehow met. The drivers could act as important changes to ensure that decision-making on sustainability investments is increasingly dynamic and with the right amount of risk.

Defining the Right Level of Risk in Organizational Innovation: Factors, Criteria, and Strategic Balance

By Alena Bernyukevich

Abstract: This essay explores the complex issue of determining the appropriate level of risk when implementing innovations within organizations. While innovation is widely recognized as a cornerstone of competitiveness, growth, and sustainability, excessive or poorly managed risk can lead to significant challenges. The discussion highlights key factors influencing acceptable risk levels, including alignment with corporate goals, the organization's ability to cope with consequences, prior experience with innovation, organizational structure and culture, risk management models, personal biases of employees, and external environmental influences. By synthesizing these dimensions, the essay proposes a set of guiding questions that can serve as practical criteria for evaluating whether a risk should be considered acceptable. The analysis underscores that the "right level of risk" is not universal but context-dependent, requiring balance, rational assessment, and collective decision-making to ensure the sustainable development of a company's innovative potential.

Keywords: Innovation management; Organizational culture; Risk management; Corporate governance; Sustainable growth.

Institute for Statistical Studies and Economics of Knowledge, HSE University. Master's student of the Postgraduate Program; E-mail address: aabernyukevich@edu.hse.ru

It is hard to imagine a modern successful company that does not aim to implement innovations in the framework of its activities. Innovations play a vital role in the development of a company, help it adapt to the changing reality, stay competitive and visible on the market, ensure significant employee involvement in the development of the company, and support sustainable functioning and scaling. Innovations are certainly one of the pillars of a company's financial success since new solutions open up new sources of revenue, attract sponsors and good employees.

At the same time, overestimating one's strengths for implementing innovations can lead to serious consequences, to the appearance of such risks that an organization may not be able to deal with. Therefore, the following question arises: What is the right level of taking risk?

In popular literature, risk management is often called as an "art" and it makes sense since the entire process of identifying, analyzing, assessing, and monitoring risks is extremely comprehensive and at the same time very creative. In general, the assessment of the rationality of the risk taken seems to be quite judgmental – what is supported in one company may be unacceptable in another. In this regard, developing a universal concept of the right level of taking risk sounds very brave. Guided by the concerns mentioned above, this essay will attempt to identify the factors that can influence the determination of the acceptable level of risk.

At the first stage, it is important to define the theoretical apparatus, what is meant by the main words that are used in this essay – innovation and risk. The term "innovation" is used in one of its broadest context as a new characteristic or a new product, process, service, etc. In other words, any qualitatively new difference that the company considers as innovation. As for risk, it is perceived as any possible undesirable event after implementing an innovation, which can lead to undesirable consequences.

As was noted, the right level of risk cannot be universal across the entire diversity of organizations. The difference in risk tolerance has many reasons associated with both objective criteria and specific characteristics – from the organizational structure of the company to personal biases of employees. Referring to the often-heard phrase "it depends", we will explore factors that can influence the right level of risk-taking for implementing innovations in an organization.

In this essay, the following factors are analyzed:

- Relation to the goals and strategy of the company;
- Ability to cope with the consequences;
- The company's innovative experience: the effect of successful and unsuccessful cases;
- The organizational structure and corporate structure of the company;
- The model of company's risk management;
- Personal biases of employees;
- External factors.

The starting point of taking any decision, including the one regarding the introduction of innovation, is to answer the question if it fits the company's goals. For example, if the risk is serious, but the innovation can lead the company to achieve one of strategic or key goals, it may be a sufficient ground to take this risk. In this conditions, the high risk level is balanced with opportunities and the grow the company gets in case of success.

If the desired result is not achieved and the risk becomes a real issue, the question of the ability to deal with the problem arises. As a rule, it is primarily

associated with financial losses, but is not limited to them: we can lose employees or the trust of partners, cause the dissatisfaction of clients or simply fail to handle the flow of new tasks due to limited resources. Does the company have tools to mitigate negative consequences? Some decisions can end in a crisis, it is critical to consider this when assessing the level of a particular risk.

The experience of a company in innovation activities and risk management is also important, as is the nature of this experience – was it positive, negative or neutral, whether the company has coped with failures and major losses in the past. A company with significant experience in this area will certainly feel more confident and be able consciously take serious risks. The previously acquired valuable knowledge will be a good support for risky decisions. At the same time, experience may help to build a more reliable strategy based on an already established understanding of the right level of risk for this particular company.

The organizational structure and corporate culture have a direct impact on the level of risk that is considered acceptable in the company. The first point here is the decision-making level. Employees are usually limited in their decision-making to operational activities, while all strategically important decisions, including those regarding innovations that may affect the entire company, its profit or market position, are the prerogative of top-management. The managers bear the financial responsibility; have access to the necessary resources and access to the strategic vision of the situation. On the other hand, initiatives can come from employees. It means that how productive, innovative and creative they are as well as the level of risk they are ready to offer to management largely aligns with the relevant regulations in the company and its corporate culture.

In this regard, it is necessary to maintain balance between restraint and initiative. Thus, even if only the management is responsible for risky decisions in a company, its development is related to the freedom of proposing ideas its employees have. In my opinion, companies need to encourage people to take reasonable risks and foster an environment in which ideas can be created and implemented at different levels. This will help to cultivate innovative thinking and productive creative environment in the team.

The next factor stems from the previous one, but has its own characteristics in different companies, sometimes even at a basic level. There are many risk management concepts that help identify, evaluate, compare and manage risk. In this essay, we will not discuss how each of them affects the formation of an understanding of the right level of risk due to the limitations of the essay format, but we will note that, firstly, even the perception of such a concept as “risk” can be fundamentally different. What does a company consider as a risk: a hypothetical possibility of undesirable consequences, a real threat or only something that can lead to real financial losses? The answer to this question is critical to finding the right level of risk for a company.

Second, risk-management in the particular company may have its own special features. It can be more old-fashioned with the focus on losses or more modern and strategic-oriented, aimed at supporting the development of the organization and considered as a component of the decision-making system along with other key areas. In companies with the second approach, risk management becomes a daily practice. The risk management strategy is precisely the tool in which you can incorporate the criteria for determine the acceptability of risk; include all the elements that were previously outlined in the essay.

People responsible for risk management in a company can develop an appropriate risk mitigation mechanism, algorithms for offering alternatives and

substitutions, and formulate critical indicators for filtering out initiatives that will entail risks that the company will not be able to cope with. From this prospective, the concept of the right level of taking risk in a company may be laid at the stage of building the risk management system.

The last two factors, which can also be considered as important in this context, are not always within the control of an organization. First, it is the human factor or, in other word, the personal biases of employees. Each of us has a different attitude to threads, level of responsibility and solidarity. A person can make an emotional decision without conducting a sufficient risk analysis or, on the contrary, succumb to groupthink and neglect his own concerns.

Moreover, each employee has his personal experience which, unlike the company's experience, is pretty limited. At the same time, this experience influences every action and perception of everything going on around, instilling selective attention to a person, i.e. when a person focuses only on those opportunities and risks that harmonize with his experience and correspond to his personal beliefs. Therefore, if a decision on the acceptability of a particular risk is made by one person in the company, this is a dangerous strategy, even if the only decision-maker is the most experienced and intelligent person in the industry. Although in an ideal world, it will be very easy to determine the right level of risk using such a simplified scheme – just ask your manager.

Another factor, even less controllable (or not controllable at all), is the risks accruing in the external environment. External risks are alarming because they arise due to certain processes in the external environment, including political, economic, and social processes, and do not depend on the essence or scope of the company's activities. Although external risks cannot be influenced, it is possible to develop a relevant strategy for responding to them, as well as not to take actions that are contrary to the difficult external environment.

Based on the factors discussed, we can formulate the main questions that need to be answered before deciding on the right level of risk for the company. The answers to these questions can serve as decision-taking criteria and form a kind of formula for calculating "acceptable risk". Therefore, I propose the following questions:

- Will taking a high-risk decision contribute to achieving strategically important goals for the company?
- Will the company be able to cope with the consequences of a risk that will turn into a real problem?
- Does the company have experience and relevant skills in working with projects that include risks of such a scale?
- Do the organizational structure and corporate culture of the organization allow working on projects with such a level of risk? Is this activity welcomed and encouraged?
- Does the risk go beyond the permissible limits placed by the company's risk management system? (And if it does, what is the possible algorithm for working with such an initiative)
- Is the high risk a projection of one specific person? Have the appropriate communications been conducted and the opinions of all involved experts taken into account?
- Does the initiative conflict with the external environment, thereby provoking the emergence of external risks that cannot be controlled and very difficult to adapt to?

In conclusion, it is important to note once again that the right level of taking risk cannot be universal, since this is a rather comprehensive and multi-component concept. The set of the proposed criteria comes down to finding rational approaches and maintaining balance, taking into account a whole range of factors and teamwork for the benefit of the successful development of the company's innovative potential.

Chapter 4. Balancing risk and safety

Balancing Risk and Safety: A Strategy for Responsible Innovation

by Renato Aikawa

Abstract: Balancing innovation and operational safety present an organizational challenge, as companies must innovate to remain competitive while ensuring the safety and compliance of their operations. Within this context of organizational ambidexterity, the role of organizational culture and the adaptation of traditional frameworks to operate in uncertain and innovative environments stand out. In the Brazilian oil and gas sector, companies face regulatory requirements from public agencies aimed at ensuring operational safety, while also navigating the cultural influence of the Brazilian “jeitinho,” which can either foster innovation or compromise safety. A history of emblematic industrial accidents in the national oil and gas industry reinforces the need for a risk management approach focused on operational safety, encouraging innovation through controlled risk-taking.

Keywords: Balancing, innovation, operational safety, jeitinho, Brazilian, oil and gas sector.

School of Applied Sciences, University of Campinas. PhD student of the Postgraduate Program in Administration; E-mail: r231341@dac.unicamp.br

Presently, innovation policy (IP) draw influence from various territorial innovation models, among which the regional innovation system approach stands out as a prominent example (Pinto, 2023). IP is a somewhat recent topic in literature (Faderberg, 2016). It emerges as a field of politics with increasing attention on innovation as an essential cause of economic accomplishment and more recently as a means to tackle societal and environmental challenges. However, few works have been comprehensive assessments of the IP literature (Edler & Boon, 2018; Edquist, 2019; Fagerberg, 2017; López-Rubio et al., 2021), and no holistic systematic literature review has been conducted. Following Edquist (2019), the *holistic approach of IP is defined as a policy that integrates all public actions that influence or may impact innovation processes.* Major literature reviews that mentioned IP have focused on specific streams and contexts of research, such as global problems with science, technology, and innovation policies (Manyuchi, 2018; Ozkaya et al., 2021); policy mixes (Kanger et al., 2020; Scordato et al., 2018); health policy innovations (Grundy et al., 2009); and environmental policy integration (Weber & Driessen, 2010), among others.

Balancing innovation and operational safety constitute a fundamental paradox for organizations that cultivate a culture of risk-taking. While innovation is essential for sustaining competitive advantage, it must be pursued without compromising the integrity and regulatory compliance of operational systems. This tension manifests as a dichotomy: safeguarding operational safety while simultaneously striving for continuous improvement and enhanced efficiency in both processes and business models. This dynamic gives rise to the paradox of Organizational Ambidexterity, defined as an organization's capacity to concurrently engage in exploration and exploitation of existing resources by allocating and recombining active resources across exploration and exploitation units (Jansen, Tempelaar, Bosch, & Volberda, 2009). The paradox becomes particularly salient in high-risk operational environments, where the imperative to innovate necessitates the creation of secure spaces for experimentation without undermining facility integrity.

Organizational culture serves as the foundational substrate upon which strategic initiatives are conceived and executed. It encompasses artifacts, shared values, and underlying assumptions, and can either facilitate or inhibit risk-taking behaviors among employees. Organizations that actively promote creativity and innovation tend to institutionalize norms that reward effective decision-making and acknowledge the constructive efforts of those who fail in the pursuit of novel solutions. Such environments reframe risk as an opportunity for learning. In cultures characterized by open and transparent communication, employees are more likely to contribute ideas without fear of reprisal. A culture that embraces risk-taking is contingent upon leadership that visibly endorses and exemplifies this orientation.

Fostering a culture of risk-taking enhances psychological safety, empowering employees to propose innovative solutions without apprehension of punitive consequences. This, in turn, cultivates a climate conducive to learning, professional development, and engagement. Nevertheless, even within risk-tolerant cultures, the scope for innovation may be constrained by the inherent nature of specific processes. Activities that entail operational risks necessitate rigorous analysis due to their potential implications for physical safety. A robust risk management framework may incorporate tools such as SWOT analysis to identify external threats and opportunities alongside internal strengths and weaknesses. Complementary instruments include financial impact scales, which quantify the economic ramifications of risks, and standardized manuals and policies that facilitate continuous risk monitoring.

In the Brazilian oil and gas sector, structured risk analysis methodologies such as the Hazard and Operability Study (HAZOP) are employed to identify potential deviations in operational processes, with a primary focus on facility safety. This technique involves multidisciplinary teams analyzing process diagrams using guide words to detect anomalies in critical parameters such as pressure, temperature, flow, and composition. Each deviation is systematically evaluated in terms of causality and potential consequences, culminating in recommendations for risk mitigation or operational enhancement.

For quantitative assessments, organizations utilize Preliminary Hazard Analysis (PHA), which estimates the frequency and severity of identified risks, accounting for impacts on human health, environmental sustainability, asset integrity, and corporate reputation. Typically applied during the early stages of project planning, PHA aims to anticipate risk scenarios and formulate preventive and mitigative strategies. It disaggregates operational planning into discrete steps, evaluated through criteria such as frequency, severity, and exposure, thereby enabling risk classification and prioritization of corrective measures. Beyond its technical utility, PHA functions as both a regulatory compliance mechanism and a cultural reinforcement tool.

To achieve equilibrium between innovation and safety, it is imperative to differentiate among risk categories. Operational risks, particularly those related to occupational safety and regulatory adherence, demand stringent controls due to their direct implications for human well-being. Conversely, strategic and managerial risks permit a more adaptive, learning-oriented approach. Risk-taking must be governed by clearly articulated evaluation criteria and subject to ongoing monitoring. Skinner's reinforcement theory, encompassing both positive (reward) and negative (punishment) stimuli, can be strategically applied to modulate risk-related behaviors within organizational settings.

The challenge of balancing innovation and risk is particularly pronounced for firms pursuing sustainable growth in volatile environments. Traditional management frameworks, often designed for stable and predictable contexts, must be reinterpreted to remain effective under dynamic conditions. These frameworks offer conceptual scaffolding for the organization and execution of processes, encompassing principles, guidelines, components, and best practices. A pertinent example is the Committee of Sponsoring Organizations of the Treadway Commission's Enterprise Risk Management (COSO-ERM) framework, which facilitates the alignment of risk appetite with strategic growth objectives (Callahan & Soileau, 2017). Although originally conceived for static environments, COSO-ERM can be adapted through agile methodologies, replacing annual reviews with iterative "risk sprints" of one to two weeks. This shift emphasizes resilience through failure absorption, iterative learning, and adaptive response rather than rigid control (Lan, Kannan, Xu, & Balasubramaniam).

In Brazil, the oil and gas industry is regulated by the National Agency of Petroleum, Natural Gas and Biofuels (ANP), which promulgates resolutions to enforce operational safety standards in exploration and production activities. The agency conducts routine inspections and establishes comprehensive safety protocols for industry participants.

Within this regulatory framework, companies are encouraged to engage in calculated and responsible risk-taking, aiming to harmonize innovation with operational safety. Their organizational cultures adopt a proactive stance toward risk, fostering innovation within well-defined boundaries. Given the hazardous nature of their operations, particularly the handling of flammable and toxic substances, operational

safety is institutionalized as a core value. This commitment is reflected in corporate safety programs that educate personnel on the proper use of personal protective equipment, risk analysis methodologies, and emergency response protocols. These initiatives also promote a cohesive safety culture across all stages of production. The Industrial Automation Master Plan (Pdai) exemplifies this integration, enhancing safety and efficiency through automation that spans field, control, and supervisory layers.

To cultivate a risk-embracing environment, these organizations implement enterprise risk management policies that delineate clear procedures for identifying opportunities and preempting threats. These policies standardize the processes of risk identification, analysis, evaluation, and mitigation, embedding risk management into the organizational ethos. Continuous investment in workforce training, both for employees and contractors, is a standard practice, complemented by inclusive and collaborative approaches to policy formulation. Furthermore, companies adopt collaborative governance models that integrate safety into the organizational culture, thereby fostering awareness and continuous learning. Technological advancements such as real-time process automation and cloud-based data migration further enhance scalability, remote accessibility, and risk oversight.

Culturally, Brazilians are renowned for their inventive and unconventional problem-solving approaches, colloquially referred to as “jeitinho.” While this cultural trait can confer a competitive edge in dynamic environments, it also carries the risk of circumventing established protocols to expedite outcomes or reduce costs, often without adequate risk assessment. When exercised within ethical and technical boundaries, the “jeitinho” can serve as a catalyst for innovation; however, it may also compromise operational safety.

Historical industrial accidents in Brazil’s oil and gas sector—such as the 1967 Gasômetro explosion in Santos, the 1993 fire at the Paulínia Refinery, and the 2015 Ultracargo terminal explosion, underscore the grave consequences of improvisation, negligence, and regulatory noncompliance. These incidents highlight the indispensable role of robust safety protocols and conscientious risk governance.

Ultimately, the endeavor to balance innovation with operational safety remains a persistent challenge for organizations committed to cultivating a culture of innovation and calculated risk-taking. To sustain competitiveness, firms must innovate while preserving the structural integrity of their operations. This necessitates a nuanced approach to risk management: operational risks warrant stringent oversight, whereas strategic and managerial risks may be navigated with greater flexibility, always tempered by prudence, as ill-considered decisions can jeopardize both corporate reputation and financial stability.

References

Callahan, C., & Soileau, J. (2017). Does Enterprise risk management enhance operating performance? Advances in Accounting, pp. 122-139. doi:http://dx.doi.org/10.1016/j.adiac.2017.01.001

Jansen, J., Tempelaar, M., Bosch, F., & Volberda, H. (2009). Structural Differentiation and Ambidexterity: The Mediating Role of Integration Mechanisms. Organization Science, pp. 797-811. doi:10.1287/orsc.1080.0415

Lan, C., Kannan, M., Xu, P., & Balasubramaniam, R. (s.d.). A framework for adapting agile development methodologies. European Journal of Information Systems, pp. 332-343. doi:10.1057/ejis.2009.26

Innovation and risk management: how to build competitive advantage while maintaining organizational sustainability

By Michael Anderson Rodrigues Soares

Abstract: This chapter addresses the strategic relationship between innovation, risk management, and fundraising in traditional organizations. Based on three empirical accounts drawn from the author's professional experience, it discusses how strategic risk management and the ability to attract external financial resources are fundamental to promoting and sustaining innovative initiatives. The findings highlight the importance of balancing innovation and operational safety, emphasizing the need for an organizational culture open to continuous learning and structured processes to ensure sustainable organizational growth

Keywords: Innovation Management, Risk Management, Organizational Sustainability, Strategic Funding.

School of Applied Sciences, University of Campinas (UNICAMP). PhD student of the Postgraduate Program in Administration; E-mail: m295835@dac.unicamp.br

Innovation is a key factor for competitive advantage and for the economic and sustainable development of organizations (Schumpeter, 1957), especially in today's context of profound social and technological transformations. To innovate, it is necessary to take risks—something that often generates resistance within certain organizations, particularly those considered traditional, where institutional culture is strongly oriented toward stability, fostering aversion to risk and uncertainty.

Based on this premise, an important point for organizations seeking to innovate is to determine the appropriate level of risk they are willing to assume alongside the implementation of innovative processes, so that their operational and financial sustainability is not compromised.

The literature recognizes that innovation cannot be successfully applied without involving a certain degree of risk. It is up to organizations to manage these processes with organizational skill, transforming this risk relationship into sustainable growth (Tidd & Bessant, 2015).

Organizations that innovate must elevate their organizational capacity, properly measure costs, identify degrees of uncertainty, and work with projections of potential benefits in the short, medium, and long term. This balance is associated with the effective implementation of innovation management processes alongside sound risk management. Equally important is the establishment of clear indicators and metrics that enable continuous monitoring of processes until innovation is, in fact, achieved (Teece et al., 1997).

Throughout my experience of over ten years in managing technological innovation projects, I have observed that companies capable of executing sound risk management while pursuing innovation tend to be more successful in securing external funding. This occurs because investors and public funding agencies are more inclined to invest in organizations that demonstrate best practices in risk governance. An organization's ability to raise venture capital for innovation initiatives is directly proportional to the maturity of its risk management systems, allowing it to take calculated risks without jeopardizing its own capital.

Drawing further from the literature, an equally critical dimension arises: balancing risk and safety. In this regard, the specialized literature emphasizes that balancing innovation and operational safety does not mean eliminating risks entirely, but rather ensuring that they are kept within acceptable and manageable levels (Freeman, 1974).

These approaches show that for an organization to become viable for innovation, it must not entirely compromise its operational and financial integrity. Moreover, the combination of effective risk management and a robust capacity to attract funding gives organizational leadership more confidence to approve innovation project proposals.

To illustrate these dynamics with practical examples from my career, I present three real-world cases that help establish a clear correlation with the themes explored in this chapter.

From this empirical and grounded perspective, it becomes evident that strategic innovation management is closely linked to the organization's capacity to manage risks effectively—an ability that also strengthens its position when seeking investment resources.

This chapter explores these dynamics by arguing that to achieve an appropriate balance between innovation and operational safety, organizations must develop strong competencies in strategic risk management, supported by effective mechanisms for accessing external funding. The objective is to provide key insights for a deeper

understanding of this phenomenon, contributing to both theoretical and practical advances in the fields of strategic innovation management and organizational risk.

To protect the anonymity of the organizations involved and avoid any potential negative exposure, I use fictitious names for each organization, indicating only their sector and type. The three accounts presented are real and based on my own professional experiences as a technological innovation manager.

Starting with the first organization, ORG1, a non-governmental, non-profit institution led by highly risk-averse managers, the implementation of innovation consistently faced significant challenges.

This organization had long been oriented toward predictability and control, with an organizational culture deeply rooted in traditional processes and conservative management practices. At that time, it struggled to keep up with technological innovations while maintaining relevance in the economic environment in which it operated.

While the organization needed to secure external funding, it was often questioned for relying on outdated processes. Despite having well-defined cost predictability, this was no longer sufficient to continue attracting investment resources and sustaining its operations. The board of directors, composed of traditionally minded leaders, remained resistant to innovation, placing the organization at serious risk of collapse.

It became necessary to demonstrate to leadership that it was possible to develop innovation initiatives without relying solely on the organization's internal resources. By combining strong risk management capabilities with a new operational mindset, the organization gradually adopted a culture of innovation, stepping away from strict traditionalism, exposing itself to calculated risk, but mitigating potential losses through external funding mechanisms.

This dynamic highlighted a critical correlation between the organization's ability to manage strategic risk and its ability to access external financial resources. The use of clear risk indicators and metrics reflected not only a robust managerial capacity but also a sense of organizational accountability to funders, enhancing its credibility and increasing the likelihood of securing funding and, subsequently, implementing innovation.

The second organization, ORG2, is a private agribusiness company that produces food products derived from soy and has been in operation for over sixty years. It faced significant challenges in implementing new manufacturing processes, particularly in the area of digital transformation.

I was invited to develop an internal department dedicated to Research and Development (R&D), and from the outset, I encountered considerable resistance stemming from the high costs associated with industrial modernization projects—initially viewed by the board as excessive. This perception was based on a short-term mindset, lacking consideration for the potential medium- and long-term strategic gains that could be achieved through the initiative.

I proposed an integrated approach combining innovation management with risk management. Despite ongoing resistance from the board, I was able to demonstrate the value of securing external funding to support the project. This shift in perspective helped the board see beyond the immediate risks and begin to recognize the broader opportunities associated with creating a dedicated R&D area. The prospect of accessing funding resources played a pivotal role in gaining the board's trust and approval for the proposed initiatives.

The process was not easy—it involved nearly two years of planning and execution, including the development and implementation of clear risk management actions, the application of performance indicators, continuous monitoring, and preparation for possible operational and financial contingencies. The organization succeeded in securing external resources, but more importantly, it experienced a profound internal cultural transformation that led to short-term gains through the successful implementation of digital transformation initiatives.

A critical reflection on this case reveals that although short-term benefits were achieved through external fundraising, the company must avoid becoming overly reliant on such funding. To ensure long-term strategic autonomy in both innovation and risk management, it is essential for the organization to continuously invest in the development of internal capabilities.

As a third and final example, ORG3 reflects another professional experience I had as a project manager, in which I was challenged to build effective connections between the organization and startups that could provide innovative solutions to internal strategic challenges. From the outset, I encountered significant cultural resistance, as both the internal team and the executive leadership demonstrated a clear lack of familiarity with the dynamics of open innovation and the importance of risk management. The organization's traditional, risk-averse structure initially led to serious obstacles, such as slow decision-making and resistance to proposed changes, which hampered the execution of the project.

To overcome the cultural barriers encountered, I implemented a continuous training program with the internal team to foster openness to innovation management practices and risk mitigation strategies. This training not only improved the team's technical knowledge but was also essential in driving meaningful behavioral change, preparing employees to act collaboratively and agilely in open innovation projects.

In parallel, a sensitization process was conducted with the board of directors to emphasize the strategic importance of effective risk management. The primary argument employed was that a structured and strategic risk management approach would enable the organization to benefit substantially from collaborations with startups—particularly when such partnerships were associated with the potential for securing external funding.

The external fundraising significantly reduced negative perceptions of financial and operational risks related to open innovation, thereby enabling the organization to move forward with its startup collaboration initiatives.

It is worth noting, however, that despite the experience in securing external resources, the organization failed to adopt a long-term perspective and did not continue the process of improving its organizational culture. This led to a rupture in the growth process, and in this case, the long-term success was not achieved.

The practical narratives presented in this chapter exemplify the significance of these dynamics. The experiences with these organizations empirically demonstrate that the ability to attract external funding, when combined with the rigorous implementation of strategic risk management, acts as a key enabler for the success and advancement of innovation initiatives. Nonetheless, it is crucial that leadership recognize the long-term value of these efforts, rather than focusing solely on short-term gains.

Conversely, the total absence of these essential elements often results in strategic paralysis and the organizational inability to progress with new innovative projects, ultimately leading to operational and competitive stagnation.

The real cases analyzed in this chapter reveal a relevant organizational dynamic between strategic risk management, the capacity to generate innovation, and the importance of leveraging these factors to secure external resources. It becomes evident that achieving balance between innovation and operational safety is not a trivial matter, but rather a strategic asset for organizations—one that requires robust processes, clear metrics, and an organizational culture open to change and continuous learning.

By comparing the three organizations (ORG1, ORG2, and ORG3), it is possible to observe that although external fundraising can reduce initial internal resistance, it is the effective strategic management of risks that sustains innovative initiatives over time. Organizations that manage to integrate these two components—financial acquisition and structured risk management—are better positioned to lead innovation management, even in an increasingly competitive landscape.

It is essential that senior leadership understand that innovation is not merely a one-off activity but a continuous process that demands constant investment in internal capabilities, strengthening of organizational culture, and effective strategic risk governance.

The empirical insights presented here contribute meaningfully to advancing the understanding of the balance between risk, innovation, and organizational sustainability, offering relevant insights for both managers and professionals seeking to understand and optimize strategic innovation processes within contemporary organizations.

References

Freeman, C. (1974). *The economics of industrial innovation*. London, Penguin Modern Economics Texts.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal, 18*(7), 509–533.

Schumpeter, J. A. (1957). *The theory of economic development*. Cambridge, Harvard University Press.

Tidd, J., & Bessant, J. (2015). *Innovation and entrepreneurship*. Wiley.

Innovation is written with 3 “C”s

By Leandro Meier de Carvalho Albano

Abstract: Innovating in such dynamic times as the present can be a complex task full of uncertainties. However, several cases in recent decades have shown us that not innovating can be even riskier. But how to balance risk and security when promoting innovation? To demonstrate that this equation is not only inevitable, but also much simpler to solve than it may seem, this text presents three Stoic principles brought from the remote past: consciousness, coherence and control.

Keywords: Philosophy, Innovation, Risk, Innovation Planning, Consciousness, Coherence, Control.

School of Applied Sciences, University of Campinas. PhD student of the Postgraduate Program in Administration, E-mail: l295834@dac.unicamp.br

The past can offer useful lenses to navigate the present

We live in a time of great and profound changes, which introduces uncertainties and brings the perception that we constantly need to make decisions involved in the most varied types of risks. In times like the present, looking at the past can be useful to notice that we are experiencing the same challenges that other societies have already gone through, albeit at a faster pace. Thus, understanding how ancient thinkers interpreted their time may offer an interesting way to confront modern challenges.

Seneca, a roman philosopher and writer (who lived between 4 BC and 65 AD) saw life in a simple and optimistic way, which demanded discipline and pragmatism. He has said that "to live is to take risks", but that there would be more things capable of scaring us than of effectively defeating us. For this philosopher, life would be a river that flows constantly, inevitably promoting endless and inevitable changes. We can see this endless flow as an opportunity or ignore it and be carried away by it. However, fighting or swimming against this river would not be an option. To do so would only generate suffering. It would be important to be conscious of this nature of the flow of life and to choose how to behave in the face of this reality.

The philosopher also understood that life requires coherence between what one thinks and how one acts. Another interesting point of Seneca's view is the dichotomy that would exist between the facts that are under our control and those that aren´t, and it is important then to act on those that are under our control with diligence and discipline.

Modern companies can find in Seneca's thinking useful lenses to analyze and think about the equation “innovation vs. associated risks”.

“C” as in Consciousness

Today's world can be qualified with many adjectives, but the one that perhaps applies best is "dynamic". Social contexts are constantly changing and with them consumption habits; new technologies are developed in an almost "exponential" way and new business models emerge in a process that redefines the balance of forces in virtually all industries. Companies that for decades were market leaders have lost relevance or ceased to exist (such as Sears, Woolworth's and Circuit City). On the other hand, organizations that did not even exist 30 or 20 years ago replace the once giants and today are among the largest or most valuable companies on the planet (such as Amazon, Mercado Libre and Alibaba). Never the concept "creative destruction" coined by Schumpeter has been so assertive in describing the action of innovation and its results in the competitive scenarios of the most varied branches of business activity.

Cases such as Kodak´s, Blockbuster´s, Nokia´s and Blackberry´s help us better understand this process. The digital photo technology was created by Kodak's own engineers, which preferred not to invest in the project. Blockbuster had the opportunity to acquire Netflix in the early 2000s, but did not do so. Nokia and Blackberry clung to their technologies and ignored the advent of smartphones. These cases show us that closing our eyes to the role that innovation should assume in the company's strategy or "leaving it for later" may not be an option... because if your company does not innovate, another company will and will decide for you what place your company will occupy in the market in the future. The river will follow its flow and there will always be a company willing to invest in the best vessel to navigate it.

The “other side of the coin” also exists. There are situations in which companies choose to innovate but fail. In 2014 Amazon introduced its smartphone, the Amazon

Fire Phone. The company's optimism turned into disappointment because the product resulted in failure, seen as too expensive and with features that did not compensate for the price charged. The so revered Apple also had its failures... in 1993 the American company launched the Newton, digital personal assistance (PDA) equipped with a touch screen and digital recognition. The concept was ahead of its time, but it was too expensive, and its handwriting recognition was not accurate, which made the product unsuccessful. However, many of Newton's ideas and technologies were not lost, they were incorporated into future developments such as the iPhone and the iPad. In 2013 Google launched Google Glasses, its augmented reality glasses. The product promised to revolutionize the market. However, the market was not yet ready for the apparatus. Moreover, the high prices proved to be prohibitive even for greatest enthusiasts of high-tech devices. Cases like these show that innovation carries with it several risks (market, technological, operational, financial, regulatory, and reputational risks).

But what is the difference between Kodak, Nokia, Blockbuster and Blackberry and Amazon, Apple and Google cases? The difference is that the companies in the second group are still present, leaders in their markets or at least relevant. While for Amazon, Apple and Google the failure is part of the company's evolution path to Kodak, Nokia, Blockbuster and Blackberry, not innovating resulted in the end of the road (or at least, the change to a less relevant "road").

Therefore, it is necessary to be conscious of the imperative need to innovate. But you must also be conscious of the risks involved and have a plan to bear and dilute them.

“C” as in Coherence

Consciousness of the need to innovate (or at least why it was decided not to do so) and the risks involved must be translated into the company's strategic plan, and more specifically into innovation planning. It is in this exercise that managers, having a clear vision of the company's resources and skills, its culture, its competitive context and probable future scenarios, set objectives and choose which actions it will promote and which it will not perform. The "perfect" plan requires rigor in its architecture, so that all decisions make sense together, or in other words, are coherent.

In the innovation planning, it must be decided what the role of innovation will be. That is, how much and how innovation will contribute to the achievement of the objectives established for the short, medium and long term of the company. It must be defined, for example, whether incremental, radical, disruptive or even business model innovation will be sought (it is desirable that the company does not focus only on one modality, to dilute risks). This decision includes the level of risk that the company is likely to submit to in each period over time. It must also be defined in which areas innovation will be promoted; whether the company will develop closed or open innovation (with external partners); innovation´s governance and its monitoring models.

The plan should be clearly communicated to employees, encouraging them to get involved in the actions and generate new ideas.

Once the planning has been carried out and communicated, it is time to unfold it into actions and follow up on them. Returning to the parallel with Seneca's thinking, innovation planning would ultimately reflect how the organization thinks. From then on, coherence is necessary, ensuring that all actions follow the plan, or in other terms, generating coherence between how the company thinks and how the company acts.

“C” as in Control

To ensure that the plan is fulfilled, it is necessary to define its governance or control. These are important questions that must be answered: How will innovation be organized in the company, will it be centralized in a team or person? What is the amount dedicated in terms of budget? Who will be responsible for innovation processes and projects? Will there be an innovation projects portfolio? In short, it will be necessary to think very carefully about the processes involved.

For example, ideas and opportunities that were not contemplated during planning will arise after the plan is designed and the company cannot simply "close its doors" to them. Nor should the company drastically change its course with each new proposal. Therefore, it is vital for companies to define a flow of evaluating opportunities that can generate value. Including in this analysis, the risk-return checks and how much the new idea is coherent with the strategic plan. One revolutionary technology may not fit into the short-term plan, but it can be "fitted" to be developed in the medium term to generate results in the long term. Or this technology can be seen as inconsistent with the company's resources, competence, risk and objectives. But a complete analysis is needed.

Another integral part of the control of the innovation plan and its implementation over time are the metrics and performance evaluation. As important as planning is ensuring its execution and verifying whether its execution is generating the expected results. Quickly identifying that the results demonstrate that the company is not on the right track can mean the opportunity to react and take correct actions in a timely manner. Again, drawing a parallel with Seneca's teachings, we cannot control all the variables, but we can focus on acting on those that are under our control.

Consciousness of the need to innovate and the risks inherent to innovation, added to the coherence between well-thought-out (and conscious) choices and control to ensure that the choices made are implemented with the minimum deviation from the conscious choices made by the organization can be useful in balancing risk and security, a concern that is always present in investment decisions in innovations.

Consciousness, coherence and control: 3 lessons taught two thousand years ago by a philosopher that can guide companies in balancing innovation and assumed risk.

The balance between risk, innovation and sustainability in the business model of “Vencidinhos” markets

By Luciana Aparecida de Paula Castro

Abstract: As new “expired” markets must assume the risks of selling products close to their expiration date that are safe and suitable for consumption, a retail model that changes from the traditional model. With innovation strategies, offering products at affordable prices to combat food waste and serve lower-income consumers. A challenge is to indicate the acceptable point of assuming risks with a positive environmental and social impact, low prices and fast stock turnover without compromising consumer health.

Keywords: Food Waste, Retail, Food Safety.

School of Applied Sciences, University of Campinas. PhD student of the Postgraduate Program in Administration, E-mail: l295836@dac.unicamp.br

Sustainable supply chain management is defined as the coordination of material, information and capital flows, collaboration between companies, with the purpose of achieving the three values of sustainable evolution and considering the conditions of customers and other parties along the chain (Seuring & Müller, 2008). With development, companies have discovered that the supplier is the most important party that will affect the performance of the supply chain (Busse et al., 2016).

In a typical supply chain, the number of companies involved has increased with the development of globalization, outsourcing, and competition. Due to the pressures and incentives mentioned above, several companies have implemented supplier assessment procedures that need to report on how they use environmental and social issues (Trowbridge, 2001; Kytle & Ruggie, 2005; Koplin & Mesterharm, 2007; Beske et al., 2008; Wang & Dai, 2018).

The minimum requirements for implementing the standards are avoiding risks that may be linked to the three sustainability values, which may arise from environmental and social performance and from interruptions in production processes in the “traditional” supply chain (Cousins & Lamming, 2004; Norma & Janson, 2004; Michelsen & Dahlsurd, 2006; Teuscher & Ferdinand, 2006). In addition, seeking to achieve operational performance, including the environmental and social dimension, leading to the debate on the trade-off at a broader level of the sustainable supply chain (Singhal, 2005; Seuring & Muller, 2008). This results in a challenge for both long-term studies that rarely address the social dimension and business practices (Seuring & Müller, 2008; Barbosa-Póvoa, 2009; Barbosa-Póvoa, 2014; Brandenburg et. al., 2014; Barbosa & Carvalho, 2018).

There are typically unique characteristics in food supply chain management such as short product shelf life and strict government regulations regarding food safety and obstacles in its storage, processing, and distribution (Zhu & Piramuthu, 2018). Environmental, social, and economic problems occur at the food production and consumption stages (Ahumada & Villalobos 2009; Brandemburgo et al. 2014; Soto-Silva et al. 2016; Zhu & Piramuthu, 2018).

A characteristic that makes perishability more critical than perishability is the great diversity of industries and the distribution operation to numerous points of sale (Accorsi & Tufano, 2018, Chan et.al., 2020). Another important characteristic is food safety, which requires responsibilities and interest from the different parties in the supply networks (Piramuthu & Grunow, 2013). Therefore, the challenges of decision-making throughout the supply chain are great, considering how to model the risk to food safety, recovery and recall of food (Zhu & Piramuthu, 2018).

According to the Food and Agriculture Organization of the United Nations (FAO), 931 million tons of food are thrown away each year worldwide, or 17% of the total food available to consumers in 2019, which was discarded from homes, retail, and other food services (FAO, 2021; Santos et.al, 2020). Food waste and insecurity are growing concerns that have led to the emergence of innovative models such as “Expired” markets. “Expired” markets arise from the union of two practices: 1) the sale of perishable products close to their expiration date, as they are cheaper; 2) it is called “FIFO”, which means “First in, first out”. Emerging as a new actor in the supply chain, with the rise in prices due to inflation in 2022, products became 64% more expensive in Brazil (Ortiz, 2022). Therefore, it represents a strategy for managing stocks based on waiting lines, where the first products shipped to consumers are those that have been stored for the longest time and serve to minimize losses caused by poor stock management (Dantas & Duarte, 2022; Nascimento, 2022; Ortiz, 2022; Rodrigues, 2024).

In 2023, according to the UN Hunger Map, 733 million people will be hungry, which corresponds to one in every eleven people. In Brazil, in 2023, 14.3 million Brazilians will be hungry or in a situation of food insecurity, with 18.2% having mild food insecurity, 5.3% moderate and 4.1% mild (FAO, IFAD, UNICEF, WFP and WHO, 2024).

In its report on the State of Food Security and Nutrition in the World, FAO recommended several forms that management can take for the evolution of food security. The indication in the report is that these drivers were similar to the drivers of sustainable development (Correia et.al., 2017; Bastas & Liyanage, 2018). With an acceptable number of studies, the efficient contribution and the tendency of the emergence of new concepts of sustainability in relation to food security are discussed (Aiking & De Boer, 2004; Lang & Barling, 2012; Berry et.al, 2015).

Regarding research on sustainable food security, approximately 64% of the published articles are related to food security management at a global level, that is, at the FAO, the Food Security Committee, the G20 (International Forum for Economic Cooperation and the national government center) (Chan et.al., 2020).

In the food supply chain, the private sector plays an important role in food safety, but its contributions to knowledge have been relatively vague (Chan et. al., 2020). Furthermore, there is a lack of systematic analysis of the actions that should be taken to improve food safety in food supply chains (Irani, 2016; Sun, 2017), with limited knowledge that could assist in global actions and strategies based on global value chains (Chan et. al., 2020).

In recent decades, the radical increase in food losses and waste generation, therefore, the forms of management and recovery were seen within the United Nations Agenda for Sustainable Development (Resolution, 2015), particularly by the Sustainable Development Goal “Responsible consumption and production” (SDG12). Target 12.3 with the reduction of Food Loss and Waste (FW), which aims to halve global waste per capita and at the post-harvest, production, food supply, retail and final consumer stages (Resolution, 2015). In addition, the FAO (FAO, 2019), showed the links between SDG 12 and target 12.3 with all other SDGs (Amicarel, 2021; Conrado et.al., 2019)

As a result, PDAs have the capacity to ensure long-term global food security and impact the sustainability of food systems (Pinstrup-Anderson & Meybeck, 2016). With food security increasing worldwide, moral issues of food waste are identified in both developing and developed countries (Ribeiro et.al., 2016).

Retailers are aware that improving product quality is expected to the appropriate level of riskin the economic, environmental and social impact, which is linked to the life cycle, this contrasts sharply with food safety, which focuses only on food agendas (Beske & Seuring, 2014). Another important issue, in retail, is the PDA, product positioning and food prices with the high capacity for food waste affect food safety (Charlebois, 2015; Eriksson, 2017). Suppliers establish commercial agreements many times agreeing to take back products of unsatisfactory quality or about to expire (Eriksson, 2017; Chan et.al., 2020).

References

Accorsi, R., Cholette, S., Manzini, R., & Tufano, A. (2018). A hierarchical data architecture for sustainable food supply chain management and planning. Journal of cleaning production, 203, 1039-1054.

Ahumada, O., & Villalobos, J. R. (2009). Application of planning models in the agri-food supply chain: A review. European journal of Operational research, 196(1), 1-20.

Aiking, H., & De Boer, J. (2004). Food sustainability: Diverging interpretations. British Food Journal, 106(5), 359-365.

Amicarelli, V., & Bux, C. (2021). Food waste measurement toward a fair, healthy and environmental-friendly food system: a critical review. British Food Journal, 123(8), 2907-2935.

Bastas, A., & Liyanage, K. (2018). ISO 9001 and supply chain integration principles based sustainable development: A Delphi study. Sustainability, 10(12), 4569.

Brandenburg, M., Govindan, K., Sarkis, J., & Seuring, S. (2014). Quantitative models for sustainable supply chain management: Developments and directions. European journal of operational research, 233(2), 299-312.

Barbosa-Póvoa, A. P. (2009). Sustainable supply chains: key challenges. Computer Aided Chemical Engineering, 27, 127–132.

Barbosa-Póvoa, A. P. (2014). Process supply chains management–where are we? Where to go next?. Frontiers in Energy Research, 2, 23.

Barbosa-Póvoa, A. P., da Silva, C., & Carvalho, A. (2018). Opportunities and challenges in sustainable supply chain: An operations research perspective. European journal of operational research, 268(2), 399-431.

Berry, E. M., Dernini, S., Burlingame, B., Meybeck, A., & Conforti, P. (2015). Food security and sustainability: can one exist without the other?. Public health nutrition, 18(13), 2293-2302.

Beske, P., Koplin, J., & Seuring, S. (2008). The use of environmental and social standards by German first-tier suppliers of the Volkswagen AG. Corporate social responsibility and environmental management, 15(2), 63-75.

Beske, P., Land, A., & Seuring, S. (2014). Sustainable supply chain management practices and dynamic capabilities in the food industry: A critical analysis of the literature. International journal of production economics, 152, 131-143.

Busse, C., Schleper, M., Niu, M., & Wagner, S. M. (2016). Supplier development for sustainability: contextual barriers in global supply chains. Int. J. Phys. Distribution Logistics. Manag, 46, 442–468.

Capone, R., Bilali, H. E., Debs, P., Cardone, G., & Driouech, N. (2014). Food system sustainability and food security: connecting the dots. Journal of Food Security, 2(1), 13-22.

Chan, H. Y., Abdul Halim-Lim, S., Tan, T. B., Kamarulzaman, N. H., Jamaludin, A. A., & Wan-Mohtar, W. A. A. Q. I. (2020). Exploring the drivers and interventions towards sustainable food security in the food supply chain. Sustainability, 12(19), 7890.

Charlebois, S., Creedy, A., & von Massow, M. (2015). “Back of house” – focused study on food waste in fine dining: The case of Delish restaurants. Int. J. Cult. Tour. Hosp. Res., 9, 278–291.

Correia, E., Carvalho, H., Azevedo, S. G., & Govindan, K. (2017). Maturity models in supply chain sustainability: A systematic literature review. Sustainability, 9(1), 64.

Corrado, S., Caldeira, C., Eriksson, M., Hanssen, O. J., Hauser, H. E., van Holsteijn, F., ... & Sala, S. (2019). Food waste accounting methodologies: Challenges, opportunities, and further advancements. Global food security, 20, 93-100.

Cousins, P. D., Lamming, R. C., & Bowen, F. (2004). The role of risk in environments-related supplier initiatives. International Journal of Operations & Production Management, 24(6), 554-565.

Duarte, R. (2002). Qualitative research: reflections on fieldwork. Research notebooks, 139-154.

Ecker, O., & Diao, X. (2014). Food Security Policy Brief. Available online:http://www.fao.org/fileadmin/templates/faoitaly/documents/pdf/pdf_Food_Security_Cocept_Note.pdf accessed 11/08/2014

Eriksson, M., Ghosh, R., Mattsson, L., & Ismatov, A. (2017). Take-back agreements in the perspective of food waste generation at the supplier-retailer interface. Resources, Conservation and Recycling, 122, 83-93.

FAO (2019). The state of food and agriculture 2019: Moving forward on food loss and waste reduction. UN.

FAO in Brazil UN (2021). 17% of all food available for consumption is wastedhttps://www.fao.org/brasil/noticias/detail-events/pt/c/1379033/accessed 08/08/2024

FAO, IFAD, UNICEF, WFP and WHO (2024). The State of Food Security and Nutrition in the World 2024 – Financing to end hunger, food insecurity and malnutrition in all its forms. Rome.https://doi.org/10.4060/cd1254en

Irani, Z., & Sharif, A. M. (2016). Sustainable food security futures: perspectives on food waste and information across the food supply chain. Journal of Enterprise Information Management, 29(2), 171-178.

Irani, Z., & Sharif, A. M. (2016). Sustainable food security futures: perspectives on food waste and information across the food supply chain. Journal of Enterprise Information Management, 29(2), 171-178.

Koplin, J., Seuring, S., & Mesterharm, M. (2007). Incorporating sustainability into supply management in the automotive industry–the case of the Volkswagen AG. Journal of cleaner production, 15(11-12), 1053-1062.

Kosa, K. M., Cates, S. C., Karns, S., Godwin, S. L., & Chambers, D. (2007). Consumer knowledge and use of open dates: results of a web-based survey. Journal of food protection, 70(5), 1213-1219.

Kytle, B., & Ruggie, J. G. (2005). Corporate social responsibility as risk management: A model for multinationals. Corporate Social Responsibility Initiative. Kennedy School of Government, 1-17.

Lang, T., & Barling, D. (2012). Food security and food sustainability: reformulating the debate. The geographical journal, 178(4), 313-326.

Michelsen, O., Fet, A. M., & Dahlsrud, A. (2006). Eco-efficiency in extended supply chains: A case study of furniture production. Journal of environmental management, 79(3), 290-297.

Nascimento, L. (2022). Food, In the Periphery https://expresso.estadao.com.br/naperifa/nas-periferias-vencidinhos-sao-alternativas-para-garantir-alimentacao-dos-mais-pobres/ . Accessed August 5, 2024.

Norrman, A., & Jansson, U. (2004). Ericsson's proactive supply chain risk management approach after a serious sub-supplier accident. International journal of physical distribution & logistics management, 34(5), 434-456.

Pinstrup-Andersen, P., Gitz, V., & Meybeck, A. (2016). Food Losses and Waste and the debate on food and nutrition security. Routledge handbook of food and nutrition security, 169-184.

Piramuthu, S., Farahani, P., & Grunow, M. (2013). RFID-generated traceability for contaminated product recall in perishable food supply networks. European Journal of Operational Research, 225(2), 253-262.

Resolution, A. (2015). RES/70/1. Transforming our world: the 2030 agenda for sustainable development. Seventieth United Nations General Assembly, New York, 25, 86-97.

Ribeiro, A. P., Rok, J., Harmsen, R., Carreón, J. R., & Worrell, E. (2019). Food waste in an alternative food network–A case study. Resources, Conservation and Recycling, 149, 210-219.

Rodrigues L. (2024). Expired items: foods about to expire are up to 80% cheaper in supermarkets Products still in good condition are marketed clearly to the population 2024 / Diário do Nordeste /. Access - August 12, 2024.

Santos, J., & Freitas, C. (2013). Your company sees the Losses 2013. Available at: http://www.caminhus.com/artigos.php?id=3. Accessed on: August 1, 2024.

Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. Journal of cleaning production, 16(15), 1699-1710.

Singhal, K. (2005). Sustainable operations management. Production and operations management, 14(4), 482-492.

Soto-Silva, W. E., E. Nadal-Roig, M. C. González-Araya, & L. M. Pla-Aragones. 2016. Operational Research Models Applied to the Fresh Fruit Supply Chain. European Journal of Operational Research, 251 (2), 345–355.

Santos, KLD, Panizzon, J., Cenci, MM, Grabowski, G., & Jahno, VD (2020). Food losses and waste: reflections on the current Brazilian scenario. Brazilian Journal of Food Technology, 23, e2019134.

Soto-Silva, W. E., E. Nadal-Roig, M. C. González-Araya, & Pla-Aragones, L. M. (2016). Operational Research Models Applied to the Fresh Fruit Supply Chain. European Journal of Operational Research, 251 (2), 345–355.

Sun, F., Dai, Y., & Yu, X. (2017). Air pollution, food production and food security: A review from the perspective of food system. Journal of Integrative Agriculture, 16(12), 2945–2962. https://doi.org/10.1016/S2095-3119(17)61814-8

Teuscher, P., Grüninger, B., & Ferdinand, N. (2006). Risk management in sustainable supply chain management (SSCM): lessons learned from the case of GMO-free soybeans. Corporate Social Responsibility and Environmental Management, 13(1), 1-10.

Trowbridge, P. (2001). A case study of green supply-chain management at Advanced Micro Devices. Greener Management International, (35), 121–135.

Ortiz, A. L. A. (2022). Vencidinhos: Discover the alternative that overcomes inflation. *Politize!*. https://www.politize.com.br/vencidinhos/. Accessed: August 01, 2024.

Wang, J., & Dai, J. (2018). Sustainable supply chain management practices and performance. Industrial Management & Data Systems, 118(1), 2-21.

Zhu, Z., Chu, F., Dolgui, A., Chu, C., Zhou, W., & Piramuthu, S. (2018). Recent advances and opportunities in sustainable food supply chain: A model-oriented review. International Journal of Production Research , 56 (17), 5700-5722.

Balancing Innovation and Stability: An Integrated Approach to Sustainable Risk Management

By Zamaletdinova Aigul

Abstract: This chapter examines how organizations can achieve a sustainable balance between innovation and stability in today's highly uncertain business environment. It argues that effective risk management requires an integrated approach that combines advanced quantitative methods, such as machine learning–based sensitivity analysis, dynamic scenario planning, and Monte Carlo simulations, with qualitative techniques including crowdsourced risk matrices, weak signal analysis, and structured expert input. Beyond risk modeling, the chapter highlights the importance of comprehensive benefit assessment, integrating stress-tested financial metrics (NPV, IRR, ROI with ESG considerations) with strategic advantages such as resilience, dynamic capabilities, and long-term market positioning. A central element is the establishment of an adaptive risk management culture, characterized by psychological safety, digital transparency, continuous learning, and incentive systems aligned with long-term value creation. The synergy of these elements (hybrid analytics, multidimensional valuation, and a mature culture) enables organizations to transform uncertainty into a source of sustainable competitive advantage.

Keywords: Risk management, Innovation and resilience, Strategic benefits, Sustainable competitive advantage.

Governance of Science, Technology and Innovation, HSE University. Master's student of the Postgraduate Program; E-mail address: afzamaletdinova@edu.hse.ru

Effective risk management is an essential condition for the sustainable development of organizations operating in the highly uncertain modern business environment. The key management task is to achieve an optimal balance between the need to stimulate innovation, which requires taking reasonable risks, and ensuring stability and control over potential threats. This essay argues that resolving this dilemma requires an integrated approach that combines modern analytical methods with the formation of an adequate organizational culture. Such an approach includes the use of hybrid risk assessment methods that combine advanced quantitative models (such as machine learning for sensitivity analysis and dynamic scenario planning) with flexible qualitative approaches (including crowdsourced risk matrices and weak signal analysis) to work with both predictable and fundamentally unpredictable threats, such as “black swans” (Alentev & Ibragimova, 2024; Arnesen & Foster, 2016). In addition, a comprehensive assessment of the potential benefits of innovation is critical, synthesizing tailored financial metrics (e.g. stress-tested NPV and IRR, ROI taking into account ESG factors) with a deep analysis of strategic benefits, such as strengthening organizational resilience, developing dynamic capabilities, and enhancing market position (Dranev, 2023; Kotturu, 2024). Finally, a fundamental element of success is the development of an adaptive risk management culture based on psychological safety for reporting threats, digital transparency of information, continuous learning from lessons learned, and balanced incentive systems focused on long-term value (Prokopenko et al., 2019). The objective of this article is to demonstrate how the synergy of these elements - advanced risk and benefit assessment methods underpinned by a mature risk culture – allows organizations to systematically manage the balance between innovation and resilience, thereby achieving sustainable competitive advantage.

Achieving sustainable competitive advantage in today’s highly dynamic and uncertain business environment requires organizations to constantly balance the need for innovation, which comes with inherent risks, with the imperative of maintaining stability and managing threats. This search for the optimal balance is not limited to intuitive solutions; it dictates the need to implement a comprehensive management system based on advanced methods for assessing both potential threats and expected benefits and, critically, on developing an adaptive risk management culture capable of maintaining this dynamic equilibrium.

The starting point for building an effective balance sheet is a comprehensive and up-to-date risk assessment. The modern risk management paradigm, reflected in the international standard ISO 31000:2018 and developed in recent research (Alentev & Ibragimova, 2024), emphasizes the importance of synergy between quantitative and qualitative approaches, each of which makes a unique contribution to understanding the nature of threats and shaping the balance sheet strategy. Quantitative methods such as advanced sensitivity analysis using machine learning, dynamic scenario planning, and high-performance Monte Carlo implementations (Covington & Gearhart, 2020) provide powerful tools for numerically modeling the probability and impact of risks in complex systems with multiple interdependencies. This allows, for example, to accurately predict the financial impact of global supply chains in the face of geopolitical instability or fluctuations in cryptocurrency markets. However, their effectiveness remains limited by the “curse of dimensionality” and the urgent need for large volumes of relevant, high-quality data, especially for forecasting rare but catastrophic events (“black swans”) or fundamentally new technological risks. In this context, qualitative methods evolving through digitalization – such as interactive risk matrices with

crowdsourcing capabilities, advanced SWOT analyses integrating big data analytics to identify weak signals, and structured expert sessions using Delphi and cognitive mapping methods (Alentev & Ibragimova, 2024; Benson et al., 2022) – are proving indispensable for the rapid identification, conceptualization, and prioritization of risks in conditions of high uncertainty and data scarcity. Their key advantage is the ability to capture emerging, poorly structured threats (e.g. ethical risks of AI, reputational risks in social media, regulatory shifts in response to climate change) and engage cross-functional teams in the process.

The main challenge remains the minimization of subjective distortions and groupthink, which requires careful process design and the use of digital platforms for anonymous data entry. Therefore, the formation of a sustainable balance between the readiness for innovative risk and the need for control is impossible today without hybrid approaches: qualitative methods provide a “radar” for early detection and prioritization of threats, especially in new areas, and quantitative ones provide in-depth analysis and optimization of resources for managing key, measurable risks, determining specific levels of “risk appetite” in strategically important segments.

However, focusing solely on the threat landscape ignores the fundamental driver of risk taking: potential reward. Finding the right balance requires an equally rigorous and multidimensional assessment of the expected benefits that justify leaving the comfort zone. Modern financial analysis, enriched by new computational capabilities, continues to rely on key metrics, but with an emphasis on their adaptation to volatility: Net Present Value (NPV) and Internal Rate of Return (IRR) are stress-tested in a variety of scenarios, including extreme ones, using real options to assess flexibility. A positive adaptive NPV or IRR that consistently exceeds the dynamically calculated cost of capital is becoming a more reliable indicator. Return on Investment (ROI) analysis is evolving towards integrated metrics that take into account ESG factors (Environmental, Social, Governance) and the long-term sustainability of the value created (Brealey et al., 2024). A critical breakthrough in recent years has been the widespread recognition that financial metrics, no matter how sophisticated, cannot alone determine the value of risky initiatives. Innovations in digital platforms, green technologies, or unique business models often generate strategic benefits that are not captured by traditional DCF analysis: enhanced dynamic capabilities, the creation of ecosystems of partnerships, increased organizational resilience, a stronger social license to operate, and the creation of future growth options. Thus, reaching a balanced risk-taking decision today requires the convergence of advanced financial modeling and deep strategic expertise: the assessment must compare the full range of financial and non-financial risks not only with the expected cash flows, but also with the strategic potential of the initiative to strengthen the long-term competitive position and adaptability of the organization in a turbulent environment.

The fundamental understanding of modern risk management is that even the most advanced analytical tools remain ineffective without a deeply rooted and adaptive risk culture. It is this culture that acts as the central nerve center that determines the ability of an organization not only to implement innovations, but also to do so sustainably, minimizing destabilizing consequences. As shown by current empirical research (Power, 2020), a modern effective risk culture is distinguished by the following key characteristics:

- Adaptive leadership: Leaders go beyond simply declaring the importance of risk, and actively model adaptive behavior by demonstrating a willingness to take informed risks within the strategic appetite and an openness to rethinking strategy based on new risk data. They create a

psychologically safe environment for experimentation and discussing failures.

- Digital transparency and collaboration: Using digital platforms to provide risk transparency, support real-time cross-functional discussion of threats and opportunities, and collectively find solutions. This reduces silo mentality.
- Learning agility: Focusing on quickly learning from both successes and failures (including near misses), integrating these lessons into processes, and providing microlearning to develop situational awareness and risk-response skills across all employees.
- Flexible roles and responsibilities: Risk responsibilities are dynamically adapted to specific projects and challenges, encouraging local risk ownership.
- Balanced incentives for long-term value: Reward and recognition systems are closely aligned not only with short-term KPIs, but also with contributions to long-term sustainability, ethical compliance, ESG risk management and constructive engagement in risk management.

Such a culture is a catalyst for balanced innovation:

- It encourages responsible opportunity hunting, where employees feel empowered to propose ideas, knowing that the risks involved will be objectively assessed by modern hybrid methods, rather than dismissed out of caution.
- It enables proactive threat management through early detection of weak signals and open discussion of uncertainties on digital platforms, enabling early threat mitigation with minimal cost.
- It improves the quality of strategic decisions by integrating risk thinking and strategic benefit assessment at all levels. Decisions are made with an understanding of their full risk and value profile, facilitating choices between disruptive but risky initiatives and evolutionary but more predictable paths forward.
- It minimizes organizational blind spots through a culture of transparency and collaboration, dramatically reducing the likelihood that critical or emerging risks (especially non-financial ones such as cyber threats or reputational crises) will go unnoticed or unvoiced.

Ultimately, in an era of exponential change, only an organization with such a mature, digitally enabled, and adaptive risk culture can reliably balance at the cutting edge of innovation, turning inevitable uncertainty from a threat into a source of strategic advantage and long-term resilience.

Achieving a sustainable balance between innovation and sustainability is not a static goal, but a dynamic management process that requires the systemic integration of three key elements. As demonstrated in this paper, modern hybrid risk assessment approaches (Alentev & Ibragimova, 2024) – combining advanced quantitative modeling with flexible qualitative methods for dealing with uncertainty and “black swans” – enable accurate identification and prioritization of threats. A comprehensive benefits assessment that synthesizes stress-tested financial metrics (NPV, IRR) with an analysis of strategic advantages and ESG factors of long-term value (Brealey et al., 2024) allows us to justify risk taking where the upside outweighs the potential losses.

Critically, the effectiveness of these tools is inextricably linked to the formation of an adaptive risk management culture (Power, 2023) based on psychological safety, digital transparency, continuous learning, and resilience-oriented leadership.

The synergy of these elements – advanced analytics, multidimensional valuation and a mature organizational culture – creates the basis for transforming managed risk from a threat into a source of competitive advantage. Organizations that are able to implement such an integrated approach not only minimize potential losses, but also systematically use innovative potential, ensuring sustainable development in conditions of permanent turbulence. The future of effective risk management lies precisely in this integrity of methodology, assessment and human capital.

References

Alentev, R. J., & Ibragimova, A. A. (2024). Risk management in an organization: identification methods. Èkonomika i Upravlenie: Problemy, Rešeniâ, 6/7(147), 152–159. https://doi.org/10.36871/ek.up.p.r.2024.06.07.021

Arnesen, D. W., & Foster, T. N. (2016). Planning for the known, unknown and impossible: Responsible risk management to maximize organizational performance. Journal of Business and Behavioral Sciences, 28(1), 40–52.

Benson, C., Argyropoulos, C., Nicolaidou, O., & Boustras, G. (2022). Impact of weak signals on the digitalization of risk analysis in process safety operational environments. Processes, 10(4), 631. https://doi.org/10.3390/pr10040631

Brealey, R. A., Myers, S. C., Allen, F., & Edmans, A. (2024). Principles of corporate finance (14th ed.). McGraw-Hill Education.

Covington, T. R., & Gearhart, J. M. (2020). Sensitivity and Monte Carlo analysis techniques and their use in uncertainty, variability, and population analysis, Academic Press. (pp. 211–242). https://doi.org/10.1016/B978-0-12-818596-4.00009-6

Dranev, Y. (2023). Impact of ESG activities on the innovation development and financial performance of firms. Journal of Corporate Finance Research, 17(3), 152–159. https://doi.org/10.17323/j.jcfr.2073-0438.17.3.2023.152-159

International Organization for Standardization. (2018). ISO 31000:2018 Risk management – Guidelines. https://www.iso.org/standard/65694.html

Kotturu, P. (2024). A study on risk assessment and financial management on ESG. International Journal of Research Publication and Reviews, 5(5), 3624–3632. https://doi.org/10.55248/gengpi.5.0524.1229

Power, M. (2020). Risk culture: A practical guide to building and sustaining a healthy risk culture. Routledge.

Prokopenko, O., Kholod, B., Pavlova, V., Niziaieva, V., Shtepa, O., & Orlova, V. (2019). Risk management culture as a systematic method for ensuring safety development. Business Ethics and Leadership, 3(4), 112–120. https://doi.org/10.21272/bel.3(4).112-120.2019

World Economic Forum. (2023). The global risks report 2023 (18th ed.). https://www.weforum.org/reports/global-risks-report-2023

The Dual Path of Innovation and Stability in Organizations

By Ikenna Mbata

Abstract: This chapter analyzes the paradox between risk-taking and risk-aversion in innovation management. While innovation drives progress and creates opportunities for growth, it inherently involves uncertainty, experimentation, and the potential for failure. Conversely, a conservative approach offers predictability and stability but often leads to stagnation, reduced competitiveness, and resistance to change. Drawing from historical examples of technological advancement, managerial reflections, and strategic insights, the chapter highlights the benefits and dangers of both extremes. Risk-taking encourages creativity, breakthrough discoveries, and long-term competitiveness, but without discipline it can waste resources and expose organizations to severe losses. Conversely, safety-oriented approaches may secure short-term reliability, especially in sensitive sectors like banking or healthcare, yet they risk missing opportunities for transformation. The conclusion emphasizes the need for balance: organizations should combine resilience, adaptability, and calculated experimentation to mitigate risks while embracing innovation. This balance allows for learning from failure, sustaining progress, and fostering competitiveness in a dynamic environment.

Keywords: Risk, Innovation, Competitive advantage, Organizational resilience, Balance strategy.

Governance of Science, Technology and Innovation, HSE University. Master's student of the Postgraduate Program; E-mail address: imbata@edu.hse.ru

This essay examines the gains of innovation and the fears of a rather conservative policy, the adventurous exploits against a docile approach. It seeks to x-ray the benefits and the downside of innovation and also the merits and demerits of being on the safe side. In the end, it sought to strike a balance between taking risks and playing safe.

From the start of human existence, man has always sought out and had always found ways of making life easier, of making living less stressful. From inventing manual tools to mechanized equipment and now to robotic engineering and Artificial Intelligence, there had always been that quest to create something new or at least improve on what already existed. That is innovation. Innovation has existed for a long time even before the evolution of science and technology. It could be rightly defined as the process of introducing a new idea, of creating a novel product, of improving on a process or of developing a new method towards solving man's problems. In creating or developing a new innovation, often times, it is a clear departure from an existing norm, and may entail breaking new grounds, advancing already established frontiers and daring to be different. It is about delivering value in novel ways, fulfilling the customer's needs and adapting to changing market trends. Other times, innovation would come by trial and error, rigorous research and development experiments and countless tests and a lot of back and forth before there would be a breakthrough. This essay provides the ground for arguing the limitations of taking risks to embark on an innovative process and the consequences of staying conservative.

Innovation drives the wheel of progress. It advances the frontiers of human existence, solving problems and helping to make the world a better place. Innovation involves taking risks and trials and experimentations. And these three are laced with uncertainty of success and the risk of failure. Think of the major breakthroughs in science and technology. Even the discoveries that had happened serendipitously, they have all come because those inventors or innovators dared to take the risk, sometimes at the expense of their lives. Disruptive innovations in space technology, astronomy, the advances in neuroscience and the dynamics of the stock markets all typify sectors where risk taking is a major characteristic. These may be the huge risks which exemplify innovation. But more recently, innovation startups have changed the world and how we have come to assess risk, making light of risk-taking without casting a shadow on the fear off failing or the risks in innovation. It is this risk of failing that often makes companies and individuals to hesitate in accepting innovative ideas, choosing rather to maintain their stay in familiar terrain, their comfort zone.

Observing caution or towing the path of safety is advantageous. It means the business rather chooses to follow laid-down protocols of doing things and prioritizing already established methods. The benefits are almost certainties. It gives that reassuring sense of security and predictability. Unlike in embarking on an unknown path of uncertainty, a safe-playing company could be able to forecast the events and occurrences that may happen on the process of taking a major business decision or just before embarking on a production. Safe playing in a sector like banking or financial sector guarantees the assurance of secure funds. Mistakes can be catastrophic and it is only the assurance of some level of prediction that stabilizes and secures investors funds. Players in the healthcare sector also deploy this strategy. Rather than taking a risk of innovating and/or investing in a novel drug discovery or development, a business manager would take a decision not to delve into the murky terrains because an error here may be fatal and lead to loss of lives, or loss of resources in producing the new drug. Being on the side of safety also reduces the risk of suffering a damning setback. When a business cannot afford to entertain mistakes or errors, then this approach

becomes quite valuable and comes in handy. Businesses that play safe have a predictable track of progression (or even retrogression). This increase or decline is studied, and steady. Particularly when the changes are in the positive (increase), it is incremental and confers that sense of reliability and trust. It gives room for the business to be able to invest time on other activities, knowing that their financial progress is assured and could be guessed. Also, assuming the change were a retrogression, the decrease could also be tracked and halted with some level of accuracy because the risk curve is known. Conversely, those that prefer not to take risks suffer some consequences. An American president, Richard Nixon, once said “if you take no risks, you will suffer no defeats. But if you take no risks, you win no victories.” Safe players fall culpable of this paradoxical statement. It has been agreed that playing safe ensures stability, however, the business runs the risk of being stagnated. In a dynamic world as ours where change is the order of the day, as the only constant thing, those not malleable to that only currency may be left behind. The fear factor of failure stunts the growth that comes with creativity, discourages experimenting on new things or ideas and would also not allow one to take those first, bold infant steps that are necessary to achieve greatness. Nixon’s statement is a universal fact. Non-risk takers suffer from stagnation. For them, the fear of failure is absent, as you only engage in familiar activities. Yet at the same time, the profits, pleasures and prizes associated with winning from risk taking, would elude such an organization.

The above arguments of taking a risk and its dangers (if it boomerangs) and playing safe, risking not to be adventurous with its gains (if it succeeds) beg the huge question for an innovation manager. Should we plunge into the unknown or do we stay within the confines of our comfort area? Both sides of the coin have their potential benefits as well as their calamitous pitfalls. This then leaves one with the option of striking a balance between being innovative and playing safe. Here are some strategic plans towards managing the risk of failure. It is not advisable to have all of one’s eggs in a basket. To reduce the risk of failure, it may be necessary to explore multiple business ideas at the same time. This may also come as breaking down daunting innovative goals into smaller processes. That way, the impact of failure of one or two may not be felt by the whole. It also gives the time and resources to be able to monitor more efficiently these smaller processes and perfect them in order to repeat them, if successful, in a larger and more profitable scale. In striking a balance, one has to be able a good risk assessor and at the same time, learn to cultivate the habit of experimentation. In staying put, rather than fearing taking risks, one should be able to critically analyze the risk path that an innovation may likely take and try to think out strategies to avoid those risks. It is in thinking those strategies out that the culture of testing the innovation should be developed. The risks could be taken in small, guided and controlled measures so as not suffer big failures if they went wrong. A balance between risk taking and safety could not just be a point but an area developed by adaptability and resilience. It is the area marked out by adjustments made in adopting new strategies, learning from past mistakes and experiences and shifts in business plans based on prevailing situations and evolving circumstances. With resilience comes the ability to manage stress better. In learning from previous failures one understands the reasons a process did not work and tries to avert them in future.

Balancing between risk and safety means reaching a compromise, finding a common solution ground. The innovative process involves risk, as an intrinsic component or feature. Risk is not an assured failure neither is it an uncertain success, but it is a tightrope which individuals or organizations must walk in order to cross the path of innovation. Failure does not mean the end of the process but an opportunity to

learn, adjust and repeat, avoiding past errors. Success does not also eliminate the risk but emboldens the achiever, reducing the fears and advancing the frontiers that a new normal is possible and achievable. Implementing some of the outlined strategies would make individuals and organizations to imbibe a culture of innovation and brave the uncertainties that lie on the pathway to successful innovative processes or products. Innovation is so important in business and other creative ventures which strive for growth, sustainability and a competitive edge.

Harmonizing Risk and Safety in the Pursuit of Innovation

By Mohammad Saleh Rasa

Abstract: This chapter examines the interdependent relationship between risk and safety in organizational innovation. Innovation inherently involves uncertainty, as companies must invest in unproven technologies, new markets, or novel business models to remain competitive. However, excessive risk without control can lead to failure, while hypersafe strategies often stifle creativity and result in stagnation. Through real-world cases, such as Tesla, SpaceX, Apple, Amazon, Nokia, Blockbuster, and Blackberry, the analysis demonstrates both the benefits and dangers of different approaches. Risk-taking fosters breakthroughs and long-term growth but requires robust risk management frameworks, pilot testing, and adaptive organizational culture. Safety ensures continuity, especially in high-stakes sectors like healthcare and aerospace, but taken to the extreme, it discourages experimentation and blocks transformational opportunities. The findings suggest that successful organizations achieve balance by encouraging intelligent risk-taking while maintaining strong safety systems, thereby sustaining both innovation and resilience in dynamic markets.

Keywords: Risk, Innovation management, Safety culture, Organizational resilience, Strategic balance.

Institute for Statistical Studies and Economics of Knowledge, HSE University. Master's student of the Postgraduate Program; E-mail address: mrasa@edu.hse.ru

Introduction

Innovation is key to the survival and success of an organization in today's highly competitive, fast-paced business environment. Innovation, however, is very relative to venturing into new grounds, which essentially is a risky undertaking. These risks could be related to investment in unproven technologies, entry into virgin markets, or exploration of a new business model. On the other hand, safety guarantees continuity at no extra cost since an organization is able to avoid some costly failures. On the other hand, hypersafe organizations often stifle creativity and close themselves off to various forms of transformational opportunity. In such a case, balance must be struck between risk and safety for companies to innovate without jeopardizing their core operations. This essay deals with the significance of risk and safety in respect to each other for innovation management, how equilibrium can be attained, and gives an example of companies that succeeded or failed to do so in reality.

The Role of Risk in Innovation

But risk is inherent in the innovation process. Innovation, by definition, involves doing something new or different. Therefore, there is always a degree of uncertainty—different products, new markets, and different business strategies involve risks that organizations have to take in order to create value and move ahead.

For example, Tesla and SpaceX have taken huge risks under the pioneering pace set by Elon Musk to make a stride in technology. Evidently, a decision by Tesla to invest in electric vehicles and autonomous driving technology was considered highly risky, considering that the EV market was still at an infant stage then. Traditional automakers were wary of it and opted to concentrate on their existing product lines. However, Tesla made that bold gamble, which paid off by making the company one of the leading EV manufacturers to date, with the entire automotive industry moving toward electrification.

It was a risk when SpaceX decided to develop reusable rockets, something that most people in the aerospace industry thought was impossible or too expensive. It was that very challenge which SpaceX conquered and changed space travel forever, reducing the cost of launching anything into space and allowing for even further ambitions relating to space exploration. These examples show just how risk-taking can really pay off big and create advantages that are enduring over time.

However, taking risks does not really pay off all the time. Organizations that fail to manage risk often undergo the harshest impacts. One well-known example involves Nokia: once the leading player in the mobile phone industry. True to its head start, Nokia was rather slow to adapt to the smartphone revolution and unwilling to take the risks associated with adopting such technologies as touchscreens and application-based ecosystems.

Being so, the company quickly gave away its market share to competitors such as Apple and Samsung, up until its very demise. This case shows that, although being risky is a good strategy, risk management is just as important in avoiding a disastrous outcome.

The Need for Safety and Stability

While risk-taking notices the zeal of innovation, its reverse side of the coin carries with it safety and stability in ensuring growth and sustainability within an organization. Safety, in this regard, concerns those practices employed by an organization to protect itself from failure and ensure continuity. Such practices might

include maintaining financial reserves, adhering to strict sets of rules and regulations, conducting proper market research before launching any new product or service.

Good examples of such industries include healthcare, aerospace, and finances. For instance, in the health sector, any new device or treatment has to be critically tested and approved by the relevant regulating authorities to ascertain safety for use by patients. The losses resulting from failure will not only be monetary but may also involve loss of human life. Therefore, companies dealing in these sectors tend to be more conservative in their methods of innovation; safety takes precedence over speed.

Similarly, in the aerospace industry, companies like Boeing and Airbus have to go by very strict safety in developing new aircraft since the cost of failure is simply too high, resulting in financial losses and loss of human life. While those industries are innovative, they balance their hard drive for new technologies with strict safety protocols as a way to prevent disasters.

While taking too much care about safety, such organizations will also lose their chance for growth and innovation. Blockbuster is the prime example of such an organization that, due to excessive pride in stability and unwillingness to reconsider its business model, was not able to innovate: Early in the days, Blockbuster was supposed to buy Netflix but refused to do so.

It instead chose to safeguard its physical rental shops, eventually finalizing its bankruptcy agreement as the market continued to shift to digital streams. This case, therefore, brings into view once again the dangers of being overly cautious and how organizations need to strive for a balance between security on one hand and changeability/willingness to change on the other hand.

Finding a Balance

The balancing act for organizations, however, is to find the right mix between risk and safety. Such a balance needs to be judiciously drawn between strategic planning and organizational culture. Many strategies can be adopted for guiding companies in striking the right balance. One such salient strategy involves the use of risk assessment frameworks. This framework enables any business to appraise the potential risks that present a new business venture might pose or carry and subsequently allow the business to decide whether this initiative is considered worth pursuing. Categorizing these risks by their potential impact and likelihood allows organizations to effectively make informed decisions regarding the acceptance or mitigation of certain risks. In this respect, it deters companies on many occasions from taking excessive risks that would render their operations in jeopardy.

Other successful investments include pilot testing and prototyping, where firms test a new idea on a smaller scale before investing in it. This will have them test the viability of a new product, service, or technology with minimal risks from large-scale failures.

For example, most technology companies, such as Google and Amazon, release beta versions of their products to test them with users and improve them with feedback before releasing them to the mass market. Besides risk assessment and pilot testing, it is the leadership and organization's culture that keeps the scale between risk and safety in balance. The leader should provide an environment to enable the employees to take risks but at the same time be conscious of stability and safety of the platform. Indeed, Amazon is a prime example regarding how to nurture this innovative culture while mitigating their risk factors.

Amazon fosters a culture of experimentation and risk-taking, from the "Day One" philosophy, which reminds employees that it is always day one and that the

company needs to keep innovating. In addition, solid operational processes have been established to provide stability and profitability in the core business.

Success and Failure Case Studies

One of the famous success stories in risking safety is Apple. It does well in setting trends by introducing pioneering products into the market, for instance, the iPhone, iPad, and Apple Watch. A strategy of innovation at Apple is fully characterized by a careful balance between risk and safety.

It innovates by taking calculated risks in investment in new technologies and in pushing the boundaries of design. However, it ensures that its products undergo rigorous testing to keep standards of quality and reliability high. Fair to say, Apple has managed to stay ahead in the technology world without getting too mired down in risk.

In contrast, the failure of Blackberry is another consequence of imbalance between risk and safety. Blackberry once dominated the smartphone arena, taking for granted the security of its messaging services and business-oriented devices. But the company's reluctance toward taking risks and adapting to the trend of touchscreen smartphones had it lag behind in the competition from both Apple and Samsung. Blackberry became too focused on safety and held on too tight to its existing products. These then brought it down when it could not harness the dynamic nature of the changing market conditions. This case underlines the fact that when needed, risks are necessary in order to be competitive.

Conclusion

In brief, the tightrope balance between risk and safety would be of essence for any organization that has to innovate to keep abreast of the fast-changing world while providing stability in the long run. Although risk gives the force for change that could propel an organization past its competitors, it must be grasped cautiously lest it results in failure. All the same, safety should not be overtly restrictive to discourage companies from trying their hands at new opportunities. Companies like Apple and Amazon have shown efficiently how innovation and growth can be sustained with a properly balanced approach in issues related to risk and safety. On the other hand, companies such as Blockbuster and Blackberry have provided proof of the opposite—that when it comes to risk and safety, if these factors are not managed properly, missed opportunities and a decline within the company will be the results.

As markets continue to evolve, organizations should re-evaluate constantly their strategies for risk-taking to ensure they remain innovative but secure.

Expanding Mongolian Innovation through the Belt and Road Initiative: Opportunities, Challenges, and Management Strategies

By Orgilbold Tsogtbayasgalan

Abstract: The Belt and Road Initiative (BRI), introduced by China in 2013, presents significant opportunities for Mongolia, particularly through the China-Mongolia-Russia Economic Corridor (CMREC). Mongolia's engagement in the BRI could enhance regional economic integration, promote infrastructure modernization, and foster sustainable economic growth. However, this participation brings not only benefits but also considerable challenges and related risks and uncvertainties. This paper examines Mongolia's role within the BRI by assessing its financial conditions, infrastructure preparedness, foreign direct investment (FDI) trends, and the status of its national innovation system. Findings indicate that while Mongolia stands to gain substantially from improved infrastructure and increased FDI inflows, it must proactively address risks associated with governance practices and environmental sustainability. The paper concludes by offering practical policy recommendations intended to enable Mongolia to effectively capitalize on its strategic position within the economic corridor and reduce the identified risks.

Keywords: Belt and Road Initiative (BRI), China-Mongolia-Russia Economic Corridor (CMREC), Economic corridors, Mongolia, Foreign Direct Investment (FDI), Asian Infrastructure Investment Bank (AIIB).

School of Public Policy & Management, Tsinghua University. Master's student of the Postgraduate Program.

Introduction

Mongolia, a landlocked nation of remarkable natural resource wealth, lies at the geopolitical crossroads of two global powers—China and Russia. Renowned for its vast reserves of coal, copper, gold, uranium, and rare earth elements (REEs), Mongolia holds significant potential to emerge as a key player in global supply chains. However, its developmental trajectory is hindered by its reliance on the export of unprocessed raw materials, infrastructural deficiencies, and governance challenges. The dominance of resource exports, primarily to China, has exposed Mongolia to the risks of economic dependency and global commodity market volatility. These constraints limit Mongolia's ability to leverage its natural resources for sustainable and diversified economic growth.

The Belt and Road Initiative (BRI), launched by China in 2013, offers Mongolia a unique opportunity to turn challenges into opportunities for regional development. Encompassing infrastructure, trade, and investment initiatives, the BRI seeks to establish interconnected economic corridors across Asia, Europe, and Africa. Mongolia's participation in the China-Mongolia-Russia Economic Corridor (CMREC), a flagship component of the BRI, positions it as a vital transit hub in the Eurasian region.

Beyond infrastructure development, the BRI provides Mongolia access to Chinese expertise in technology transfer, renewable energy, and advanced mining practices. It offers a platform for Mongolia to expand its innovation ecosystem and integrate into global value chains.

However, Mongolia's engagement with the BRI is fraught with complexities. Domestic resistance to large-scale mining and infrastructure projects has emerged due to concerns over environmental degradation, displacement, and inadequate benefit-sharing mechanisms. The governance landscape, characterized by overlapping institutional mandates and regulatory inefficiencies, further complicates project implementation. Moreover, Mongolia's reliance on Chinese investment and technology raises concerns about economic sovereignty and geopolitical vulnerabilities. Understanding these dynamics requires a robust theoretical framework to analyze Mongolia's decision-making processes and stakeholder interactions.

This work aims to provide recommendations that ensure the BRI serves Mongolia's long-term interests, promoting economic diversification, technological advancement, and sustainable growth, rather than reinforcing existing vulnerabilities like dependency on raw material exports, economic instability, or environmental degradation. Additionally, it analyzes Mongolia's policymaking processes and proposes management strategies to align BRI projects with national priorities.

Analysis of Mongolia's National Innovation System

To successfully harness the potential benefits of the Belt and Road Initiative (BRI), particularly the China-Mongolia-Russia Economic Corridor (CMREC), Mongolia must closely evaluate its National Innovation System (NIS). This paper explores Mongolia's innovation landscape by examining how political, economic, social, technological, environmental, and legal factors influence the country's innovation capabilities. The analysis aims to identify critical areas that Mongolia can strengthen to promote sustainable and innovation-led growth.

This paper analyzes Mongolia's Foreign Direct Investment (FDI) distribution by country in 2023. The Netherlands is the largest investor, representing approximately 24.1% of total FDI, highlighting its significant economic ties with Mongolia, likely due to major investments such as the Oyu Tolgoi mining project (Davaasukh 2025). China

is the second-largest contributor, accounting for 9.5%, reflecting ongoing regional economic cooperation and infrastructure projects. Singapore, at 4.5%, and Japan, with 2.8%, also play notable roles. Other countries, including the USA, Canada, and Russia, collectively represent smaller but still meaningful portions of investment. This diversified investment landscape underscores Mongolia's strategic importance and attractiveness to international investors, emphasizing both opportunities and geopolitical considerations. (National Statistics Office of Mongolia, nso.mn, 2024).

This paper also analyzes the distribution of Foreign Direct Investment (FDI) by different sectors in Mongolia for the year 2023. The mining sector dominates the FDI landscape, accounting for 75.1% of total foreign investments. This highlights Mongolia's heavy dependence on its mineral resources, especially coal, copper, and gold, which continue to attract significant international investments. Other sectors have relatively lower contributions to FDI. Wholesale and retail trade, including vehicle repairs, is the next largest recipient, but accounts for only 5.7%. Financial and insurance activities follow closely with 4.5%. Professional, scientific, and technical activities make up around 2.6% of the investments, and information and communication sectors represent a small share of 0.6%. Education is the least attractive for foreign investors, receiving just 0.1%.

This data shows Mongolia's economy heavily relies on mining activities, with limited diversification into other industries. The large investment gap between the mining sector and other sectors points towards a need for strategic initiatives to attract investments to more diversified areas, ensuring long-term sustainable economic development. (National Statistical Office of Mongolia, nso.mn)

Strategic Evaluation of Innovation Readiness under the BRI

Mongolia's readiness to leverage the Belt and Road Initiative (BRI) as a catalyst for innovation-driven sustainable development depends upon its strategic integration of systemic reforms across multiple domains. One significant advantage is Mongolia's strategic geographic position between China and Russia, which places it at a crucial juncture for economic corridors and infrastructure investments under BRI. This positioning can facilitate regional integration and enhance Mongolia's role as a transit and trade hub.

However, to capitalize on this advantage, Mongolia must strategically align its internal strengths—such as abundant natural resources and favorable demographics—with external opportunities, notably in sectors like renewable energy, logistics, and digital technology. Mongolia must continuously balance Chinese influence with broader international cooperation to prevent excessive dependency. Diversifying partnerships, actively engaging multilateral financial institutions, and incorporating strict governance frameworks are necessary to mitigate geopolitical and financial risks.

Economically, Mongolia's heavy reliance on commodity exports, especially minerals, underscores both vulnerability and potential. FDI data show that foreign investments are concentrated within the mining sector, limiting spillover into innovation-driven industries. A strategic shift is needed to direct investments into sectors that promote value addition and technological advancement. Redirecting investments into renewable energy manufacturing, agro-processing, and ICT development would significantly enhance Mongolia's innovation ecosystem. This requires reasonable upgrade of industry to avoid long term dependency on natural resources only. In other words, a paradigm shift is needed for Mongolians to conquer a space higher in the value chain with respective revenue increase. This in turn,

requires a risky investment into skilled labor force which is a long-term undertaking in any case with uncertain results. It's been experienced in many less developed countries that investment in education and training of labor force might lead to brain drain due to the significant demand for highly trained labor in developed countries which offer better employment conditions.

Mongolia's youthful, urbanizing population also represents a vital asset. This demographic profile supports the human capital needed for innovation and digital integration. However, skill gaps—particularly in STEM fields—pose a challenge. Educational reforms, vocational training programs aligned with BRI projects, and public-private partnerships must be implemented to unlock the full potential of Mongolia's labor force while simultaneously improving employment conditions for qualified labor to maintain the skilled labor force in Mongolia. It shows, that Mongolia faces the chicken – egg problem, e.g. first upgrading labor force competence and skills level hoping that the labor market is large enough to absorb the changing supply of labor or investing in upgrading the labor market first. Both approaches are facing serious uncertainties.

2.2. Systemic Constraints and Institutional Challenges

While Mongolia possesses several strategic strengths, it also faces systemic constraints that limit innovation capacity. Despite BRI-driven infrastructure improvements, Mongolia's innovation-specific infrastructure—including technology parks, research labs, and digital connectivity—remains inadequate. Infrastructure projects must explicitly incorporate technology transfer mechanisms and innovation-supporting facilities. Proactive negotiation with BRI partners to include joint ventures, local content requirements, and technology-sharing provisions is essential.

Environmental sustainability is another critical concern. Mongolia's fragile ecosystems—especially in mining regions—demand robust environmental safeguards. Sustainable and green infrastructure, guided by rigorous environmental impact assessments, will help mitigate long-term risks and align BRI investments with global climate objectives.

The regulatory and institutional framework remains underdeveloped. Weak enforcement capacity, inconsistent policies, and limited protection for intellectual property increase risks of disputes and corruption. These challenges discourage private-sector innovation and limit Mongolia's ability to attract high-quality investment. Institutional transparency, legal reform, and anti-corruption measures are necessary to improve investor confidence and build a stable innovation environment.

Conclusions

This paper examines the multifaceted challenges Mongolia faces in benefiting from China's Belt and Road Initiative (BRI), particularly through its strategic involvement in the China–Mongolia–Russia Economic Corridor (CMREC). Through an in-depth analysis of Mongolia's National Innovation System (NIS), the study has identified key systemic constraints and external risks while highlighting promising opportunities to enhance Mongolia's innovation capacity and sustainable development outcomes.

One of the core findings of this study is that despite Mongolia's strategic geographic position and resource endowment, its ability to translate BRI engagement into innovation-led development is significantly constrained by institutional weaknesses. These include fragmented governance structures, overlapping

ministerial responsibilities, weak regulatory enforcement, and frequent changes in political leadership.

Such systemic issues undermine investor confidence, disrupt project coordination, and reduce the potential for technology transfer and innovation spillovers. To address these challenges, Mongolia should establish a centralized oversight body or inter-ministerial committee specifically tasked with coordinating and monitoring BRI-related projects. This institutional reform would streamline decision-making, reduce bureaucratic inefficiencies, and enhance transparency and accountability in dealings with foreign investors and international partners. Lessons from successful BRI participants demonstrate that clear, stable governance significantly improves project outcomes and investment flows. Therefore, improving governance and regulatory clarity is not just a desirable goal—it is a strategic necessity for Mongolia to realize the innovation potential embedded in BRI engagement.

In line with institutional reforms go national programs for economic development and especially labor force upgrading to enable economy catching up in the value chain. Such measures however need to be carefully designed to avoid abuse of public money. Such abuse might be found in the wrong allocation of funds intended for technological upgrading but eventually not achieving impact. It's often the case that such funds are not designed to achieve a critical size for a broader audience, e.g. eligible recipients but also the funders lack powerful monitoring and controlling mechanisms to ensure the respective investment is initiated and implemented leading to upgrading. Furthermore, the country faces a mentality challenge by mans of convincing the economic stakeholders to initiate and support the changes needed. Oftentimes stakeholders wonder why they should revise their business models, it worked for many years so why changing it? What follows is that these actors will very likely ake advantage of the national initiative and related funding but don't support the objectives and scope of the initiatives fully instead channeling funds to other means. Such behavior is often observed in less developed countries which employ a significant share of less qualified labor with an economy resting on early value chain stages activities. So for the public authorities the risk of misallocating public funds or not achieving measurable impact is significant at the same time authorities can't afford of remaining passive. In that sense authorities need to take risk to invest funds despite uncertain outcome.

References

Davaasukh D (2024). EXTERNAL SECTOR STATISTICS REVIEW IN MONGOLIA: Trade Services and Direct Investment statistics. Available at https://unctad.org, last accessed 10 August 2025