INTERDISCIPLINARY PERSPECTIVES ON VULNERABILITY: A COMPARATIVE ANALYSIS OF DEFINITIONS AND CONCEPTUAL IMPLICATIONS

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Abstract: *This paper explores the concept of vulnerability from an interdisciplinary perspective, highlighting its complexity and evolving nature in academic and lexicographic contexts. Starting with the etymology of the term—literally meaning "the capacity to be wounded"—the study examines how its meaning has expanded beyond physical dimensions to encompass psychological, social, economic, legal, and ecological aspects. The comparison of definitions brings together a wide range of definitions from renowned dictionaries and academic literature, identifying the advantages and limitations of each approach. The findings show that general definitions offer clarity and versatility but often overlook contextual and causal factors. In contrast, academic definitions tend to be more comprehensive, integrating elements such as adaptive capacity, resilience, uncertainty, and affective dimensions, yet they can become overly abstract or difficult to apply in practice. A central challenge is balancing specificity with general applicability, and acknowledging both the universal nature of vulnerability and the need for targeted interventions for disadvantaged groups. The paper emphasizes the importance of an interdisciplinary approach to defining vulnerability, as well as the ongoing conceptual adaptation required in response to emerging global risks and social transformations. It also stresses the essential role of context in using the term, suggesting that no single, universally valid definition exists—only formulations tailored to specific analytical, policy, or practical objectives. This study thus contributes to a nuanced understanding of a key concept in public policy, social intervention, and academic research. The paper was elaborated within the framework of the "Young researchers 2024-2025" competition project 24.80012.0807.09TC "Strengthening scientific and methodological support for reducing social vulnerability by increasing the level of financial inclusion of low-income groups" (2024-2025).*

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1. Introduction

The concept of vulnerability has become a cornerstone in contemporary academic, policy, and humanitarian discourses. From climate change and social inequality to legal exclusion and digital risk, vulnerability shapes how we understand exposure to harm and the capacity to respond to it. The term itself, derived from the Latin vulnerabilis, meaning "capable of being wounded", has evolved significantly over time. Originally denoting physical injury, its scope has expanded to encompass psychological, economic, legal, and systemic susceptibility to adversity. Given its growing relevance across disciplines, vulnerability is far from a uniform or static concept. It is multifaceted, context-dependent, and shaped by the intersection of structural conditions and individual experiences. As such, defining vulnerability presents both conceptual and practical challenges. This section explores a range of definitions drawn from dictionaries and academic sources, highlighting the advantages and limitations of each. Through this comparative analysis, we aim to identify the key dimensions of vulnerability and propose a flexible yet operational framework suitable for interdisciplinary research and applied practice.

2. Methodology

This study employs a qualitative, exploratory research design, focused on the conceptual analysis and typological classification of vulnerability as presented in academic literature and authoritative reference sources. The objective is to synthesize and evaluate diverse definitions of vulnerability across disciplines, highlighting their applications, limitations, and conceptual evolution. The research methodology is rooted in documentary analysis, which includes: lexical and etymological sources, such as major dictionaries (DEX, Merriam-Webster, Oxford, Cambridge, Larousse), to trace the historical and linguistic origins of the term; academic literature, drawing from peer-reviewed journal articles; a comparative matrix was constructed to systematically evaluate definitions based on criteria such considered aspects, advantages, and disadvantages. This approach enables a multi-dimensional analysis, allowing the study to capture both the universality and specificity of vulnerability in different theoretical and applied contexts. Sources were selected based on relevance to key dimensions of vulnerability (ecological, social, economic, psychological, legal, and digital). As limitations, this study does not include primary data collection or empirical fieldwork. Instead, it relies entirely on secondary sources. While this approach enables a comprehensive conceptual review, it may not capture the full diversity of lived experiences of vulnerability in specific communities or cultural contexts. Future studies may benefit from integrating qualitative interviews, case studies, or participatory research to complement and ground the conceptual findings.

3. Results and discussions

The word *vulnerability* originates from the Latin *vulnerābilis*, having entered the Romanian language through French (vulnérabilité). Its root, *vulnus* (plural: vulnera), meant *wound* or *injury*[1], while the suffix *-abilis* indicated ability or capacity. Thus, vulnerabilis literally means *capable of being wounded* or *susceptible to injury*. Later, in both French and English, although the core meaning was preserved, the original sense was expanded, often being used metaphorically to describe emotional, physical, or systemic susceptibility to harm or damage[2].

Table 1 presents a wide range of perspectives on vulnerability, from environmental and social aspects to legal and psychological dimensions. This diversity reflects the multifaceted nature of vulnerability, which can be understood and approached from various angles, depending on the context and purpose.

[1] In Proto-Indo-European, *wel-* meant "to break, to hit, or to wound."
[2] *To harm* has a broader and more formal range, while *to hurt* is more specific to concrete traumas or injuries, whether physical or emotional.

Table 1. **Comparative analysis of vulnerability definitions and their advantages and disadvantages**

Authors/ source	Definition	Considered aspects	Advantages	Disadvantages
DEX '09 (2009)	The trait of being vulnerable	General, non-specific	Simple, easy to understand	Lacks specificity; does not provide context or details regarding vulnerability factors
Cambridge Dictionary	The quality of being vulnerable (= able to be easily hurt, influenced, or attacked) or something that is vulnerable	General, relation to external risks	Clarity and broad applicability	Lacks a detailed perspective on causal factors
Larousse Dictionary	The vulnerable nature of something or someone; the state of a vulnerable person	Individual, relation to personal condition	Highlights individual condition	Lacks details on circumstances or conditions of vulnerability
Merriam-Webster Dictionary	The quality or state of having reduced resistance to an external agent; the state of being left without shelter or protection from something harmful	Relation to protection and risks	Includes aspects related to protection and physical vulnerability	Focus on material conditions without integration of other factors
Oxford English Dictionary	The quality or state of being vulnerable, in various senses	General	Versatility, applicable in multiple fields	Lacks specificity to guide analysis
Adger (2006)	The state of susceptibility to harm due to exposure to environmental and social stresses and lack of adaptive capacity	Environmental change, social change, adaptive capacity	Comprehensive, considers both environmental and social factors; emphasizes adaptive capacity	Too broad, encompassing too many aspects
Wolf et al. (2013)	A possibility of harm in the future	Future risk	Simple and clear; easy to understand and apply in various contexts	Lacks details; does not specify types of harm or involved factors
Havrilla (2017)	The condition of being exposed or unprotected, with inherent components of risk and resilience	Exposure, protection, risk, resilience	Emphasizes risk and resilience; acknowledges the role of protection	Too focused on the dichotomy of protection versus exposure
Thekdi and Aven (2021)	The combination of consequences and uncertainties, considering the occurrence of a threat or set of threats	Consequences, uncertainties, threats	Highlights the role of uncertainty; considers multiple threats	Too focused on theoretical aspects rather than practical implications
Rozmarin	The affective pattern that	Power	Unique	Complex and

(2021)	derives from affective encounters with formations of power that limit and hinder life; an affective response marking the micro-vital connections of bodies, allowing transformation and creativity to transcend stable subject positions	formations, affective responses, transformation, creativity	perspective, considers affective and creative dimensions; emphasizes transformative potential	abstract; difficult to apply in practice
Fernandes, Ranchordas and Beck (2024)	The susceptibility to being placed in a position of economic, social, ecological, or legal disadvantage, with potential harm as a result; a state that any individual may experience rather than a label attributed to disadvantaged groups	Economic, social, ecological, legal aspects, universality	Inclusive; recognizes vulnerability as a potential state for all individuals; multifaceted	Dilutes focus on specific vulnerable groups; breadth hinders targeted interventions

Source: Elaborated by author

One of the key challenges is balancing the breadth and specificity of definitions of vulnerability. The definitions of vulnerability provided by the analyzed dictionaries reflect a wide range of perspectives, from simple general descriptions to attempts at capturing more applicable aspects of the concept. DEX '09 (2009) defines vulnerability as "the quality of being vulnerable," offering an extremely general formulation. This simplicity makes it accessible and easy to understand, but at the same time, it limits its usefulness in contexts that require a detailed understanding or concrete application. The lack of further description of causal factors or the impact of vulnerability makes this definition less suitable for complex studies or practical interventions. The Cambridge Dictionary expands on this approach by including the relationship with external risks, defining vulnerability as "the quality of being easily hurt, influenced, or attacked." This definition provides clarity and broader applicability, making it easy to integrate into various social or economic contexts. The Larousse Dictionary shifts the focus toward the individual condition, describing vulnerability as "the vulnerable nature of something or someone" and "the state of a vulnerable person." This approach highlights the personal aspects of vulnerability, which is useful in situations requiring understanding at the individual level. However, this definition does not provide details regarding the specific circumstances or external conditions that generate vulnerability. The Merriam-Webster Dictionary adds a material and protection-related dimension, defining vulnerability as "the state of having reduced resistance to an external agent" and "the state of being left without shelter or protection from something harmful." This makes the definition more specific and useful in contexts involving tangible risks, such as physical or material threats. Nevertheless, it overlooks other essential factors such as social, emotional, or environmental elements that are crucial for a more comprehensive understanding. The Oxford English Dictionary offers a versatile and inclusive definition, describing vulnerability as "the quality or state of being vulnerable, in various senses.". This approach is useful due to its applicability across multiple fields but suffers from a lack of specificity, making it difficult to apply in situations that require a more targeted approach. In the scientific literature, broader definitions such as those of Adger (2006) and Fernandes, Ranchordas and Beck (2024)

provide comprehensive views that include multiple factors, but they are often too general for targeted applications. On the other hand, simpler definitions like that of Wolf et al. (2013) offer clarity and ease of application but lack the depth necessary for nuanced analysis. Several definitions highlight the role of adaptive capacity and resilience (e.g., Adger (2006), Havrilla (2017)). These aspects are essential for understanding how individuals and communities can respond to and recover from vulnerabilities. Emphasizing adaptive capacity and resilience adds a dynamic component to the concept, focusing not only on the state of vulnerability but also on the potential to overcome it. Definitions such as that of Rozmarin (2021) introduce complex and abstract concepts, such as formations of power and affective responses. While these offer a deeper theoretical understanding, they present challenges for practical application, especially in policy formulation and intervention design. Practicality is crucial for definitions intended for use in real-world contexts, such as disaster management or social policies. The varied definitions underscore the importance of context in understanding and applying the concept of vulnerability. Different situations may require different definitions. For example, environmental policies may benefit from Adger's comprehensive approach, while social interventions might find the simplicity of Wolf et al. (2013) more effective. The definition by Fernandes, Ranchordas and Beck (2024) is noteworthy for its inclusive nature, recognizing vulnerability as a condition that anyone can experience. This universality can encourage a more empathetic and comprehensive approach to addressing vulnerabilities, but it may also dilute the focus on specific groups that require targeted support. The definitions demonstrate the interdisciplinary relevance of vulnerability. They incorporate elements from environmental science, social sciences, psychology, and other fields. This interdisciplinary approach is beneficial for developing holistic strategies to address vulnerability but also requires collaboration across disciplines. The inclusion of recent definitions (e.g., Thekdi and Aven (2021); Rozmarin (2021); Fernandes, Ranchordas and Beck (2024)) indicates that the concept of vulnerability is continuously evolving. As new challenges and understandings emerge, definitions are adapted to better capture the nuances of vulnerability in contemporary contexts.

From the analysis of vulnerability definitions, we can identify its key dimensions: ecological, social, economic, psychological, and legal. Thus, vulnerability is a complex and multifaceted concept that cannot be fully understood through the lens of a single discipline. Interdisciplinary approaches allow for a more holistic and nuanced understanding, integrating insights from various fields to address both the causes and consequences of vulnerability, as well as the potential pathways for resilience and empowerment. Ecological vulnerability can be referred to the susceptibility of natural systems and communities to environmental risks such as climate change, natural disasters, pollution, and resource depletion. This dimension highlights how ecosystems, and the people who depend on them, can be affected by environmental degradation or abrupt ecological shifts. A comprehensive review in Environmental Management proposes an interdisciplinary approach to assess ecosystem vulnerability, emphasizing the integration of ecological and socio-economic factors (Weißhuhn, Müller, Wiggering, 2018). The authors emphasized the importance of considering both biophysical and human dimensions to develop effective management strategies. Additionally, a bibliometric analysis provides an overview of research trends in ecological vulnerability, highlighting the increasing attention to this field (Chen et al., 2021). It highlighted an increasing focus on climate change impacts and the need for standardized assessment methods.

Social vulnerability encompasses the conditions and structural inequalities that make certain individuals or groups more susceptible to harm. Factors such as age, gender, disability, ethnicity, or social status can influence one's exposure to risks and access to resources and support. This dimension is especially relevant when considering marginalized or disadvantaged populations. A scoping review published in BMC Public Health characterizes various social vulnerability indices, discussing their composition and applications (Mah et al., 2023). This scoping review revealed a lack of consensus on the components included. The study called for standardized approaches to enhance comparability and applicability in policy-making. Another systematic review explores the relationship between an Social Vulnerability Index and health outcomes in the United States, underscoring the index's relevance in public health research (Higginbotham et al., 2025). It found that it was frequently used to predict health outcomes, with higher scores correlating with adverse health events. The study recommended integrating the index into public health planning to address disparities.

Economic vulnerability reflects the instability or precariousness of individuals, households, or communities in terms of income, employment, access to markets, or financial security. Economic shocks, unemployment, or poverty can significantly reduce an individual's ability to cope with external stressors and recover from adverse events. A survey in Sustainability reviews concepts and measurements related to economic vulnerability and resilience to natural hazards, offering insights into how economies can prepare for and respond to such events (Noy and Yonson, 2018). It emphasized the importance of adaptive capacity and proactive policy measures in mitigating economic impacts of disasters. Briguglio et al. (2008) developed an Economic Vulnerability Index (EVI) to quantify countries' susceptibility to external economic shocks, highlighting the significance of structural factors and advocating for policies enhancing economic resilience.

Psychological vulnerability refers to a person's emotional or mental susceptibility to harm, which can result from trauma, chronic stress, social isolation, or mental health conditions. This dimension is essential for understanding how vulnerability affects inner well-being, resilience, and the capacity to cope with adversity. Yamaguchi et al. (2023) examined the association between psychological vulnerability and stress coping strategies among Japanese university athletes, providing insights into how vulnerability influences coping mechanisms. It found that higher psychological vulnerability was associated with maladaptive stress coping strategies, suggesting the need for targeted interventions to enhance coping mechanisms. Harpviken (2020) discusses psychological vulnerabilities and extremism among Western youth, highlighting factors that contribute to radicalization. It identified as factors such as identity crises and perceived injustice, and recommended comprehensive approaches addressing these underlying issues.

Legal vulnerability involves the lack of legal protection or access to justice, as well as exposure to discriminatory laws, policies, or institutional practices. It can also arise from undocumented status, statelessness, or being part of a legally unrecognized group. This dimension emphasizes the role of legal frameworks in safeguarding or, conversely, endangering vulnerable populations. Moen, Hee Åker and Gulati (2024) explores police officers' experiences when interacting with individuals with intellectual disabilities, shedding light on legal vulnerabilities faced by this population. Through interviews with police officers, this study emphasized the need for improved training and legal safeguards to protect this vulnerable group. Additionally, Siegel et al. (2021) introduced the Legal Vulnerability Model

for same-sex parent families, linking legal recognition with negative family outcomes, advocating for legal reforms to support family well-being.

A relatively new form of vulnerability is the digital vulnerability, that refers to the susceptibility of individuals and groups to harm or exploitation within digital environments. This concept has gained prominence due to the pervasive integration of digital technologies into daily life, leading to new forms of exposure and risk. Unlike traditional vulnerabilities, which often stem from inherent personal characteristics or socio-economic factors, digital vulnerability is context-specific and arises from interactions within digital spaces. It encompasses various dimensions, including exposure to manipulative design, data surveillance and privacy risks, algorithmic bias and discrimination. Users may encounter interfaces designed to exploit cognitive biases, leading to unintended decisions or actions. These manipulative designs, often termed "dark patterns," can compromise user autonomy and privacy. The extensive collection and analysis of personal data through practices like dataveillance (”data+surveillance”, monitoring and collecting data) can result in privacy infringements and unauthorized use of information. This continuous monitoring can lead to a state where individuals feel perpetually observed, affecting their online behavior. Automated systems and algorithms may inadvertently perpetuate biases, leading to unfair treatment or discrimination in areas such as employment, lending, and law enforcement. DiPaola and Calo (2024) introduced the concept of socio-digital vulnerability, emphasizing how mediated environments can interfere with individuals' decision-making processes and social interactions. They argue that vulnerability is not solely an inherent trait but can be contextually induced by digital architectures. Grochowski (2024) examined how digital vulnerability manifests in consumer settings, particularly in a post-consumer society where traditional consumer protections may be inadequate. The study calls for a reevaluation of legal frameworks to address these emerging challenges. Mitigating digital vulnerability requires a multifaceted approach. Educating users about potential risks and manipulative tactics in digital spaces can empower them to make informed decisions and recognize exploitative designs. Developing and enforcing regulations that address data privacy, algorithmic transparency, and consumer protection can help safeguard individuals from digital exploitation. Encouraging designers and developers to adopt ethical principles in creating user interfaces and algorithms can reduce the prevalence of manipulative and harmful digital environments. Thus, digital vulnerability represents a critical area of concern in the modern digital landscape. Addressing it necessitates collaborative efforts from policymakers, technologists, and educators to create safer and more equitable digital experiences for all users.

We need to say that the concept of vulnerability plays a central role in disciplines ranging from environmental science to social policy and digital ethics. However, a tension exists between defining vulnerability in a general, abstract sense versus developing highly specific, contextualized definitions. A generalist definition of vulnerability refers to a broad, overarching understanding that can be applied across different fields and situations. It usually emphasizes susceptibility to harm; lack of capacity to anticipate, to cope with, or to recover from adverse events; exposure to risks or hazards. Such definitions are useful for creating universal frameworks or indices (e.g., UN disaster vulnerability metrics); making cross-disciplinary comparisons; supporting broad policy initiatives. At same time, these definitions can be too vague to capture the specific, lived realities of vulnerable groups in different settings.

A specific or contextualized definition focuses on how vulnerability manifests in specific environments, populations, or circumstances—for instance, psychological vulnerability in adolescents or legal vulnerability in refugee populations. Such definitions highlight power relations, historical context, and situational variables, are better suited to designing targeted interventions, reflect the fluid and dynamic nature of vulnerability (e.g., how digital platforms create new types of harm), but they may lack comparability across cases and risk being overly narrow or fragmented.

We should mention that both approaches have value. A hybrid model—using a general framework supplemented with contextualized analysis—may offer the most balanced way to define and respond to vulnerability in today's complex world.

In recent decades, wars, forced migration, and significant geopolitical transformations have increasingly challenged and reshaped the way we define and understand vulnerability. These global phenomena have exposed limitations in traditional frameworks and pushed scholars and policymakers to reconsider the dimensions, drivers, and consequences of vulnerability. Armed conflicts generate complex layers of vulnerability that go beyond physical harm. They affect entire populations through: displacement and destruction of livelihoods, breakdown of institutional and legal protections, increased exposure to gender-based violence and psychological trauma. These conditions require vulnerability to be understood not just in terms of individual frailty, but as a structural and political condition, deeply embedded in systems of violence and governance. Forced migration, whether due to war, persecution, or climate crises, has introduced new categories of vulnerable populations, such as: stateless individuals, asylum seekers and refugees, internally displaced persons. These groups often face multi-layered vulnerabilities: legal (lack of rights), social (discrimination), economic (poverty), and psychological (trauma). As such, the traditional definitions of vulnerability based on static characteristics are no longer adequate. The rise of nationalism, shifting alliances, and changing global power dynamics also reshape vulnerability. Vulnerability is increasingly politicized, with certain groups labeled as threats rather than protected populations. Digital and informational vulnerabilities emerge in contexts of hybrid warfare and disinformation campaigns. Access to humanitarian aid and international protection becomes contingent on shifting diplomatic relations. These evolving global realities demand a conceptual redefinition of vulnerability—from a passive, individual trait to a dynamic, context-dependent condition, shaped by intersecting forces of conflict, displacement, and power. The new paradigms of vulnerability must consider legal status, political agency, and transnational structures that either protect or marginalize affected populations.

Based on the synthesis of literature and evolving global dynamics, we propose the following operational definition of vulnerability - a dynamic condition arising from the interaction between individual or group characteristics and external stressors - structural, environmental, or situational, which reduces the capacity to anticipate, cope with, or recover from harm. To capture the complexity of this phenomenon, a typology can be helpful. The following categories are proposed:

- structural vulnerability, rooted in systemic inequalities and long-term conditions such as poverty, discrimination, legal exclusion, or lack of institutional support.
- transitory vulnerability, temporary or situational, arising from acute events such as natural disasters, job loss, illness, or displacement.

- self-perceived vulnerability, based on individuals' subjective sense of risk, fear, or insecurity, regardless of objective conditions; this is especially relevant in mental health, digital spaces, or identity-based contexts.

One of the central conclusions is that vulnerability cannot be fully understood without reference to context. Cultural, political, economic, social, legal, psychological and digital environments all shape how vulnerability is produced and experienced. Therefore, any operational use of the term, whether in research, policy, or practice, must be sensitive to the specific context in which it is applied. Conceptual flexibility is not a weakness but a strength. Rather than seeking a one-size-fits-all definition, future work should embrace pluralistic and intersectional models of vulnerability that can adapt to complex realities.

4. Conclusions

Vulnerability is a dynamic, multifaceted concept shaped by structural, contextual, and individual factors. No single definition can fully capture its complexity. An interdisciplinary and context-sensitive approach is essential for effective analysis, policy, and intervention. A hybrid model—combining general frameworks with specific applications—offers the most robust foundation for understanding and addressing vulnerability in a changing world. As recommendations for future research and practical applications of vulnerability concept we can mention as following: to develop interdisciplinary and context-sensitive models that integrate psychological, legal, economic, and technological dimensions of vulnerability; to focus on emerging forms of vulnerability, such as those related to digital environments, algorithmic governance, or climate-induced displacement; to prioritize participatory research that includes the voices of vulnerable communities in defining their own needs and risks; to design adaptive and inclusive welfare policies that recognize different types of vulnerability, especially structural and transitory; to integrate vulnerability assessments into public service planning, particularly in healthcare, housing, education, and digital access; to promote resilience-building strategies at the local level, including education, peer-support systems, and legal empowerment; to support community-led vulnerability mapping to identify and address context-specific risks; to use multidimensional vulnerability indices that go beyond demographic data to include social networks, legal status, and self-perceived insecurity; to apply these assessments in disaster preparedness, public health planning, and urban development.

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