



EXPLORING THE INTERSECTION OF ERGONOMICS AND HUMAN FACTORS IN THE IMPLEMENTATION OF SUSTAINABILITY STRATEGIES IN THE BANKING SECTOR: A CRITICAL ANALYSIS

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Abstract

The aim of this paper is to explore the intersection of ergonomics and human factors in the implementation of sustainability strategies, based on the analysis of a Sustainability Plan proposed by a banking institution. This is a narrative review, based on a critical analysis of a Sustainability Plan structured and implemented by a private Brazilian bank. Among the themes listed in the sustainability plan, seven are aligned with the human factors perspective: Attracting, Retaining, Satisfying and Developing Talent; Diversity; Culture of Sustainability; Customer Relations and Satisfaction; Best Corporate Governance Practices; Human Rights and; Occupational Health and Safety. Human factors ergonomics plays a crucial role in promoting sustainability in business models, contributing to the creation of safe and efficient working environments, while at the same time promoting innovation and environmental responsibility.

Keywords: Ergonomics. Sustainability. Human Resources Management. Workers' Health.

1. INTRODUCTION

In recent years, in various sectors of the economy, the pressure on organizations to respond to concerns related to sustainability has increased (Joyce; Paquin, 2016) calling for measures to satisfy socio-environmental demands, maintain organizational growth and generate positive long-term impacts (Wan; Mathiyazhagan; Xu; Diabat, 2016). Large financial

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institutions operating in Brazil also show interest in the topic, considering its great influence on the market, the economy, society and the environment, which reinforces the importance of adopting social responsibility and sustainability strategies, through innovations in their processes.

Despite addressing the importance of sustainability in all areas of business, including governance and corporate culture, the UN Principles for Responsible Banking do not explicitly mention sustainable ergonomic practices for bank workers.

Sustainable ergonomics takes into account physical, environmental, cognitive, organizational, socio-technical factors, as well as the complex interactions between human beings, the environment, tools, products, equipment, and technology. It seeks to overcome the vision of microergonomics, which is restricted to specific aspects related to jobs, to advance in macroergonomics aimed at optimizing socio-technical systems, including their organizational structures, policies and processes (Valim; Light; Callefi, 2023).

Brunoro, Bolis and Sznelwar (2017) consider that the production system needs an analysis that also includes the social aspect, taking into account the work itself, emphasizing the importance of work for the lives of the subjects, and how it contributes to quality, productivity, as well as to the development of society and culture itself.

A company's sustainability is a strategy focused on long-term growth and sustainable production and service practices. In addition to the adequacy of processes, the organization needs to consider the importance of human factors for its sustainability, considering that employees represent the institution's most precious asset and that its competitive advantage also depends on human capital (Freitas; L; Santos, 2022). In view of this, this work aims to explore the intersection of ergonomics and human factors in the implementation of sustainability strategies in the banking sector, based on a narrative review of the Sustainability Plan of a Brazilian private bank.

Understanding and addressing human factors can help organizations create safer, healthier, and more productive work environments, as well as improve the overall well-being of workers.

2. MATERIALS AND METHODS



This is a narrative review, carried out from the critical analysis of a Sustainability Plan structured and implemented in a Brazilian private bank.

3. RESULTS AND DISCUSSIONS

The concept of sustainable development has gained greater visibility since the publication of the *Brundtland Report* (Ipiranga; Godoy; Brunstein, 2011) when it expresses that development is capable of meeting the needs of the current generation, without compromising the ability to meet the needs of future generations, proposing a global call to action to end poverty, protect the environment and the climate, and ensure that people, everywhere, can enjoy peace and prosperity.

This concept is transposed to the organizational environment from the Triple *Bottom Line* proposed by Elkington (2011) and which, in general, has three pillars, which are social, environmental and economic and the sustainable business model for banking institutions proposed by Yip and Bocken (2018), where banks have important technological innovations for sustainability, and some of these social innovations seek to improve the quality of life of the population and the environment, and organizational innovations that allow institutions to collaborate with sustainable development, through the way they organize their activities.

Since Corporate Sustainability is convergent with the concepts of sustainable development, it is first necessary to highlight the elements common to it, such as, for example, the consideration: of values and ethics (respect, cooperation, balance, centrality of the human being); temporality (the actions of the current generation create or restrict the opportunities of the next generations); the multiple scales of analysis and interdependence (local, regional and global or individual, organization and society); and of the various dimensions (ecological, social and economic); of the interdependence and integration between these elements (BRUNORO, BOLIS AND SZNELWAR, 2017, p.12).

Still in this scenario, innovation is an imperative for organizations to remain competitive, as well as a necessary element for the progress of societies. In the organizational environment, the term is intended to describe new products, services, methods, and organizational approaches that enable businesses to achieve extraordinary returns (Wheelen, Hunger, Hoffman, & Bamford, 2018). Innovation and ergonomics are intrinsically linked and have a significant impact on several areas, including the work environment and productivity,



enabling efficiency in the fulfillment of tasks, reducing absenteeism, increasing employee motivation and improving the organizational climate.

Regarding the development of sustainable business models, Lüdeke-Freund and Dembek (2017) identified five necessary characteristics: (1) explicit sustainability orientation, integrating ecological, social, and economic concerns; (2) expanded notion of value creation, questioning traditional definitions of value and success; (3) expanded notion of value capture in terms of those for whom value is created; (4) explicit emphasis on the need to consider diverse stakeholders, and; (5) Expanded perspective on the system in which a sustainable business model is embedded.

It is important to consider that the worker, as a social actor, is an interested party in the entire process, leading the implementation of the proposed actions. Therefore, human factors must also integrate the ecological, social and economic concerns in which they are inserted.

The development of ergonomics was associated with industrial issues, prioritizing productive aspects (such as increased production and profit), physical factors and man's adaptation to working conditions. Still in the period of the Second World War, all efforts in the technological area were aimed at the production of relatively complex war instruments, equipment that required skill from the operator in unfavorable environments, where accidents and errors were frequent and sometimes had fatal consequences (Iida, 2005). In this context, not even with the best selection, and the best training, the operation of some activities still exceeded the capabilities of the operators (Sanders; McCormick, 1993).

Over time, the importance of considering the individual conditions of man, as well as the social and personal determinants of the worker's behavior, was perceived, emerging the need to adapt the equipment to people. A human factor is a physical or cognitive property of an individual or social behavior specific to humans, which can influence the functioning of technological systems. The consideration of human factors presupposes biomechanical and cognitive processes that define the capacities and limits of the human being that must be considered in the design of production systems.

Meister (1999) describes human factors as physical, cognitive, and motivational. Studies of this current are related to anthropometric characteristics, characteristics linked to muscular effort, characteristics linked to environmental factors, psychophysiological characteristics (vision, hearing, touch, reaction time, perception, cognition) and characteristics of circadian rhythms.



Ergonomics plays a crucial role in promoting sustainability in business models, contributing to the creation of safe and efficient work environments, while promoting innovation and environmental responsibility. In this context, the adequacy of organizational structures, policies and processes are necessary for the implementation of sustainable work strategies that consider human factors.

It is important to highlight that a well-defined organizational structure can facilitate the effective communication of sustainability policies and ensure that they are implemented at all levels of the organization. Another aspect involves the effective implementation of policies that include in guidelines for sustainable practices aligned with the promotion of a healthy and safe work environment. No less important, the adequacy of work processes is essential to ensure organizational efficiency as long as they are aligned with the diversity of human factors.

There is a unique structure that helps ensure that the strategy and practice of the signatory banks are aligned with the vision that society has established for its future, based on the sustainable development goals, which are the Principles for Responsible Banking (PRB) (Gomes; Olive tree; Matias, 2017). The PRBs establish guidelines to ensure that banks' strategies and practices are aligned with the Sustainable Development Goals (SDGs), incorporating sustainability at all levels of the banking sector, at the strategic, portfolio, transactional and business levels.

These points are directly associated with a set of standards and good management practices for organizations, represented by the acronym ESG - Environmental, Social and Governance, with the inclusion of the dimensions that involve the decision-making process of investors, known as sustainable investment or responsible investment (Silva; Extend; M; Murarolli, 2016). This attention is also related to the social search for improving the customer journey and ensuring more satisfaction, data protection and privacy and, in addition, it works to diversify teams, unite employees and establish a relationship with the community.

Moiescu (2018) highlights that clients' perception of corporate sustainability is directly influenced by the degree of integration of economic, social, and environmental concerns in business operations and in the organization's interactions with its *stakeholders*. A bank's trustworthiness and reputational risk are also intrinsically linked to the health and well-being of its employees. Studies emphasize the importance of mental health and quality of life for an organization's employees, highlighting that employee satisfaction has a direct impact on the organization's reputation (France; Gil; Pinto, 2019; Saints; Natalli, 2023).



The objective of the Sustainability Plan is, therefore, to avoid, mitigate and/or reduce possible impacts that may affect the generation of value, both for the business and for society, in alignment with the SDGs (Figure I). To respond to these challenges, the banking institution has established actions, indicators, and short- and long-term goals based on the assessment of risks, opportunities, and trends in sustainability for a three-year period, distributed in five pillars: people, planet, prosperity, peace, and partnership. Thus, the implementation of the Plan involves all of the Bank's strategic areas and representatives of its main stakeholders (employees, customers, suppliers, partners, shareholders/investors, representatives of civil society and sustainability experts, competitors, regulatory bodies, press/media and government).



Fig. 1 – Sustainable Development Goals

For the 2023-2025 triennium, specific themes and challenges in sustainability were identified. These represent key areas that need attention and strategic action to ensure long-term sustainability. Of the 23 topics listed, 11 were considered material (priority) and 12 were considered relevant, aligned with the SDGs. 47 actions were outlined and 100 indicators were established, among which, 19 contribute to Decent Work and Economic Growth.

This dimension involves the promotion of programs and initiatives related to attracting and retaining talent and developing human capital, in order to increase business competitiveness and employee satisfaction. The proposed actions aim to strengthen initiatives whose reward is impacted by the evaluation of individual performance and; improvement of recruitment and talent selection processes with a focus on diversity.



Manuti and Giancaspro (2019) state that strategically aligning both individual and group interests with the organization's objectives has been an important challenge. This alignment requires a planned set of policies and practices that contemplate the processes of hiring, retaining, and developing people for the transformations of organizational environments that result from innovations, technologies, sustainability, and other external variables.

One of the aspects that interferes with the ability to adapt is job satisfaction, which, according to Rohmert (*apud* FISCHER; PARAGUAY, 1989), refers to integration, autonomy, motivation, involvement and the use of physical and mental capacities. Thus, job satisfaction is strongly influenced by adequate ergonomic conditions. Spaces that facilitate collaboration and communication, in addition to offering comfort, encourage learning and professional growth (MARQUEZE AND MORENO, 2005).

In summary, investing in human factors ergonomics, including the *design* of equipment, workstations, and work environments that are comfortable, safe, and efficient, not only improves the health and well-being of workers, but also contributes to the attraction, retention, satisfaction, and development of talent within the organization.

3.1. Diversity

This dimension aims to promote diversity and combat any form of discrimination in the workplace and in the work with the Bank's stakeholders, through the promotion of diversity.

Diversity refers to the inclusion of people with different characteristics, such as gender, age, ethnicity, physical and cognitive abilities, by accepting and respecting individual differences and creating an environment where everyone feels valued and included. Diversity is contemplated in the guidelines presented by ESG, with regard to good practices related to work, physical and emotional safety of its employees and social inclusion.

It means considering the varied needs and capabilities of a diverse workforce when designing work systems and environments, including improving employee satisfaction and productivity, attracting talent, reducing material waste, and promoting a more equitable and sustainable work environment. Here, the skills, potentialities and limitations of workers must be incorporated into work processes, considering the different levels of mobility and abilities. It also involves incorporating interfaces and tools that are intuitive and usable by people with different levels of experience and technological skills (ButturaChrusciak et al., 2020).



3.2 Culture of sustainability

It aims to foster a culture of sustainability through the implementation of policies, programs, commitments and actions that encourage a change in behavior among BB's stakeholders. To this end, actions were proposed to disseminate the culture of sustainability, recognition of performance and sustainable initiatives by employees and society. It also involves promoting awareness and training of employees and Senior Management in sustainability.

Organizational learning is defined as the acquisition of knowledge by willing individuals and groups, aiming at its application in decision-making and in various activities, in order to influence people to perform actions considered important for the organization.

Recent research suggests that organizational culture has consequences on innovation, on the people management policies practiced in companies, on the degree of concern of organizations with their social/environmental responsibility, on leadership and on the management of knowledge in organizations itself.

3.3. Customer Relationship and Satisfaction

This area aims to qualify customer relationship management and increase satisfaction and retention rates by strengthening the culture of sustainability in customer relationships, through employee engagement and training in ESG products/services. This action is strongly impacted by the effective adoption of the culture of sustainability, since workers act as the front line in the dissemination of this culture in relationship practices.

3.4 Best Corporate Governance Practices

The strategic management of companies is a complex process that requires the involvement of all stakeholders, including employees, customers, suppliers, and the community at large. This theme aims to align the Bank's governance with the best international practices and in line with the institution's strategic objectives, reinforcing the role of senior management in the sustainability strategy, reinforcing the management of the bank's environmental and eco-efficiency programs, initiatives and practices.

3.5 Human rights



With regard to human rights, banks have a responsibility to ensure that their operations and investments do not contribute to violations of these rights. Therefore, the Plan aims to improve the management of the human rights theme, assessing the impacts on the institution's work environment, practices and business through the qualification of the *risk analysis due diligence* process that may impact BB's practices and business.

3.6 Occupational Health and Safety

Regarding occupational health and safety, the sustainability plan proposes to strengthen the Bank's performance in the management of health, safety, well-being and quality of life of employees. To this end, by the year 2025, the institution must implement initiatives to gradually reduce the absenteeism rate and adopt flexible work options, through remote work.

Absenteeism corresponds to the employee's unscheduled absence from work, which is multifactorial in origin and takes into account factors directly related to working conditions and individual factors. In terms of health, it corresponds to a significant indicator of the health of this population, with a direct impact on health expenditures, discontinuity of care, productivity and quality of work. The implementation of programs to protect the health and safety of workers becomes essential to eliminate or mitigate the risks associated with the triggering or aggravation of occupational diseases.

Flexible work, in general, is an increasingly present trend in the world of work in the twenty-first century, being considered a response to rapid changes in the market and new forms of work organization. Remote work implies carrying out tasks at a distance, making use of the latest communication technologies. This implies that it can occur even in an office environment, as long as it is intermediated by electronic means and does not require the physical presence of the supervisor (Nogueira; Patini, 2012).

Among the benefits of remote work for sustainability, we can mention the more efficient use of resources, conservation of the environment by adopting renewable energy for digital technologies, and reducing the need for employees to commute daily, reducing carbon emissions from vehicles (Economist Impact, 2023).

Among the topics listed in the Sustainability Plan, seven are aligned with the human factors perspective, namely: (1) Attraction, Retention, Satisfaction and Development of Talents; (2) Diversity; (3) Culture of sustainability; (4) Customer Relationship and Satisfaction;



(5) Best Corporate Governance practices; (6) Human Rights and; (7) Occupational Health and Safety.

4. CONCLUSIONS

Considering the ergonomics of human factors is essential for business sustainability, considering that the competitive advantage and sustainability of an organization also depends on human capital.

A well-defined organizational structure can facilitate the effective communication of sustainability policies and ensure that they are implemented at all levels of the organization. Another aspect involves the effective implementation of policies that include in guidelines for sustainable practices aligned with the promotion of a healthy and safe work environment. No less important, the adequacy of work processes is essential to ensure organizational efficiency as long as they are aligned with the diversity of human factors.

REFERENCES

- BANCO DO BRASIL. Caderno Agenda 30 BB 2023-2025. 2023. Disponível em: <https://www.bb.com.br/docs/portal/pub/CadernoAgenda30BB.pdf>. Acesso em: 28 jun 2024.
- BRUNORO, C.M; BOLIS, I; SZNELWAR, L.I. (2017). Contribuições da ergonomia da atividade e da psicodinâmica do trabalho para um trabalhar em uma perspectiva de sustentabilidade. *Revista Ação Ergonômica*.
- BUTTURACHRUSCIAK, C. et al. (2020). Ergonomia e fatores humanos: um panorama das definições com base na literatura. *Revista Ação Ergonômica*.
- ELKINGTON, J. **Canibais com garfo e faca**. São Paulo: Makron Books, 2011.
- FARIA, Maria F. B.; FONSECA, Marcus V. A. Medidas de cultura de inovação e de cultura organizacional para análise da associação com inovação. *Revista de Administração e Inovação*, v. 11, n. 3, p. 30-55, 2014.
- FISCHER, F. M.; & PARAGUAY, A. I. B. B. A ergonomia como instrumento de pesquisa e melhoria das condições de vida e trabalho. In: FISCHER, F. M.; GOMES, J. R.; & COLACIOPPO, S. (coord.). *Tópicos de saúde do trabalhador* São Paulo: Hucitec, 1989.
- FRANÇA, A. L. C.; GIL, E. V.; PINTO, F. R. Relação entre qualidade de vida no trabalho e gestão de pessoas: um estudo bibliométrico. **Revista Eletrônica Gestão & Serviços**, v. 10, n. 1, pp. 2491-2523, 2019.
- FREITAS, A.D.G.; LACERDA, F.M.; SANTOS, E.A.; ALVARENGA, M.A.; BIZARRIAS, F.S. Human resources policies, learning, and turnover intention in organizations. **RAM, Rev Adm Mackenzie** [Internet], v. 23, n. 4:eRAMG220210, 2022. Disponível em: <https://doi.org/10.1590/1678-6971/eRAMG220210.en>. Acesso em: 12 jun. 2024.
- GARCIA DE PAIVA, L. et al . Fatores associados ao absenteísmo-doença de trabalhadores da saúde: revisão de escopo. *av.enferm.*, Bogotá , v. 38, n. 2, p. 234-248, Aug. 2020 . Available



from http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0121-45002020000200234&lng=en&nrm=iso. access on 18 July 2024. <https://doi.org/10.15446/av.enferm.v38n2.79437>.

- GOMES, M, C.; OLIVEIRA, S, V, W, B.; MATIAS, A, B. Eficiência do setor bancário brasileiro no período de 2006 a 2013: bancos domésticos x bancos estrangeiros. *Nova Economia*, v. 27, n. 3, pp. 641-670, 2017.
- HAFSI, T. & MARTINET, A. (2008) Estratégia e gestão estratégica das empresas: um olhar histórico e crítico. *Revista Administração Contemporânea*, vol.12, n.4, 1131-1158.
- IPIRANGA, A. S. R.; GODOY, A. S.; BRUNSTEIN, J. Introdução. **RAM. Revista de Administração Mackenzie**, v. 12, n. 3, p. 13–20, jun. 2011
- JOYCE, A.; PAQUIN, R, L. The triple layered business model canvas: A tool to design more sustainable business models. **Journal of Cleaner Production**, v. 135, pp. 474-1486, 2016.
- MARQUEZE, Elaine Cristina e MORENO, Claudia Roberta de Castro. **Satisfação no trabalho: uma breve revisão**. *Revista Brasileira de Saúde Ocupacional*, 2005. Tradução . . Disponível em: <https://doi.org/10.1590/s0303-76572005000200007>. Acesso em: 18 jul. 2024.
- MEISTER, David. *The history of human factors and ergonomics*. Mahwah, NJ: Lawrence Erlbaum Associates, 1999.
- MOISESCU, O, I. From perceptual corporate sustainability to customer loyalty: a multi-sectorial investigation in a developing country. **Economic Research Ekonomska Istraživanja**, v. 31, n. 1, pp. 55-72, 2018.
- MORSCHER, Emilio L. et al. A influência da cultura organizacional no processo de inovação: o caso da Águia sistemas de armazenagem em Ponta Grossa, Paraná. *Revista de Administração e Inovação*, v. 10, n. 2, p. 219-237, 2013.
- NOGUEIRA, A. M.; PATINI, A. C. Trabalho remoto e desafios dos gestores. *Innovation and Management Review*, v. 9, n. 4, p. 121-152, 2012
- ROCHA, R.; BAU, L.M. *Dicionário de ergonomia e fatores humanos [livro eletrônico] : o contexto brasileiro em 110 verbetes*. -- 1. ed. -- Rio de Janeiro: Associação Brasileira de Ergonomia – P.128, ABERGO, 2023
- ROCHA, M. P., SCHIMMEL, M., & ASSUMPÇÃO, M. (2011). Estrutura sísmica do manto superior abaixo do sudeste e do Brasil Central a partir da tomografia regional de tempo de viagem das ondas *P* e *S*. *Revista Geofísica Internacional*, **184**(1), 268-286. <https://doi.org/10.1111/j.1365-246X.2010.04831.x>
- SANTOS, B.E.O; NATALLI, B.V. **A importância da saúde mental e qualidade de vida para os colaboradores de uma organização**. 2023. 26 p. Trabalho de Conclusão de Curso (Bacharelado em Psicologia) - Universidade de Uberaba, Uberaba, Minas Gerais. 2023.
- SILVA, D.; ESTENDER, A. C.; MACEDO, D. L.; MURAROLLI, P. L. A importância da sustentabilidade para a sobrevivência das empresas. **Empreendedorismo, Gestão e Negócios**, v. 5, n. 5, pp. 74-91, 2016.
- SILVA, José Carlos Plácido da; PASCHORELLI, Luís Carlos (Org.). *A evolução histórica da ergonomia no mundo e seus pioneiros*. São Paulo: Cultura Acadêmica, 2010. (Coleção PROPG Digital - UNESP). ISBN



- Sustentabilidade na visão das empresas: o impacto da economia remota no meio ambiente. DocuSign, 5 de junho de 2023. Disponível em: [[Sustentabilidade na visão das empresas: o impacto da economia remota no meio ambiente](#)]. Acesso em: 18, junho de 2024.
- VALIM, G.A.S; LUZ, M. L. F.; CALLEFI, J. S. O aporte da ergonomia como contribuição no desenvolvimento sustentável. *In*: 32º Encontro Anual de Iniciação Científica e 12º Encontro Anual de Iniciação Científica Junior da Universidade Estadual de Maringá, 2023, Maringá. **Anais** [...]. Paraná: Universidade Estadual de Maringá, 2023. Disponível em: <http://www.eaic.uem.br/eaic2023/anais/artigos/6654.pdf>. Acesso em: 26 jun 2024.
- WANG, Z.; MATHIYAZHAGAN, K.; XU, L.; DIABAT, A. A decision making trial and evaluation laboratory approach to analyze the barriers to Green Supply Chain Management adoption in a food packaging company. **Journal of Cleaner Production**, v.117, p. 19-28, 2016.
- YIP, W.H.A.; BOCKEN, N, M.P. Sustainable business model archetypes for the banking industry. **Journal of Cleaner Production**, v. 174, pp. 150-169, 2018.