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## ***Generativity is a Core Value of the ESJ: A Decade of Growth***

Erik Erikson (1902-1994) was one of the great psychologists of the 20th century<sup>1</sup>. He explored the nature of personal human identity. Originally named Erik Homberger after his adoptive father, Dr. Theodore Homberger, he re-imagined his identity and re-named himself Erik Erikson (literally Erik son of Erik). Ironically, he rejected his adoptive father's wish to become a physician, never obtained a college degree, pursued independent studies under Anna Freud, and then taught at Harvard Medical School after emigrating from Germany to the United States. Erickson visualized human psychosocial development as eight successive life-cycle challenges. Each challenge was framed as a struggle between two outcomes, one desirable and one undesirable. The first two early development challenges were 'trust' versus 'mistrust' followed by 'autonomy' versus 'shame.' Importantly, he held that we face the challenge of **generativity** versus **stagnation in middle life**. This challenge concerns the desire to give back to society and leave a mark on the world. It is about the transition from acquiring and accumulating to providing and mentoring.

Founded in 2010, the European Scientific Journal is just reaching young adulthood. Nonetheless, **generativity** is one of our core values. As a Journal, we reject stagnation and continue to evolve to meet the needs of our contributors, our reviewers, and the academic community. We seek to innovate to meet the challenges of open-access academic publishing. For us,

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<sup>1</sup> Hopkins, J. R. (1995). Erik Homburger Erikson (1902–1994). *American Psychologist*, 50(9), 796-797. doi:<http://dx.doi.org/10.1037/0003-066X.50.9.796>

generativity has a special meaning. We acknowledge an obligation to give back to the academic community, which has supported us over the past decade and made our initial growth possible. As part of our commitment to generativity, we are re-doubling our efforts in several key areas. First, we are committed to keeping our article processing fees as low as possible to make the ESJ affordable to scholars from all countries. Second, we remain committed to fair and agile peer review and are making further changes to shorten the time between submission and publication of worthy contributions. Third, we are looking actively at ways to eliminate the article processing charges for scholars coming from low GDP countries through a system of subsidies. Fourth, we are examining ways to create and strengthen partnerships with various academic institutions that will mutually benefit those institutions and the ESJ. Finally, through our commitment to publishing excellence, we reaffirm our membership in an open-access academic publishing community that actively contributes to the vitality of scholarship worldwide.

*Sincerely,*

***Daniel B. Hier, MD***

*European Scientific Journal (ESJ) Natural/Life/Medical Sciences*

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# Towards a Sustainable Digital Future: Exploring AI, Legal Frameworks, and Environmental Transformations in the Post-COVID Era?

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## Abstract

This research paper examines the environmental, legal, and governance implications of digitalization, focusing on the intersection of software engineering, sustainability, and accountability. As digital systems and Artificial Intelligence (AI) become increasingly embedded in society, their environmental footprint and regulatory challenges demand urgent attention. Drawing upon theories from scholars such as Beck on modernity and Haraway on the interconnected digital era, this study investigates how digitalization reshapes governance structures and sustainability efforts. The research addresses the growing environmental impact of AI and digital technologies, identifying gaps in existing legal and governance frameworks that fail to account for sustainability. The key objectives are to assess the energy consumption and ecological footprint of digitalization, analyze the perspectives of software professionals on sustainability, and propose accountability mechanisms that integrate environmental governance with software engineering practices. Methodologically, this study combines a literature review with qualitative research, including interviews with software professionals, to explore how sustainability considerations are—or are not—integrated into software development. The research highlights the lack of systematic approaches in current governance models and the absence of clear

regulatory oversight regarding AI's environmental impact. Acknowledging the limitations of available data and the challenges of regulatory harmonization, this study underscores the need for interdisciplinary collaboration between technologists, policymakers, and environmental researchers. Key findings emphasize the necessity of incorporating accountability into sustainability frameworks to foster effective transformations. The research examines software engineering practices, particularly regarding energy efficiency, carbon footprints, and the broader environmental consequences of digitalization. Using the concept of co-production, this study highlights the interconnectedness of technological advancements and environmental governance. Strategies based on Science and Technology Studies (STS) are proposed to guide the socio-technical transformation required for sustainability. To address these challenges, the study recommends the implementation of comprehensive legal frameworks, the adoption of sustainability metrics within software engineering, and the promotion of knowledge-sharing initiatives that enhance digital governance. By emphasizing the role of education, legal culture, and governance mechanisms, this research aims to contribute to a paradigm shift toward a more accountable and sustainable digital future.

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**Keywords:** Digitalization, environment, governance, sustainability, environmental footprint, accountability, software engineers, AI

## Introduction

Technoscience, as a phenomenon is subject to governance and its progress brings about increased environmental risks. The expansion of technology along with the growing utilization of resources leads to the escalation of environmental challenges. The emergence of AI has redefined our existence by integrating reality, augmented reality and digital realms. While these concepts may have seemed guarded in the past, they now present challenges in the age of the AI "black box" (Gigerenzer, 2022) and the era of the "metaverse." Understanding the evolving relationship between norms, environmental shifts and individual positions within them, is crucial when examining environmental principles in this post crisis meta-reality and its interaction with global ecology.

In light of this novel "era" and AIs influence on it, it becomes necessary to depart from traditional legal perspectives. A new conceptual framework encompassing "principles" and "meta jurisdiction" becomes indispensable. This globalized aspect of pandemic reality and the meta-verse era requires international oversight that focuses on mitigating environmental harm and regulating interactions within the AI era. The juxtaposition between Europe's

Green Deal ambitions, for a green resilient transition and the technological disruption brought about by AI, demands attention.

What are the effective approaches, to regulate and govern AI in order to address the challenges of achieving goals? The European 'Artificial Intelligence Act' aims to establish a legal framework for AI. Developed by the European Commission in collaboration with the European Council and Parliament this Act defines AI systems as software that impacts their environment based on objectives. Considering the interconnectedness of the meta-verse AI consciousness and legal awareness it is crucial to foster a renewed approach within our system.

There are concerns surrounding regulation in aspects of the AI era. While AI Act emphasizes on ethical AI systems within the EU, it overlooks environmental objectives. The regulations primarily focus on high-risk AI systems. Meta jurisdiction regulation fails to address potential environmental risks unless they directly infringe upon human rights. Data governance, transparency, oversight and security measures fall short in preventing environmental harm caused by AI. Therefore, there is a need for exploration and development of mechanisms to evaluate and mitigate environmental risks associated with AI during this era. Our research explores on understanding how environmental sustainability intersects, with this legal landscape.

Legal concerns related to behaviours, ownership dynamics and the impact of AI, on the evolving meta-verse landscape are highly relevant. The introduction of environments into real world systems raises questions about environmental responsibility, policy enforcement and the protection of environmental rights. Additionally, the recent pandemic has emphasized the significance of advancements and their environmental consequences. The digital transformation associated with the AI era which necessitates resource extraction, has many societal implications.

These changes require a foundation that respects Earth's limits. The future trajectory of this era whether focused on environmental improvement or driven by interests depends on the decisions made by technology entities and regulators. Therefore, it is crucial to adopt strategies that involve entities advocating for ecosystem preservation and establish a legal framework for both virtual and real-world domains.

The complex workings of AI systems primarily influenced by users' actions highlight the importance of seeking insights regarding the impacts of software development. These insights contribute to an approach to software engineering and influence regulatory frameworks for sustainable AI practices. Aligning regulations with these perspectives is essential in fostering a resilient green software sector. Our research aims to explore software engineers' perspectives on how certain aspects of AI environments, at a level may affect our ecosystem.

The problems related to the impact of AI and digitization which may be unintentional have not been thoroughly investigated. Therefore, our research aims to uncover these issues, discuss their implications, on existing regulations, and propose interventions to promote friendly policies and actions. By examining the meta-COVID era of AI through the environmental lens, our goal is to stimulate debate, encourage the development of new policies and emphasize areas of strategic importance.

It is crucial to approach transformation with a renewed focus on sustainability. Software engineering plays a role in this transformation as it influences processes of digitization that is influenced by cultural technological, economic and governance factors. This calls for a perspective on sustainability and software engineering. Our objective is to establish a research framework that lays the foundation for a shift towards software engineering by providing empirical examples. However, in-depth empirical research is necessary to realize this framework. We advocate for a transformative approach that holds software engineering accountable for sustainability while recognizing its role. It is essential for society to address overarching sustainability challenges, with visionary solutions.

In today's world, software and technological proliferation play not only a pivotal role in our lives but also a decisive one. However, many software development efforts tend to prioritize short-term goals without considering the long-term effects on society and the environment. It is crucial to shift our perspective and take a more long-term approach when designing software systems. This is because software now greatly influences how we utilize resources and access information. With this increased influence comes a responsibility for software designers to incorporate sustainability into their designs.

### **Theoretical Framework, Background and Literature Review**

#### **Reimagining Legal Consciousness in the Age of AI: A Geocentric Shift Towards Planetary Equilibrium**

Scholars like Beck, Ellul, Floridi, Jasanoff, and Latour have explored the intricate relationship between science, technology, and society, particularly focusing on the evolving dynamics between these realms and the law. Our current legal culture, once primarily centered on human concerns, is now being reshaped by the rise of artificial intelligence (AI). This transformation urges a shift towards values that highlight interconnectedness between humans, AI systems, and the environment. As we move towards an eco-centric worldview, it becomes clear that both law and societal narratives must adapt to prioritize the well-being of the planet.

Beck suggests that while science defines boundaries and mitigates risks, it also introduces new challenges, leading to an on going introspection

of its role (Beck, 2015). Science, while indispensable, must now be viewed through a lens of scepticism as it tackles both the problems it creates and the solutions it offers. In contrast, Ellul views technology as an autonomous force, a system that often surpasses human control (Ellul, 2013). Floridi, on the other hand, conceptualizes the world as an "info-sphere" filled with "info-organisms" that blur distinctions between objects, treating them as carriers of information (Floridi, 2011). Latour's actor-network theory further highlights the complex interrelations between human and non-human actors that shape the modern world, heavily influenced by science and technology (Latour, 2012). Meanwhile, Jasanoff's co-production theory emphasizes the need to study how science and technology intersect with society, giving rise to concerns over security, privacy, and sustainability (Jasanoff, 2004).

As we navigate this era of AI, the constructs of legal consciousness and legal culture demand reassessment. Traditionally viewed as human-centric, these concepts must now integrate AI's influence on law and society. Friedman emphasizes that legal culture reflects the beliefs and practices of society, shaping our understanding of justice and legal norms (Friedman, 1997). However, with the convergence of human intelligence and AI, there is a pressing need to redefine this culture, ensuring it encompasses both human and machine interpretations of the law. Beckmann's research also underscores the importance of understanding the interplay between societal practices and legal rules, particularly as AI continues to evolve within legal systems (Benda Beckmann, 2019).

In conclusion, legal frameworks must evolve to reflect the shift from an anthropocentric to an ecocentric worldview, particularly in the Anthropocene, where human activities significantly impact the environment (Castree, 2014). The inclusion of AI as a co-participant in our legal and societal systems highlights the need for a shared legal consciousness that bridges both human and AI perspectives. Post-human theory advocates for this coexistence, emphasizing the importance of fostering principles such as democracy, respect for humanity, and environmental preservation in this new era (Braidotti, 2020; Haraway, 2016). In an era infused with AI technology developing a consciousness can pave the way, for adapting to groundbreaking changes while embracing a perspective (Haraway, 2016). We need to understand that all entities, whether human or machine are interconnected within a network. It is crucial that we recognize humans and other entities as integrated beings within their environment rather than isolated individuals. This understanding emphasizes the urgency for change in our time period. (Haraway, 2016).

## **Software Engineering at the Crossroads. Navigating Sustainability Challenges in the Digital Age**

In today's world, sustainability is a critical global challenge, as highlighted by the United Nations' Sustainable Development Goals. This focus is deeply connected to the Information and Communications Technology (ICT) sector, where software serves as the backbone, powering economies and connecting industries. However, while Brundtland's definition of sustainability emphasizes addressing social issues within economic development (Brundtland, 1987), the current AI-driven digitalization strategies prioritize growth, often at the expense of increased resource and energy consumption (Santarius, Pohl & Lange, 2020). This disconnect underscores the need for a more sustainable approach to software engineering.

Technology itself plays a dual role in sustainability efforts, offering solutions while also creating challenges. While software can enable more efficient operations, it also consumes vast amounts of energy during development (Calero & Piattini, 2017). ICT is responsible for 2% of global CO2 emissions and consumes 8% of the European Union's electricity (Calero & Piattini, 2015). Bitcoin's annual energy consumption, for example, surpasses that of entire countries, illustrating the environmental impact of current digital technologies. The challenge lies in balancing the benefits of ICT with the need to reduce its environmental footprint.

In this vein, Neumann and colleagues, define sustainable software, as software that has both direct and indirect negative impacts on the economy, society, individuals and the environment, but also contributes positively to sustainable development. They further explain "sustainable Software Engineering" as an approach where the effects on sustainability, both harmful and beneficial are consistently evaluated, documented and utilized to improve the software product (Neumann et al., 2011 p.296). These studies collectively suggest that interpretations of sustainability can vary depending on the perspective adopted.

Sustainable development is described as meeting the needs of this generation, without compromising the ability of subsequent generations to meet their own needs. The topic of sustainability in Software Engineering (SE) has gained popularity recently (Mourao et al., 2018). With the increasing use of software tools designed to simplify tasks, it is important to understand their impact.

Traditional software development life cycles do not consider the sustainability consequences of the software (Dick et al., 2010). As a result, integrating sustainability into software practices is still relatively new and challenging for professionals in this field. Some argue that environmental sustainability should be considered a requirement (NFL), within SE processes

(Carlero & Bertoa 2013; Venters et al., 2014; Becker, 2014; Penzenstandler et al., 2014b). Its adoption is still limited.

Sustainable software engineering (SE) must account for both the positive and negative effects of software on the economy, society, and the environment (Neumann et al., 2011). Scholars argue that environmental sustainability should be a requirement in SE processes (Carlero & Bertoa, 2013), yet its adoption remains limited. To advance sustainability, software development needs to integrate sustainable requirements throughout its lifecycle (Venters et al., 2017). This includes addressing environmental, societal, economic, and personal dimensions (Chitchyan et al., 2016), while ensuring that sustainability is evaluated not only in the final software product but throughout the development process itself (Johann et al., 2011; Hilty et al., 2006).

There is an agreement, among scholars regarding the need for more discussions on "sustainable requirements" and its application in the field of Software Engineering (Venters et al. 2017). It is crucial to define these sustainability requirements and ensure that they are consistently monitored and tested throughout the life cycle of all software. However, there is still ambiguity surrounding the interpretation of software development in current conversations, which can lead to potential misunderstandings (Karita et al., 2019).

Additionally, while many scholars, in Software Engineering (SE) view sustainability as resource usage and waste reduction, Becker et al. (2016) argue that software sustainability encompasses five interconnected dimensions; environmental, societal, economic, personal and technical (Chitchyan et al., 2016). The societal dimension focuses on the effects of Software Engineering on society and communities, while the personal dimension addresses the impacts of SE in everyday life (Condori, Fernandez, et al.,).

To effectively assess sustainability as discussed in literature it is necessary to consider the following questions: Are we evaluating the software artifact itself or its development process? Which aspects of sustainability are being examined? Environmental, societal, economic or indeed, technical? For each aspect being reviewed, which layers are important? How is sustainability defined within each layer? What are the essential sub-components within each aspect, under scrutiny? How does the software process influence each of these sub-components?

When discussing sustainability as an effort, it is important to inquire about the background of the participants in terms of dimensions, layers and subsystems as well, as their level of involvement in designing the process or product. The main aim of this framework is to discourage researchers and experts from imposing sustainability concerns onto fragmental aspects and

instead encourage a deeper reflection, on how sustainability manifests itself across various systems and scales. Ultimately the goal is to promote an understanding of our intentions when referring to sustainability. In conclusion, the ICT sector must reconcile its role as both a contributor to and a potential mitigator of sustainability challenges. A sustainable SE approach requires a shift in mindset, prioritizing long-term ecological, social, and economic goals over short-term growth. By adopting interdisciplinary strategies and focusing on resource efficiency, the software industry can contribute to a more sustainable future.

### **Literature Review. Existing Qualitative Studies**

Several qualitative studies have explored the intersection of computing and sustainability, with a particular focus on the involvement of software professionals. Mendez Fernandez et al. (2013) conducted a study involving 228 companies across ten countries to examine challenges in Requirements Engineering (RE), shedding light on the difficulties faced by professionals in this area. Similarly, Jagroep (2017) emphasized the importance of energy efficiency in software architecture in response to the increasing energy demands of the ICT sector, while Paul (2016) focused on computing's potential for cost reduction, energy conservation, and reduced greenhouse gas emissions.

Becker et al. (2016) evaluated software engineering practices with respect to sustainability, finding that although current practices often focus on immediate needs, future software development should prioritize long-term sustainability. Shukla et al. (2015) identified inadequate RE as a primary reason for software failures. Marimuthu and Chandrasekaran (2017) conducted a systematic study on green software engineering, highlighting the need for ongoing research to track advancements in the field. Komeil Raisian (2016) examined challenges in software engineering but failed to address the significance of green requirements analysis, while Torre et al. (2017) emphasized the need to integrate sustainability into software engineering education.

Nasir Rashid (2016) highlighted the risks associated with inadequate documentation in green software development, while communication barriers between developers and clients were also identified as factors leading to software failures. Maqbool Ahmed Muhammad Azeem (2017) similarly argued that incomplete requirement details were responsible for many project failures between 1994 and 2000. Hassan Reza (2017) introduced a RE tool aimed at improving software quality, with a focus on availability, performance, and security. Additionally, Supavas Sitthithanasakul (2017) proposed an ontology-based approach to enhance the RE process.

Other studies, such as that by Manotas et al. (2016), surveyed 464 industry specialists from companies like IBM, Google, and Microsoft, highlighting the growing awareness of energy considerations in software development. Despite this, Pang et al. (2016) found that while 60% of programmers considered energy efficiency when choosing a development platform, 80% overlooked energy factors during actual software development. This gap highlights the need for tools and support structures to facilitate the development of energy-efficient software (Pinto & Castor, 2017).

Penzenstadler (2019) further breaks down sustainability in software engineering into several aspects: development process, maintenance process, system production, and system usage, each emphasizing eco-friendly approaches throughout the software lifecycle. These studies collectively underscore the growing recognition of sustainability in software engineering practices. Initiatives such as the Karlskrona Manifesto for Sustainability Design (2019) advocate for embedding sustainability into software development, urging professionals to consider not only the environmental impacts of software but also its social and economic implications.

Furthermore, the manifesto urges researchers, practitioners, educators, and other stakeholders to integrate sustainability principles into their work. This entails both researching practices in software development and imparting these principles to generations of software engineers. The document serves as a starting point for discussions surrounding sustainability, within the field of software engineering.

Professionals from various backgrounds can come together through the Karlskrona Manifesto to tackle the challenges of developing software systems. The manifesto aims to make sustainability a fundamental principle in software engineering like performance, usability and security. Ruzanna Chitchyan,(2016) a pioneer in sustainability design in Requirement Engineering (RE) has emphasized the importance of incorporating sustainability education and re-evaluating norms and practices in the software development life cycle. This approach highlights the significance of considering sustainability during the requirements engineering process.

One noteworthy initiative that combines transformation with sustainability is the "AI for Good" conference organized by a UN entity since 2017. These conferences focus on leveraging AI to achieve Development Goals (SDGs). However, this vision may differ from aspirations for "de-growth" or "post-growth" economies prevalent in sectors concerned with sustainability.

Germany has taken steps toward bridging sustainability and digitalization, exemplified by the "Our Shared Digital Future" report (WBGU, 2019) and the CODINA project. Research by the German Environment Agency (Groger et al., 2018) highlights that different software functionalities

can lead to varying energy consumption levels, contributing to the development of a "green software" criterion catalogue (Hilty et al., 2017). As these studies illustrate, the intersection of software engineering and sustainability is increasingly relevant, and streamlined RE processes will be crucial for achieving long-term sustainable software development.

### **Exploring the Sociopolitical Impacts and Governance of AI Innovation**

Advancements in technology, particularly artificial intelligence (AI), have deeply influenced societal structures and governance frameworks. Science and Technology Studies (STS) provides valuable insights into these transformations, emphasizing that technological evolution encompasses not only tools but also normative and behavioural shifts (Johnson & Wetmore, 2007). Stakeholders such as software engineers, legal experts, and policymakers play pivotal roles in navigating these changes. STS explores the uncertainties and significant decision-making challenges posed by technological advancements, reinforcing the need for a multidisciplinary approach to understanding their implications (Irwin, 2007).

Central to these discussions is the Co-Production of Knowledge (CPOK) theory, which stresses collaboration among stakeholders (Jasanoff, 2004). Incorporating diverse perspectives into technology design, however, poses challenges. Achieving consensus on design, or "closure," can be elusive as technology continually evolves. STS highlights the interplay between technological determinism and decision-making, urging a more nuanced understanding of how technology shapes and is shaped by society (Wyatt, 2007; Thorpe, 2007). Governments are increasingly adopting technology to enhance service efficiency, yet the ethical and legal consequences of such technologies warrant closer examination (Kakabadse et al., 2003; Dunleavy et al., 2006). In the face of rapid technological advancements, there is a pressing need to include citizens in discussions to prevent technocratic overreach (Sadowski, 2020).

The evolution of AI has introduced complex power dynamics, reshaping governance structures. Unlike traditional software, AI holds the potential to wield significant power, challenging existing authority structures. On a global scale, AI has become a point of competition, with countries like the U.S. and China vying for dominance due to its military and strategic importance. This competitive pursuit often undermines collaborative efforts, as nations prioritize AI development over more deliberate governance approaches (Kissinger et al., 2022). Furthermore, the concentration of AI expertise within a few powerful corporations' risks overshadowing sovereign states' regulatory capacities. Despite efforts such as the EU's AI Act and the recent international consensus at the UK's AI Safety Summit (The Bletchley Declaration, 2023), current regulatory frameworks struggle to keep pace with

AI's rapid evolution, highlighting the need for innovative, multi-stakeholder governance models that go beyond traditional state-cantered approaches.

To address the societal impacts of AI, accountability mechanisms must be developed that bridge the gap between technological advancements and governance. These systems connect organizations to governing bodies, holding them accountable for their actions and ensuring responsibility is assigned (Cech, 2021; Kroll, 2020). As AI systems increasingly monitor, analyse, and influence human behaviour, a comprehensive approach to accountability is essential. This includes reshaping cultural perspectives on sustainability and fostering obligations within the technology sector. STS emphasizes the need to integrate considerations of social responsibility into technological innovation, advocating for approaches like "Responsible Research and Innovation" and "ICT ethics" (Fisher et al., 2015). By embedding sustainability into software engineering practices and curricula, the field can align with societal needs and promote long-term ethical development (Losck et al., 2017).

## **Methodology**

This research is based on social research methods and socio-legal approaches. It involves analysing existing literature and gathering data through interviews, with individuals, working in legal entities related to software development and computer engineering. All the decisions made by AI systems have real-world consequences that depend on decisions during the systems design phase (Christen et al., 2020). To conduct this study a doctrinal approach was necessary to identify literature and legal principles governing the use of AI in the European Union. Additionally, any environmental or sustainability related legal issues arising from the application of AI, were considered.

In addition to reviewing theory and existing studies, focusing on software engineering professionals, we conducted and micro-managed structured interviews (both virtually and face to face) with carefully selected individuals, such as technical decision-makers, software developers and employees in the computer sector. Documentary research was also conducted to complement these interviews. In order to understand the perspectives and vertical as well as horizontal organizational concepts of professionals regarding sustainability, a survey was carried out without introducing any ideas, about the topic. One of our goals was to explore literature and theories related to sustainable software engineering, while examining how technology interacts with society from an STS perspective.

However, our main objective was to assess and comprehend the knowledge of sustainability and legal culture, among software professionals in the field of Software Engineering (SE). In order to gather data, while

maintaining brevity, our survey focused specifically on understanding professionals' motivations and perspectives regarding eco practices in software development and regulation. To ensure the credibility of our findings we exclusively targeted individuals who possess expertise in software development processes. The selection process was based on their roles within their organizations, including project managers, system analysts, developers, product owners, employees in the semi-conductor industry, educators and others, involved in the cycle of software/computer development.

The initial section of our interviews collected information such as gender, name, age, education level, and professional experience. Between January 2023 and June 2023, interviews were conducted with 15 professionals. All interviewees were male, aged between 38 and 48, held a Master of Science degree, and had experience working in different software companies. Seven of the interviews were conducted face-to-face in Athens(Greece), while the remaining eight took place via Skype or Zoom, as the interviewees were based and working in other European countries. Our study revolved around ten research questions (RQs) that explored aspects of software and sustainability. These questions are outlined below.

RQ1; How familiar are professionals with the concept of integrating sustainability into software development and its practical application in their computer usage? RQ2; What level of importance do practitioners assign to software sustainability personally as, within the broader industry perspective? RQ3; At which stages of the Software Development Life Cycle (SDLC) do software developers implement practices if at all? RQ4; Which dimensions of sustainability (environmental, social are actively incorporated in software development? RQ5; Does the software industry adopt models, for development? RQ6; How aware are SE professionals about software development and the regulatory framework in terms of culture and environmental consciousness? RQ7; What kind of education do they receive regarding sustainability in the software development process and what tools support the integration of sustainability? RQ8; How familiar are they with legislations approach to technological advancements so far? What are their thoughts on efforts towards digitalization and the AI era? RQ9; To what extent are practitioners involved in decision making processes? RQ10; How do they perceive sustainable software in relation to regulations and what is their opinion, on whether regulations should be flexible or stringent?

## **Findings**

The analysis of participants' feedback revealed several key insights regarding their perspectives on AI and sustainability. The majority expressed support for strong international regulations to address emerging challenges, with many advocating for comprehensive measures to prevent misuse (e.g.,

Participants 1, 5, 14). All participants acknowledged the transformative potential of AI, both on a global and local scale and emphasized the need for international, rather than solely national, regulations. Participants generally favoured robust governance structures, with some stressing the need for human oversight and the balance between AI benefits and ethical considerations (e.g., Participants 2, 4, 6, 10, 13).

A notable concern among participants was the environmental impact of AI. Many (e.g., Participants 1, 2, 5, 8) expressed varying degrees of worry about AI's potential ecological consequences, particularly regarding the extraction of raw materials and the broader implications of digital tools required for AI advancements. Participants 3, 11, and 13 emphasized the need to integrate AI's environmental impact into existing legal frameworks, while others (e.g., Participants 7, 9, 10) discussed the societal and ethical challenges AI poses. Most participants agreed on AI's transformative societal impact but underscored the importance of maintaining human values in the process.

A common sentiment was a gap in their understanding of current regulatory frameworks. Additionally, many voiced concerns about the environmental impacts of unrestrained AI. For instance, participants 1, 2, 5, and 8 express varying degrees of concern about the environmental consequences. Moreover, participants 4, 13, 15 discuss the environmental impacts of digital tools necessary for upcoming AI advancements and recognize the effects of raw material extraction.

Additionally, there was a consensus on the necessity of establishing overarching legal principles that incorporate environmental standards within AI frameworks (e.g., Participants 1, 2, 3, 4). Despite recognizing the potential of sustainable software development, participants noted a gap in current industry practices and education. Many (e.g., Participants 2, 4, 7, 11, 12) emphasized the need for more sustainable policies and standards in the software industry. Although most participants lacked formal knowledge of green computing metrics, they showed significant interest in adopting sustainable software practices. Concerns were also raised about the economic burden of sustainability on companies, which may hinder its widespread implementation. Moreover, many participants expressed fears about AI and Big Data exacerbating the depletion of natural resources, such as rare materials, and contributing to the degradation of ecosystems.

It is worth mentioning, that all participants in this study recognized the transformative potential of AI in a global as well as in a local scale and the need for international rather than national regulations. There is a shared belief among participants about AI's transformative capacity and its societal effects. Many participants highlight the need for overarching legal principles, stressing the significance of recognizing AI's environmental impact and its integration with current legal systems. They emphasize the importance of AI's training

data and incorporating environmental standards within AI frameworks. For example, participants 1, 2, 3, and 4 give varying emphasis to different aspects of sustainability and regulation. A shared sentiment indicates potential inconsistencies in industry practices.

Furthermore, many interviewees emphasize an educational gap concerning sustainable software development and the absence of sustainable policies. (see 2, 4,7,11,12,13,14,15). Their responses reveal insights into the policy gaps in self-regulation and corporate responsibility. Participants 3 and 11 answered that for companies “unfortunately is all about money”. Most advocate for stricter, rather than lenient, regulations.

From open-ended questions on green computing metrics, it's evident that participants-all but one- lack knowledge about such tools yet express a keen interest in adopting them. All participants emphasize the necessity for better standards and sustainable practices in software engineering.

There was an acceptance among all respondents that computer culture influences their decision towards sustainability. Participant 7 argued that “indeed culture have an influence on my work”, while participants 10 and 15 stressed the culture of “repair”. “I think our culture is closer to repairing than replacing.

Moreover, most of the participants stressed the need of regulating full transparency in environmental principals and adding metrics. It is worth mentioning the answer of respondent 8 who stated that: *«adding metrics is a step in the right direction for promoting sustainability and refers to the amount of carbon dioxide and other greenhouse gases for its production....so by measuring and reducing their environmental footprint companies can contribute to mitigate the impact on climate change. However, is important to consider that reducing the carbon footprint of technology is one aspect of sustainability. There are as well other important factors that include the responsible use of resources, the production of environmentally friendly materials and the disposal of electronic waste...so we can say that we have to have in front of us all a brand-new ecosystem of metrics. Companies should aim to have a comprehensive approach to sustainability taking into consideration all these factors in their business practice not only the CO2 footprints...»*

Sustainable software development was discussed by some interviewees as an additional economic burden for their companies, indicating a potential barrier to its widespread adoption. They raised many issues regarding the attention that still needs to be paid at the planning level and regarding the possibility of successful and safe introduction of sustainable practices in software engineering as well as the lack of reliable methods of detection the whole environmental footprint on them, etc. Fears they were also expressed about the impact of AI technology and Big Data Science on the

degradation or loss of key natural sources (rare materials etc) and natural ecosystems. A large percentage of them expressed the fear that in this era of “datafication” software engineering is fast becoming a new force of geopolitical influence.

It was observed that many professionals remain unfamiliar with the concept of embedding sustainability within software development and their routine computational activities. Notably, all respondents indicated that their current or previous employers lacked a sustainability policy specific to software engineering. Nevertheless, four respondents highlighted the presence of recycling policies within their respective departments. While there seems to be a general lack of awareness regarding existing sustainable software methodologies and metrics, there was a unanimous consensus among participants supporting the adoption of such methods in their daily tasks. Most of these professionals identified a pronounced void in environmental considerations, within their professional practices and educational backgrounds. This research confirms a substantial knowledge gap in the field of Green Software Engineering, reinforcing the need for further education and the integration of sustainability into the Software Development Life Cycle (SDLC).

## **Discussion**

The literature review indicates a direction for future research, emphasizing the need for deeper studies, more practical tools, and broader engagement with industry professionals. Given the widespread impact of software and hardware systems on our society, there is a pressing need for software engineering practices to be responsible for socio-ecological objectives. As an eminent scholar (Booch, 2021) states “every line of code embodies an ethical or moral choice”. We would attempt to add that embodies a sustainable choice as well. Every individual involved in crafting IT products and services must bear responsibility for the potential effects these systems may have on sustainability.

In essence, the focal point of the literature review underscores a gap between the academic understanding and industry implementation of sustainable software practices. The literature emphasizes the need for greater awareness, practical tools, and an integrated approach that combines both environmental and economic dimensions to truly realize the potential of sustainable software engineering

For our research purposes, we greatly valued the insights from the aforementioned studies. Notably, while these studies provided invaluable perspectives, they often homed in on specific aspects, such as software quality or energy usage. Given the nascent nature of this research arena, it is pivotal

to adopt a more encompassing approach to capture software professionals' viewpoints.

While Software Engineering tries to warm up to Green and Sustainable Software Engineering, the broader software industry remains on the periphery. Sustainable practices, as a result, aren't universally understood or consistently employed by practitioners. Our research, a qualitative research building upon previous literature review findings, aimed to collate insights from software experts regarding sustainability in software crafting. The data corroborated earlier findings, point to a general unfamiliarity with the topic, but also a consensus that sustainability merits recognition as a quality benchmark and should thus, weave seamlessly with the Software Development Life Cycle (SDLC).

Diving deeper into the field of software, its sustainability is multi-faceted. It is not and cannot be merely about endurance or functionality but must in turn encompass broader considerations, from economic ramifications to societal and environmental implications, and from human-centric impacts to environmental footprints. Thus, software sustainability incorporated with hardware sustainability is not just a technical concern to be sidelined as a non-functional requirement. Instead, it demands integration into every phase of software development, ensuring that every line of code written - bears the weight of these considerations. (Oyedeeji et al. 2021).

The interaction between software and sustainability can be analysed through four primary lenses: (a) the integration of sustainability principles directly into software development processes; (b) the creation of software solutions that actively promote sustainability efforts, such as emission tracking tools or energy-efficient management systems; (c) the development of green software systems that prioritize energy efficiency and minimal environmental impact; and (d) the sustainability of interconnected software ecosystems that power global economies. These perspectives underscore the importance of aligning the software industry with broader environmental goals. However, a significant challenge remains—the lack of standardized metrics to assess software sustainability effectively, unlike the established ratings for other industries (Bozzelli et al., 2013).

Our review highlights a critical gap: many professionals in the software industry are either unaware of or underappreciate the environmental consequences of their work, even though they recognize the significance of sustainability. Often, their understanding of sustainability is limited to tangible practices, such as recycling or water conservation, rather than addressing the specific environmental impacts associated with software, like energy consumption during the development process. Sustainable software engineering presents a pathway to environmental sustainability by addressing these concerns throughout the software and hardware life cycle. However, the

absence of practical tools and frameworks poses a major barrier, and many view sustainability as an additional economic burden, further inhibiting its widespread adoption.

As our findings reveal, the urgency to address AI's environmental and societal impacts is echoed by participants, who advocate for comprehensive regulatory frameworks. The rapid digitization spurred by AI and other technologies increases the pressure on science and technology to deliver responsible global decision-making, as highlighted by initiatives such as the European Green Deal (COM/2019/640 final). Participants emphasized the need for international regulations to govern the multi-dimensional implications of AI systems, echoing Beck's theory of modernity, which positions decision-making at the centre of societal transformation. This underscores the growing recognition of the ecological and ethical challenges posed by AI, including concerns about resource extraction and the geopolitical influence of AI technologies.

Furthermore, the study reveals a gap in professionals' understanding of green computing metrics and current regulatory frameworks. This knowledge deficit highlights the necessity for education and democratization of sustainability practices within the software industry. While the field of Green Software Engineering is in its nascent stages, a notable disparity remains between the broader understanding of sustainability and its specific application within the Software Development Life Cycle (SDLC). From an economic perspective, businesses often fail to recognize the long-term benefits of sustainable software development, focusing instead on immediate market constraints, which may hinder their competitive edge in the future.

In conclusion, the findings from our research, aligned with existing literature, emphasize the critical need for comprehensive regulatory frameworks and increased awareness of sustainability within the software industry. The field must move beyond a limited understanding of sustainability, not only through technological advancements but by embedding these principles into its core processes. Legal, educational, and governance frameworks must evolve to meet the complexities of technological advancements and their societal impacts, ultimately ensuring that software engineering can meet the demands of a sustainable future.

## **Conclusions**

In light of our research and the discussions presented, several key conclusions emerge regarding the challenges and opportunities surrounding Artificial Intelligence (AI), its regulatory frameworks, environmental impacts, and societal implications. The findings not only highlight the current landscape but also suggest pathways for future development. AI's transformative potential, coupled with its societal significance, underscores

the urgent need for international regulations to manage its growth responsibly and sustainably. The European Green Deal (COM/2019/640 final) serves as a model for integrating environmental and digitalization policies, but greater public and stakeholder engagement is necessary to bridge the perceived disconnect between high-level policy and practical implementation.

The growing influence of digital systems across various societal sectors necessitates strong accountability mechanisms to ensure sustainability in their design and use. These systems are now deeply embedded in governance structures, reshaping the regulatory landscape and offering opportunities for innovation in sustainability. However, the unchecked expansion of AI and associated technologies poses significant environmental challenges, from raw material extraction to the energy consumption of digital tools. Our study revealed widespread concerns among participants about the ecological footprint of AI, highlighting the need to integrate environmental considerations into both policy and industry practices.

Furthermore, the societal and ethical challenges posed by AI cannot be overlooked. Our research underscores the dangers of instant gratification, the geopolitical influence of AI, and the broader cultural shifts driven by 'computer culture.' These challenges highlight the complex interplay between technology, societal norms, and sustainability. A significant knowledge gap exists among professionals concerning sustainable software practices and green computing metrics, revealing the need for broader education, awareness campaigns, and accessibility to regulatory frameworks.

Despite these challenges, Green Software Engineering offers a promising avenue for embedding sustainability into software development. However, the observed knowledge gap among professionals suggests an urgent need for expanded industry training and educational reforms. Policymakers should focus on developing comprehensive global regulatory frameworks, with active participation from all stakeholders, while businesses must view sustainable software practices as a long-term investment rather than a short-term economic burden.

In conclusion, the intersection of AI, sustainability, and societal implications demands a balanced approach that harmonizes technological advancement with ethical and environmentally responsible practices. Future research must further explore the complex relationships between technology, culture, law, economy, and governance, leveraging Science and Technology Studies (STS) methodologies to navigate the socio-technical challenges of the digital age. As we move forward, integrating sustainability into every aspect of digitalization will be crucial for shaping a more accountable and sustainable future.

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## Power in International Relations: Insights from Realist and Liberal Theories

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### Abstract

The concept or factor of power has been given great importance in the social sciences in general and in the fields of political science and international relations in particular. However, the concept of power is a vague and controversial concept and has been defined in various ways, despite being mixed with other concepts and terms such as authority, purpose, ability, oppression, influence and other concepts close to the meaning of power. Due to its significance, the concept of power has been explored through numerous studies and theories since ancient times. Above all, both realism and liberalism have interpreted the concept of power and its importance in the international arena. Realism and its thinkers emphasize military strength and strategic alliances for the survival and hegemony of the state, while liberalism and its thinkers emphasize economic dependence, institutional cooperation and adherence to international norms and values in order to achieve state security and influence. Based on the perspectives of the two major schools of international relations and political science, this study aims to interpret the concept and types of power in international relations. Simultaneously, it compares the perspectives of both schools and their thinkers and theorists on the concept of power and its significance in international politics.

**Keywords:** Power, hard power, soft power, realism, liberalism, international relations

## **Introduction**

The concept of power in international relations is pivotal and multifaceted, serving as a cornerstone for understanding state behavior and interactions on the global stage. This paper offers a comparative analysis of the concept of power as articulated by the realist and liberal schools of thought. By exploring various theoretical perspectives, this analysis aims to elucidate how different schools interpret the nature, function, and implications of power in international relations.

Power, in the context of international relations, encompasses a range of forms and applications. It is often categorized into hard power, involving military and economic capabilities, and soft power, which pertains to cultural and ideological influence. Understanding these varieties is crucial for analyzing how states and other actors pursue their objectives and maintain their positions within the global hierarchy.

Realism, one of the most influential theories in international relations, emphasizes power as a central element in state interactions. Realists argue that the anarchic nature of the international system compels states to prioritize their own security and survival, often through the acquisition and demonstration of hard power (Waltz, 1979). This theory posits that international politics is characterized by a constant struggle for power, with states acting primarily out of self-interest.

Classical realism, as articulated by Morgenthau, views power as an intrinsic aspect of human nature and state behavior. Morgenthau argues that power is an end in itself, driving states to seek dominance and influence in an inherently competitive world (Morgenthau, 1948). This perspective underscores the notion that international politics is a zero-sum game where the gain of one state often corresponds to the loss of another.

Neorealism, or structural realism, introduced by Kenneth Waltz, refines the classical realist perspective by emphasizing the structural constraints imposed by the anarchic international system (Waltz, 1979). Unlike classical realism, which focuses on power as an end, neorealism views power as a means to ensure security. States are driven to maximize their capabilities to achieve a balance of power and prevent potential threats.

Neoclassical realism expands upon neorealism by incorporating domestic factors and leadership perceptions into the analysis of power. This theory suggests that the internal characteristics of states, such as political leadership, national identity, and domestic politics, influence how states perceive and pursue power (Rose, 1998). Neoclassical realism provides a more nuanced understanding of how internal and external factors shape state behavior.

Liberalism offers a contrasting view to realism by emphasizing the role of international institutions, economic interdependence, and the promotion of individual rights in shaping international relations. Liberals argue that

cooperation and collective action can mitigate the anarchic tendencies of the international system, reducing the emphasis on power politics (Keohane, 1968).

Classical liberalism, grounded in the ideas of thinkers such as Immanuel Kant, posits that international peace and security are achievable through the promotion of individual rights, democratic governance, and international cooperation (Kant, 1917). This theory critiques realism for its deterministic view of power and advocates for a system where mutual interests and moral considerations guide state interactions.

Neoliberalism, building on classical liberal principles, emphasizes the importance of international institutions and regimes in facilitating cooperation and reducing conflict (Keohane, 2005). Neoliberal theorists argue that power can be exerted through soft power mechanisms, such as diplomatic influence and economic ties, rather than solely through military means (Nye, 2004). This perspective highlights the potential for achieving international goals through collaboration and mutual benefit in an interdependent world.

This analysis reveals distinct perspectives on power within realism and liberalism. Realism, with its focus on hard power and state security, views international relations as a struggle for dominance where power is a primary tool for ensuring survival. In contrast, liberalism emphasizes the potential for cooperation and the role of international institutions in mitigating conflicts. While realists highlight the importance of power as a means of security, liberals argue that power dynamics can be transformed through international reforms and collaborative mechanisms.

Understanding the concept of power is essential in international relations, as different theoretical perspectives offer distinct interpretations of its nature and influence in global politics. This paper aims to provide a comprehensive analysis of the contrasting views on power within the main schools of international relations "realism and liberalism". By examining classical realism, neorealism, neoclassical realism, classical liberalism, and neoliberalism, this study seeks to elucidate the evolving nature of power and its implications for international politics.

This research employs a descriptive-analytical and comparative methodology, relying on library-based literature to explore the diverse perspectives of key thinkers within these schools. Through this approach, the paper discusses how different theories conceptualize power and influence in international affairs, offering insights into their contributions to our broader understanding of global interactions and state behavior.

### **Power and its Varieties in International Relations**

The renowned American researcher Joseph S. Nye, who has conducted numerous studies on the concept of power and its various forms, describes

power as follows: "Power is like the weather; everyone depends on it and talks about it, but few understand it." Just as farmers and meteorologists attempt to forecast the weather, political leaders and commentators try to describe and predict shifting power dynamics. Power is also like love: it is easier to experience than to define and measure; but that doesn't diminish its importance and reality. Due to its importance and necessity, and to understand the meaning of power and its types in international relations, we will first discuss the concept of power and its various forms.

The concept of power, in its basic sense, can be defined as "achieving the desired outcome of an event by doing whatever is necessary" (Morgenthau, 2005). In other words, power is the ability of "A" to influence "B" to do something that "B" would not do without that influence from "A" (Karim, 2023). While power in international relations means having the ability to influence the behaviour of other actors to achieve the goals of the state. At the same time, there are various methods to influence the behavior of individuals, states, and other entities. Examples of these methods include threats and coercion, offering financial incentives and material benefits, and persuading the other party through deception, among others (Nye, 2004).

Power is a key concept that has significantly contributed to the development of international relations as a social science. In a sense, a substantial portion of the most notable research in this field is centered on the concept of power. The concept of power is often superficially associated with the realist approach; however, the liberal approach also assigns significant importance to power, albeit with different perspectives. Additionally, other trends and approaches also regard power as central to their interpretations but offer varying definitions and understandings (Özdemir, 2008). In this paper, we concentrate on the schools and thinkers of realism and liberalism, examining the meaning of power and its types within the context of international politics.

Regarding the different types of power in politics and international relations, it should be noted that the division of power into several different types and forms depends on the classification and division described by Joseph Nye. Because in the past, the military force of the state was the only dominant form of power in international politics, and it was used as a tool to achieve the highest and strategic interests of the state. On the other hand, Nye's classification of power into various types underscores the importance of diversifying sources of state power to effectively achieve state objectives within the international system (Nye, 2004). In this context, we will define and interpret the different types of power in international politics according to Nye's classification.

- First, Hard Power: Hard power in international politics refers to the use of tangible material tools, such as military assets like tanks and

warplanes, or the imposition of sanctions and economic restrictions, to compel a state to act against its will. Obviously, the theory of realism places significant emphasis on a state's military power, including both its use and the threat of its use. Realists believe that to protect the state and secure its interests within the international system, it is crucial for the state to enhance its military capabilities through the acquisition of modern weapons and technology, and to form military alliances with other states to maintain the balance of power among countries (Morgenthau, 2005).

For researchers and theorists of realism, hard power includes not only a state's military capabilities (both their use and the threat of their use) but also an economic aspect. This economic dimension involves the imposition of economic sanctions, whether by a state or an international organization, on another state to advance its own interests and goals (Dumankaya, 2019).

- Second, Soft Power: This concept, introduced by Joseph Nye in the early 1990s, refers to the ability of one state to persuade another to take certain actions without resorting to military force, threats, or coercion. According to Nye, for the success of foreign policy, a state must utilize its soft power in conjunction with its hard and military power to achieve its objectives. In other words, a state does not always need to rely on occupation and military force to achieve its goals; it can employ other forms of soft power to persuade other states. Examples of soft power include diplomacy, media, education, culture, trade, investment projects, and religious institutions (Nye, 2004). It is important to note that while realism and its theorists emphasize the importance of hard power, the liberal school and its theorists place significant emphasis on soft power.
- Third, Smart Power: is a strategy that combines both soft power and hard power, leveraging the strengths of each to achieve a state's objectives more effectively (Nye, 2011). When Joseph Nye first introduced the term "smart power," it coincided with the U.S. invasion of Afghanistan and the war with the Taliban. Nye argued that the United States should not rely solely on hard power or military force to succeed in the conflict. Instead, he advocated for a combination of soft power and hard power to effectively achieve its goals. To that end, the Washington government can more easily achieve its goals in the war through diplomacy, communications and economic cooperation (Omar, 2019). Nye believed that smart power represented a strategic blend of hard power and soft power, distinct from each of these powers on their own. He viewed it as a new and modern tool for achieving state goals. Nye also emphasized that, through the use of smart power,

the United States could enhance its global hegemony and influence, as well as better justify its actions abroad (Gallarotti, 2015).

Nye believed that smart power could be a crucial concept for establishing global peace while also presenting a different side of America to the world. Especially since, in foreign policy, the United States has historically focused more on hard power or military force to achieve its goals. For these purposes, the United States and other countries can strategically employ all available powers, capabilities, and resources to effectively counter their opponents (Nye, 2011).

- Fourth, Electronic Power (Cyber Power): Power based on information resources is not a new concept; however, cyber power is relatively new. While there are numerous definitions of cyberspace, "cyber" generally refers to electronic and computer-related activities. One definition describes cyberspace as an operational domain defined by the use of electronics to exploit information through interconnected systems and their associated infrastructure. Power in this context depends on the specific resources and characteristics of the cyberspace domain. Acknowledged as a novel and rapidly evolving dimension of strategic influence, cyber power leverages electronic and computer-related activities to exploit information through interconnected systems and their infrastructure. This domain is characterized by its dynamic nature and its impact on both national security and global interactions (Libicki, 2009). According to Martin C. Libicki, cyberspace serves as an operational domain where power is defined by the control and manipulation of information and digital infrastructure. This includes using cyber capabilities to gain strategic advantages, conduct espionage, or disrupt adversaries' systems, reflecting the unique characteristics and resources of the cyber domain.
- Fifth, Sharp Power: The concept of sharp power has been used by some Western countries and researchers to describe certain diplomatic activities of China in countries governed by liberal democracies. The term "sharp power" is generally used to describe when a country employs manipulative diplomatic policies to influence and weaken the political system of a targeted country. They also claim that through such activities, China aims to undermine the democratic processes of states by influencing their decision-making mechanisms (Walker & Ludwig, 2018). Sharp power is a new concept and phenomenon used to create influence in international politics, particularly in an era where information plays a crucial role and can act as an effective weapon. In this way, powerful states seek to influence or even alter the policies of countries by leveraging information and communication technologies. In political literature, this practice is often interpreted as an attempt to

weaken Western states from within. In other words, sharp power involves interfering in the internal political processes of the targeted country, destabilizing it, and threatening its national security by influencing public awareness and behavior. Practitioners of sharp power do not aim to win hearts and minds as soft power does. Instead, they conduct information operations to penetrate the political and media spheres of other countries, with the goal of creating influence and subjugating their opponents. Tools and technologies of sharp power include hacking personal emails, stealing information, distorting the flow of information, using malware, and disrupting various networks and websites...etc.

### **The Realist School and the Concept of Power**

As we have already mentioned, in the international relations literature, each school of thought interprets and evaluates the concept of power from its own perspective. Realism, in particular, has been a predominant framework for understanding and interpreting power in academic circles. One of the main reasons for this is that realism views world politics from a state-centered perspective. Although international and non-governmental organizations play active and important roles in international politics today, states remain the primary actors in the international arena. Another reason is that the school of realism defines a "state of war" as a continuous condition and links the principle of international politics with the concept of anarchism (chaos). Although there is no major global war today, regional and proxy wars persist in various regions (Mearsheimer, 2001).

There is no doubt that one of the main objectives of states is to gain and develop their own power. This objective is widely accepted among international relations thinkers, especially those aligned with the school of realism and its various branches. In other words, power for realist thinkers is akin to energy for physicists (Faraj, 2018).

According to the school of realism, power is the immediate goal, and international politics is fundamentally a struggle for power. However, the power referred to in realist analyses is not limited to classical military power alone; it also encompasses economic, ideological, and geographical powers. Or in its broadest sense, it is national power. National power is the means by which a state relies on to achieve its goals, following a specific pattern of foreign policy (Faraj, 2018).

Therefore, it can be said that power is a central concept and phrase that has received significant attention and is reflected in various theories within the realism school of politics and international relations. In a sense, for realism, power is defined by the degree of influence one unit or actor has over other units and their behavior within the international system in global processes

and interactions. Realism emerged as a prominent approach to interpreting international relations after World War II, particularly in the United States. Realists (researchers and theorists within this school) place significant emphasis on the role of power in international relations, focusing on the position and influence of state power within the international system. Realists believe that power determines the outcomes of international conflicts (Hussein, 2018).

Therefore, it is undeniable that the concept of power is closely associated with the theory and school of realism, particularly in the field of international relations (Yılmaz, 2008). Because, on the one hand, realists believe that the stronger a state is relative to its rivals, the less likely it is to be attacked (Mearsheimer, 2006). On the other hand, the means and mechanisms of the balance of power are considered more important and effective for imposing peace and stability, especially when compared to the idealists' reliance on international law and the establishment of a world government (Faraj, 2018).

That is why realists believe it is crucial to focus on the power factor as a means of achieving world peace, specifically by ensuring a balance of power among states. Although this balance is temporary and relative, it is seen as a way to prevent wars between states in the international system. Therefore, realists believe that power is a decisive factor in governing and directing all international interactions and movements (Hussein, 2018).

Although the school of realism has maintained its importance and position at the international level, it has not been free from criticism. Realism is constantly criticized for this reason: there are differing and contradictory views in the analysis of issues, particularly regarding the concept of power, its importance in international politics, and the characteristics of the international system. On the other hand, although realists believe that power is a fundamental aspect of international politics, it is undeniable that scholars within this school disagree on how to define and measure the concept of power. This is why critics of the theory, including those from the liberal school, argue that realism and its proponents have failed to provide a clear and consistent definition of power (Omar, 2019).

Although some criticisms of realism are accurate and relevant, others may arise from the lack of a unified perspective among realism scholars. These scholars typically fall into three main categories: classical realism, neorealism, and neoclassical realism. To delve deeper into the subject, we will explore how each of these schools of thought views and emphasizes the role of power in their theoretical frameworks.

## **The Concept of Power in Classical Realism Theory**

Classical realism is the initial movement within the realism school, which specifically examines the significance and role of power in the international system. The first generation of realism responded assertively to the ideas and theories of the liberal school, critiquing them for neglecting the role and importance of power in international politics. In contrast, realism is deeply intertwined with the concept of power, rooted in the fundamental belief that international competition and conflict are intrinsic elements of global politics (Carr, 1939).

Classical realists have been notably successful in analyzing the role of power and its significance in international politics, as well as in making substantial efforts to integrate the concepts of power and global political dynamics. However, this does not mean that they have fully succeeded in this domain, as complications and disagreements among realists persist. Some realism theorists place significant emphasis on material factors such as state size, population, and military strength when interpreting and defining the concept of power. In contrast, others focus on intangible resources, as previously mentioned (Heywood, 2016).

In other words, for some realism theorists, power is considered an end in itself, while for others, it is merely a means to achieve the state's objectives. In classical realism, the desire to control others and accumulate substantial amounts of power is seen as a fundamental aspect of human behavior. This trait is mirrored in the behavior of states, which, reflecting individual tendencies, pursue their own interests relentlessly (Ari, 2004). To gain a deeper understanding of the views of the realism school, including classical realism, on the concepts of power, international politics, and related issues, we will explore the perspectives of key researchers and theorists. This examination will highlight their contributions and outline the significance of classical realism in the international arena.

At the pinnacle of the realism school, particularly classical realism stands Hans J. Morgenthau, a prominent figure in the field. In his influential work, "Politics among Nations" Morgenthau characterizes international politics as an ongoing struggle and competition focused on the acquisition, maintenance, and enhancement of power. Morgenthau also asserts that humans are inherently driven by power, with power serving as the primary source of human action and behavior. Similarly, in the realm of international politics, states are perpetually engaged in efforts to acquire and enhance their power, reflecting the same fundamental drive observed in individuals (Özcan & Çınar, 2014).

Morgenthau highlights two crucial concepts: power and interest. He argues that stability and peace are not permanent conditions but can be pursued through various measures, notably the balance of power. According to

Morgenthau, the international system is characterized by chaos and anarchy, lacking any overarching authority or power above the states. This lack of a higher authority compels states to justify the use of power and to view war and chaos as inevitable and persistent features of the international system (Morgenthau, 2005).

Another classical realist thinker, Edward Hallet Carr, contends that power fundamentally revolves around prevention and that humans possess an inherent drive to acquire power. Additionally, he regards the division of people into various groups, which leads to inevitable conflict and competition, as an undeniable reality (Carr, 1939).

Reinhold Niebuhr is another classical realist who believes that the human desire for life stems from an inherent quest for power, a trait also evident in various groups. This passion for survival and strength manifests in human behavior. According to Niebuhr, competition and conflict are unavoidable, making war and discord inevitable. Consequently, in this perpetual competition, there will always be winners and losers, leading to the continuous and unending nature of wars and chaos among states (Niebuhr, 1932).

Other theorists of classical realism, including Nicholas Spykman, Raymond Aron, Arnold Wolfers, George Kennan, Norman Graebner, Friedrich Schumann, and John Herz, followed the example set by the aforementioned thinkers. They concur on the inherent desire for power in both humans and states. Therefore, it can be said that the concept of power holds a central place and significant role in the view of classical realism. They also perceive international politics as a realm of competition and conflict among major powers. They agree that people and states inherently possess a selfish and belligerent nature. This nature causes the international arena to be viewed as a stage for the display of varying powers and interests, with states perpetually prepared to engage in conflict and attack one another (Hosseinzadeh, 2023).

### **The Concept of Power in Neorealism Theory**

Neorealism developed in response to critiques of classical realism. This new approach to realism maintains a strong focus on the power factor, similar to classical realism thinkers. Most thinkers and theorists of neorealism concur with classical realism theorists on issues such as the nature of human conflict, self-interest, and the pursuit of power. However, they also differ from classical realism, particularly in their interpretation of power. For classical realism, power was often seen as an end in itself, whereas, for neorealism, power is viewed as a means to an end, with the ultimate goal being survival (Waltz, 1979).

If we examine prominent researchers and theorists of neorealism similarly to classical realism, we should begin by noting that the roots of neorealism trace back to the English philosopher Thomas Hobbes. Hobbes focused on the natural state of humanity, arguing that in the absence of a central authority to unify people, individuals exist in a state of constant competition and conflict. This situation has been translated from the domestic to the international system. Just as there is no central and sovereign authority within a state, the international system similarly lacks a supreme authority to which states are bound. Consequently, chaos is the defining characteristic of the international system (Hobbes, 1985).

Kenneth N. Waltz, considered the founder of neorealism, views power as an infinite means and defines it in terms of the distribution of capabilities. According to Waltz, abilities and resources are not evenly distributed in the international system, and this uneven distribution is a crucial factor in defining and understanding power. This inequality in distribution serves as a motivation, providing states with the opportunity to act and influence the international system. In his theory of "structural realism," Waltz distinguishes himself from classical realists by focusing on the structure of the international system rather than human nature to analyze international politics and state behavior (Waltz, 1979).

Waltz also identifies several key characteristics of the structure central to his thesis, including that it is anarchic and lacks a central authority above the states. States have their own sovereignty and independence without any hierarchical distinctions. Additionally, due to the absence of a higher authority and the anarchic nature of the international system, states share the fundamental responsibility to pursue their own security. Another characteristic of the international system's structure is that power is not evenly distributed among states. The varying amounts of power available to states are the primary reasons for their differences. Thus, to fully understand international politics, one must first grasp the distribution of power among states (Waltz, 1979).

According to Waltz, the lack of any authority above states means that they must rely solely on themselves for survival in the international system. He also argues that war is inevitable because there is nothing to prevent it. This perspective echoes Hobbes' centuries-old view of the world system as a "war of all against all." Waltz emphasizes that states must pursue the acquisition and development of power to secure their survival and ensure their safety. In his view, military power is crucial for providing security and guaranteeing the survival of states (Ertoy, 2019). Therefore, we conclude that power in neorealism is as crucial as in classical realism and is regarded as the most important factor in the international system.

## **The Concept of Power in Neoclassical Realism Theory**

Neoclassical realism theory includes all the views and ideas of classical and new realism. According to this perspective of realism, international politics involves both the pursuit and struggle for power, as highlighted by classical realism, and the need for security driven by the chaotic nature of the international system, as emphasized by neorealism. This theory integrates the idea that states seek power due to inherent competitive motivations while also striving to ensure their security in an anarchic and unstable global environment. Although theorists of neoclassical realism focus significantly on power in international relations, they are divided into two main trends of thought: defensive realism and offensive realism (Hosseinzadeh, 2023).

Although both branches of neoclassical realism agree that the primary goal of states is to achieve security, they contend that this requires states to actively seek power. However, the main difference between the two views lies in their methods for ensuring security. Proponents of defensive realism argue that states should not react to every threat but focus on responding to specific external dangers. They believe that states should manage these threats through the balance of power mechanism, which they see as the most effective way to achieve peace and stability in the international system (Rose, 1998).

Defensive realists believe that states aim to acquire only the amount of power needed to secure their safety. Once they achieve a balance of power with potential threats, they cease further efforts to expand their power. They argue that weapons designed for defense are more effective and cost-efficient compared to those used for offense. Historical experience supports the view that defensive strategies are generally more successful and less costly for states than offensive ones. In contrast, proponents of offensive realism argue that only after disrupting the balance of power do powerful states attempt to dominate the international system by amassing significant powers. They view this aggressive approach as the most effective means to ensure security and believe that states must adopt assertive behavior to secure their survival. Mobilizing large powers is seen as the most effective way to ensure security, and states must adopt aggressive behaviors to guarantee their survival (Jervis, 1976). They will implement aggressive policies whenever the benefits are greater than the costs.

In other words, defensive realism argues that it is preferable for a state to have just enough power to maintain its security, as continuously increasing power could ultimately lead to its downfall. In contrast to defensive realism, offensive realism, as advocated by John Mearsheimer, argues that state foreign policy should be aggressive. Mearsheimer and other offensive realists contend that because the international system is inherently chaotic and the threat of attack is always present, states must adopt an offensive stance to secure their

interests and ensure their survival. Contrary to defensive realism, offensive realists believe that states must continually seek to acquire and enhance their power to achieve a level of hegemony and thereby ensure their security (Mearsheimer, 2001). Since no state can dominate the entire world, the competition to amass power remains a constant and perpetual phenomenon.

### **The Liberalism School and the Concept of Power**

After World War I, liberalism gained prominence, emphasizing the stabilization and promotion of peace, as well as the eradication of war and its consequences. In general, liberal schools and thinkers believed that war, misery, and disasters could be ended through the establishment of international organizations. Under their influence, the League of Nations was established in 1920 to end war and establish lasting peace (Melanson, 1997).

Despite their differences, the various views and theories of liberalism in international relations generally share several key assumptions, one of which is the belief that human beings have a pure and benevolent nature. States can act in the interests of humanity and the world, not just their own. Liberals also believe that although the state is the main actor in the international system, it is not the only actor. Along with the state, other actors such as individuals, international organizations, and multinational companies play significant roles in international politics (Keohane & Nye, 2012).

In the view of the liberal school, the anarchic structure of the international system does not inherently lead to perpetual wars and conflicts between states, as claimed by the realists. Instead, liberals believe that states try to cooperate with each other to prevent and avoid the negative consequences of anarchy and chaos. At the same time, the behavior of states is largely influenced by international laws, institutions, and organizations that have the ability to stop and end war and chaos (Nye, 2004).

Regarding power, the liberal school and its thinkers believe that the continuous accumulation of military force, as the realists argue, is not the only way to ensure state security. Instead, they argue that states have more appropriate ways to provide security. While all factors of power are important, economic power plays the most significant and tangible role (Keohane & Nye, 2012).

In short, we can say that while realism and its thinkers place great importance on power and interests, believing that politics is nothing but power and interests, liberalism and its thinkers focus on several basic principles in international relations, such as ethics, human rights, values, and norms. According to these principles, classical liberalism and neo-liberalism within the liberal school have varying perspectives on the issue of power, which we will explore in two main topics.

### **The Concept of Power in Classical Liberalism Theory**

Classical liberalism generally emphasizes the individual and their role in society, focusing on the positive aspects of human nature. In international relations, it highlights the importance of peace, dialogue, and mutual understanding. Classical liberals critique realism's justification that laws and rules in international relations are driven solely by national interests tied to power. They argue that these justifications stem from a set of ideas rather than reflecting the true nature of international life (Moravcsik, 1997).

According to classical liberalism, power is an element that should be limited and balanced. As previously mentioned, classical liberalism emphasizes principles such as individual freedom, private property rights, and limited government intervention. In this context, power refers to the responsibility of the state to protect and regulate individual rights in a limited manner, which is considered its fundamental function. In this context, power refers to the responsibility of the state to protect and regulate individual rights in a limited manner, which is considered its fundamental function. Classical liberal thought encourages state power to be confined to protecting individuals while allowing people to pursue their own self-interest under free market conditions. In this context, power is viewed as a tool that should ensure a fair balance between individuals (Bozdağlıoğlu & Özen, 2004).

Classical liberalism focuses on international cooperation and conflict prevention rather than the use of power in international relations. This approach integrates the humanistic principles of classical liberal theory into international relations and foreign policy. In this context, they emphasize the importance of the individual and assess international relations and interactions between states from a personal and human-centered perspective. By considering the individual as the basic unit of analysis, this theory approaches international relations with a multifaceted and pluralistic perspective. Consequently, its level of analysis and interpretation differs significantly from that of the realists. However, this theory was criticized for its failure to prevent two world wars, which led to the dominance of realism in the international arena (Ari, 2002).

Classical liberalism is closely associated with the work of Immanuel Kant and Jeremy Bentham, both of whom criticized the international situation as barbaric. They believed that understanding and solidarity between states are possible alongside protecting the interests and economies of countries (Bentham, 2001).

### **The Concept of Power in Neoliberalism Theory**

In response to the crisis in global financial markets that began in the late 1960s, liberal theory sought to reform and strengthen itself in the 1980s. This was partly due to the realization that traditional state-centric value sets

were insufficient to explain the international system. As a result, in the 1970s, "pluralist" thinkers laid the foundations for the theory and direction of neoliberalism (Varlık & Demir, 2013).

Neoliberalism, also known as institutional liberalism, builds on the core arguments of classical liberalism but adopts a more pluralistic perspective. It operates under the assumption that states are compelled to consider their own interests due to their "complex interdependence." The key difference between neoliberalism and classical liberalism is that classical liberalism focuses directly on the state, whereas neoliberalism emphasizes an international system composed of a network of international regimes and entities rather than a central state (Bozdağlıoğlu & Özen, 2004).

Neoliberalism emphasizes the importance of supranational cooperation and coordination between states. It highlights the role of regional and international institutions, as these institutions carry out functions that states alone may not be able to perform. They also believe that states can pursue their own interests without resorting to power, instead using trade, cultural and ideological influence, or so-called soft power. The concept of soft power, introduced by neoliberal theory, is particularly significant because it enables achieving results that hard power alone cannot accomplish. In terms of its components, soft power is associated with the immaterial aspects of power, such as culture, ideologies, values, institutions, and principles. In contrast, hard power is linked to the material tools of power, including economic conditions and the use or threat of armed and military force. Therefore from the liberal perspective, states can pursue their interests and goals by leveraging the strength of their culture and ideology, as well as their principles and values. They can also achieve this through their institutional strength, influencing the tendencies and directions of other states and parties in international processes, leading to coordination and rapprochement (Hussein, 2018).

Neoliberalism, regarding the efficiency of power and its role in achieving state goals and interests at the international level, posits that an indirect form of power is effective. This involves influencing others to align with the state's desires because they admire its values and aspire to reach the same level. This type of soft power encourages others to want what you want without using force or threats (Nye, 2004).

Neoliberalism emerged primarily through the work of Ernst B. Haas and David Mitrany, who focused on studying the unity and complementarity of states. In general, three main theses of neo-liberal theory and its thinkers can be identified:

- The state is not abstract and monolithic.
- Non-state entities and actors, such as multinational companies, institutions, and NGOs, play a major role in the international system,

with power being divided and fragmented among these entities. For this reason, the state alone is no longer able to control the environment and the international arena.

- The third thesis is that, in this environment, hard power and military force cannot be the sole instrument of authority and has largely diminished in importance due to the reduced risk of war between democratic states (Moravcsik, 1997).

In contrast, neoliberalism has faced criticism on multiple fronts, particularly regarding its assumptions about the role of the state, non-state actors, and the significance of military power. Key critiques include:

- **Downplaying the Role of the State;** Critics argue that neoliberalism underestimates the state's influence in international relations, often portraying it as less central than it actually is.
- **Overstating the Influence of Non-State Actors;** The theory is criticized for exaggerating the power of international organizations, multinational corporations, and other non-state actors while neglecting the control that states continue to exert over these entities.
- **Debating the Shift from Military to Economic Power;** Neoliberalism assumes that economic power has largely replaced military power in shaping global politics. However, many scholars challenge this notion, emphasizing that military strength remains a crucial factor in international security.
- **Questioning the Effectiveness of Economic Interdependence;** While neoliberalism suggests that mutual economic interdependence fosters peace and stability, critics argue that this assumption is overly optimistic and does not guarantee the elimination of conflicts (Keohane, 1989).

Although neoliberalism and neorealism differ in methodology and theoretical emphasis, their practical outcomes often align. Both recognize the persistence of power struggles in international relations, even if they explain them differently.

## **Conclusion**

The concept of power remains a fundamental and widely debated issue in international relations, with realism and liberalism offering distinct interpretations. This study has demonstrated that power is not a monolithic concept but varies significantly across theoretical traditions.

Realist theories, particularly classical realism, neorealism, and neoclassical realism, emphasize power especially military strength (hard power) as essential for state security in an anarchic international system. While

classical realists view power as an end in itself, neorealists see it as a means to achieve security. Defensive realism contends that states seek only enough power to ensure survival, whereas offensive realism asserts that continuous power maximization and the pursuit of hegemony are necessary for long-term security.

In contrast, liberal theories, including classical liberalism and neoliberalism, challenge the realist notion that power is primarily derived from military capabilities. Instead, they argue that economic interdependence, international institutions, and cooperation contribute to stability and security. Classical liberalism promotes individual rights, limited state power, and peace through diplomacy, critiquing realism's emphasis on power struggles. Neoliberalism builds on these principles by highlighting the importance of international institutions and soft power mechanisms, such as cultural and ideological influence.

By analyzing these perspectives, this research provides a deeper understanding of how power operates in global politics and how different schools of thought shape international interactions. Recognizing these distinctions contributes to a more comprehensive grasp of the dynamics of power and its implications for contemporary international relations.

Furthermore, this study highlights the evolving nature of power in an increasingly interconnected world, where economic interdependence, technological advancements, and global governance play a growing role alongside traditional power structures. Future research should explore how hybrid strategies integrating both hard and soft power are shaping state behavior and international stability in the 21st century.

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## Digital Linguistic Markers of Emotions during the September 2024 Hostilities in Lebanon: A Case Study in Communication Arts Course at a University Level in Southern Lebanon

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### Abstract

Language and emotions are intricate systems that have several interactions. Amid the expeditious spread of digitalization and the upswing of various international issues, this case study seeks to explore how students at the Lebanese University in the South utilize language on social media to convey their emotions as of the 2024 clashes and airstrikes in Lebanon. Further, it aims to identify digital linguistic markers that reflect key emotional states and social identity. Drawing on discourse analysis, which acknowledges language as a dynamic system influenced by shared experiences, values, and beliefs, and notably, by Conceptual Act Theory, which explores how meaning is constructed from experiences and perceptions, and on sentiment analysis, a mixed-methods approach is employed. A convenient sampling of (191) university EFL students taking the Communication Arts module during the fall of 2024-2025 completed an online survey of 15 multiple-choice and Likert scale items. Twelve students joined a focus group discussion, and 155 out of 191 participants interacted on the web-based application Padlet. The findings show that utilizing language in the context of social media platforms through words, emojis, hashtags, slogans, or posting articles, images, or videos plays a vital role not only in channeling positive and negative sentiments but also in signaling belonging to a collective identity during times of crisis in Lebanon.

The overall analysis indicated that using various linguistic practices on social media platforms communicates positive and negative emotions and upholds social norms and ideologies.

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**Keywords:** Discourse Analysis, Sentiment Analysis, Digital Linguistic Markers, Lebanon, War

## Introduction

Language is constantly used from a perspective and always exists within a specific context. It communicates emotion via almost every aspect (Majid, 2012). The choice of linguistic expressions and specific words can reveal social class, cultural background, and personal experiences. It serves as a mechanism that asserts dominance, negotiates power, creates social hierarchies, and upholds or challenges social norms and ideologies (Edward, 2024).

Contextualizing how we use language offers insights into its underlying dynamics and real-life consequences; that is where discourse analysis (DA) comes in. It looks for what is said in a given text and how it is used in social settings and cultural contexts. It explores how language presents different perspectives and understandings of the world and creates social reality (Gee, 2011).

The relationship between the text, the author, and the reader has changed because of social media opportunities (Oprea, 2019). Social media refers to applications and digital platforms premeditated for people to create, share, and be involved with content, communicate, and connect. Blogging on social media often impacts communication, social interactions, and discourse by making it more instantaneous, interactive, and widespread (Joudi, 2024). According to Khan (2024), social media has become a familiar public place in the global village for activism, where people can share targeted messages and emotionally charged content that shapes perceptions and beliefs.

Chalise (2024) stated that since October 7, 2024, social media followers or users have become active bystanders of the war, bound to see, think, like, repost, internalize, respond, and comment about the unprecedented violence. Kharroub (2023) asserted that oppressed populations rely on social media platforms to share their grievances, especially when social media exclude voices, emasculate their suffering, or intend to report practices that dehumanize them. According to Joudi and Ayoub (2024), the platforms have become spaces for conveying emotions. Social media users have started to echo their voices and embellish their engagement by following, commenting, reposting, replying to comments, and liking. In Lebanon, in the context of the September 2024 escalation of hostilities that have led to massive casualties, injuries, destruction, and displacements, followers have started to

exhibit various feelings through empathizing, dreading in disbelief, and, in some instances, expressing contempt for the suffering of the Lebanese people.

Consequently, the exchange of sentiments in the context of social media platforms represents collective consciousness and societal values, which often depend on culturally framed interpretations (Parkinson et al., 2005). This aligns with Smith and Mackie (2008), who noted that emotions pertain to identity as they depend on each other. They stressed that emotion makes identity consequential, and identity makes group-level emotion possible. As psychologist Smith (1993) stated, emotion goes with identity. For example, expressing pride in one's group or hate of one's enemy presupposes identities that one cares about. The analysis features of the prominent Palestinian figures on Instagram, Plestia Alaqaad, Motaz Azaiza, Bisan Owda, and Hind Khoudary, indicate that sympathy and frustration are the most expressed social emotions as these categories score high in both the number of likes and comment responses (Chailse, 2024). However, no studies have explored how digital communication can deeply reflect social and emotional dynamics in the Middle East, emphasizing Lebanon and its youth's social media language, emotions, and social identity, which are closely intertwined.

According to the psychological constructionist Conceptual Act Theory (CAT), emotion occurs when information from one's body is made meaningful in light of the present situation using conceptual knowledge about emotion. The Tajfel and Turner (1986) Social Identity Theory (SIT) suggests defining identities about social groups, and the Sentiment Analysis (SA) discipline suggests mining people's perceptions, opinions, sentiments, emotions, and attitudes in textual data, such as social networks (Pang & Lee, 2008).

Amidst the digital discourses that question the fluidization and the circulation of information in the public space that has not been encountered before (Opreas, 2019), the purpose of this study is to explore how university students in Southern Lebanon, during the ongoing war that began in Lebanon on October 7, 2023, use language on social media to express emotions and social identity. This study also aims to identify linguistic markers that reflect emotional states, such as anger, fear, sadness, hope, pride, social identity, and community affiliation. Thus, the current study has the following questions to answer:

1. How do university students in Southern Lebanon use language on social media to convey their emotions as of September 2024 clashes and airstrikes?
2. What emotional expressions and linguistic markers do university students in Southern Lebanon use on social media as of the September 2024 clashes and airstrikes?

3. How does the language university students in Southern Lebanon use on social media convey social identity as of the September 2024 clashes and airstrikes?

### **Literature Review**

Experiencing situations is the key to learning abstract concepts like anger, love, fear, or pride. According to Lindquist et al. (2015), language is the tool that enables humans to learn and apply concept knowledge to make sense of their experiences, perceptions, and emotions, such as happiness, sadness, anger, or fear. Negri et al. (2020) indicated that online expressive writing has helped respondents get more in touch with the intense emotions they experienced following the upheavals. When someone writes, "I am sad," for instance, it is understood that they are experiencing sadness. The idea of what it means to be "sad" can encompass past physical experiences (such as feeling worn out, exhausted, or unpleasant), past exteroceptive experiences, and external sensations (such as sights, smells, tastes, and sounds connected to various physical contexts in which one was sad), and simulations of representative situations in which loss occurred (such as simulations of the context occurred at the death of a loved one (Lindquist et al., 2015). Discrete emotion emerges and changes with culture and context (Lindquist, 2013).

Consistent with the constructionist Conceptual Act Theory (CAT), which posits that emotions arise from internal bodily sensations, external sensory representations, and conceptual knowledge to make meaning of ongoing sensory perceptions i.e., to give these sensations contextual meaning (Barrett, 2009; Lindquist et al., 2012; Lindquist, 2013), and informed by the field of Sentiment Analysis, which attempts to explore people's perceptions, opinions, sentiments, emotions, and attitudes through the analysis of textual data from social networks based on sentiment polarity (Pang & Lee, 2008), researchers have conducted various studies and presented various findings. Initially, they relied on manually built sentiment lexicons to categorize sentiment as positive, negative, or neutral and later evolved to incorporate multiple shallow machine-learning techniques (Stoy, 2021).

Taboada et al. (2011) utilized a positive and negative word lexicon-based technique to classify documents centered on their sentiments. Sailunaz and Alhaj (2019) analyzed different emotions and sentiments and asserted that multiple positive and negative dimensions can characterize some emotions. Further, Nandy and Sridhar (2020) did not rely only on traditional machine learning-based models to filter six human emotions and synonyms in English words. However, they proposed using both lexicon-based approaches and machine-learning approaches. In Ortigosa, Carro, and Quiroga (2014), sentiment analysis in Facebook transmitted messages has been presented to extract information about the users' sentiment polarity and to detect significant

emotional changes. They found that the classification method, which combines lexical-based and machine-learning techniques, is feasible for performing sentiment analysis on Facebook with high accuracy (83.27%). Further, Alsaeedi and Khan (2019) explored various sentiment analysis techniques applied to Twitter data and their outcomes. They demonstrated that lexicon-based techniques were extremely viable at times, requiring little effort in the human-marked archive. Moreover, Nahar et al. (2020) used the Arabic sentiment lexicon-based only to determine the polarity of provided Facebook posts and comments on a public issue concerning the services provided by Jordan's major telecommunications companies. Further, Mehmood et al. (2020) conducted an experimental study on the social issue of illegal immigration. They found an improved technique for lexicon-based sentiment analysis by incorporating verbs with multi-level grammatical dependencies. These studies comply with Calabrese and Cannataro's (2016) findings that confirmed the integration of sentiment analysis and affective computing to obtain a more accurate and reliable detection of emotions and feelings for applications in the life sciences.

Although Sentiment Analysis (SA) is a means of assessing written or spoken languages to decide whether articulation is positive, negative, or neutral and to what degree, many researchers used it in detecting and monitoring depressive states or mood disorders and anxiety conditions (Medhat, Hassan & Korashy, 2014; Ravi & Ravi, 2015), revealing collective behavior (Zafarani & Liu, 2014) and people's self-monitoring (He, Glas, Kosinski, Stillwell, & Veldkamp, 2014). Others use it to explore social identity, i.e., the person's sense of who they are based on their group membership(s) (Tajfel, 1978; Tajfel & Turner, 1979).

Consequently, language is not simply a tool for communication but also a means for establishing social identity; the language we speak and the way we use group talk when people become members of a social group reflect social representations and constitute important markers of social identity (Eastman, 1985; Jaspal, 2009). Thus, drawing upon a wide range of linguistic features within the context of social media posts, especially in times of conflict, and mapping out the structure and expression of language, i.e., patterns that reflect both emotional responses and social identities, serve the purposes of the current research.

## **Methods**

As cited in Joudi (2019), case studies have become one of the most common ways to do qualitative inquiry that investigates a contemporary phenomenon within a particular context to uncover patterns, determine meanings, and construct rich descriptive conclusions derived from multiple pieces of evidence. This exploratory study used a case study research design

that includes a survey, a focus group interview, online reflection logs on Padlet, and a follow-up lexicon-based sentiment analysis of words and phrases that are linked to different positive or negative emotions and social identity.

### **Participants**

The participants in this case study were selected using a convenience sampling technique based on their accessibility and availability to the researchers. Etikan et al. (2016) stated that it is commonly applied in social sciences, education, and healthcare research; it is valuable for case studies and exploratory research as it provides initial insights which ensure that the knowledge gained is representative of the population from which the sample was drawn. 191 students out of 223 enrolled in the Communication Arts course at the Lebanese University (LU), fifth branch, during the fall semester of 2024-2025, willingly participated in the study. For ethical considerations, the researchers provided informed consent, ensuring that participants understood the purpose of the study and how their data would be used anonymously.

### **Data Collection**

During the second week of November 2024, a Google Form was used to track the progress of questionnaire data collection and to view the exported responses from 191 participants on the fifteen items (Appendix A).

Since data obtained through questionnaires come from the individuals' accounts and not from a direct measurement of the experience of emotion that an actual event can trigger (Baele, 2016), the researchers included a focus group that is used for the qualitative data collection to create a complete picture of how a given issue affects a community of people. According to Mack et al. (2005), "Focus groups contribute to this broad understanding by providing well-grounded data on social and cultural norms, the pervasiveness of these norms within the community, and people's opinions about their values"(p. 52) as cited by Chehimi and Joudi (2017). By the end of November, a virtual focus group was organized with twelve students from the Oral Communication class, ensuring representation from different regions in southern Lebanon. The students were invited to provide insights on eight questions covering three main areas: language use on social media in discussions about the September 2024 hostilities, digital emotional expressions and linguistic markers of emotions related to the war in Lebanon, and the expression of social identity and community through language (Appendix B). The session was audio-recorded for transcription.

In December 2024, students were invited to reflect on their experiences through two online reflection logs on the web-based application Padlet, a collaborative platform for sharing content (Appendix C). This microblogging platform fosters collaborative communication, engages students in noticing

linguistic features (Joudi & Ayoub, 2024), and allows them to share examples of their own language choices, such as words, hashtags, or emojis used to convey emotions and reveal aspects of their identity during the war. These posts remained open for one week. Then the researchers applied lexicon-based approaches, looked for consistency in linguistic markers, and chose a lexicon of words and phrases associated with various emotions and social identities.

### **Data Analysis**

This study employed statistical analysis and structured lexicon-based data analysis to examine how university students in Southern Lebanon used language on social media to convey emotions such as anger, fear, sadness, pride, and hope, as well as to express their social identity linguistically during the hostilities in Lebanon.

The responses to the fifteen items in the questionnaire were followed by statistical analysis, using Google Forms' charting tools, which provide an analytical description of the data.

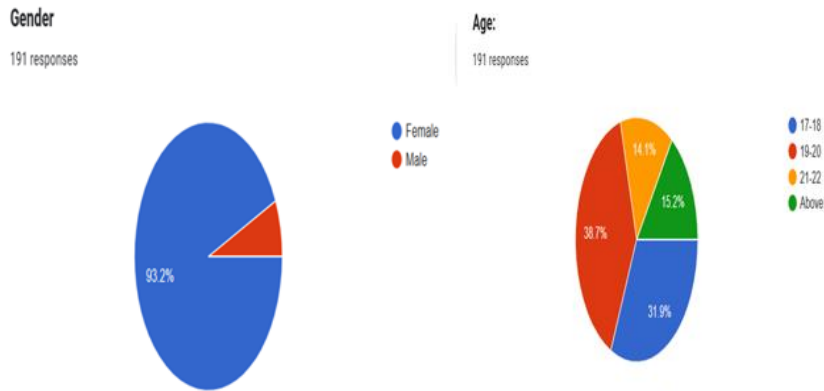
The insights of the focus group and the reflection logs were followed by lexicon-based analysis and feature classification, which entails identifying words and phrases linked to particular emotions and social norms.

The study examined linguistic patterns and detected the expressions of positive and negative emotions while also analyzing the underlying beliefs and social conventions that influence linguistic choices. This analytical framework thoroughly examined the linguistic markers associated with emotions and social identity within the specified context.

### **Results of Survey Analysis**

#### ***Section One: Demographics***

The results show that the participants include (178) females and (13) males from the Communication Arts course at the Lebanese University (LU), fifth branch. The proportions represent 93.2% females and 6.8% males. The majority of the sample, 38.7%, falls within the 19–20 age group, while the minority group, aged 21–22, accounts for only 14.1% of the respondents. 31.9% are between 17–18 years old, while 15.2% are above 22 years. These ranges highlight that the participants are predominantly young university students or recent high school graduates. Figure (1) depicts the results.



**Figure 1:** Demographics (Gender and Age)

The participants reside in various cities and villages across Lebanon that fall into four of the eight administrative divisions: South Lebanon governorate (50%), Nabatieh governorate (25%), Mount Lebanon governorate (19.2%), and Beirut governorate (5.8%). Table (1) shows the breakdown of the participants’ responses regarding their place of residence before the September 2024 hostilities in Lebanon.

**Table (1):** Place of Residence before the September 2024 hostilities in Lebanon

Place of Residence before the September 2024 hostilities in Lebanon			
Governorates			
South Lebanon	Nabatieh	Mount Lebanon	Beirut
Abra	Adaisseh	Barja	Beirut
Ain el celeb	Blat	Chhim	Jnah
Al Abbasieh	Ebba	Haret al-	New Rawda
AlBurghliyyeh	Hasbaya	Naameh	Dekweneh
Alrashidieh	Chouya	Jadra	
camp	Houmin el	Ketermaya	
Al-Shaatey	tahta	Mazboud	
Borj Rahal	Kawkaba	Wadi el	
Borj Alchamali	Kosaybi	Zayne	
camp	Majdal		
Chehour	Selem		
Deir Kanoun	Marjeyoun		
Al-Nahr	Nabatieh		
Doueir	Nabatieh Al-		
Ghazieh	Fawkaa		
Kharayeb	Kfarjouz		
Majdal Selem	Toul		
Maitake			
Sarafand			
Saida			
Toura			
Tyre			
<b>Total</b>	19 locations	14 locations	7 locations
			3 locations

A large number of the participants, (91/191) representing (47.6%), were displaced, while (64/191), i.e., (33.5%), stayed in their residences but were still affected by the conflict and the clashes. Only a minority (36/191), accounting for (18.8%), were neither displaced nor affected by the hostilities in 34 out of the 44 mentioned locations. Figure (2) depicts the results.

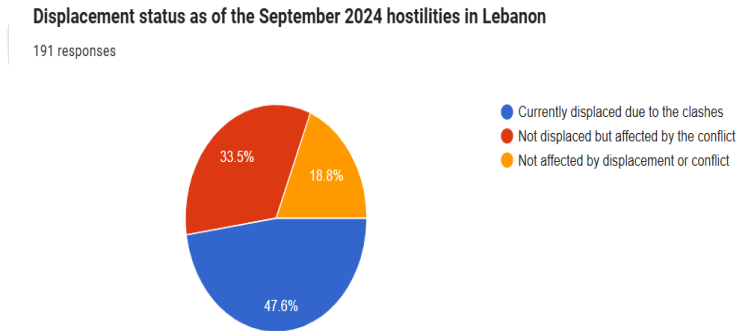


Figure 2: Displacement status as of the September 2024 hostilities in Lebanon

### ***Section Two: Social Media Engagement and Emotional Expression in Response to the hostilities in Lebanon that began in September 2024***

Respondents were asked about their social media engagement and emotional expressions in response to the hostilities in Lebanon. The results of question (1) show that (73%) followed online news about the recent hostilities in Lebanon about 1– 4 times per day, reflecting a significant level of engagement. Only (7.3%), followed the news 5–10 times per day, indicating a moderate interest. Those who checked the news less frequently, several times a week, weekly, occasionally, or rarely, constitute a much smaller share of the responses. Generally, the responses reflect an average to a high level of news consumption among most young adult participants. Figure (3) depicts the results.

1. How often do you follow online news about the recent hostilities in Lebanon that began in September 2024?

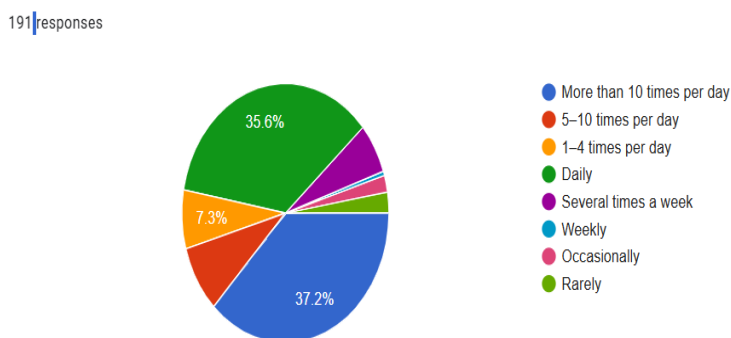


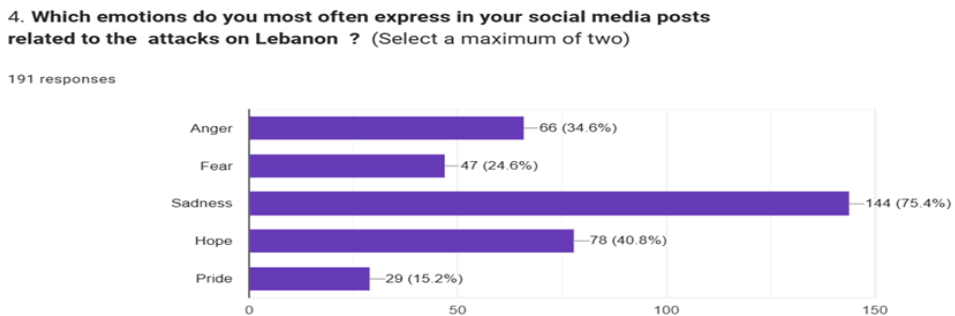
Figure 3: Social Media Engagement: News Consumption

When asked question (2), how often do they post online or interact with digitalized content related to the recent hostilities in Lebanon that began in September 2024? The results show a diverse range, with an average leaning toward minimal to moderate interaction. (26.7%) interacted daily, and (25.1%) interacted several times a week, reflecting a consistent level of involvement that exceeds (50%). The minority (9.9%) rarely posted or interacted, showcasing sporadic involvement. Regarding question (3), the input shows that the majority (63%) express anger, fear, hope, and pride on social media when discussing Lebanon's hostilities. The responses to question (3) show that more than (63%) express emotions like anger, fear, sadness, hope, or pride when talking about the attacks on Lebanon on social media daily and several times a week accounted for (44%) and (18.9%) respectively. The minority of 24% rarely do so. Figure (4) below depicts the results.



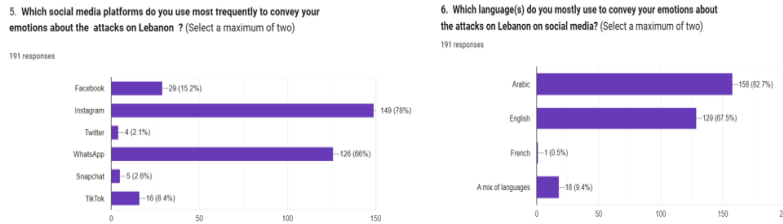
**Figure 4:** Frequency of online interaction and emotional expression on social media during the 2024 hostilities in Lebanon

As question (4) shows, the profile of emotional expressions employed by the participants of the Communication Arts course on social media highlighted that the negative emotions prevailed: sadness (75.4%) – followed by anger (34.6%) and fear (24.6%). However, respondents experienced a parallel set of emotions, such as hope (40.8%) and pride (15.2%). Figure (5) depicts the results.



**Figure 5:** Emotion expressions during the attacks on Lebanon

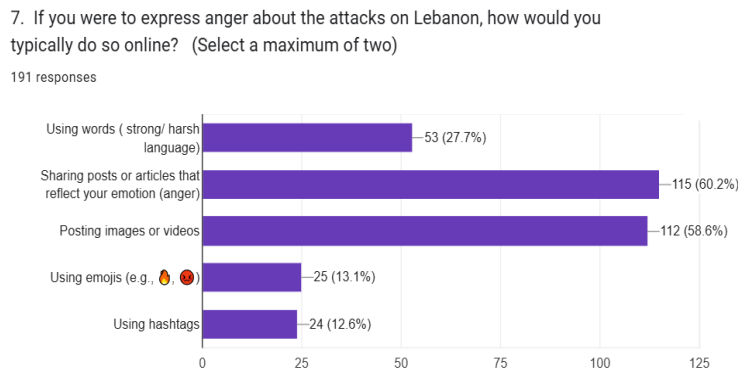
Based on the responses to the question (5), the most frequently used platform is Instagram (78 %), followed by WhatsApp (66%). As for question (6), the majority of respondents (82.7%) prefer using Arabic to convey their emotions about the war, while (67.5%) also use English. Figure (6) depicts the results.



**Figure 6:** Preferred platforms and languages for expressing emotions during the war

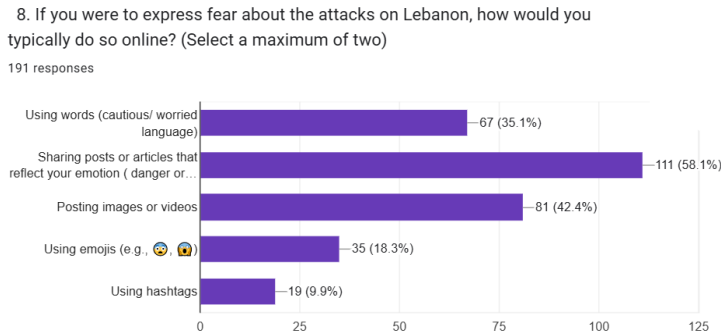
### ***Section Three: Language and Expression of Emotions in Social Media Posts***

A similar manifold profile emerged from analyzing linguistic markers of emotions related to five emotional states. When participants were asked question (7) about their preferred method of expressing emotions about the attacks on Lebanon, (60.2%) typically chose to share posts or articles to convey their anger, (and 58.2%) opted for posting images or videos that reflect their anger. In comparison (27.7%) preferred using strong harsh words, (13.1%) used emojis (e.g., 🤬, 😡), and (12.6%) expressed their anger through hashtags. Figure (7) depicts the results.



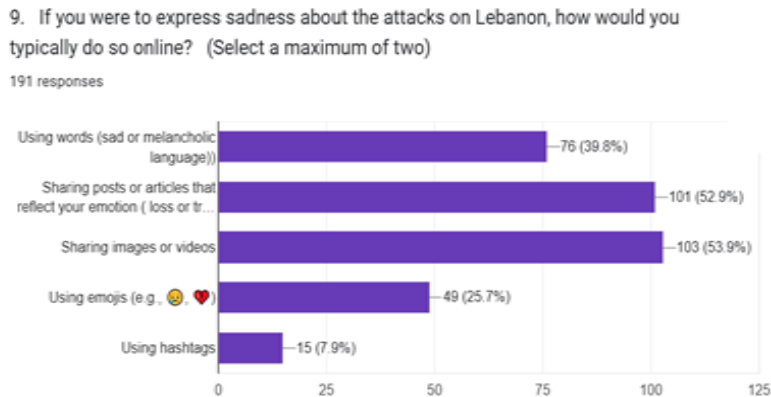
**Figure 7:** Preferred digital linguistic practices for expressing anger during the war

Regarding question (8), when asked how they would express fear about the attacks on Lebanon, the participants reported the following: (58.1%) typically shared posts or articles to convey fear, (42.4%) preferred posting images or videos, (35.1%) opted for cautious, worried language reflecting fear. A minority of (18.3%) used emojis (e.g., 🤬, 😬), and (9.9%) expressed fear through hashtags. Figure (8) depicts the results.



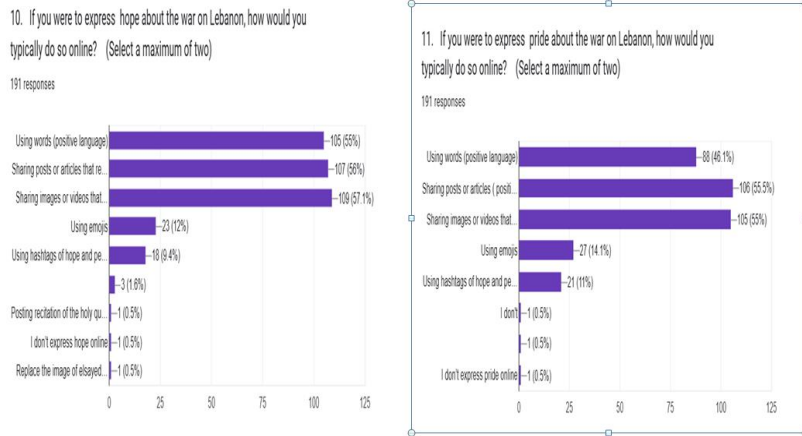
**Figure 8:** Preferred digital linguistic practices for expressing fear during the war

Almost similar percentages were observed for question (9), which asked how they express sadness online. The majority chose to share posts or articles or post images or videos to convey their sadness, accounting for (52.9%) and (53.9%,) respectively. Figure (9) depicts the results.



**Figure 9:** Preferred digital linguistic practices for expressing sadness during the war

In line with determining how participants would express positive feelings about the attacks on Lebanon, question (10), the overwhelming response of around (55%) opted for using words, sharing posts or articles, and sharing images or videos to convey their hope. Only (12%) chose to use emojis (e.g., 🙌, 😊), and (9.4%) chose hashtags to express their hope. Almost similar percentages were observed for question (11), which asked how they would express their pride online during the September hostilities in Lebanon. Figure (10) depicts the results.



**Figure 10:** Preferred digital linguistic practices for expressing hope and pride during the war

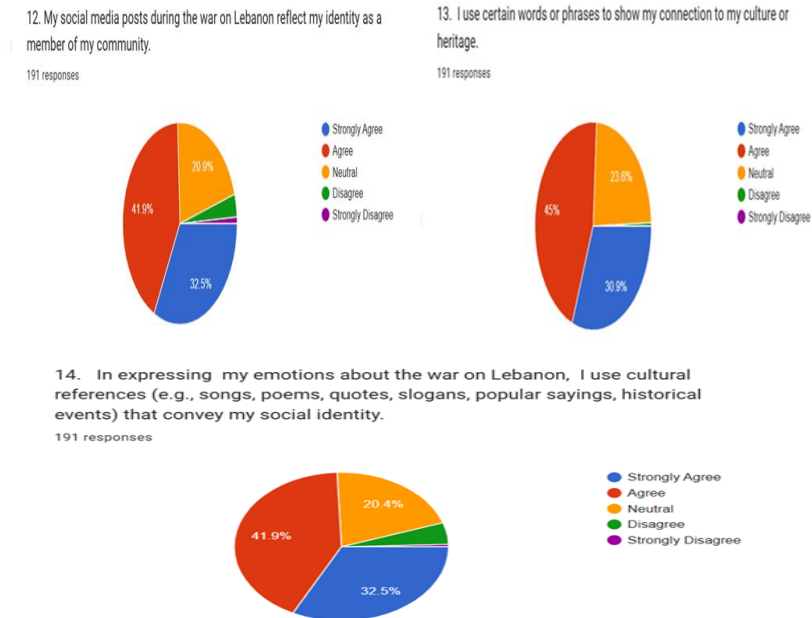
Table (2) summarizes the results of figures (7),(8),(9), and (10).

**Table 2:** Preferred Digital Linguistic Practices for Expressing Emotions during the War on Lebanon as of September 2024

Modes of Digital Linguistic Practices for Expressing Emotions during the War on Lebanon as of September 2024					
	Using words	Sharing posts or articles	Posting images or videos	Using emojis	Using hashtags
Anger	27.7%	60.2%	58.2%	13.1%	12.6%
Fear	35.1%	58.1%	42.4%	18.3%	9.9%
Sadness	39.8%	52.9%	53.9%	25.7%	7.9%
Hope	55%	56%	57.1%	12%	9.4%
Pride	46.1%	55.5%	55%	14.1%	11%

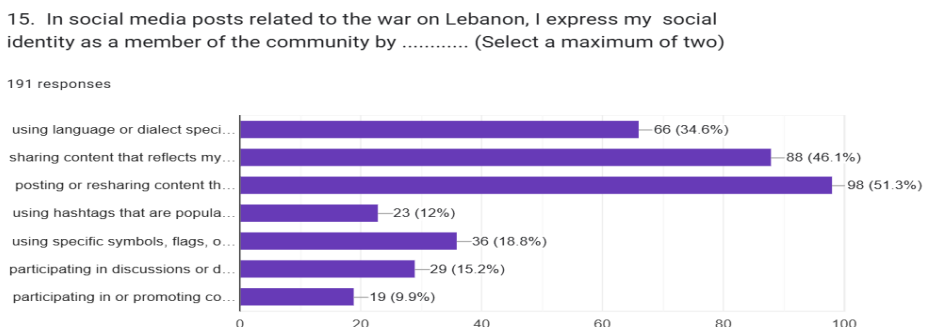
**Section Four: Social Identity and Community Affiliation in Social Media Posts**

When asked question (12) whether social media posts reflect their identity as members of their community, the majority (75%) affirmed the statement, and only (21% ) showed neutrality. In comparison, a significant minority of (4%) only disagreed. Similarly, in response to question (13), whether they use certain words or phrases to show their connection to culture or heritage, a significantly large number more than (76%) agreed. The minority (23.6%) remained neutral, and no significant disagreement was showcased. Furthermore, when asked question (14), if they incorporate songs, poems, quotes, slogans, popular sayings, or historical events to reflect their social identity, the majority of (75%) affirmed, (20.4%) showed neutrality, while only (4%) disagreed. Overall, these responses indicate that most respondents view social media and the use of language as an integral platform for reinforcing their communal ties and cultural references. Figure (11) depicts the results.



**Figure 11:** Digital linguistic practices and identity reflection during the war on Lebanon

Regarding question (15), the participant's responses showcased various ways they use to express their social identity through social media posts related to the September hostilities in Lebanon: (51.3%) preferred posting or re-sharing content that aligns with their community's collective voice (46.1%) chose to share content that reflects their religious or spiritual beliefs; (34.6%) opted for using language or dialect specific to their cultural or regional background. A smaller group (18.8%) employed symbols, flags, or colors associated with their identity, and (15.2%) engaged in discussions or debates reflecting their community's culture or values. The minority (9.9%) participated in or promoted community-driven initiatives or campaigns online to assert their identity. Figure (12) illustrates the responses.



**Figure 12:** Digital linguistic modes of social identity during the September 2024 hostilities in Lebanon

### Results of Focus Group Discussion

In December 2024, one focus group discussion was conducted to gather information about language use on social media, mainly about the digital emotional expressions and linguistic markers of emotions and social identity, in discussing the September hostilities in Lebanon. The participants were males and females, but most (9/12) or (75% ) were females. The group's responses are combined in the following outcomes, and a sample of what was stated is reported.

#### *Outcome 1. To know about language use on social media in discussing the War on Lebanon*

Languages Used on Social Media: Arabic, English	Language and Expression of Emotions
(Q1) When discussing the war on Lebanon on social media, which language do you use: Arabic, English, or a mix of languages?	(Q2) How does your language affect how you express your emotions about the war on social media?
<ul style="list-style-type: none"> <li>✓ I use Arabic to be perfectly understood.</li> <li>✓ I use English.</li> <li>✓ I use both.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Specific words in Arabic carry emotional weight.</li> <li>✓ Lebanese users might mix Arabic and English to reach diverse audiences.</li> <li>✓ My choice of English words would convey my sadness and anger more. For example, I would say this war is devastating.</li> <li>✓ My Arabic language conveys my emotional engagement more.</li> </ul>

One finds here that the participants' language on social media to express their emotions about the war in Lebanon significantly varies based on their perceptions about the tone and the intensity of the choice of words in Arabic versus English.

#### *Outcome 2. To know about digital emotional expressions and linguistic markers of emotions in discussing the hostilities in Lebanon*

Digital Emotional Expressions when Discussing the Hostilities in Lebanon	Modes of Expressing Emotions when Discussing the Hostilities in Lebanon	Digital Linguistic Markers of Emotions to Discuss the Hostilities in Lebanon
(Q3) What emotions do you most often feel when you discuss the war on social media? Can you describe a specific moment when you felt strongly about it?	(Q4) How do you express the following emotions online discussing the war? a. Anger b. Fear c. Sadness d. Pride e. Hope	(Q5) What linguistic markers do you include in your posts to convey your feelings about the war? Why do you think you choose them?
✓ I feel <b>sadness</b> , especially seeing children affected	✓ I post <b>messages</b> that convey my <b>anger</b> : I	✓ I use emotionally charged <b>language</b> .

<p>by war. I remember one post I shared that broke my heart: " Stop killing innocent children."</p> <ul style="list-style-type: none"> <li>✓ I feel <b>anxious</b>, especially knowing about being at risk every single moment. I remember one post I shared: I hope not to see a familiar name passed away or a familiar place being bombed.</li> <li>✓ I feel <b>afraid</b>. I posted: I just want to hold my little sister close and protect her from this nightmare. How do I explain war to her? How do I calm her when she is <b>terrified</b> when I am <b>terrified</b>?</li> <li>✓ My heart races every time I hear news of another airstrike. We are in the danger zone, and we feel so <b>powerless</b>. Please, pray for us.</li> <li>✓ I feel <b>afraid</b>. The sounds of airstrikes keep replaying in my head even when it's quiet. Hope to feel safe again. Pray for us and everyone affected.</li> <li>✓ I feel angry and frustrated: I demand justice and call for action.</li> </ul>	<p>am <b>tired</b> of leaders and politicians doing nothing while people are dying!</p> <ul style="list-style-type: none"> <li>✓ I post a <b>question</b> that irritates <b>emotions</b>: Where is humanity?</li> <li>✓ I <b>encourage</b> people in my <b>community</b> to act: Our voices need to be louder, and action needs to happen now.</li> <li>✓ I express my <b>anger</b>: Enough is enough.</li> <li>✓ I express my <b>hope</b> and <b>pride</b> by posting on my Facebook page: Thank you for coming together during tough times.</li> <li>✓ I express what is happening around me through words, whether the sound of airstrikes or the <b>fear</b> of ar.</li> <li>✓ I process my emotions of <b>displacement</b> using <b>angry</b> words that convey my <b>fear</b> and <b>anxiety</b>.</li> </ul>	<ul style="list-style-type: none"> <li>✓ I use <b>hashtags</b>. "#JusticeNow"</li> <li>✓ I post personal <b>anecdotes</b>.</li> <li>✓ I <b>share posts</b> about efforts that inspire people to donate.</li> <li>✓ I use <b>descriptive words</b> to reveal my feelings.</li> <li>✓ I use <b>emojis</b> that show my anger and hatred.</li> <li>✓ I describe my feelings in <b>sentences</b>.</li> <li>✓ I tell what is happening and how I feel using <b>words</b>.</li> <li>✓ The <b>words</b> I use are <b>harsh</b>, like the situation.</li> <li>✓ I post <b>pictures</b> and comment on them.</li> <li>✓ I can communicate the reality of what we are experiencing to people outside Lebanon through <b>posts, hashtags, and live videos</b>.</li> <li>✓ Posting <b>videos</b> helps me process my feelings and spreads awareness about the hostilities in Lebanon.</li> </ul>
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*Outcome 3. To know about digital emotional expressions and linguistic markers of social identity in discussing the hostilities in Lebanon*

Digitalization and Social Identity when Discussing the Hostilities in Lebanon	Digital Linguistic Markers that Signal Social Identity when Discussing the Hostilities in Lebanon	Modes of Expressing Social Identity when Discussing the Hostilities on Lebanon Online
(Q6) Smith and Mackie (2008) noted that emotions pertain to an	(Q7) Provide examples of how your social identity is reflected in the language you use when discussing the	(Q8) Emotion goes with identity (Smith, 1993). For example, expressing pride in

<p>identity as they depend on each other. How does social media help you communicate your emotions during the war on Lebanon?</p>	<p>hostilities in Lebanon on social media. Think about linguistic markers like using specific terms, hashtags, slogans, and emojis that signal your affiliation with certain groups or perspectives.</p>	<p>one's group or hate of one's enemy presupposes identities that one cares about. Can you use any cultural references (e.g., songs, poems, quotes, slogans, popular sayings, historical events) on social media to express your emotions and convey your identity during the war on Lebanon?</p>
<ul style="list-style-type: none"> <li>✓ It allows me to convey my <b>deep emotional connection to Lebanon</b> in words, pictures, or videos.</li> <li>✓ Facebook and WhatsApp applications help me openly <b>express my</b> anger, fear, and sadness without feeling judged.</li> <li>✓ Instagram helps me <b>convey my emotions</b> and connect with people who are going through the same thing.</li> <li>✓ Receiving and posting comments, likes, and messages let me <b>feel that I am not alone</b> in experiencing bad feelings.</li> <li>✓ The platforms help me <b>feel a sense of solidarity</b> and <b>hope</b> to overcome the bad times.</li> </ul>	<ul style="list-style-type: none"> <li>✓ In the middle of despair, sharing posts of solidarity on social media <b>gives hope</b> صامدون</li> <li>✓ Sharing a post hand in hand helps me focus on the <b>positive</b> amidst the chaos.</li> <li>✓ Words like شهداء (martyrs) or مأساة (tragedy) highlight <b>shared suffering</b>.</li> <li>✓ Phrases like Stay strong, لبنان signal my <b>affiliation</b> and perspective.</li> <li>✓ Hashtag لبنان_ينزف# (#LebanonIsBleeding) expressing <b>shared pain and grief</b>.</li> <li>✓ Hashtag لن_نركع# (#WeWillNotBow)</li> <li>✓ Hashtag: #StopTheWar.</li> <li>✓ Hashtag:#PrayForLebanon</li> <li>✓ Hashtag:#WithYouInGrief</li> <li>✓ Hashtag #StayStrong</li> <li>✓ Symbolic emojis:                      a Lebanese bleeding; raised fist for <b>resistance and solidarity</b>; dove for peace.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Lebanese flag for national pride and identity.</li> <li>✓ We refuse to die. A direct appeal to unity and collective identity.</li> <li>✓ لبنان لن ينكسر</li> <li>✓ سلام لأرض السلام</li> <li>✓ على هذه الأرض ما يستحق الحياة. سنبقى صامدين</li> <li>✓ بحبك يا لبنان رغم الجراح</li> <li>✓ Julia Boutros: expressing frustration and a call for solidarity among Arab nations</li> <li>✓ Julia Boutros: اأحيائي a <b>tribute to the resilience</b> of those suffering and fighting</li> </ul>

Further, the researchers extracted from the preprocessed focus group documented the lexicons of words associated with various negative and positive emotions, created two tables, placed each feeling into a single row, and included the expressed words.

A Lexicon of Words Associated with Various Negative Emotions	
Feeling	Words
✓ Anger	✓ Outraged ✓ Furious
✓ Fear	✓ Scared ✓ Desperate ✓ Terrified ✓ Helpless
✓ Sadness	✓ Overwhelmed ✓ Broken ✓ Heartbroken ✓ Devastated ✓ Mournful
✓ Others	✓ Frustrated ✓ Helpless ✓ Anxious ✓ Nervous ✓ Worried ✓ Uncertain

A Lexicon of Words Associated with Various Positive Emotions and Social Identity	
Feeling	Words
✓ Hope	✓ Optimistic ✓ Hopeful ✓ Resilient
✓ Pride	✓ Strong ✓ Determined ✓ Proud of my community
✓ Social Identity	✓ Strong ✓ Together ✓ United ✓ We ✓ Strength ✓ Resilience

### Results of Reflection Logs

The 191 participants were required to respond to two questions shared via Padlet (Appendix C). Figures (13) and (14) depict the records which show that (49) students conveyed their emotions and reflected, while (155) viewed their peers' posts. The researchers extracted words and phrases that convey their positive emotional engagement and identity from the preprocessed documents: proud, resistance, dignity, beloved country, hope, confident, patience, unity, empathy, strengthen, prayer, better, victory, broken but strong, together for Lebanon, long live resistance, gorgeous country, stand straight again, determination, persistence, لو هالدنيا سألت انت مين قلهن انك لبناني شمالك لجنوبك بحبك

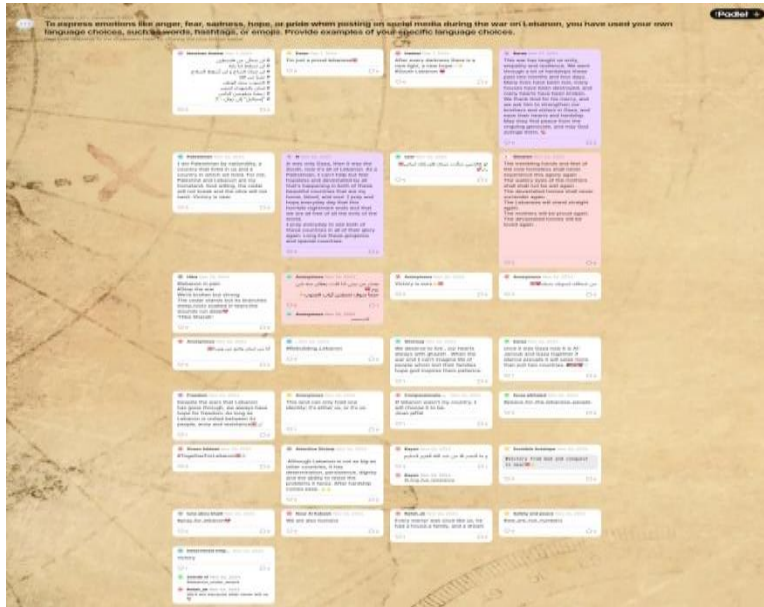


Figure 13: Examples of digital language choices that express emotions during the war on Lebanon

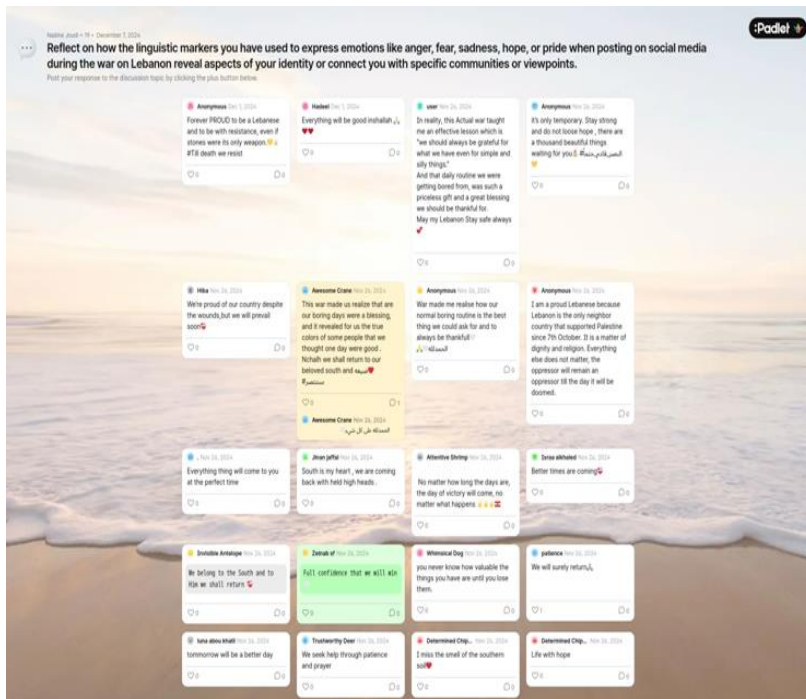


Figure 14: Examples of digital language markers that reveal identity during the war on Lebanon

## Findings and Discussion

The given data analysis is grounded in sentiment polarity and is in line with the domain of Sentiment Analysis (SA) which investigates individuals' perceptions, opinions, sensations, emotions, and attitudes. To obtain a more accurate and reliable detection of emotions and feelings and to decide whether articulation is positive, negative, or neutral, revealing collective social norms, the analysis also deals with the constructionist Conceptual Act Theory (CAT). This theory asserts that emotions are not innate, biologically hardwired responses but rather constructed experiences shaped by context, past experiences, and cultural interpretations. Emotions are shaped as they are dynamic, and they vary depending on contextual information, conceptual knowledge, and situational social norms.

The results reveal a shared theme of social media platforms as a means for expressing social identity during crisis. The participants' posts tried to highlight the use of emotionally charged language, hashtags, and personal anecdotes to communicate their emotions. They channel their emotions by using emotional words, affective adjectives, harsh words, emojis, visual elements, hashtags, or phrases.

All the participants are well aware that social media platforms play a vital role in communicating their emotions during a crisis. They are spaces for self-expression, connection, and advocacy. The linguistic markers not only express emotions but also signal belonging to a collective identity during times of crisis.

The findings are consistent with those of Negri et al. (2020), who found that following online expressive language can be helpful in situations of emergency to get more in touch with intense emotions. Among the predominantly young university student participants who were displaced and affected by the hostilities in Lebanon that began in September 2024, (73%) reported checking the news more than four times daily; more than (51%) leaned towards online interaction several times per week, and (63%) expressed their emotions about the attacks on Lebanon on social media. (78%) preferred using Instagram, while (66%) chose WhatsApp. (82.7%) selected Arabic as their primary communication medium, while (67.5%) opted for using English.

Other findings correspond with Fattah and Fierke (2009), who affirmed that emotion finds expression in a language and culture, and Ye et al. (2023), who considered the relationship between university students' emotional expression and self-presentation in online communication and their well-being. Positive and negative emotional expressions revealed through social media depend on the respective patterns of social media. Table (2) shows that the patterns vary from using words, emojis, and hashtags to posting articles, images, or videos.

According to Halperin et al. (2011), in the pro-Palestinian emotional configuration, anger, sadness, and anxiety are evident emotions in conflict. These results correspond to the findings of the study. Negative emotions such as sadness, anger, and fear prevailed, accounting for (75.4%), (34.6%), and (24.6%) respectively. Regarding expressions of positive emotions during the war, (40.8%) chose to convey their hope, while (15.2%) opted to express their pride.

Further, as the participants' interaction on padlets shows, the university students in Southern Lebanon used emojis and symbols to convey their emotions. This finding aligns with Bleiker and Hutchison (2008), who argued that one of the most promising locations in which emotions are examined is how they are represented and communicated symbolically. They added that religious elements are also constitutive of the emotional states.

In addition, the results of the focus group discussion and the transcription of the reflection logs on the padlet align with Absattar et al. (2022), who affirmed that the lexical and syntactic patterns serve in exploring cognitive perception and building public relations. The participants use adjectives, melancholic expressions, harsh words, and cautious or worried language to convey their emotions. According to Tausczik and Pennebaker (2010), language reflects the text's saliency of positive or negative emotions. It allows the analyst, for example, to get scores for anxiety, anger, and sadness. The language used in the reflection logs and the focus group discussion reflects the participants' emotional state amid the war in Lebanon and conveys their social processes. The use of nouns and adjectives in the microblogging and the focus group transcripts reveal the positive and negative emotional tones and convey what they think about and how they feel. Also, using the pronouns (I, we) reveal the magnitude of intergroup tensions. This aligns with Nerbonne (2014), who proved that the pronouns are robust indicators of the general emotional tone of discourses in that they reveal the distinctions between those in groups and those who are different.

The majority of the participants agreed that when discussing the war on social media, they noticed shared linguistic references such as popular sayings, common slogans, and songs that reveal their culture and community affiliation. The findings align with Kuntsman (2010), who illustrated that digital circulation fosters ingroup cohesion across territorial boundaries, and Cammaerts and Van Audenhove (2005), who proved that it strengthens transnational citizenships. Identities exist at individual, group, and state levels of analysis because emotion exists at these different levels. Monroe's (1996) research on altruism shows some people identify with humanity, even at significant risk to themselves and their families (McFarland et al., 2012).

## **Limitations**

This study has some limitations. Even though 191 EFL university students participated in the survey, the participants were not a casual representative sample; thus, the results may differ from those of the general population. Additionally, among the final 155 responses on microblogging, the reflection logs collected from the respondents were insufficient to generalize. To better understand how social media usage patterns convey emotions and social identities, recruiting more respondents of different ages would be necessary to analyze in more detail.

## **Conclusion**

Multiple linguistic markers evidence that language significantly facilitates the processing of positive and negative emotions and upholds social norms and ideologies.

This study enhances the existing literature on language, warfare, and digital communication and elucidates the digital linguistic indicators of emotions articulated by university students during the September 2024 hostilities in Lebanon. It provides significant insights into the influence of the crisis on online linguistic patterns linked to emotions such as anger, fear, sadness, hope, and pride.

The results showed that utilizing language on social media platforms through words, emojis, hashtags, slogans, articles, images, or videos plays a vital role not only in channeling positive and negative sentiments but also in signaling belonging to a collective identity during times of crisis in Lebanon.

The notion that Lebanese hostilities contribute to these findings is somewhat naive, given the lack of comparable data before the conflict. Nonetheless, the study is essential as it corresponds with other researches on linguistic displays of emotion in conflict contexts; they reinforce the universality of emotional reactions in digital communication while providing a case study specific to Lebanon.

This research highlights the necessity for additional studies that analyze language trends before, during, and after conflicts to enhance the comprehension of the growing dynamics of war-related digital communication.

As the use of words and the choice of terminology carry meanings that can downplay the extent of what is happening (Osman, 2023), linguists have to conduct further studies on social media posts as they can be enough to catalyze action and mobilize activism (O'Brien, 2024). Let us contribute something to the push for peace, which is a worthwhile pursuit.

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## Appendix A

### Questionnaire

#### Section 2:

*Social Media Engagement and Emotional Expression in Response to the September 2024 Hostilities on Lebanon*

**1. How often do you follow online news about the recent hostilities in Lebanon that began in September 2024?** \*

*Mark only one oval.*

- More than 10 times per day
- 5–10 times per day
- 1–4 times per day
- Daily
- Several times a week
- Weekly
- Occasionally
- Rarely

gle.com/forms/d/1\_7Kn5T5R6U-x57FyGX4MjEak4amgNP7FI02L\_KCil/edit

M Questionnaire: Digital Linguistic Markers of Emotions as of the September 2024 Hostilities in Lebanon: A Case Study in Communication Arts Course at a University Level in Southern

**2. How often do you post online or interact with digitalized content related to the recent hostilities in Lebanon that began in September 2024?** \*

*Mark only one oval.*

- Daily
- Several times a week
- Weekly
- Rarely
- Never

**3. How often do you express emotions like anger, fear, sadness, hope, or pride when talking about the attacks on Lebanon on social media?**

*Mark only one oval.*

- Daily
- Several times a week
- Weekly
- Rarely
- Never

gle.com/forms/d/1\_7Kn5T5R6U-x57FyGX4MjEak4amgNP7FI02L\_KCil/edit

M Questionnaire: Digital Linguistic Markers of Emotions as of the September 2024 Hostilities in Lebanon: A Case Study in Communication Arts Course at a University Level in Southern

**4. Which emotions do you most often express in your social media posts related to the attacks on Lebanon ? (Select a maximum of two)** \*

*Check all that apply.*

- Anger
- Fear
- Sadness
- Hope
- Pride

**5. Which social media platforms do you use most frequently to convey your emotions about the attacks on Lebanon ? (Select a maximum of two)** \*

*Check all that apply.*

- Facebook
- Instagram
- Twitter
- WhatsApp
- Snapchat
- TikTok

gle.com/forms/d/1\_7Kn5T5R6U-x57FyGX4MjEak4amgNP7FI02L\_KCil/edit

M Questionnaire: Digital Linguistic Markers of Emotions as of the September 2024 Hostilities in Lebanon: A Case Study in Communication Arts Course at a University Level in Southern

**6. Which language(s) do you mostly use to convey your emotions about the attacks on Lebanon on social media? (Select a maximum of two)**

*Check all that apply.*

- Arabic
- English
- French
- A mix of languages

**Section 3:**

**Language and Expression of Emotions in Social Media Posts**

7. If you were to express anger about the attacks on Lebanon, how would you typically do so online? (Select a maximum of two) +
- Check all that apply.*
- Using words (strong/ harsh language)
  - Sharing posts or articles that reflect your emotion (anger)
  - Posting images or videos
  - Using emojis (e.g., 😡, 🤬)
  - Using hashtags

gls.com/forms/MS1\_76n5TSR6U-s57FyCk4MEak4angNR7F52I\_KC3de48

9/11

8. If you were to express fear about the attacks on Lebanon, how would you typically do so online? (Select a maximum of two) +

- Check all that apply.*
- Using words (cautious/ worried language)
  - Sharing posts or articles that reflect your emotion (danger or uncertainty)
  - Posting images or videos
  - Using emojis (e.g., 😨, 😱)
  - Using hashtags

9. If you were to express sadness about the attacks on Lebanon, how would you typically do so online? (Select a maximum of two) +

- Check all that apply.*
- Using words (sad or melancholic language)
  - Sharing posts or articles that reflect your emotion (loss or tragedy)
  - Posting images or videos
  - Using emojis (e.g., 😞, 😔)
  - Using hashtags

gls.com/forms/MS1\_76n5TSR6U-s57FyCk4MEak4angNR7F52I\_KC3de48

9/11

10. If you were to express hope about the war on Lebanon, how would you typically do so online? (Select a maximum of two) +

- Check all that apply.*
- Using words (positive language)
  - Sharing posts or articles that reflect your emotion (positive news or stories about resilience)
  - Sharing images or videos that convey hope
  - Using emojis
  - Using hashtags of hope and peace
  - Other: \_\_\_\_\_

11. If you were to express pride about the war on Lebanon, how would you typically do so online? (Select a maximum of two) +

- Check all that apply.*
- Using words (positive language)
  - Sharing posts or articles (positive news or stories about bravery and resilience)
  - Sharing images or videos that convey achievements or successes of Palestinians during the war
  - Using emojis
  - Using hashtags of hope and peace
  - Other: \_\_\_\_\_

**Section 4:**

**Social Identity and Community Affiliation in Social Media Posts**

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9/11

12. My social media posts during the war on Lebanon reflect my identity as a member of my community. +

- Mark only one oval.*
- Strongly Agree
  - Agree
  - Neutral
  - Disagree
  - Strongly Disagree

13. I use certain words or phrases to show my connection to my culture or heritage. +

- Mark only one oval.*
- Strongly Agree
  - Agree
  - Neutral
  - Disagree
  - Strongly Disagree

gls.com/forms/MS1\_76n5TSR6U-s57FyCk4MEak4angNR7F52I\_KC3de48

9/11

14. In expressing my emotions about the war on Lebanon, I use cultural references (e.g., songs, poems, quotes, slogans, popular sayings, historical events) that convey my social identity. +

- Mark only one oval.*
- Strongly Agree
  - Agree
  - Neutral
  - Disagree
  - Strongly Disagree

15. In social media posts related to the war on Lebanon, I express my social identity as a member of the community by ..... (Select a maximum of two) +

- Check all that apply.*
- using language or dialect specific to my cultural or regional background.
  - sharing content that reflects my religious or spiritual beliefs.
  - posting or resharing content that represents my identity and aligns with my community's collective voice or opinions.
  - using hashtags that are popular within my community.
  - using specific symbols, flags, or colors associated with my social identity and resonate with my community.
  - participating in discussions or debates with online communities or groups that reflect my community's culture, traditions, or values.
  - participating in or promoting community-driven initiatives or campaigns online.

## Appendix B

### Semi-structured Interview Questions

#### Section One: Language Use on Social Media in Discussing the War

1. When talking about the war on social media, which language do you use: Arabic, English, or a mix of languages?
2. How does the language you use affect the way you express your emotions about the war on social media?

#### Section Two: Digital Emotional Expressions and Linguistic Markers of Emotions in Discussing the War

3. What emotions do you most often feel when you discuss the war on social media? Can you describe a specific moment when you felt strongly about it?
4. How do you express each of the following emotions when discussing the war online?
  - a. Anger
  - b. Fear
  - c. Sadness
  - d. Pride
  - e. Hope
5. What kinds of linguistic markers (emotion words, affective adjectives, metaphors, strong harsh words, symbols, emojis, repetitions, visual elements, hashtags or phrases) do you include in your posts to convey your feelings about the War? Why do you think you choose them?

#### Section Three: Digital Emotional Expressions and Linguistic Markers of Social Identity and Community Affiliation in Discussing the War

*Social identity refers to a person's sense of who they are based on the groups they belong to. These groups can include things like nationality, ethnicity, religion, political affiliation (Tajfel and Turner, 1986).*

6. Smith and Mackie (2008) noted that emotions pertain to an identity as they depend on each other. How do social media help you communicate your emotions during the war on Lebanon ?
7. Provide examples of how your social identity is reflected in the language you use when discussing the hostilities in Lebanon on social media. Think about linguistic markers like the use of specific terms, hashtags, slogans, emojis that signal your affiliation with certain groups or perspectives.

## Appendix C

### Reflection LOGS

- To express emotions like anger, fear, sadness, hope, or pride when posting on social media during the war on Lebanon, you have used your own language choices, such as words, hashtags, or emojis. Provide examples of your specific language choices.

<https://padlet.com/nadinejoudi1/to-express-emotions-like-anger-fear-sadness-hope-or-pride-wh-dcjad25whv5geue3>

- Reflect on how the linguistic markers you have used to express emotions like anger, fear, sadness, hope, or pride when posting on social media during the war on Lebanon reveal aspects of your identity or connect you with specific communities or viewpoints.

<https://padlet.com/nadinejoudi1/reflect-on-how-the-linguistic-markers-you-have-used-to-expre-ewn7j6og1914hpfq>

## Bridging Linguistic Gaps through Translation of COVID-19 Terms from English into Albanian

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### Abstract

During the critical period of the global COVID-19 outbreak, Albania, like many other nations, faced the urgent need to communicate vital public health information effectively. The selection of appropriate terminology was paramount to ensuring that the public understood the nature of the virus, the measures necessary to prevent its spread, and the overall health strategies implemented by the government. Henceforth, this study aims to identify the COVID-19 terminology used by the Albanian Health Authorities to describe the virus and to analyse the strategies employed in translating these terms from English into Albanian. The research focuses on the period from March 1, 2020, to July 27, 2020, which coincided with the global COVID-19 outbreak. 30 COVID-19-related terms in English and their Albanian equivalents were examined for this purpose. Data for this research was collected from two primary sources: the COVID-19 Terminology Collection from the European Union Terminology Database (IATE) and the Albanian equivalents obtained from news reports published by the healthcare authorities on the Ministry of Health and Social Protection of Albania’s website. The study employed several theoretical frameworks to analyze the translation strategies. Vin and Darbelnet’s translation model, the sociolinguistic model, and the metaphor translation method were utilized to achieve the research objectives. Vin and Darbelnet’s model provided a structured approach to analyzing translation techniques, such as borrowing, calque, literal translation, transposition, modulation, equivalence, and adaptation. The sociolinguistic model helped to understand how social and cultural factors influenced the choice of

terminology and its reception by the public. The metaphor translation method was particularly relevant given the widespread use of metaphorical language in describing the pandemic and its effects. The findings offer insights into the most effective translation methods for accurately conveying selected COVID-19 terms in Albanian while preserving the intended stylistic essence of the original terms. The research emphasizes the importance of making controlled linguistic choices during translation rather than freely creating and adopting COVID-19 terminology for public use. Standardizing terminology is essential for clear and consistent communication, particularly during a public health crisis. The study highlights the potential risks of using inconsistent or poorly translated terms, which can lead to confusion, misinformation, and reduced public compliance with health guidelines. Furthermore, the research emphasizes the importance of making controlled linguistic choices during translation rather than freely creating and adopting COVID-19 terminology for public use.

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**Keywords:** Linguistic communication, translation, health terminology, audience

## **Introduction**

The COVID-19 pandemic has presented unprecedented challenges and uncertainties, necessitating effective communication strategies to navigate the crisis (Tirosh, 2020). This situation has also led to a significant increase in the use of medical terminology worldwide, including in the Albanian public sphere. During those difficult times and beyond, it is essential to examine how experts and non-experts use and understand this terminology in various communicative contexts (Alanda, 2020). One critical aspect of communication during the pandemic was the accurate translation and use of terminology related to the virus. Many new specialised terms emerged from around the world, flooding communication channels. This proliferation of specialised terminology was essential because many individuals lacked medical or biological expertise (Federici, O'Brien, 2020). Information about the coronavirus pandemic was directed at two primary audiences: professionals and the general public. In this context, the universal principle of communication is crucial; therefore, language, communication, and culture must be used appropriately to ensure fast and accurate transmission of information between countries (Baya, 2007).

The paper aims to identify the COVID-19 terms used by the Albanian Health Authorities to describe the virus and analyse strategies adopted in translating the terms from English into Albanian from March 1, 2020, to July 27, 2020. The English data is taken from the European Union Terminology database (IATE) and includes terms from the COVID-19 Terminology

Collection. The Albanian counterparts were sourced from news reports published by healthcare authorities on the Albanian Ministry of Health and Social Protection website. This period, March 1, 2020, to July 27, 2020, was critical as Albania, like many other countries, struggled with the initial outbreak of the pandemic and the implementation of restrictive measures (Musabelliu, 2020). By examining the translation strategies employed during this time, the study seeks to understand how Albanian health authorities handled the challenges of communicating complex medical information to the public (UNICEF, 2020). This approach allows the study to compare standardised English terms with their official Albanian counterparts, whether they were translated terms, borrowed, adapted, or newly created for the sake of the pandemic crisis at its beginning time, henceforth providing insights into the translation techniques used and the potential impact on public understanding. For this purpose, the effectiveness of communication of risks and consistent communication played a key aspect in managing the pandemic (Madhi, 2020).

### **Literature Review**

The exploration of COVID-19 terminology is a relatively recent field of study that arose alongside the coronavirus pandemic's onset in early 2020 and has continued to develop throughout these challenging years. Henceforth, many international scholarly articles have made important efforts to understand coronavirus terminology, its translation, and its varied implications across different cultural contexts. These studies have explored the linguistic challenges posed by the pandemic, the strategies employed to overcome them, and the impact of terminology choices on public understanding and health outcomes. However, when we look at Albanian literature, there is a notable opportunity for growth and development. Currently, there is a lack of research focused on strategies for addressing stress and anxiety related to COVID-19 symptoms. This gap is particularly significant given the psychological toll of the pandemic on individuals and communities. Furthermore, the translation of COVID-19 terms from English to Albanian remains an unexplored territory, with no studies examining the linguistic challenges in this process. This study aims to address these gaps, thereby providing valuable insights within the Albanian context and contributing to the broader field of COVID-19 terminology research.

Theoretical research clearly illustrates that translation and interpretation are essential for effective cross-cultural communication, particularly during the COVID-19 pandemic (Kanglong Liu & Andrew K. F. Cheung, 2023). As we navigate this era of uncertainty and disruption, the demand for these skills has reached unprecedented levels. Translators and interpreters have played a critical role in ensuring that accurate and timely

information reaches diverse communities, helping to mitigate the spread of the virus and promote public health. The rapid rise of terms linked to current events-such as 'COVID-19,' 'lockdown,' and 'distance learning'-demonstrates how swiftly language evolves to meet emerging realities. This transformation can generate terms that may obscure important semantic distinctions (Muller, Beka, 2017). The need for clarity and precision in terminology is particularly acute in the context of a public health crisis, where misunderstandings can have serious consequences (Baya, 2007). Furthermore, examining linguistic features reveals significant language-specific adaptations in vocabulary pertinent to the pandemic, showcasing the emergence of neologisms and loanwords. These linguistic developments highlight the adaptability of language in response to challenges and reflect the profound semantic changes that shape our communication landscape. The integration of neologisms and loanwords into a language can both enrich and complicate communication, necessitating careful consideration of their usage and understanding (Karren, Fisker, & Demoulin, 2022).

The COVID-19 pandemic has highlighted the importance of addressing linguistic diversity in our communities. It has revealed language disparities that may limit access to vital public health information for some individuals (Piller, 2020). This situation highlighted the critical role of minority language media, particularly with decreasing advertising revenue and the dynamics between minority and majority language groups. Ensuring that public health information is available in multiple languages is essential for reaching all members of society, regardless of their linguistic background. Moreover, the pandemic has underscored the need for the COVID-19 translation of terminology and techniques from English into other languages (Willis & Bober, 2021).

Moreover, the pandemic has underscored the need for translating COVID-19 terminology and techniques from English into other languages. This intentional and thoughtful approach is essential to ensuring accurate and accessible communication for all communities. The nuances of language and culture must be carefully considered to avoid misunderstandings and promote effective communication (Kitanovska-Kimovska & Neškovska, 2022).

During the COVID-19 pandemic, conceptual metaphors became necessary, serving as powerful mechanisms for effectively communicating crucial information to diverse audiences (Sarif, Garniwa, & Sunarn, 2020). These metaphors simplified complex health concepts and ensured messages resonated clearly and effectively with the public. Furthermore, cognitive theory plays an indispensable role in this process, shaping our mental representations and allowing individuals to fully engage with and understand their experiences through these metaphors (Wenjie & Rossi, 2021). Understanding how cognitive processes influence the reception and

interpretation of information is essential for crafting effective communication strategies. This strategic use of language was vital in fostering clarity and comprehension during uncertainty. Striking a balance between technical precision and accessibility is essential for engaging a diverse audience, especially during challenging times like the coronavirus pandemic. Communication style and transparency from public health institutions are important factors in predicting anxiety (Gapparova, 2020).

Our focus on identifying effective translation strategies-such as translation, adaptation, and creation-plays a vital role in understanding how information is conveyed across various linguistic and cultural landscapes. This understanding is particularly crucial when writing original research or translating terminology related to COVID-19 because the choices made during the translation process can have a significant impact on the accuracy, clarity, and cultural appropriateness of the information being conveyed. Therefore, it is important to adopt translation approaches that carefully analyze and deliver the meaning of the terms and take into account the social-cultural factors (Jiménez-Crespo & Sánchez, 2017).

## **Methodology**

The **research questions** for this study are as follows:

- a. What COVID-19 terminology was used by the Albanian Health Authorities to describe the virus?
- b. What translation procedures were utilised to convey COVID-19 terminology from English to Albanian between March 1, 2020, and July 27, 2020? How successful were these procedures in clearly communicating the meaning of English COVID-19 terminology to Albanian audiences?

These questions aim to explore both 1. specific terms adopted by health authorities and 2. effectiveness of the translation strategies employed during a critical period of the pandemic. Understanding these elements is essential for assessing how well public health messages were conveyed and received in Albania.

## **Data Collection**

To conduct this research, 30 COVID-19-related terms most used in English were taken from the COVID-19 Terminology Collection in the European Union Terminology database (IATE). This database serves as an authoritative source for terminology used across various sectors, ensuring that the selected terms reflect standardized usage within the context of public health communication.

The corresponding Albanian terms were sourced from news reports published by healthcare authorities on the website of the Ministry of Health and Social Protection of Albania. Data was collected from March 1, 2020, to July 27, 2020, a timeframe that coincided with significant developments in the COVID-19 crisis both globally and within Albania.

The following data from English and Albanian are collected to be analysed in the study:

- English 'coronavirus, quarantine, vaccine, symptoms, pandemic, vaccination, isolation, face mask, hand sanitiser, test, positive test, outbreak, contact tracing, health guidance, super spread, social distancing, lockdown, the fight against the invisible enemy, apocalypse, zombie, invisible, enemy, nature's warning, tracing';
- Albanian terms 'korona virusi, kuarantinë, vaksinë, simptomat, pandemi, vaksinimi, izolim, maskë fytyre, desinfektues duarsh, test, test pozitiv, shpërthim, ndjekja e kontakteve, udhëzimet shëndetësore, super ngjitës, distancim social, lokdaun, lufta kundër armikut të padukshëm, apokalips, zombi, i padukshëm, armiku, forcë e natyrës, gjurmim'.

This list includes a range of terms that reflect various aspects of the pandemic, from health measures and symptoms to broader metaphors that emerged during this global crisis. Through their analysis, it is possible to gain insights into how COVID-related concepts were communicated and understood within Albanian society.

### **Data Analysis Methods**

The analysis process of the COVID-19 terms went through the following stages:

- a) the data collection stage;
- b) the analysis stage: a thorough analysis was conducted to evaluate both the English terms and their Albanian counterparts. For this reason, the study focused on identifying patterns in translation strategies and assessing whether direct translations were employed or if adaptations were made to fit cultural and linguistic contexts better. The study made use of several theoretical frameworks to conduct this analysis, including Vin and Darbelnet's translation model, and different translation techniques such as borrowing, calque, literal translation, transposition, modulation, equivalence, and adaptation. By applying these frameworks, it was aimed to determine which methods were most effective in conveying the meaning while maintaining clarity and accessibility for Albanian audiences.

Sociolinguistic and Cognitive Approaches added value to the analysis of the data and to the study itself. It was used to examine and understand:

- How cultural factors influenced the choice of terminology and whether certain metaphors resonated more strongly with the public;
  - How language shapes perceptions of health issues and influences public behaviour during crises.
- c) the discussion stage, which, in this paper, due to the type of the discussion analysis process and to avoid ambiguities and repetition, is incorporated with the result section.

### **Data Analysis Description**

The effectiveness of translation methods hinges on the strategic application of various models and approaches, each designed to support and enhance the others when challenges arise. To achieve this, the following methods were used:

- a. The study utilized several theoretical frameworks to guide this analysis, including:
  - Vin and Darbelnet's Translation Model: This foundational framework is built upon the essential translation strategies articulated by Vinay and Darbelnet in their influential work from 1958, later revisited in 1995, and highlighted in Venuti's 2000 analysis.

In our efforts to effectively translate specific terms into Albanian, we used a variety of techniques that reflect the depth and versatility of this model:

- Borrowing: This approach involves retaining the original term from the source language within the target language. By comparing terms and contexts they were used in, the study analysed if the borrowings in Albanian maintained the authenticity and distinctiveness of the original concept, allowing the Albanian audience to recognise and connect with the term in its native form.
- Calque: Here, we delved into translating the individual components of terms to preserve their underlying meaning. This technique allowed the researcher to identify through comparison if the essence of the original phrase while adapting it to the Albanian grammatical and syntactic structures was the same as the original.
- Literal Translation: Through direct, word-for-word translation, the researcher compared the clarity and straightforwardness of the terms used in both languages and in determining the loss or not of the meaning or their intended impact while conveying essential ideas from the source to the target language.
- Neologism: when existing vocabulary fails to capture the nuances of newly introduced concepts, we innovate by creating new words. To analyse that, this creativity ensured the newly created term resonated with contemporary language usage while faithfully reflecting original

- meanings, and the researcher analysed the meanings and scales of similarities of the existing and new terms.
- Direct Translation: The researcher identified health terms in Albanian that aligned closely with their English counterparts to foster a clear understanding of the target audience by providing a precise conveyed meaning.
  - Adaptation and Transcreation: Recognising that language is deeply intertwined with culture, terms are modified to convey similar meanings that are respectful of the cultural context. Through this approach, it was possible to bridge the gap between the source and target languages by ensuring that the translation is both relevant and relatable to Albanian speakers. This combination of strategies was used to aim at delivering translations that are not only accurate but also culturally sensitive, enriching the engagement of Albanian readers with the original material.
- b. Sociolinguistic Mode. This analytical approach was one of the bases for the study to comprehend how the original intent and meaning were articulated in both the source text (ST) and the target text (TT). By closely examining the nuances of language and culture, it was possible to appreciate the intricate dynamics of communication. Particularly in the context of COVID-19 terminology, the study focused on awareness of cultural and linguistic sensitivities. Through the sociolinguistic mode, the study could identify that this sensitivity affects how messages are framed and influence their reception among diverse audiences. All that is possible with the use of precise language that resonates with the specific cultural contexts of the target population.
- c. Metaphor Translation Method (Cognitive Approach): it served as a crucial framework for translating metaphors by emphasizing their role as essential connections between cognitive processes and cultural contexts. This method in this study helped in reaching a deeper understanding of the underlying meanings of metaphors and highlighted their significance in conveying complex ideas and emotions across languages.

Also, this approach provided the author of the study with the means to meticulously ensure that the stylistic nuances and semantic integrity of the original text are preserved throughout the translation process (Wenjie Hong, 2021). The comprehensive analysis through this cognitive method revealed that a remarkable level of cognitive equivalence can be achieved when translating metaphors into Albanian. This means the translated metaphors resonated well with the target audience while maintaining their original intent

and impact. By focusing on the cognitive aspects of metaphorical language, it was identified that translators can minimise the potential loss of meaning that often occurs in literal translations. This careful consideration enriches the translated text, conveying a more profound interpretation that resonates with the target audience's cultural and emotional sensibilities. Therefore, it was found that the result is a translation that reflects the original message and enhances the reader's experience through a more authentic and relatable engagement with the content.

## **Results and Discussion**

As the global pandemic spread, many international, governmental, and independent organisations dedicated significant resources to the creation of detailed glossaries that captured COVID-19 terminology in various languages. These glossaries served as vital tools for clear communication and understanding during an unprecedented crisis (UNDP Albania, 2020). Organizations like the World Health Organization (WHO) and the European Union (EU) developed comprehensive terminological resources to ensure consistency and accuracy in the dissemination of information related to the virus (INSTAT, 2021). Such glossaries became essential references for healthcare professionals, translators, media outlets, and the general public, facilitating effective communication across linguistic and cultural barriers.

However, in contrast to this global trend, Albania did not adopt a similar standardized approach. Instead, the terminology and language surrounding COVID-19 in the Albanian context seem to have been generated spontaneously and without careful planning. This absence of a cohesive language framework has posed considerable challenges for different and important audiences or target groups, including healthcare authorities and personnel, media representatives, translators, and the general public. The absence of a unified glossary or terminology could have led to inconsistencies in messaging, potential misunderstandings, and difficulties in accurately conveying complex medical information (Albania IC, 2022). For instance, without standardized translations, healthcare professionals might have faced challenges in communicating with patients or accessing the latest research findings.

This study is the first of its kind in the Albanian context, and it aims to provide a thorough view of the COVID-19 terms and techniques used to translate them from March 1, 2020, to July 27, 2020. Therefore, it aims to shed light on the translation strategies used to deliver important information about the virus and its impact on Albanian society through the analysis of the terminology mostly used during this critical period. The daily press news at the official website of the Albanian Ministry of Health was an important source of information for the public (OECD, 2020). Through the analysis of

their news outlets, the study tries to assess how successfully various English terms were translated and adapted for local use. It also intends to identify any potential cultural misunderstandings or meaning inconsistencies that might have arisen due to the lack of a unified glossary or terminology. Moreover, this study's findings contribute to the broader discussion on the importance of language planning and terminology management during public health emergencies, offering valuable insights for future crisis communication strategies in Albania and other similar contexts.

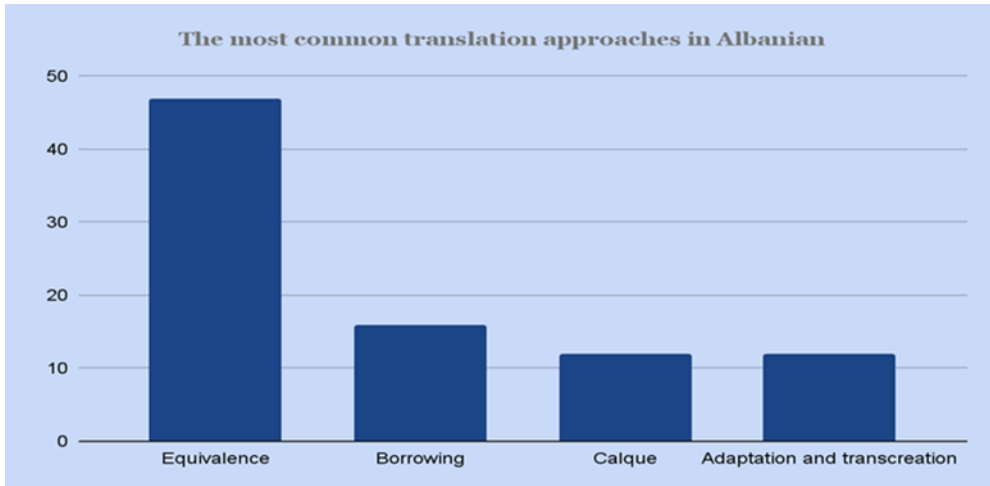
### **Overview of Methods in Translating and Adapting Medical Terminology**

In response to this challenge, we have identified eight distinct methods for translating, adapting, or using medical terminology to suit different audiences. Each technique plays a crucial role in conveying the intended meanings, capturing metaphorical nuances, and considering the cultural backgrounds necessary for clear and effective communication.

These methods include:

- 1) Borrowing existing terms
- 2) Creating calques
- 3) Employing literal translations
- 4) Developing neologisms
- 5) Utilizing direct translations
- 6) Adapting phrases to fit local contexts
- 7) Ensuring cultural and linguistic sensitivity
- 8) Using metaphorical translations

The data gathered for this study reflects a comprehensive exploration of linguistic elements and the interdisciplinary efforts that underpin this paper. However, the effectiveness of this terminology relies on how well the target audience understands it. Nevertheless, our analysis indicates that the terminology related to COVID-19 has become widespread in the Albanian context since 2020. In quantitative research, in terms of percentages, the most common translation approach is equivalence (47%), terms such as 'pandemia' (pandemic), 'izolimi' (isolation), and 'vaksinimi' (vaccination); followed by borrowing (16%) (e.g., 'asimtomatik' (eng., asymptomatic), 'kontakt' (eng., contact), calque (12%), like 'lokdaun' (eng., lockdown), and adaptation and transcreation (11.9%), such as 'distancim social' (eng., social distancing).



**Table 1.** Most used translation strategies

Below is an overview of key lexical characteristics and various translation techniques employed in adapting terminology related to the pandemic into Albanian.

### Translation Strategies

This examination through the aforementioned translation strategies of COVID-19 health terminology used between March 1, 2020, to July 27, 2020, reveals the nuances of language and the cultural context in which these terms have been reinterpreted and integrated. The findings presented in this study offer an in-depth analysis of various linguistic components and the collaborative, interdisciplinary efforts that support this research.

- Some languages opt for direct translation of COVID-19 terminology from English to better convey these urgent concepts to their speakers. In Albanian, the term 'coronavirus' is rendered as <korona virusi>, closely following the English phonetics while making it accessible for Albanian speakers. Similarly, the English word 'quarantine' is translated to <kuarantinë>, and 'vaccine' becomes <vaksinë>. These direct translations showcase how essential terms have been phonetically adapted or borrowed directly from English to ensure clarity and understanding among the population.

Ultimately, whether through adaptation or direct translation, the goal remains the same: to communicate vital information effectively in a way that is culturally relevant and linguistically appropriate. This nuanced approach is crucial for fostering understanding and compliance, especially in public health communication.

Other common COVID-19 terms translated from English to Albanian that have been translated using the direct translation strategy are:

**Table 1.** Words and phrases translated by the Direct Translation method

Direct Translation	English	Albanian
	Coronavirus	korona virusi
	Quarantine	kuarantinë
	Vaccine	vaksinë
	Symptoms	simptomat
	Pandemic	pandemi
	Vaccination	vaksinimi
	Isolation	izolim
	Face mask	maskë fytyre
	Hand sanitiser	desinfektues duarsh
	Test	test
	Positive test	test pozitiv
	Outbreak	shkallëzim
	Contact tracing	ndjekja e kontakteve
	Health guidance	udhëzimet shëndetsore
	Hospitalisation	spitalizim
	Recovery	rekuperim
	Tracing	gjurmim

- Neologisms can play a crucial role in addressing novel concepts, as seen in the example of the English Neologisms play an essential role in our understanding of new concepts, particularly highlighted by terms like the English 'Super Spreader,' which translates to <super ngjitës> in Albanian. These terms were not merely created out of convenience; they emerged as critical responses to the global coronavirus pandemic, illustrating our urgent need to articulate unfamiliar phenomena arising within scientific and medical discussions.
- Adaptation and Transcreation: In the realm of language, particularly in the context of global crises like the COVID-19 pandemic, the process of adaptation and transcreation has become increasingly significant. This involves not only translating terminology but also adjusting it to resonate with specific linguistic and cultural nuances. For example, 'social distancing' has been adapted to fit various cultural contexts. In Albanian, this concept translates to <distancim social>, which is not just a direct translation but also reflects local understandings of personal space and social interactions during the pandemic. This adaptation illustrates the importance of considering cultural norms and societal values when disseminating health-related information. Transcreation requires a creative approach to translation, ensuring that the original message's intent and emotional impact are preserved, even

when the wording changes. According to Jiménez-Crespo & Sánchez (2017), this dual focus on translation and creative adaptation is essential, especially when introducing new concepts that may not have direct equivalents in the target language.

- Calquing is a linguistic process that entails borrowing the underlying structure of a foreign expression while translating its components literally into the target language. This technique is useful in situations where there is no direct equivalent or established term available in the target language. An illustrative example of this can be found in the translation of the English term 'lockdown' into Albanian, which was rendered as <lokdaun>. This translation captures the sound and structure of the original term, effectively embodying its meaning through literal interpretation.

In this instance, the Albanian authorities confidently took significant steps to enhance public understanding of the lockdown measures. They delivered clear and comprehensive explanations in Albanian, thoroughly outlining the implications and rationale behind the lockdown. Acknowledging the urgency of effective communication during a crisis, these explanations were consistently paired with visual aids, such as infographics and videos, which made the information not only accessible but also engaging.

- Cultural and linguistic sensitivity has been highly considered by translators when translating COVID-19 terminology. For this purpose, the study aimed to identify how the chosen health terminology in both languages conveyed information that resonated with the target audience and was culturally appropriate. Henceforth, a focus was put on adjusting terminology, tone, or examples to align with local customs and beliefs (Gapparova, 2020). Through cultural and linguistic sensitivity, the study analysed if the information was clearly stated and accurately conveyed, fostering public responses. The perfect example is 'Lufta kundër armikut të padukshëm' (the fight against the invisible enemy), which is explained in detail in the section on metaphors. Here, the purpose of using this metaphor was to tailor messages to meet the cultural and linguistic frameworks of the audience and to enhance the clarity and effectiveness of health communication news.

To achieve its best outcome on how the frequent appearance of specialised terminology in various news outlets shaped public understanding and behaviour during health crises, it would have needed the involvement of readers, and that was impossible to put into practice, but it would have shifted from the objectives of the study. Maybe this will be the topic of another paper.

Another noteworthy finding was the substantial influence of English on the development of Albanian medical terminology regarding linguistic borrowing and cultural nuances, which underscores the profound impact that English has as a global lingua franca, particularly in the field of medicine. Several factors contribute to this trend, including the overwhelming presence of English-language medical publications and literature, which serve as key resources for medical professionals and students. Furthermore, the collaboration and exchange of knowledge through international partnerships in addressing health crises have significantly facilitated the integration of English terms into the Albanian lexicon, thereby enhancing the richness and precision of medical discourse in the language.

- The metaphor for Coronavirus, the cognitive approach. During the pandemic, metaphors about coronavirus were used to describe personal or social perceptions about the virus. The Albanian version is 'Lufta kundër armikut të padukshëm' (the fight against the invisible enemy). In this case, it is noticed the replacement of the word virus with the word enemy. The usages of the words fight and enemy in the example above are at the detriment of the word virus, considered the enemy in both source and target texts. The word fight on its own is a term used in the army to defeat the enemy. Metaphors help people with the intangible, with tangible expressions (Lakoff and Johnson, 2003). There are numerous English metaphors about COVID-19; a few to mention are apocalypse, zombie, invisible enemy, nature's warning, and so on. In the Albanian context, one of them predominated in most official news delivered at the website of the Ministry of Health and Social Protection of Albania: 'Fight against invisible viruses...'. (Risagarniwa, & Sunarn 2020).

As a summary, the following table illustrates the words and phrases used in the study and analysed through the above translation strategies:

**Table 2.** Words and phrases analysis through different translation strategies

<b>Translation Strategies</b>	<b>English</b>	<b>Albanian</b>
Neologisms	Super Spreader	super ngjitës
Adaptation and Transcreation	social distancing	distancim social
Calquing	lockdown	lokdaun
Cultural and linguistic sensitivity / Metaphorical translations	the fight against the invisible enemy	lufta kundër armikut të padukshëm
	face the storm	përballojmë stuhinë
Metaphorical translations	apocalypse	apokalips
	zombie	zombi
	invisible	i padukshëm
	enemy	armies
	nature's warning	forcë e natyrës

## **Analysis of Albanian COVID-19 Terminology and its impact on Albanian culture**

The COVID-19 pandemic has significantly influenced language, particularly in English, where terms such as 'social distancing,' 'quarantine,' and 'lockdown' spread rapidly and became widely used worldwide. This was mostly made possible by social media and online platforms, and the rapid dissemination of information through virtual communication allowed for the immediate adoption of terminology by the masses, and it made it easier for people to discuss and understand the evolving situation. It also reflected the pandemic's global reach and underscored the English language's adaptability in incorporating new vocabulary (Muller, Beka, 2017).

In contrast, Albanian tends to rely more on translations and calques when incorporating foreign health terms. This practice has led to a blend of loanwords and local expressions within the Albanian lexicon. While some terms have been directly borrowed from English, others have been adapted to fit the phonetic and grammar structures of the Albanian language. For instance, terms like "lockdown" have been translated as "lokdaun," reflecting a trend toward using English terminology rather than developing an equivalent Albanian term. However, the dependence on borrowed terms can create challenges in ensuring that all classes of audiences, including educated or uneducated people, or the old generation, fully understand the meaning of these concepts, particularly among those who may not be familiar with English.

Additionally, there has been a notable impact of English borrowing in Albanian medical terminology, helping to modernize and expand the language in response to contemporary health discussions. The influx of new terms has prompted discussions among linguists and language conservatives about the balance between maintaining linguistic integrity and embracing necessary innovations that reflect current realities. This dynamic evolution of language is particularly evident in medical contexts, where precise communication is vital for public health (Musabelliu, 2020).

Furthermore, the research uncovered a range of language-specific and nuanced differences in the way health-related terminology is comprehended and used within Albanian society. For example, the term 'lockdown' was interpreted through multiple lenses, which reflected the unique cultural perspectives and attitudes towards cultural practices dominant in Albania. These interpretations varied significantly, highlighting the diverse social and historical contexts that shape how such terms are perceived. In some cases, the concept of lockdown may evoke feelings of safety and protection from the virus, while in others, it may raise feelings of isolation or frustration due to restrictions on movement.

The study also documented various cases of shifting meanings and the emergence of newly coined terms that sought to articulate concepts associated with the pandemic. This dynamic evolution of language demonstrates not only the adaptability of communication in response to unprecedented events but also the creativity involved in finding suitable descriptions for new realities. For example, terms or expressions like "super spreader", "invisible enemy" or "face the storm" were introduced into everyday discourse, provoking discussions about individual responsibility and community health.

One thing that was noted in the Albanian linguistic situation of the first months of the COVID-19 pandemic, from March 1, 2020, to July 27, 2020, is that its "special" terminology extended beyond general vocabulary; it influenced cultural attitudes and public agreement towards health practices of the government rules. As people become more familiar with these terms, they may also develop a greater understanding of public health measures and their importance in combating the virus. With this regard, it can be stated that in hard times, the widespread use of specific terminology among different demographic communities can foster a sense of collective identity and shared challenges. For this reason, health news outlets issued by official authorities must adapt to effectively incorporate new health terms to overcome any potential understanding or cultural gaps among various audiences.

### **Observations on the Medical Translations**

We've observed significant issues in the field of COVID-19 news translation, particularly concerning the style and accuracy of medical terminology. In some cases, translators adhere too rigidly to the style of the source language, often English, resulting in awkward and mechanical outcomes that undermine the quality and clarity of the target language, Albanian. This word-for-word approach, also referred to as literal translation, often may create misunderstanding and ambiguity regarding crucial information about the coronavirus. Moreover, while trying to make the source language adapt to the Albanian nuances and linguistic patterns, translators may accidentally or involuntarily incorporate foreign grammatical structures or idiomatic expressions that do not resonate with the target language's linguistic means or the Albanian different audiences. This lack of adaptation can impede Albanian people's comprehension and reduce the overall effectiveness of public health messaging. This is the case of the terms "lockdown", "the storm," "invisible enemy" and "social distancing"- given its literal meaning to cease constant contact with other people; but what was meant by "social distancing" was "physical distancing", and not leading a solitary life to do COVID-19 restrictions. Most people at that time in Albania faced strong psychological and mental health challenges and sought online professional help (Kamberi, Jaho, Mechili, Sinaj, & Skendo, 2020).

Sadly, some journalists and translators prioritize technical translations of full papers or terminology without considering the need for clear communication. The focus on technical accuracy, while important, should not overshadow the primary goal of conveying information in a manner that is accessible and understandable to the general public. Complex medical concepts must be simplified and contextualized to ensure that they are effectively absorbed by a broad audience, including those without specialized knowledge. This requires a shift in emphasis from merely translating words to interpreting meaning and adapting language accordingly.

Particularly in the Albanian context, we have found that many medical translations are performed by native speakers who lack the necessary medical expertise or the linguistic skills to accurately convey complex terms. While fluency in Albanian is essential, it is not sufficient to ensure the accuracy and appropriateness of medical translations. Translators must also possess a deep understanding of medical terminology and concepts, as well as the ability to navigate the nuances of both the source and target languages. Without this specialized knowledge, translations may be inaccurate, misleading, or even dangerous.

This can lead to misunderstandings among the general audience and undermine public trust in health information. To remedy this situation, it is imperative to engage medical translators who demonstrate specific competencies: native or near-native proficiency in the target language, full command of the source language, and a deep understanding of medical terminology. This approach is essential, as medical terminology evolves rapidly, with new terms emerging in response to discoveries and reclassifications (Bowker & Pearson 2002). By prioritising qualified translators, we can ensure clarity and accuracy in conveying vital health information. The need for qualified medical translators extends beyond the accuracy of individual terms; it encompasses the overall coherence and clarity of translated materials. Translators must be able to synthesize information from multiple sources, adapt language to suit the intended audience, and ensure that the translated text aligns with established medical conventions. This requires a high degree of skill and expertise, as well as ongoing professional development to stay abreast of the latest advancements in medical terminology and translation practices (Lakoff and Johnson, 2003).

The analysis of COVID-19 terminology within the Albanian public discourse emphasises the critical necessity for clear and precise communication during crises. Addressing the challenges associated with medical terminology and implementing effective translation strategies can ensure the accurate conveyance of essential information to the public. Such efforts are vital in fostering a better understanding of health directives and enhancing public trust in communication during emergencies. The impact of

inaccurate or unclear translations can affect adherence to health guidelines, influence public behaviour, overall health outcomes, and individual comprehension (Kerras & Baya, 2021).

This assertive, multifaceted approach ensured the public received essential information with clarity and precision. It highlighted the critical importance of strong messaging in challenging times, demonstrating how language can evolve to meet contemporary needs. The Albanian authorities showcased their firm commitment to public safety and understanding, building a robust foundation of trust with the community they serve. Clear and confident messaging is necessary, and their proactive measures exemplify the decisive action required in moments of crisis. A consistent and well-coordinated communication strategy helped to promote public compliance with health measures, reduce anxiety and misinformation, and ultimately contribute to better health outcomes. By prioritizing clear and accurate communication, public health authorities can build trust with the community and ensure that everyone has the information they need to protect themselves and others.

## **Conclusions**

The study was conducted to delve deeply into two primary areas: 1- the COVID-19 terminology used by the Albanian Health Authorities to describe the virus; and 2- various translation strategies employed by journalists and translators while reporting COVID-19 news. Through rigorous analysis, 30 COVID-19 terms, in both English and Albanian, were identified, along with several key approaches that consistently emerged as significant during translation. These terms were more widely used on the Ministry of Health and Social Protection of Albania's website and in press releases. For the latter, there is no gathered evidence. However, further investigation is needed to prove the latter claim with more complete evidence. The initial examination suggests that these official sources played a crucial role in shaping public understanding and awareness of the pandemic.

To address our objectives, an emphasis was placed on the identification of eight translation strategies and how they were used to translate and adapt specialized terminology associated with COVID-19 for varied target audiences, encompassing different cultural and linguistic backgrounds. These strategies included borrowing, calque, literal translation, neologism, direct translation, adaptation and transcreation, cultural and linguistic sensitivity, and metaphor translation methods. Throughout the study analysis, the eight chosen techniques contributed to rendering the correct meaning, metaphorical nuances, and cultural background. Among these translation strategies was the direct translation of specific technical terms, which aimed to retain the original meaning while ensuring clarity for the target

audience. Additionally, it was a prominent and crucial aspect of adapting these terms to fit cultural contexts by taking into account regional nuances and public familiarity with health-related vocabulary. This adaptability ensured that the information was accurate, accessible, and relatable to audiences.

Moreover, cases were observed where the creation of entirely new terminology was necessary, particularly in situations where existing words failed to encapsulate newly emerging concepts linked to the pandemic. This proactive approach highlights the dynamic nature of language and the pressing need for innovative solutions during crises. Also, the usage of examples from both languages, English and Albanian, were documented and highlighted, recognising their vital role in facilitating effective communication about the pandemic to a wide array of audiences. The findings of the study resonate with the insights presented by Kerras & Baya (2021), underscoring the importance of adaptability and precision in translation efforts during these unprecedented and rapidly evolving times. Engaging with these varying strategies is aimed at contributing to a deeper understanding of the complexities involved in pandemic-related translation work.

However, translating COVID-19 terminology into Albanian posed challenges, as certain terms may not have equivalents in the language. In such cases, experts and non-experts acting as senders and receivers of information must strive to find the most accurate and culturally appropriate equivalents to ensure effective communication and prevent misunderstandings and misinformation. The need for clear and precise language becomes crucial to avoid misunderstandings and misinformation (Gapparova, 2020). Another challenge posed by medical terminology, and COVID-19 terminology in particular, that we faced during the analysis phase is ensuring accurate and effective communication across different contexts and settings. In cases of English COVID-19 terms borrowed into the Albanian context so that the information conveyed could be captured more easily by Albanian society, the respective authorities gave an extra explanation, taking into account the cultural, linguistic, and contextual nuances, to overcome linguistic and cultural barriers (Bowker, & Pearson 2002).

Another limitation of the study may be the time length chosen to gather our data, reflected in the limited number of models/approaches used for this study. Further research including a broader timeframe, more COVID-19 terminology, and incorporating additional analytical frameworks could provide a more comprehensive understanding of the evolution of COVID-19 terminology and translation strategies in Albania. For this purpose, this paper is the first sequel of studies on this topic.

In conclusion, the study sheds light on the specific vocabulary used in the Albanian context but also emphasises the role of translation strategies in shaping public perception and knowledge about COVID-19. This analysis is

crucial for ensuring that health communication is accurate and culturally relevant, aiding information during health crises. The findings from this research can inform future public health communication efforts in Albania and other contexts facing similar challenges.

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## L'interdisciplinarité dans des écoles libanaises : regard des enseignants sur ses bénéfices et difficultés

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### Résumé

Cet article s'est appuyé sur les expériences concrètes d'enseignants qui ont mis en place des projets interdisciplinaires au sein de deux écoles libanaises privées, pour examiner les bénéfices et les difficultés que ces enseignants ont relevés lorsqu'ils se sont engagés dans des pratiques interdisciplinaires. Notre échantillon est composé d'un groupe de professeurs de plusieurs disciplines, enseignant la classe de cinquième, dans chaque établissement scolaire. Nous avons utilisé deux instruments de collecte de données au sein de chaque établissement scolaire : un journal de bord que chaque groupe d'enseignants, dans chacun des deux établissements scolaires, a renseigné et un *focus group* que nous avons conduit auprès de ces mêmes enseignants. Les résultats ont souligné le potentiel de l'interdisciplinarité pour motiver les enseignants, favoriser leur enrichissement mutuel en leur permettant d'échanger sur leurs pratiques pédagogiques et de développer leurs compétences réflexives, tout en leur offrant des opportunités d'innovation pédagogique et d'évolution de leurs pratiques. Cependant, nos résultats ont révélé des difficultés auxquelles ces enseignants ont été confrontés lorsqu'ils ont mis en place des projets interdisciplinaires. Ces difficultés sont liées à la culture disciplinaire des enseignants, à leurs contextes institutionnels concernant l'organisation scolaire et l'organisation des programmes officiels, mettant en évidence des aspects spécifiques à notre contexte libanais. Des difficultés liées à la planification et l'évaluation des projets interdisciplinaires ainsi qu'à la gestion des élèves ont été également identifiées.

**Mots clés :** Interdisciplinarité, Projet interdisciplinaire, Enseignants, Bénéfices, Difficultés

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## **Interdisciplinarity in Lebanese schools: teachers' views on its benefits and difficulties**

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### **Abstract**

This article drew on the concrete experiences of teachers who have implemented interdisciplinary projects in two private Lebanese schools, to examine the benefits and difficulties that these teachers have encountered when engaging in interdisciplinary practices. Our sample consisted of a group of teachers from several subjects, teaching grade seven, in each school. We used two data collection instruments in each school: a logbook that each group of teachers in each of the two schools filled in, and a focus group that we conducted with these same teachers. The results highlighted the potential of interdisciplinarity to motivate teachers, and foster their mutual enrichment by enabling them to discuss their teaching practices and develop their reflective skills while offering them opportunities for pedagogical innovation and changes in their practices. However, our results revealed these teachers' difficulties when implementing interdisciplinary projects. These difficulties are linked to the teachers' disciplinary culture, their institutional contexts regarding school organization and the organization of official curricula, highlighting aspects specific to our Lebanese context. Difficulties related to the planning and evaluation of interdisciplinary projects and student management were also identified.

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**Keywords:** Interdisciplinarity, Interdisciplinary project, Teachers, Benefits, Difficulties

### **Introduction**

L'éducation, dans un monde en constante évolution, se trouve à la croisée des chemins, confrontée à la nécessité d'innover pour préparer les apprenants aux défis complexes de notre époque. Au cœur des préoccupations éducatives au Liban réside la question cruciale de l'adaptation des méthodes d'enseignement pour répondre aux défis contemporains. Alors que le Liban se trouve confronté à des problèmes multifacettes, de la crise sanitaire aux enjeux environnementaux et sociétaux complexes, la nécessité d'une approche pédagogique novatrice se fait de plus en plus pressante. Dans un monde

marqué par l'interconnectivité des connaissances, l'interdisciplinarité offre un terrain propice à la construction de ponts entre les différentes disciplines. Le constat que l'épidémie de coronavirus, la crise environnementale, et d'autres enjeux contemporains ne se conforment pas aux frontières disciplinaires classiques renforce la conviction que l'éducation doit évoluer pour mieux refléter cette réalité. L'interdisciplinarité se présente alors comme une approche prometteuse capable de transcender les frontières traditionnelles des disciplines académiques pour favoriser un apprentissage plus significatif (Maingain *et al.*, 2002).

Bien que l'interdisciplinarité, en tant qu'approche pédagogique, occupe de plus en plus une place importante dans les systèmes éducatifs à travers le monde, au Liban, le terme « interdisciplinarité » ne figure pas explicitement dans les documents officiels même si dans le curriculum, sont mentionnées des compétences transversales qui englobent, entre autres, l'utilisation de la démarche scientifique, le développement de l'ouverture d'esprit et la mise en avant du travail d'équipe (CRDP, 1997). De plus, le curriculum libanais semble davantage orienté vers le développement de compétences spécifiques à chaque discipline plutôt que vers une intégration systématique et coordonnée de plusieurs disciplines. En effet, une examination rigoureuse du curriculum libanais montre que la répartition des contenus disciplinaires est abordée d'une manière indépendante et cloisonnée, sans souci d'harmonisation entre les disciplines quant à la possibilité de favoriser un enseignement interdisciplinaire.

Par ailleurs, de nombreuses études portant sur l'interdisciplinarité à l'école ont mis en évidence le profit que tirent les élèves ainsi que les enseignants au cours de son application. Pour Lenoir (2020), l'interdisciplinarité aurait l'avantage de requérir l'introduction de situations d'enseignement-apprentissage qui puissent avoir du sens pour les élèves sur les plans épistémologique (le rapport au savoir), ontologique (le rapport au sujet) et social (le rapport à la vie en société). Camel & Fargue-Lelièvre (2009) soulignent de leur côté que l'adoption d'un point de vue interdisciplinaire de la part de l'enseignant lui permet de porter un nouveau regard sur sa discipline. Cependant, si les avantages théoriques de l'interdisciplinarité sont largement reconnus, les avancées pédagogiques en matière de décloisonnement des disciplines restent timides et ponctuelles. A cet égard, Reverdy (2015) fait le point sur les difficultés qui empêchent l'interdisciplinarité d'être appliquée dans l'enseignement : difficultés au niveau de la collaboration entre enseignants, au niveau pratique, ou au niveau des traditions disciplinaires.

La présente recherche s'est appuyée sur les expériences concrètes d'enseignants, qui ont mis en place des projets interdisciplinaires au sein de deux écoles libanaises privées, pour examiner les bénéfices et les difficultés que ces enseignants ont relevés lorsqu'ils se sont engagés dans des pratiques

interdisciplinaires. En explorant cette dualité, notre étude cherche à offrir des perspectives éclairantes, contribuant ainsi à optimiser la mise en œuvre de l'interdisciplinarité dans le milieu éducatif libanais. Plus spécifiquement, nous nous penchons sur les questions de recherche suivantes : quels bénéfices les enseignants ont-ils tirés de leur travail interdisciplinaire et quelles difficultés ont-ils rencontrées ?

L'importance de notre étude réside dans le fait qu'elle apporte une meilleure compréhension du terrain éducatif libanais en ce qui concerne les pratiques interdisciplinaires dans la mesure où elle est considérée parmi les recherches pionnières à aborder la mise en œuvre de l'interdisciplinarité dans l'enseignement au Liban. En répondant aux questions de recherche, cette étude contribuera à mieux comprendre les enjeux de l'interdisciplinarité dans le système éducatif libanais et à identifier des pistes d'amélioration pour favoriser une adoption plus large de cette approche pédagogique, et contribuer, en retour, à l'amélioration de la qualité de l'éducation au Liban.

Après avoir présenté le cadre conceptuel, nous détaillons la méthodologie de recueil et d'analyse de données suivie d'une présentation et d'une discussion des principaux résultats.

### **Cadre conceptuel**

Notre cadre conceptuel est formé de trois volets : le premier concerne l'interdisciplinarité scolaire, le deuxième traite les bénéfices de la mise en place de l'interdisciplinarité pour les enseignants. Quant au troisième volet, il porte sur les difficultés liées à la mise en place de l'interdisciplinarité.

#### ***L'interdisciplinarité à l'école***

Il existe plusieurs termes dans la littérature de recherche qui décrivent le travail entre plusieurs disciplines comme « pluridisciplinarité », « transdisciplinarité » et « interdisciplinarité ». Camel et Fargue-Lelièvre (2009) proposent une distinction rigoureuse de ces différents termes en considérant que l'interdisciplinarité suppose un dialogue, des interactions et l'échange de connaissances, d'analyses, de méthodes entre deux ou plusieurs disciplines sur un même objet d'étude. Ces auteurs distinguent alors l'interdisciplinarité de la transdisciplinarité, laquelle désigne un savoir qui parcourt plusieurs disciplines sans se soucier de leurs frontières, et ajoutent que l'interdisciplinarité dépasse la pluridisciplinarité qui associe plusieurs disciplines autour d'un thème commun, mais dont les contributions respectives sont additionnées, sans réelle interaction entre les disciplines (Lenoir, 2020).

D'autres chercheurs proposent des définitions de l'interdisciplinarité scolaire mettant l'accent à la fois sur le concept de coopération et d'intégration des disciplines (Cramaréas, 2023 ; Lenoir, 2015 ; White & Delaney, 2021).

Pour leur part, Maingain *et al.* (2002) considèrent que le trait le plus spécifique d'une démarche interdisciplinaire est l'interconnexion des disciplines en fonction d'un contexte particulier et d'un projet déterminé dans lequel les disciplines sont sollicitées et intégrées en réponse à une problématique particulière. De ce fait, selon ces auteurs, la mise en place de l'interdisciplinarité permet de construire et d'approfondir des connaissances et des compétences par une démarche de projet conduisant à une réalisation concrète, et répondant à une finalité d'apprentissage.

Sur le plan pratique, il est important de mettre en place l'interdisciplinarité dans la mesure où elle aide l'élève à résoudre des problèmes complexes tout en articulant des connaissances disciplinaires nécessaires à la compréhension de cette réalité complexe (Abboud *et al.*, 2024). L'interdisciplinarité ne peut donc se concevoir en dehors des relations disciplinaires. D'ailleurs, comme le soulignent Roy *et al.* (2019), il n'y a pas d'interdisciplinarité sans référence explicite à des disciplines. Les enseignants ont donc à choisir et construire des situations pédagogiques tout en maintenant leur expertise disciplinaire, facteur essentiel de l'interdisciplinarité.

### ***Intérêts de la mise en place de l'interdisciplinarité pour les enseignants***

Les enseignants qui s'engagent dans une démarche interdisciplinaire en retirent un certain nombre de bénéfices. Camel et Fargue-Lelièvre (2009) soulignent les intérêts d'une telle démarche qui permet aux enseignants de s'enrichir de la culture des autres disciplines, d'acquérir des connaissances de base des autres disciplines et de comprendre un vocabulaire spécifique et différent (Moser *et al.*, 2019). La pratique de l'interdisciplinarité est également une formidable opportunité d'échanges sur des pratiques pédagogiques en permettant aux enseignants d'échanger leurs expertises et d'aborder les sujets sous de multiples angles, enrichissant ainsi leurs stratégies pédagogiques (Tonnetti & Lentillon-Kaestner, 2019). De plus, le dialogue interdisciplinaire permet aux enseignants de prendre conscience d'implicites fondamentaux de leur discipline, ce qui peut clarifier et renforcer leur enseignement disciplinaire (Morizot *et al.*, 2023). Chaque enseignant est ainsi amené à porter un autre regard sur l'objet ou le thème enseigné, et de ce fait à modifier l'enseignement de sa propre discipline (Camel & Fargue-Lelièvre, 2009).

En croisant différentes disciplines, les enseignants sont encouragés à développer des approches nouvelles et innovantes pour l'enseignement, favorisant, d'une part, un environnement propice à la créativité (Terzidis & Darbellay, 2017), et, d'autre part, le développement professionnel des enseignants (Tonnetti & Lentillon-Kaestner, 2023). En outre, l'approche interdisciplinaire est une source de motivation pour les enseignants (Hawkey *et al.*, 2019). Cette motivation se trouve encore renforcée en observant l'évolution de leurs élèves et les bénéfices d'une telle approche pour leur

apprentissage (Hardré *et al.*, 2013). Par ailleurs, travailler de manière interdisciplinaire aide à établir de meilleures relations entre collègues en créant un climat de confiance et de collaboration (McPhail, 2018), ce qui est bénéfique pour le travail en équipe et l'environnement professionnel.

### ***Difficultés liées à la mise en place de l'interdisciplinarité***

Les enseignants font face à des difficultés voire des obstacles lors d'un travail interdisciplinaire. Pour Hasni *et al.* (2012), ces difficultés relèvent des enseignants, mais aussi elles peuvent être liées au contexte de travail. Dans la même veine, Tonnetti & Lentillon-Kaestner (2023) notent que ces difficultés affectent les enseignants dans plusieurs aspects de leur enseignement : leur rapport à eux-mêmes, leur rapport au contenu des disciplines et aux ressources disponibles, leur rapport à la collaboration avec les collègues, et leurs possibilités et opportunités institutionnelles. Dans cette optique, Reverdy (2015) souligne que l'interdisciplinarité touche à la fois à l'identité professionnelle des enseignants, à leurs pratiques pédagogiques et aux formes de travail dans l'établissement.

Les enseignants ont tendance à avoir une culture disciplinaire voire une identité disciplinaire forte, ce qui peut les amener à privilégier leur propre matière par rapport à d'autres. Cela peut créer des réticences à collaborer et à s'ouvrir à d'autres perspectives disciplinaires (Ríordáin *et al.*, 2016). En outre, les approches interdisciplinaires sont souvent difficiles à mettre en œuvre en raison de la complexité associée à l'intégration de différentes disciplines, du manque de la formation (initiale et continue) pour combler les lacunes auxquelles sont confrontés les enseignants à ce niveau, et du manque de ressources pour guider les enseignants dans l'élaboration de projets interdisciplinaires (Hasni *et al.*, 2012). De ce fait, les enseignants peuvent ressentir un manque de connaissances, en particulier dans les disciplines qu'ils n'enseignent pas, ce qui limite leur capacité à intégrer efficacement ces connaissances et à s'engager dans des projets interdisciplinaires (Hasni *et al.*, 2015).

D'autres difficultés d'ordre pratique peuvent être associées à la mise en place de l'interdisciplinarité. Ce type de collaboration étant jugé chronophage (Abou-Samra, 2020), les enseignants doivent investir davantage de temps pour organiser des réunions avec leurs collègues d'autres disciplines, ce qui peut être un obstacle en raison des contraintes de temps déjà existantes (Moss *et al.*, 2019). Par ailleurs, l'évaluation des projets interdisciplinaires constitue une difficulté pour les enseignants dans la mesure où les formes et types d'évaluation dans ce contexte diffèrent souvent de ceux associés aux évaluations traditionnelles, et doivent s'adapter aux différents projets interdisciplinaires mis en œuvre (Tonnetti & Lentillon-Kaestner, 2023). Dans cette perspective, les enseignants doivent non seulement évaluer les

connaissances et compétences spécifiques à leur discipline, mais aussi les compétences globales et transversales des élèves, ce qui requiert une collaboration à ce niveau entre les enseignants des différentes disciplines impliquées dans le projet interdisciplinaire. Toutefois, cette collaboration entre enseignants n'est pas sans difficulté. Elle peut parfois entraîner des tensions et des problèmes relationnels (Darbellay *et al.*, 2019), d'autant plus que les enseignants ont traditionnellement l'habitude de travailler seuls (Reverdy, 2016).

Les contextes institutionnels présentent également plusieurs difficultés qui entravent la mise en œuvre de l'interdisciplinarité. Ces difficultés, qui émanent à la fois de l'organisation scolaire et de l'organisation des programmes, incluent des structures de programme rigides, un manque de collaboration et de soutien institutionnel, ainsi qu'une culture scolaire qui privilégie les approches disciplinaires traditionnelles (Hasni *et al.*, 2015 ; Lange & Munier, 2019 ; Tinnell *et al.*, 2019).

### **Méthodologie de recueil et d'analyse des données**

Cette étude s'inscrit dans le cadre d'un réseau de recherche collaborative en éducation (Desgagné, 1997), nommé LéAL (Lieux d'éducation associés au Liban), qui vise à promouvoir la collaboration entre deux chercheuses de la Faculté de Pédagogie de l'Université Libanaise (dont l'une qui est responsable du réseau LéAL est l'auteure) et des enseignants d'établissements scolaires libanais autour de la thématique de l'interdisciplinarité. Dans le cadre de ce réseau LéAL, nous avons accompagné des enseignants de différentes disciplines afin de mettre en place des projets interdisciplinaires (Hammoud & Hayfa, à paraître). En nous basant sur les expériences d'enseignants de deux écoles libanaises privées, qui ont mis en œuvre des projets interdisciplinaires, nous nous intéressons ici aux bénéfices relevés et aux difficultés éprouvées par ces enseignants quant à la mise en place de l'interdisciplinarité. Plus précisément, notre échantillon est composé de deux groupes de professeurs de plusieurs disciplines enseignant la classe de cinquième (première classe de collège au Liban) : le premier groupe renferme trois professeurs enseignant respectivement la physique-chimie, les mathématiques et la langue française dans le premier établissement scolaire. En ce qui concerne le deuxième groupe, il contient trois professeurs enseignant respectivement les Sciences de la Vie et de la Terre (SVT), la physique-chimie et la langue française dans le deuxième établissement scolaire.

Nous avons mis en place deux instruments de collecte de données au sein de chaque établissement scolaire : le premier est un journal de bord que le groupe d'enseignants, dans chaque établissement scolaire, a renseigné pour documenter la progression du projet interdisciplinaire de la planification à l'évaluation, tout en cernant à la fois les bénéfices et les difficultés relevés tout

au long du travail interdisciplinaire. Quant au deuxième instrument de collecte de données, il consiste en un *focus group* (Glitz, 1997), que nous avons conduit auprès de ces mêmes enseignants, au sein de chaque établissement scolaire, et qui vient compléter les données issues du journal de bord, mettant en lumière ce qui a bien fonctionné, ce qui pourrait être amélioré en fonction des difficultés et des bénéfices relevés par ces enseignants. Par ailleurs, les données issues de ces deux outils méthodologiques ont fait l'objet d'une analyse thématique.

### **Analyse des données**

Pour apporter des éléments de réponse à notre question de recherche, nous présentons nos résultats mettant en évidence les bénéfices et les difficultés engendrées par la mise en place de l'interdisciplinarité au sein des deux établissements scolaires libanais. Nous illustrons notre analyse par quelques verbatim et des extraits de journaux de bord pour appuyer nos résultats (placés tous entre guillemets).

#### ***Bénéfices de la mise en place de l'interdisciplinarité pour les enseignants***

La mise en place de l'interdisciplinarité au sein des deux établissements scolaires a engendré plusieurs bénéfices que nous présentons ci-dessous.

S'enrichir de la culture des autres disciplines : le travail interdisciplinaire a été une occasion pour s'enrichir de la culture des autres disciplines, comme en témoignent les extraits ci-dessous. En effet, la mise en place de l'interdisciplinarité a permis aux deux groupes d'enseignants de découvrir, comprendre et intégrer la culture d'autres disciplines dans leur propre approche pédagogique. Ce croisement a favorisé, en retour, un élargissement des perspectives des enseignants dans la mesure où ils ont eu l'opportunité d'accéder à des savoirs qui leur étaient auparavant étrangers ou peu exploités dans leur domaine :

*« J'ai eu recours aux enseignants de maths et de physique-chimie pour s'assurer que l'évaluation soit vraiment objective. Il y a des choses parfois que je peux remarquer en tant que prof de français et que les autres collègues ne peuvent pas remarquer et vice-versa ».*

*« Quand les apprenants ont travaillé le protocole expérimental, ils ont appris que pour écrire les étapes, il faut bien utiliser le français. Si je commence avec un verbe à l'infinitif, il faut que toutes les étapes du protocole commencent avec un verbe infinitif. Ce n'est pas seulement l'élève qui apprend ça, mais l'enseignant aussi ».*

*« Nous avons eu l'opportunité d'élargir nos compétences au-delà de notre domaine initial, le travail interdisciplinaire nous a permis d'élargir nos cultures et de lier les disciplines pour qu'elles soient l'une au service de l'autre ».*

Echanger sur les pratiques pédagogiques et favoriser leur évolution : l'interdisciplinarité a constitué un levier puissant pour stimuler l'échange entre enseignants sur leurs pratiques. Comme le montrent les extraits ci-dessous, le travail interdisciplinaire des deux groupes d'enseignants a favorisé la confrontation d'idées et a, de ce fait, permis à ces enseignants de mutualiser leurs pratiques, d'apprendre les uns des autres et de favoriser ainsi l'évolution de leurs pratiques pédagogiques :

*« Les points forts du travail interdisciplinaire étaient la communication et le partage de pratiques ».*

*« Quand j'ai introduit une nouvelle notion de physique en relation avec les maths, j'ai eu recours au prof de maths pour savoir s'ils ont déjà appris ça, discuter sur comment on va l'introduire pour faciliter la tâche ».*

*« Travailler en interdisciplinarité était enrichissant pour partager nos pratiques et nos différentes approches ».*

*« Nous avons échangé nos critères d'évaluation pour en sortir avec une seule grille d'évaluation ».*

*« Le travail interdisciplinaire nous a permis d'intégrer des approches pédagogiques novatrices tout en développant des compétences transversales chez les élèves ».*

Porter un autre regard sur le thème enseigné et modifier l'enseignement de sa propre discipline : le recours à l'interdisciplinarité avait l'avantage de permettre aux enseignants des deux groupes de sortir de leur zone de confort, de porter un regard nouveau sur le thème qu'ils enseignent, en explorant les perspectives et les approches d'autres disciplines, et de faire évoluer par la suite l'enseignement de leur propre discipline. A titre d'exemple, les témoignages des enseignants ci-dessous montrent que des modifications ont commencé à apparaître au niveau de leur préparation, de la mise en œuvre de leur enseignement, en adoptant la pédagogie de projet et en laissant une marge d'autonomie plus importante aux élèves pour les rendre acteurs, permettant ainsi à ceux-ci de donner du sens à leur apprentissage. Cela met en évidence que le travail interdisciplinaire a permis aux enseignants d'explorer des méthodes pédagogiques innovantes, en particulier la démarche de projet, et de passer ainsi des approches traditionnelles à des pratiques plus créatives et dynamiques :

*« Lorsqu'on a lancé le projet, j'ai expliqué aux apprenants le rôle des mathématiques dans ce projet. Ils étaient très motivés de savoir que les mathématiques ne sont pas seulement des calculs et qu'ils peuvent les utiliser dans leur vie quotidienne ».*  
*« Travailler avec mes collègues d'autres disciplines m'a aidé à voir ma matière sous un autre angle ».*  
*« L'apport pour nous en tant qu'enseignants, c'est d'explorer des stratégies d'enseignement par projet ».*  
*« A travers ce projet, nous avons appris à sortir de notre zone de confort dans un sens positif ».*  
*« Je favoriserai le travail interdisciplinaire dans le but d'augmenter l'engagement des élèves et aussi de faire des liens entre les disciplines parce que les élèves font rarement ça. Pour eux, ce qu'ils apprennent en sciences n'a rien à voir avec ce qu'ils apprennent en chimie et dans les autres disciplines. Je trouve que c'est un point fort pour le travail interdisciplinaire et j'aimerais travailler davantage pour cibler ces objectifs ».*  
*« Il y a eu des modifications au niveau de mes préparations et de mes pratiques. Je conçois maintenant plus de temps dans mes préparations pour le travail de projets et je laisse plus d'autonomie aux élèves pour les rendre acteurs ».*

Evolution des conceptions des enseignants relatives au travail interdisciplinaire : l'interdisciplinarité mise en œuvre au sein des deux établissements scolaires a permis aux enseignants impliqués de faire évoluer leurs conceptions en approfondissant leur compréhension de ce qu'est réellement un travail interdisciplinaire, de ses exigences et de ses conditions de réussite. Cette évolution conceptuelle s'est traduite par une meilleure compréhension des étapes nécessaires à la mise en œuvre de l'interdisciplinarité. En participant à des projets interdisciplinaires, ces enseignants ont réalisé qu'il s'agit d'un processus qui nécessite une véritable collaboration, une planification rigoureuse et une vision partagée des objectifs pédagogiques, comme l'illustrent bien leurs propos ci-dessous :

*« Une bonne planification d'un projet interdisciplinaire doit être faite à l'avance, définir des objectifs communs, faire des réunions régulières, et choisir le bon moment pour l'exécution du projet ».*  
*« On a appris à travailler davantage sur la planification détaillée d'un projet interdisciplinaire ».*  
*« Ce travail nous a permis de réfléchir davantage sur comment le projet interdisciplinaire pourrait mieux se dérouler,*

*comment inciter les apprenants à réfléchir. Donc ça a modifié nos conceptions relatives à un projet interdisciplinaire ».*  
*« Ce travail nous a aidés à mettre les étapes sur une feuille, fixer des dates pour chaque étape, répartir les tâches entre nous, mettre en œuvre un projet interdisciplinaire avec toutes ses étapes ».*

Développer des compétences réflexives : le travail interdisciplinaire mis en place au sein des deux établissements scolaires a encouragé une réflexion continue et a favorisé le développement des compétences réflexives des enseignants, en les incitant à analyser et évaluer leurs pratiques, comme en atteste l'extrait ci-dessous :

*« Les avantages ne sont pas seulement au niveau des acquisitions des connaissances, mais c'est le processus de réflexion qu'on a fait, poser des questions, réfléchir ensemble, s'arrêter pour un instant et voir quel est notre but, est-ce qu'on veut seulement que les apprenants aient des acquisitions au niveau d'une matière ou bien c'est quelque chose de transversal ».*

Facteur motivant pour les enseignants : à l'appui des extraits ci-dessous, il apparaît que l'interdisciplinarité a rendu le travail plus intéressant et motivant pour les deux groupes d'enseignants. En constatant que leurs projets interdisciplinaires ont captivé les élèves, favorisé leur compréhension des liens entre les disciplines et les ont engagés activement, ces enseignants en ont retiré une satisfaction professionnelle qui a nourri leur propre motivation à explorer davantage l'interdisciplinarité. Comme l'approche interdisciplinaire implique un travail d'équipe de la part des enseignants, ceci a constitué aussi un facteur motivant dans la mesure où on se motive quand on travaille et on réfléchit à plusieurs :

*« L'interdisciplinarité motive les apprenants et les enseignants en même temps ».*

*« C'est très motivant pour les apprenants. Ils découvrent que les disciplines se complètent et que c'est un tout. Tout cela nous motive en retour pour continuer à travailler de manière interdisciplinaire ».*

Renforcement de la collaboration et du travail d'équipe : en amenant les enseignants à travailler en équipe, à partager leurs idées et leurs pratiques, le travail interdisciplinaire a favorisé la collaboration et la communication entre les enseignants, et a amélioré de ce fait leurs relations professionnelles.

Ceci a favorisé une dynamique et meilleure cohésion d'équipe au sein des deux établissements scolaires, comme le confirment les extraits ci-dessous :

*« Développement d'une culture collaborative de travail, d'échange, de production ».*

*« Instaurer une culture de la complémentarité ».*

*« La mise en place du projet interdisciplinaire a généré des effets positifs sur le climat de l'établissement en favorisant une culture de collaboration entre nous et une ambiance plus dynamique et innovante ».*

### ***Difficultés liées à la mise en place de l'interdisciplinarité***

Parmi les constats qui se dégagent de l'analyse des difficultés rencontrées par les enseignants des deux établissements, plusieurs méritent d'être soulignés.

- Difficultés liées à la culture disciplinaire : l'une des difficultés rencontrées par les enseignants des deux établissements scolaires, dans la mise en place de l'interdisciplinarité, réside dans leur attachement à une culture disciplinaire voire une identité disciplinaire profondément ancrée. Cette culture, qui s'accompagne souvent d'habitudes pédagogiques solidement établies, se traduit par une tendance à se concentrer exclusivement sur sa propre discipline, ses méthodes et ses objectifs pédagogiques, au détriment d'une ouverture vers d'autres champs du savoir. Cela apparaît clairement dans les extraits ci-dessous qui révèlent, d'une part, que certains enseignants ont eu des difficultés à percevoir comment leur discipline peut s'intégrer de manière cohérente avec d'autres, ce qui s'est manifesté par une réticence à s'impliquer dans le travail interdisciplinaire. D'autre part, d'autres enseignants ont éprouvé des difficultés dans la planification des périodes de concertation, un défi amplifié par leur habitude de travailler le plus souvent de manière individuelle :

*« La planification des périodes de concertation entre enseignants a posé un petit problème vu l'habitude de travailler chacun seul dans sa discipline ».*

*« Après avoir décidé du thème sur lequel on va travailler, il y a des profs qui ont laissé le travail, ils ont dit que ça ne convient pas avec leur discipline ».*

- Difficultés liées à l'organisation scolaire : l'organisation scolaire freine la mise en place du travail interdisciplinaire au sein des deux établissements scolaires. Cette difficulté fait écho à une autre difficulté liée notamment à la gestion du temps et à des emplois de temps rigides et des contraintes horaires. En effet, les enseignants ont souvent des

plages horaires restreintes pour se consacrer à la planification ou au suivi de projets interdisciplinaires. Les propos des enseignants relatifs à cette catégorie de difficultés, présentés ci-dessous, vont dans ce sens et mettent en relief des difficultés à trouver un temps commun entre les différents enseignants impliqués pour se réunir. Ceci met en évidence la nécessité de consacrer dans le programme scolaire un temps libre aux enseignants concernés pour la concertation, la planification, la coordination et le suivi des projets interdisciplinaires : *« L'une des difficultés était de trouver un temps en commun entre les coordinateurs et les profs des trois matières pour se réunir afin de discuter et finaliser les différentes étapes du projet ».*

*« C'était une charge de travail trop grande, on n'avait pas assez de temps pour faire la partie recherche avant de passer à l'exécution du projet ».*

- Difficultés liées à l'organisation des programmes officiels : le curriculum libanais, souvent très chargé et disciplinaire, laisse peu de flexibilité aux enseignants pour intégrer des approches interdisciplinaires. Les enseignants se trouvent alors confrontés à une difficulté d'établir des liens entre les disciplines, et d'adapter ainsi leur progression disciplinaire pour l'articuler dans le cadre d'un projet interdisciplinaire. Les extraits ci-dessous confirment ce constat et donnent à voir que les enseignants ont été obligés de trouver des liens entre les disciplines concernées pour pouvoir mener à bien le projet, et que ceci est dû à l'allègement des programmes libanais imposé par le ministère de l'éducation. Les enseignants ont d'ailleurs souligné que le curriculum libanais ne favorise pas le travail interdisciplinaire parce qu'il a été conçu de manière cloisonnée sans tenir compte des liens interdisciplinaires entre les différentes disciplines :

*« Il fallait choisir ce qui est commun entre les disciplines scientifiques. Cette année, le programme n'a pas été donné complètement, il a été allégé, donc on était obligé de trouver des liens entre les disciplines pour pouvoir achever ce projet ».*

*« Malgré que le programme libanais ne nous permette pas de travailler l'interdisciplinarité vu qu'il y a beaucoup plus de chapitres et de leçons demandés dans un temps minimal, on a pris cette année le risque, on a tenté ».*

*« Pour moi, il faut faire une nouvelle conception du curriculum libanais. Moi si je ne demande pas au prof des sciences par exemple qu'est-ce qu'il y a comme partie commune, je ne peux pas le savoir ».*

- Difficultés liées à la planification du projet interdisciplinaire : la planification, qui est une étape cruciale dans la mise en œuvre de projets interdisciplinaires, a été l'un des principaux défis auxquels les enseignants des deux établissements scolaires ont été confrontés lors de la mise en place de l'interdisciplinarité. Les difficultés de planification dans le travail interdisciplinaire se sont manifestées à plusieurs niveaux. Nous les présentons ci-dessous en appuyant notre analyse sur des extraits de propos d'enseignants :

difficultés au niveau de la formulation de la problématique du projet, comme en témoignent les propos des enseignants :

*« Au début, la formulation de la problématique était un peu difficile ».*

difficultés à élaborer une situation-problème ancrée dans la vie quotidienne et prenant appui sur le vécu des apprenants, comme le rapportent les enseignants :

*« Nous avons eu du mal à trouver une situation de vie réelle qui puisse être intégrée avec les autres disciplines ».*

difficultés à trouver un thème cohérent avec le programme officiel : sélectionner les contenus pertinents de chaque discipline qui peuvent être articulés de manière cohérente dans le cadre d'un projet interdisciplinaire et en dégager le thème du projet s'est manifesté comme une difficulté pour les enseignants des deux établissements scolaires :

*« La difficulté c'était le choix du chapitre qui doit être en lien avec le projet. Au début c'était un travail très difficile, de trouver un thème qui va avec le programme, qui soit cohérent avec le programme et en même temps intéressant pour les élèves ».*

difficultés à définir des objectifs pédagogiques communs : les enseignants ont éprouvé des difficultés à se mettre d'accord sur les objectifs et la démarche à adopter, comme l'illustre cet extrait :

*« C'était un travail de va et vient, on a changé plusieurs fois et ensuite on s'est mis d'accord. On faisait le travail à plusieurs reprises parce qu'on ne savait pas bien cibler notre objectif notamment au début du travail durant l'élaboration du projet ».*

difficultés au niveau du temps dans la mesure où la phase de planification du projet interdisciplinaire a nécessité beaucoup de temps pour

harmoniser les contenus, ce qui s'est posé comme défi dans un emploi du temps souvent chargé au sein des deux établissements scolaires. Ceci apparaît clairement dans cet extrait :

*« la planification a pris du temps plus que prévu, c'était la phase la plus difficile ».*

- Difficultés liées à l'évaluation du projet interdisciplinaire : l'évaluation des projets interdisciplinaires s'est avérée complexe pour les enseignants des deux établissements scolaires. Dans un contexte interdisciplinaire, les enseignants doivent évaluer des compétences transversales qui ne relèvent pas exclusivement de leur discipline, et doivent donc concevoir des critères et des outils d'évaluation adaptés à la nature du projet et à ses exigences. Ceci n'est pas sans défi pour les enseignants qui ont l'habitude de s'appuyer sur des critères strictement disciplinaires, comme en témoignent leurs propos :  
*« Pour nous, la difficulté était au niveau de l'évaluation des élèves dans un cadre interdisciplinaire ».*  
*« Comme on travaillait sur plusieurs compétences dans notre projet (l'oral, l'écrit et l'expérimental ...), l'évaluation n'a pas été facile ».*
- Difficultés du côté des élèves : les enseignants des deux établissements scolaires ont éprouvé des difficultés directement liées aux élèves et à leur gestion dans un cadre interdisciplinaire. Ces difficultés sont enracinées dans les habitudes d'apprentissage des élèves, leur motivation et leurs compétences. Parmi ces difficultés, nous relevons à travers les extraits ci-dessous des difficultés des élèves à s'impliquer et à s'engager dans le projet et des difficultés à travailler en équipe :  
*« On a eu des élèves qui sont plutôt perfectionnistes et qui refusent le partage avec les autres membres du groupe. Il a fallu donc s'assurer de l'implication de tous les élèves ».*  
*« Il y a des apprenants qui étaient un peu moins motivés que les autres ».*  
*« Désintérêt de certains apprenants ».*  
*« Absence de la dynamique de certains groupes ».*

### **Discussion des résultats**

Les résultats de notre recherche sur l'interdisciplinarité dans des écoles libanaises ont mis en exergue des bénéfices significatifs pour les enseignants, tout en soulignant les difficultés qu'ils ont rencontrées.

D'une part, la mise en place de l'interdisciplinarité a permis aux enseignants des deux établissements scolaires de s'enrichir de la culture des autres disciplines, de dépasser les cloisonnements traditionnels entre les savoirs, et de valoriser ainsi les complémentarités entre les disciplines. Ces résultats rejoignent ceux de Camel & Fargue-Lelièvre (2009) et de Moser *et al.* (2019) qui ont souligné que l'interdisciplinarité permet aux enseignants d'acquérir des connaissances de base d'autres disciplines et de comprendre un vocabulaire spécifique et différent. En outre, l'interdisciplinarité mise en place au sein des deux établissements scolaires a créé des opportunités pour les enseignants d'échanger sur leurs pratiques pédagogiques et de favoriser leur évolution. Elle les a aidés à sortir de leur zone de confort et à s'ouvrir à des approches pédagogiques innovantes issues du croisement et de la complémentarité d'autres disciplines. Ce processus leur a permis d'aborder leur propre discipline sous un angle renouvelé, en la recontextualisant dans un cadre plus large. Ces constats viennent confirmer les conclusions de Tonnetti & Lentillon-Kaestner (2019) et de Morizot *et al.* (2023) quant à l'impact positif de l'interdisciplinarité sur l'enrichissement et l'évolution des pratiques pédagogiques des enseignants. De plus, à l'instar des travaux de Hawkey *et al.* (2019) et de McPhail (2018), nos résultats ont mis en avant les effets bénéfiques de l'interdisciplinarité sur la motivation des enseignants et le renforcement de la collaboration et du travail d'équipe. D'autres bénéfices ont été d'ailleurs identifiés dans notre étude, en particulier le développement des compétences réflexives des enseignants et l'évolution de leurs conceptions relatives au travail interdisciplinaire, aboutissant ainsi à une meilleure compréhension de l'interdisciplinarité et de ses conditions de mise en œuvre.

D'autre part, malgré ces bénéfices, nos résultats ont montré que l'interdisciplinarité a posé des difficultés pour les enseignants des deux établissements scolaires. L'une des difficultés identifiées relève des enseignants au sens de Hasni *et al.* (2012), elle est liée à la culture disciplinaire des enseignants et touche à leur identité professionnelle (Reverdy, 2015). Cette difficulté est largement documentée dans la littérature, notamment par Ríordáin *et al.* (2016), qui soulignent que cette forte identité et appartenance disciplinaire constitue un frein au développement de pratiques interdisciplinaires. D'autres difficultés révélées sont associées au contexte de travail des enseignants (Hasni *et al.*, 2015 ; Moss *et al.*, 2019). D'un côté, ces difficultés sont liées à l'organisation scolaire, en particulier à un manque de temps dû à des contraintes horaires et des emplois de temps déjà chargés et rigides, restreignant les opportunités de concertation et de collaboration entre enseignants. En effet, ce manque de temps s'est avéré d'autant plus contraignant que l'interdisciplinarité est une démarche particulièrement chronophage (Abou-Samra, 2020), exigeant une coordination approfondie, des échanges réguliers et une planification rigoureuse. D'un autre côté, ces

difficultés relèvent de l'organisation des programmes officiels dans la mesure où le curriculum libanais, conçu pour être enseigné dans des cadres disciplinaires bien définis, laisse peu de marge de manœuvre pour des projets interdisciplinaires. Ces contraintes organisationnelles et institutionnelles mettent en lumière des difficultés spécifiques au contexte libanais. Par ailleurs, les enseignants ont éprouvé des difficultés liées à l'évaluation du projet interdisciplinaire. Cette problématique est mise en avant par Tonnetti & Lentillon-Kaestner (2023), qui indiquent que les modèles traditionnels d'évaluation, centrés sur des critères disciplinaires, ne sont pas toujours adaptés aux approches interdisciplinaires et nécessitent des adaptations.

Toutefois, notre recherche a également mis en évidence des difficultés qui, à notre connaissance, ont été peu explorées jusqu'à présent. Celles-ci concernent plus particulièrement la planification du projet interdisciplinaire, se manifestant à différents niveaux : la formulation de la problématique, l'élaboration de la situation-problème, le choix d'un thème en cohérence avec le programme officiel et la définition d'objectifs communs. À cela s'ajoutent les difficultés rencontrées par les enseignants en lien avec les élèves et leur engagement dans le projet interdisciplinaire.

## **Conclusion**

Cette recherche a permis d'explorer, du point de vue des enseignants, les bénéfices et les difficultés liés à la mise en place de l'interdisciplinarité dans deux établissements scolaires libanais. À la lumière des analyses, nous relevons le potentiel de l'interdisciplinarité pour favoriser l'enrichissement mutuel des enseignants en leur permettant d'acquérir une meilleure compréhension des autres disciplines, d'échanger sur leurs pratiques pédagogiques et de développer leurs compétences réflexives. L'interdisciplinarité s'est révélée comme un moteur de motivation en redonnant du sens, du dynamisme et une dimension collective à l'enseignement, tout en offrant aux enseignants des opportunités d'innovation pédagogique et d'évolution de leurs pratiques pédagogiques vers une approche plus intégrée, où les disciplines se nourrissent mutuellement.

Cependant, nos résultats ont également révélé des difficultés auxquelles les enseignants ont été confrontés lorsqu'ils ont mis en place des projets interdisciplinaires. Ces difficultés relèvent des enseignants, comme celles liées à la culture disciplinaire. D'autres sont liées à leur contexte de travail, notamment à leurs contextes institutionnels concernant l'organisation scolaire et l'organisation des programmes officiels, mettant en évidence des aspects spécifiques à notre contexte libanais. Des difficultés qui touchent à leurs pratiques pédagogiques, plus particulièrement à la planification et l'évaluation des projets interdisciplinaires, et à la gestion des élèves, ont été d'ailleurs soulignées.

Les conclusions de cette étude soulignent la nécessité d'adaptations structurelles dans le système éducatif libanais pour faciliter la mise en œuvre de l'interdisciplinarité. Cela implique une révision des emplois du temps, la création d'opportunités pour la collaboration entre enseignants, l'allocation de temps suffisant pour la planification de projets interdisciplinaires, et la mise en place de formations adaptées pour développer les compétences nécessaires. Les résultats de notre recherche rappellent tout de même l'importance de concevoir une nouvelle réforme du curriculum libanais, qui tient compte du décloisonnement des disciplines en intégrant l'interdisciplinarité à la politique éducative nationale et aux programmes scolaires, et de proposer des modèles de mise en œuvre bien adaptés pour outiller l'enseignant dans sa pratique.

Bien que l'interdisciplinarité représente une approche pédagogique prometteuse pour promouvoir l'apprentissage des élèves, sa mise en place nécessite une réflexion approfondie sur les conditions favorables à sa réussite. Les résultats de notre étude contribuent à éclairer ce débat et suggèrent l'importance d'une approche systémique intégrant les dimensions organisationnelles, institutionnelles, pédagogiques et personnelles dans le développement de l'interdisciplinarité en milieu scolaire. Les perspectives ouvertes par cette étude invitent à prolonger la réflexion par la conduite de recherches futures examinant l'impact de l'interdisciplinarité sur les apprentissages des élèves.

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## **Singing from the Same Hymn Sheet? A Semantic and Convergence Analysis of the Extent to Which ‘Smart’ is Similarly Understood and Applied Across Energy, Transport, and Waste Management Sectors of Urban Planning**

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### **Abstract**

The term ‘smart’ is widely used in urban planning, and it is often linked to the use and adoption of technologies or cost-efficiency measures in support of urban development and management. Whether the term is consistently understood and applied to inform practice across different policy sectors is unclear. This paper explores the understandings and applications of the term ‘smart’ within energy, transport, and waste management sectors of urban planning. A systematic literature review, guided by PRISMA criteria, was conducted, and NVivo-based coding was used to assess convergence. The findings provide a comprehensive profile of the term’s convergent and differential understandings and reflect on the scope for standardized terminology for ‘smart’ in urban planning. The term broadly describes a means of ‘deploying mechanical solutions’ pursuing efficiency and optimization, rather than ‘transformational outcomes’ e.g. sustainability. Thus, meaning and different eco-modernism goals are pursued in each sector, steeped in a language of technology-based paradigm, but hollow in meeting any fundamental transformation of the status quo. We conclude that while the

concept of ‘smart’ can be adapted to different socio-economic and regional contexts, it requires a shared theoretical foundation. Future research could explore whether differences in understanding and application may be observed at regional levels.

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**Keywords:** Smart urban planning, Smart transport, Smart energy, Smart waste management, Semantic consistency theory, Convergence theory

## Introduction

In urban planning, the term ‘smart’ has been likened to intelligent, efficient, and intentional planning approaches (Bollier, 1998). However, this is often in response to the need to address urban sprawl, climate change, urban degradation, or other multi-faceted socio-economic challenges (ISO-IEC, 2015; Rodriguez-Bolivar, 2015; Townsend, 2013). This likening has been underpinned by the assumption that new technologies can enhance the performance, quality, and delivery of urban services and reduce costs by tackling inefficiencies, carbon emissions, and resource consumption (Nesti, 2020). This is done while also generating longer-term positive effects on the economy through the optimization of city functions (Komminos, 2014; NYC, 2015). ‘Smart’ technologies encompass, for example, the Internet of Things (IoT) and Information and Communications Technologies (ICT) (Ejidike & Mewomo, 2023; Huseien & Shah, 2022), big data analytics (Goulas *et al.*, 2022), Artificial Intelligence (AI) and Machine Learning (Pangbourne *et al.*, 2020), and cloud computing and 5G technology (Mendonça *et al.*, 2022).

Their use in different policy and planning sectors has led to the proliferation of the term ‘smart’ as a suffix applied to different forms of planning and policy intervention and focus, such as ‘smart infrastructure’ (Broo *et al.*, 2022), ‘smart buildings’ (El-Motasem *et al.*, 2021), ‘smart traffic’ (Almalki *et al.*, 2021) and ‘smart transportation’ (Sun *et al.*, 2020), ‘smart mobility’ (Docherty & Shaw, 2019), ‘smart energy’ (Aliero *et al.*, 2022), and ‘smart urban governance’ (Govada *et al.*, 2017). In these contexts, ‘smart’ is used to offer a multi-dimensional perspective that integrates technology, people, and institutions, amplifying the relationship between information communication technologies and the future of cities and of urban planning (Alrashed, 2020; Meng & Zhu, 2024).

However, whether the term is consistently understood and applied to inform practice across different policy sectors is unclear. According to Prestamburgo *et al.* (2019), how ‘smart’ integrates into the anthropic, functional, and physical subsystems of urban systems remain unclear. This is within a context where there is no international consensus on the overall architecture and standards for ‘smart’ in urban planning (Javed *et al.*, 2022; Popescul & Genete, 2016). In this context, Cavada *et al.* (2016) poses a

fundamental question for urban planning: beyond the rapidly evolving pragmatic engineering-based attempt to improve the operation of individual urban infrastructure and/or services through technology innovations. Therefore, where is the underpinning theory or understanding of the systems to be connected? If unanswered, the extent to which ‘smart’ is applied to deliver same or convergent outcomes, e.g., promote environmental protection or sustainability across the various sectors of urban planning, is unknown, unclear, or may not be effectively coordinated and aligned to any overarching goal(s).

The above concern is heightened by studies reporting that the realignment of the environment, the economy and climate change, using smart approaches, remains ineffective (Gazzola *et al.*, 2019; Janicke, 2012; Zaccai, 2012). Furthermore, the consideration and prioritization of the environmental and social nexus is not sufficiently and systematically evidenced within smart urban planning (Ahvenniemi *et al.*, 2017). The problem is that ‘smart’ technology may be increasingly deployed but *without any commensurate* consideration of how they deliver converging or common outcomes for urban planning, e.g., efficiency, quality services, environmental protection, and sustainability. In such practice, adopting terminologies without shared understanding(s) can frustrate the development of a discipline because communication for effective discourse, policy, practice, and research becomes vulnerable to potential misunderstanding and miscommunication. According to Albino *et al.* (2015), a discipline such as urban planning is an area of defined theorization and practice that must have shared meanings and clear and/or consistent usage of its key concepts and terminologies.

Therefore, against the above backdrop of rapid adoption of ‘smart’ in various sectors of urban planning, this paper aims to explore whether the term is similarly understood and applied. Following the introduction, the theories of semantics and convergence are explained, as part of setting the context for analyzing and interpreting the findings. This is followed by the methodological approach, outlining the procedures of cases study selection, data collection and analysis. Subsequently, the results and implications are presented focusing on the extent of convergence, regarding the term. The study's conclusions and recommendations are drawn up in the final chapter.

### **Meaning, Semantics, and Convergence: A Framework for Analysis**

In this paper, it is argued that despite the plentiful literature on smart urban planning in various areas of application, the level of fidelity, i.e., the degree of exactness, accuracy, or correctness with which the term is applied or reproduced, remains unexamined in any systematic manner. To address this knowledge gap, analysis based on the meaning of text is required. One appropriate approach to this is anchored in Semantic Consistency Theory,

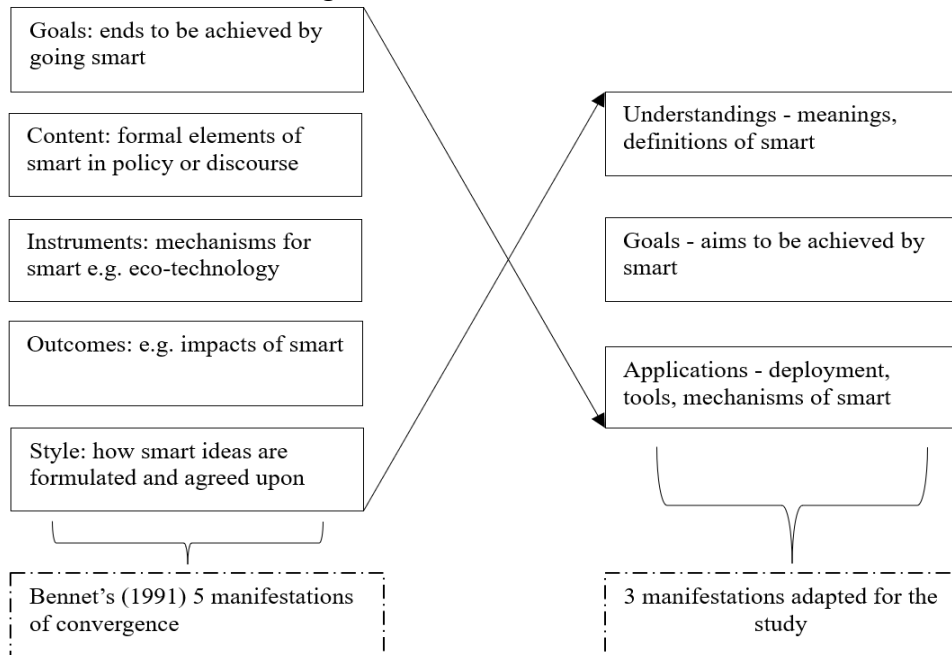
which highlights the need to standardize terminology and guarantee common understandings: to improve communication and minimize uncertainty among experts in a specific field. Consequently, in classical linguistics, this is achieved through analysing syntactic and semantic features connected to general world knowledge (De Beaugrande & Wolfgang, 1996). In this study, it will suffice to focus on the semantic features, such as presuppositions and implications, connected to the usage of the term. The goal is to see if meaning and usage of the term ‘smart’ are working towards a united goal or outcome.

In a multi-disciplinary and multi-sectoral field like urban planning, where various stakeholders are involved, this approach has the advantage of facilitating clear and consistent communication aimed at reducing the potential for confusion (Loshin, 2009, 2011). This results to the improvement of the effectiveness of ‘smart’ urban planning initiatives. However, given that the application of ‘smart’ in different sectors cannot be identical, it will be appropriate to also consider the extent of coherence, i.e., the quality of being logical and consistent, and forming a unified whole in the meaning and use of the term. Convergence can be understood as a process of “becoming,” of moving from different positions towards a “common” point or aim. This is done sometimes with similarities between the different paths emerging within the adopted processes (Inkeles, 1999). Within the social sciences, convergence can be defined as the “increasing similarity over time” (Harris & Moore, 2015), e.g., in terms of meanings, approaches, and goals (Bennet, 1991).

Following Bennet’s (1991) theorisation of convergence, similarities can be manifested in terms of: (a) goals coming together in various instances; (b) content, as in formal policy or discourse; (c) instruments or mechanisms, e.g., smart eco-innovations; (d) the outcomes or impacts of going smart; and (e) style, e.g., in terms of how these ideas are formulated and agreed upon. Therefore, the extent to which these elements are expressed within the use of ‘smart’ in urban planning can be a useful approach to address the extent to which the term ‘smart’ is similarly understood and applied. Coherence will be higher if ‘smart’ initiatives in different sectors are similarly understood and/or applied to achieve or contribute to similar goals. In contrast, coherence is less or lost when ‘smart’ initiatives take separate directions and pursue aims or goals which are dissimilar or incongruent. For the ‘smart’, therefore, to be effectively and efficiently applied in real-world urban systems, it must first be internally coherent in theory. If the meaning of ‘smart’ varies drastically across different contexts, then its application will inherently be fragmented and inconsistent. So, this paper prioritizes understanding whether a shared conceptualization of ‘smart’ exists in smart planning before considering how it manifests across different geographies or socio-economic conditions.

## Methodological Approach

In this paper, convergence will be examined following a systematic review of literature based on a selected sample of documents from urban planning. This will be done in two stages. The first one will identify relevant documents from which data will be extracted. The second one will involve data collection and analysis following the manifestations of convergence identified in Bennet (1991) (Figure 1). Thus, this comprises of understandings (meanings and definitions of smart), goals (aims, objectives, and big picture of smart), and applications (deployment, mechanisms of smart), as discerned in the documents from stage one.



**Figure 1.** Bennet's (1991) five manifestations of convergence adapted into three

### *Identifying Relevant Literature for Review*

This first stage is aimed at identifying relevant literature for undergoing a systematic review, following the Preferred Reporting Items for Systematic Review (PRISMA) guidelines (Page *et al.*, 2021). The scope of the review was defined via search criteria composed of the keywords (smart transportation, smart energy, and smart waste management), representing case studies from sectors which commonly applied the term within urban planning, policy-making, and urban studies.

In terms of case study selection, we acknowledge that a truly comprehensive understanding of 'smart' urban planning requires examining a broad range of sectors. However, for practicality, we shall examine only the above mentioned three sectors. As these sectors form the backbone of urban

systems where ‘smart’ interventions are often applied, they were considered as appropriate sources of data to meet the scope of the study.

As the literature sought was distributed across several sources, Boolean operations were used (“smart” AND “energy” OR “transport” OR “waste management”), as conjunctions to combine key words in Google Scholar, Scopus, and ScienceDirect databases, to identify potentially relevant documents. The targeted literature included peer-reviewed international academic articles, book chapters, and conference proceedings. This returned 131,639 hits. To refine the search, a staged review process (Torraco, 2016) (i.e., title, abstract, body, conclusion) was applied to eliminate irrelevant documents based on several inclusion and exclusion criteria (Appendix 1). Finally, 121 relevant documents were selected for review using NVivo in stage two.

### *Data Extraction and Coding*

Data was extracted from each document via coding using NVivo software (Silver & Lewins, 2014). It has appropriate techniques to systematically analyze textual data (Dhokal, 2022). The codes for convergence were adapted from previous literature on Bennet’s (1991) five manifestations of convergence (Figure 1), thus following a deductive coding approach (Saldana, 2009). The coding was applied as follows:

- Each document from the PRISMA results (sec 3.1) was uploaded into NVivo by sector. It was opened and perused line-by-line.
- Where a statement of definition, meaning or understanding of ‘smart’ was found, it was assigned code M.
- Where a statement of goal(s), i.e., overarching big picture to be achieved by the term ‘smart’ was found, it was assigned code G (see Appendix 2).
- Where a statement of application, i.e., how specific technologies were deployed to deliver ‘smart’ was found, it was assigned code D.

Codes like EG01 or WD05 denote the following information: First letter – sector, e.g., energy, transport, or waste; second letter – dimension of convergence, e.g., meaning, goal, or application; last two digits – identity number). Thus, the code and its text, its frequency, and sector were traceable to the document, generating numerical data for quantitative analysis. The main statements of definitions, goals, and applications were coded at level one. Further supplementary statements, adding more details, were coded at level two. Effort was made to be consistent in applying the coding scheme across all documents. Where the authors disagreed, they engaged in a detailed discussion to arrive at a consensus. The codes and statements were reviewed by the authors to remove repeated or unnecessary text.

Potential methodological limitations in our study are worth highlighting. Firstly, our analysis was based on a specific sample of documents and, therefore, the findings may not fully represent the total diversity of smart urban planning literature. Secondly, our study based on textual analysis could not account for the varied styles of writing in the documents which can distribute the elements of convergence in desperate or several overlapping places. Thirdly, contextual differences in regions, policies, and urban development stages might have influenced the level of convergence or divergence exhibited in our analysis.

While we were aware of these potential limitations, our use of PRISMA hopefully provided a systematic approach to allow the reader to judge the extent to which the findings can be generalizable to their situation. PRISMA reports our complete search strategies for the databases, including any filters and limits used, thus enhancing transparency and repeatability in our work.

### *Data Analysis*

Firstly, NVivo (Release 1.5) cluster analysis function was applied to the codes (M, G, D), clustered by coding similarity, to help find patterns by visualizing the similarity based on Pearson correlation coefficient metric. The similarity was a proxy indicator for convergence, by groups of similar words in common (Lame, 2019). To improve the outcome of a cluster analysis, stop words (e.g., and, the, a, an, also), which convey less meaning were excluded from the similarity analysis. Codes containing texts with a higher degree of similarity based on their occurrence and frequency are shown clustered together. The results took the form of word clouds based on frequency, a summary frequency table, and a dendrogram presenting a hierarchical tree showing how coded items were associated, and could therefore be grouped together, based on their levels of correlation (Miles & Huberman, 1994). In the dendrogram, a horizontal branching diagram shows similar items clustered together on the same branch while different items are further apart: useful for comparing pairs of items. Thus, more convergence is assumed where there is closer proximity in the diagrams, and vice versa.

Secondly, the frequencies of G (goals) and D (applications) codes were analyzed, using Kendall's tau<sub>b</sub> correlation coefficient (2-tailed) on SPSS software (v29 with PROCESS 4.3), to measure the correlation between them: for each sector separately, then all combined. Correlation coefficients were classified as follows: (-1 = most dissimilar, 1 = most similar); Sig. (significance) values: (0.0 to 0.30 low association, 0.31 – 0.6 moderate association, 0.61 – 1 strong association).









**Figure 5.** For All Sectors: Cluster analysis of 75 most frequent words from 121 documents

From the 42 definitions we listed from the 121 documents analyzed, it can be concluded that the discourse defines and understands ‘smart’ as referring to the ‘integration of advanced technologies and data analytics to optimize dynamic decision-making for efficiency, sustainability, and resilience’, or the ‘seamless coordination across various services, infrastructures, and informatics to enhance resource management, reduce environmental impact, and improve citizens' quality of life’.

#### *Association between Goals and Applications*

The correlation analysis reveals significant associations between specific goals and applications, indicating underlying patterns of convergence and non-random logic in their usage (Appendices 3–7). This suggests that certain "smart" urban planning aspects tend to be pursued and grouped across sectors.

The correlation between energy efficiency (EG12) and planning and policy integration (EG10) suggests that efforts to enhance energy performance are often aligned with broader urban planning strategies and regulatory frameworks, which means that improving energy efficiency is not pursued in isolation but is typically embedded within policy-driven approaches that guide urban sustainability initiatives. Also, the strong association between reducing emissions (EG01) and renewable energy integration (EG03) indicates that lowering carbon footprints is closely linked to adopting renewable energy sources. Cities that aim to cut emissions often prioritize clean energy solutions, reinforcing the interdependence between these goals.

The connection between urban development (EG05) and energy security (EG06) highlights the need for reliable energy systems to support urban expansion. Ensuring a resilient and secure energy supply as cities grow becomes crucial to maintaining infrastructure, services, and economic activities. However, weaker correlations between energy optimization (EG11), cost-efficiency (EG02), and resilience (EG09) suggest that these

factors are not always primary drivers in smart energy planning. While important, they may be considered secondary concerns or addressed separately rather than being integral to broader urban energy strategies. This implies that cost-effectiveness and system optimization might not always be prioritized in large-scale urban sustainability initiatives, where regulatory and environmental considerations tend to dominate decision-making.

The strong associations of cost-efficiency (EG02), planning and policy integration (EG10), and energy efficiency (EG12) with at least seven other goals (see appendix 2) indicate that these objectives are widely interconnected in smart energy planning, which means that strategies to reduce costs, improve energy performance, and align energy policies with urban planning tend to be integrated with multiple other sustainability and development priorities. Their broad connectivity suggests that these goals can play a central role in shaping smart energy strategies, promoting a convergent approach where multiple aspects of energy planning are pursued together rather than in isolation.

However, since cost-efficiency (EG02) is only significantly linked to three other goals and resilience (EG09) is associated with just one other goal suggests that these two aspects are less central in discussions about smart energy, which implies that resilience - ensuring energy systems can withstand disruptions - is not as frequently embedded in broader energy planning efforts, possibly because immediate efficiency and policy-driven priorities take precedence. Also, cost efficiency can be a factor in decision-making but does not appear to be a dominant driver in shaping urban energy strategies.

While planning and policy integration (EG10) and energy efficiency (EG12) have the highest number of associations with other goals, none of these correlations are particularly strong (with coefficients below 0.61). This indicates that while these goals are widely referenced across different aspects of smart energy planning, they do not always drive decision-making with absolute certainty. Instead, their influence may depend on specific urban contexts, policy frameworks, or sustainability agendas, making their integration to some extent flexible rather than universally applied in all planning efforts.

The strong associations among advanced technologies (ED01), energy infrastructure integration (ED03), energy management (ED04), and energy optimization (ED05) suggest that these applications are frequently used together in smart energy planning, which means that when cities or organizations implement advanced technologies, they often simultaneously focus on integrating energy infrastructure, managing energy consumption, and optimizing system performance. Their interconnectedness highlights a coordinated approach where digital innovations and infrastructure upgrades work together to improve energy efficiency and sustainability.

However, simulation and modeling (ED02) are only significantly associated with one other application, indicating that it is used more selectively rather than as a standard tool across multiple applications of smart energy planning, which suggests that while simulations are valuable for testing scenarios and predicting outcomes, they cannot be as widely integrated into practical energy management or infrastructure projects. Planning and policy integration (ED06) is connected to three other applications, meaning it plays a role in shaping energy strategies but is not as universally embedded as core technical applications like infrastructure integration and energy management. This shows that while policies and regulations guide energy planning, they cannot always be directly tied to specific technological implementations, instead functioning as a broader framework within which different applications operate.

Thus, when none of these associations across energy deployments are particularly strong suggests that while these applications are frequently linked, they are not always implemented in tandem. Instead, their relationships may depend on specific project needs, regional policies, or technological advancements, meaning that while there is evidence of convergence, the degree to which these applications are pursued together can vary across different contexts.

The strong association between effective transport planning (TG01) and economic benefits (TG09) suggests that strategic transport planning is directly linked to economic growth, meaning that well-organized transportation systems contribute to cost savings, efficiency, and overall urban prosperity. Their 100% correlation with other transport-related goals indicates that they are fundamental priorities in smart transport strategies.

However, human mobility patterns (TG07) have a weaker correlation, particularly with traffic congestion reduction (TG02), which suggests that while understanding how people move in urban environments is important, it may not always be directly integrated into congestion management efforts. Instead, traffic planning can focus more on infrastructure and traffic flow than mobility behavior.

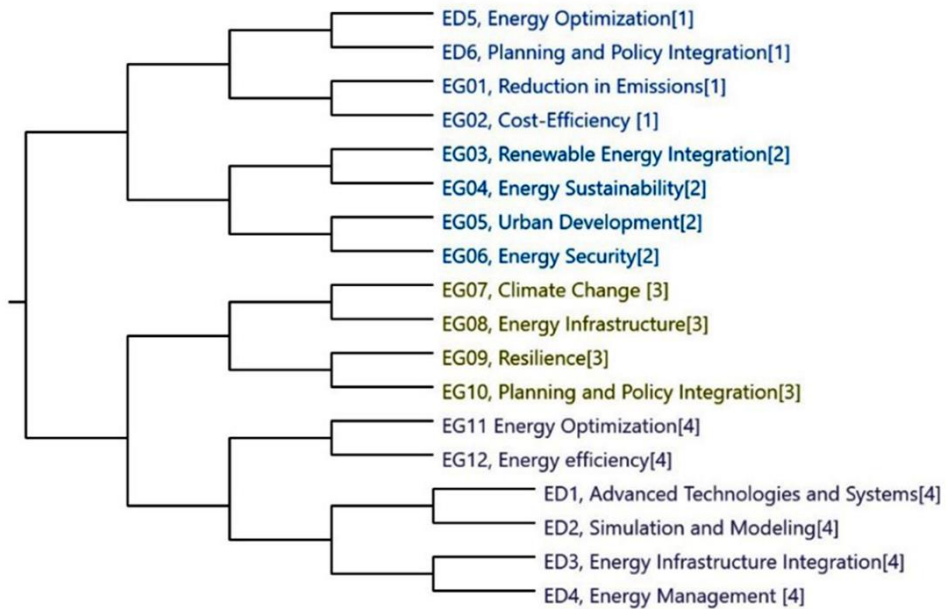
Unlike the energy sector, transport goals, including traffic safety (TG03), public safety (TG05), improved traffic flow and mobility (TG08), and addressing climate change (TG10), show strong correlations, meaning they are often pursued together, which indicates that smart transport planning tends to integrate safety, efficiency, and sustainability objectives in a coordinated manner, ensuring that improved mobility solutions align with environmental and security concerns.

Smart transport applications TD01, TD02, and TD03 exhibit moderate correlations with at least two other applications. However, while TD01 (Transport data analytics) is moderately correlated with TD02 (Traffic

monitoring systems), it is only weakly correlated with TD03 (Predictive traffic management). TD02 and TD03, also, have weak correlations, meaning that while these technologies are sometimes used together, their integration is not always strong or consistent. This suggests that while data-driven transport solutions are increasingly implemented, their level of convergence varies depending on the planning priorities and technological adoption rates in different regions.

Within smart waste management, certain goals are more commonly linked than others. Environmental sustainability (WG02), community engagement (WG04), and quality of life (WG05) are significantly associated with at least two other waste-related goals (50%), indicating that waste management strategies often incorporate sustainability, public participation, and social well-being as interconnected priorities. However, optimized waste collection (WG01) and community engagement (WG03) are only significantly correlated with one other goal (25%), suggesting that they are not as widely integrated into broader waste management strategies, which shows that while waste collection and public participation are important, they cannot always be considered central to long-term sustainability planning.

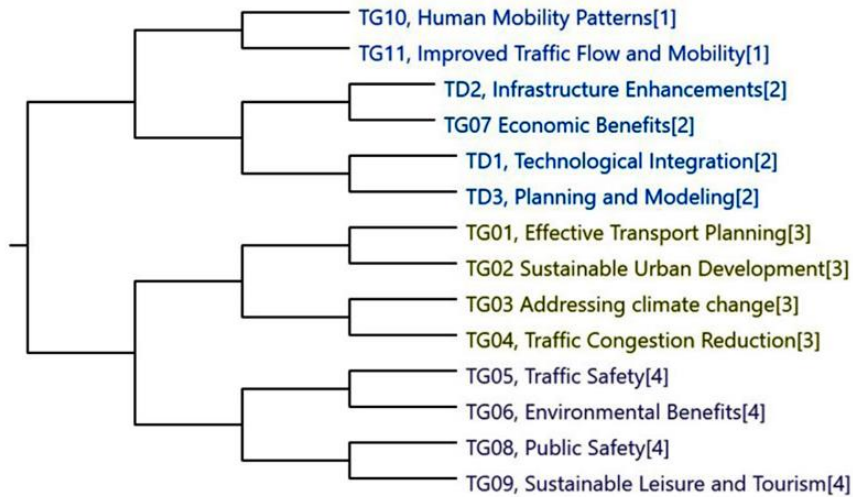
When the goals and applications (codes G and D) in the energy sector were collated and a cluster analysis undertaken, the generated dendrogram revealed four classifications (color coded and numbered) based on closeness according to Pearson's correlation coefficient within NVivo. Figure 6 reveals that ED5, ED6, EG01, and EG02 form a cluster (1) of close goals and applications and are closer to cluster (2) containing EG03, 04, 05, and 06. Thus, clusters 1 and 2 are closer together while further apart from clusters 3 and 4, which are closer together than clusters 1 and 2. This revelation confirms that certain goals and applications tend to go together more than others, identifying areas of commonality in the goals and applications of smart. This reveals areas where urban planners and policymakers can prioritize their focus for enhanced strategic and operational synergies within smart planning. Areas of strong clustering can be prioritized for optimization, while areas of low clustering can be investigated, and efforts made to recruit them as leverage.



**Figure 6.** Smart energy goals and applications distributed by code similarity into 4 clusters of close correlation

Items closer together on the horizontal axis share more common themes or keywords, revealing the level of convergence. The number of clusters was set by the researchers.

Furthermore, Figure 6 reveals that the operations (cluster 1) are relatively less closely linked to the goal ‘clusters’ of environmental protection and sustainability (cluster 3), implying the need to consider how to better integrate or align them. This can then better support the literature claiming that the term ‘smart’ can be transformative (Masucci *et al.*, 2020; Zawieska & Pieriegud, 2018) at least in environmental and sustainability outcomes. The clustering of various goals and applications were also observed within smart transport (Figure 7) and smart waste management (Figure 8).



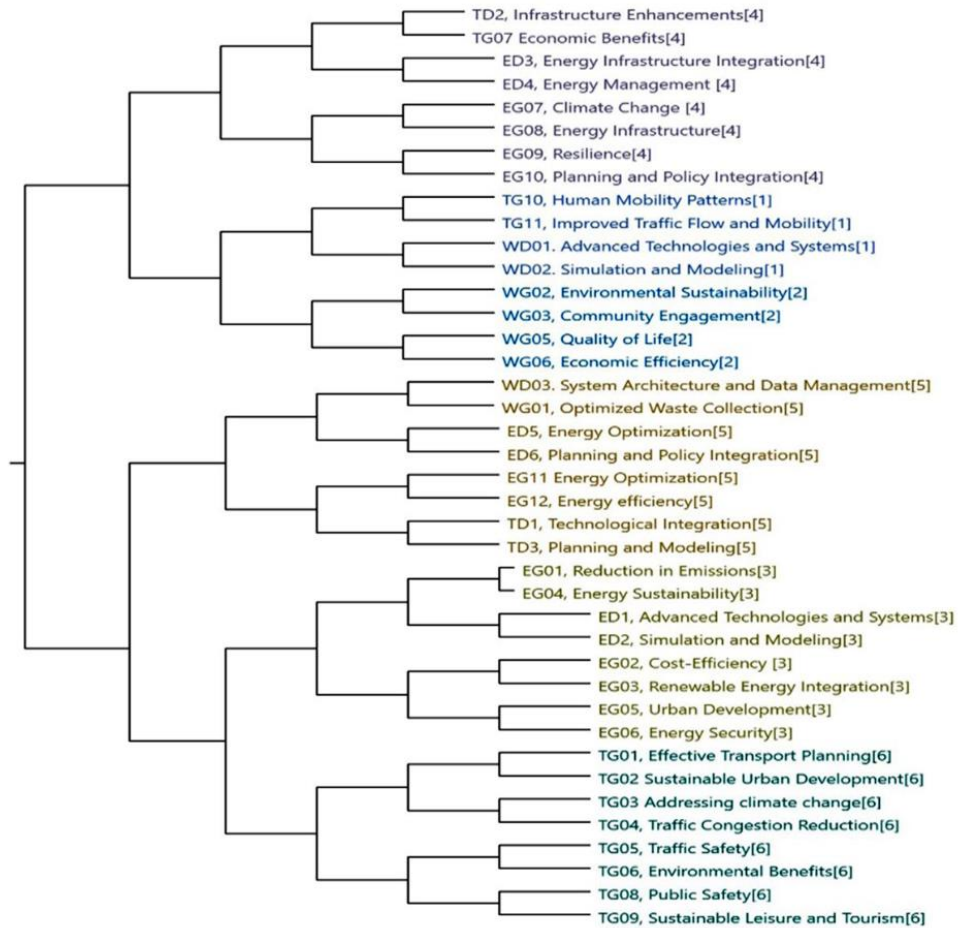
**Figure 7.** Smart transport goals and applications distributed by code similarity into 4 clusters of close correlation

In Figure 7, the cluster focusing on human mobility patterns and improved traffic flow appears furthest from those of public safety and sustainable leisure, implying that perhaps these could be more closely considered by planners and decision-makers as closer opportunities for synergies.



**Figure 8.** Smart transport goals and applications distributed by code similarity into 4 clusters of close correlation

Figure 8 reveals 2 main clusters – one of technologies and their network (clusters 1 and 2), and another of key outcomes to be achieved (clusters 3 and 4).



**Figure 9.** Dendrogram for all sectors' goals and applications, split into 6 clusters

A dendrogram from the collated goals and applications of the 3 sectors generated two main branches – one of 16 items, with transport contributing 4, energy 6, and waste 6; and the other of 24 items, with transport contributing 10, energy 12, and waste only 2. This confirms that sectors have bespoke areas of focus with specific goals and applications that tend to cluster together, which can be useful targets for policymakers (Figure 9).

### Summary and Discussion

From the 42 definitions (M codes) of ‘smart’ in urban planning collated in our study, the words in them reflect the prevailing literature: essentially about linking the use of technologies to several goals like sustainability, resilience, resource management, environmental protection, and citizens' quality of life. Analysis of the application of ‘smart’ (D codes) revealed that transformative agenda were not prominent: a gap that would require

policymakers to further explore how to effectively leverage the term ‘smart’ to bigger outcomes.

A key message is that on the one hand, the current discourse of ‘smart’ in urban planning, frequently uses words like ‘sustainability’ and the ‘environment’ in their definitions and understandings. However, on the other hand, the texts used in the goals and applications of ‘smart’ do not evidence a sense of a common usage of these texts. Instead, what is dominant is a motif of consumerism evidenced in words like ‘data’, ‘efficiency’, and ‘optimization’ – which are more about ease of access to places, goods, and services – perhaps assuming that these will necessarily correlate to environmental protection or sustainability.

‘Smart’, within urban planning, is defined by a discourse largely of deployment of technologies as recognized by others (Cai *et al.*, 2023). However, texts denoting outcomes, e.g., resilience and sustainability, were more visible in the energy sector and not in the transport and waste sectors. Notably, the word ‘clusters’ frequently contained texts describing ‘operations and mechanisms’, e.g., efficiency and optimization. This echoes scholars who define ‘smart’ in urban planning (Allam & Dhunny, 2019; Cui *et al.*, 2023; Soyata *et al.*, 2019) as essentially the integration of advanced technologies and digital innovations into the urban planning process to improve the efficiency, optimization, productivity, and effectiveness of planning activities.

The findings in this paper strongly confirm the Cyber-Physical Systems (CPS) Theory approach, emphasising the seamless integration of physical infrastructure with digital technologies (Andronie *et al.*, 2021; Pacheco & Hariri, 2016). Notably, missing in our word ‘clusters’ were other salient terms in urban planning, such as ‘spatial justice’ (Masucci *et al.*, 2020), which address equity and inclusivity. Overall, a Sustainable Smart Planning Theory approach, connecting the principles of sustainability with smart urban development, ensuring that technological advancements align with long-term environmental, social, and economic goals (Bruzzone *et al.*, 2021; Cai *et al.*, 2023; De Jong *et al.*, 2015) was not strongly evidenced by the clustering or convergence of words in our documents. A similar gap in meaning is raised in Gazzola *et al.* (2019), highlighting the incongruence associated with the terms “going green” and “going smart.” They found that “smart” approaches narrowed their focus on technology, potentially overlooking broader environmental and sustainability objectives and risks.

It was also noticed that smart energy and transport documents exhibited a lower level of convergence of text (Figure 8, Appendix 3 and 4), reflecting the diverse landscape within which ‘smart’ can be applied in those domains (Mosannenzadeh *et al.*, 2017; Zhang *et al.*, 2020). A relatively higher level of textual similarity was registered in smart waste management documents (Figures 8, Appendix 7), reflecting a narrower scope for

application compared to the other two sectors. These levels of similarity can underpin the development of a standardized framework to guide smart city initiatives in each sector. A common sectoral understanding can facilitate shared smart city principles for effective urban planning and development (Loshin, 2011; Söderström *et al.*, 2020).

While applying the framework for convergence in our study, it was noted that convergence can be viewed from two different dimensions. One is ‘*within application*’, where in one instance of use, the understanding, goal, and application all converge towards a common purpose or aim. Thus, the concept of smart is mainstreamed and streamlined from goal to application without let-up. Two is ‘*across applications*’, where the smart concept is mainstreamed and streamlined, vertically or horizontally, in several other instances of use, without let-up. This would ensure a common goal of smartness across various coordinated instances of use, e.g., various policies, programs, plans, and projects in energy, transport, and waste management sectors.

While the paper provides deep insights into how the term ‘smart’ is understood and applied across energy, transport, and waste management, there is an opportunity to broaden the sectoral scope by integrating additional sectors such as smart buildings, water management, and public health. Expanding these areas would provide a more comprehensive understanding of smart urban planning across multiple sectors. Additionally, this study is primarily based on a literature-driven approach, meaning that it does not incorporate practitioner viewpoints or expert insights from urban planning professionals. Since smart urban planning is shaped by both academic discourse and real-world policy implementation, future research should consider including interviews, case studies, or survey data from professionals actively engaged in smart city projects. This would offer a more nuanced, practical perspective on how ‘smart’ strategies are designed and implemented at different levels. Finally, while this study identifies patterns of convergence and divergence, it does not assess the long-term impact of smart urban planning strategies. Future research could build on this work by applying quantitative validation methods, conducting longitudinal studies, or integrating geospatial data analysis to measure how smart initiatives evolve over time and across regions.

On reflection, the remits of transport, energy, and waste sectors may have unsurprisingly led to more technical understandings being given to the word ‘smart’. Nevertheless, the paper shows that there remains a gap in connecting ‘smartness’ to other big picture ‘transformational’ goals and outcomes, e.g., sustainability, at least at the level of applications. So far, environmental and sustainability goals are assumed to follow automatically from being ‘smart’.

## Conclusion and Recommendations

In this paper, we noted that the term ‘smart’ has taken a visible and crucial policy and conceptual role in urban planning, governance, and decision-making, providing targets and forms for urban planning. Consequently, it is influencing how cities function and impact on their environmental friendliness or sustainability. We also noted that multiple interpretations of the term, within variable applications, risks misunderstandings, and misapplication can hinder smoother advancements in urban planning. Guided by semantic consistency theory and convergence theory, this study explored what the term ‘smart’ means between different areas of practice in urban planning, and within that, the extent to which the term is applied to achieve similar ends or outcomes. Subsequently, a systematic review of the literature facilitated by PRISMA was undertaken to identify documents to be analyzed. This was followed by similarity/convergence analysis based on NVivo’s cluster analysis and correlation analysis to ascertain levels of association of pertinent texts used in stating meaning and usage of the term. This was based on data drawn from 121 peer-reviewed international documents on energy, transport, and waste management sectors.

From our analysis, it is concluded that the term ‘smart’ is broadly understood as a means, i.e., a process by which technology and data is integrated into the urban planning processes (e.g., data collection and analytics) and outputs (e.g., digital maps and other representations, or enhanced traffic management or reduced greenhouse gas emissions). Sectors with more areas of application, such as energy, registered less convergence compared to sectors with narrower areas of application, such as waste management. Despite the plurality and intricate interplay of the idea of ‘smart’ in the three sectors, it is essentially about mechanical ‘deployment solutions’, pursuing efficiencies and optimizations, rather than ‘transformational outcomes’. Unless we assume that significant efficiencies and optimization can deliver transformational change.

While several articles have highlighted how smart urban planning is ostensibly contributing to a paradigm shift, our analysis has not uncovered convincing evidence for this. Instead, an eco-modernism steeped in a promising language of technology-based paradigm but hollow in meeting the key challenges, or even fundamentally transforming the status quo, is emerging.

For a multi- and inter-thematic area of application like urban planning, the future dynamic use of the term ‘smart’ calls for research addressing how the term’s understanding and application can underpin more transformational outcomes. This echoes Cavada *et al.* (2016) asking for a theory to underpin the systems to be connected to deliver such a transformation. This can pursue:

1) scale approaches, e.g., whole sector or city level application, 2) deeper integration, e.g., holistically linking several sectors as an organic whole, to 3) radically altering the configurations at qualitative and quantitative levels of 'smart' performance. These pursuits will require establishing relevant threshold metrics for classification as 'smart'. For example: Is an urban system with 10x technology smarter than one with 5x technologies? What if the one with 5x technologies delivers more carbon reductions than the one with 10x? Thus, what framework can help distinguish the various typologies and levels of 'smartness'?

The concept of convergence in this paper has served to highlight the challenges associated with the terminology 'smart', exposing the complexities and ambiguities that arise in its implementation. This matters in a multidisciplinary and interdisciplinary field like urban planning where various stakeholders and differing areas of application are involved, offering several instances for variously interpreting the meaning and use of the term. However, this can be guarded against by facilitating a standardized set of common understandings, goals, and applications to support a shared vocabulary for communication. This can provide policymakers with common terms of reference to inform the formulation of appropriate policy and practice.

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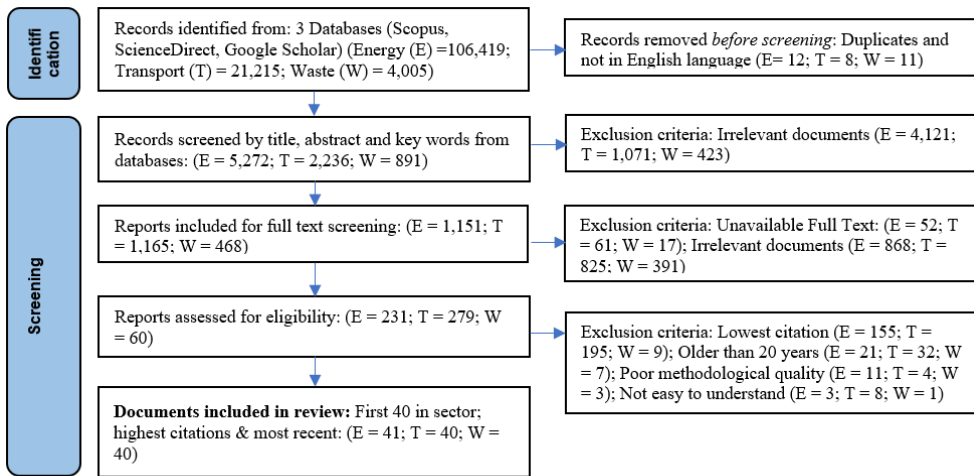
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**Appendix 1:** The PRISMA approach ensures that the search for relevant literature to analyze is systematic and transparent (adapted from: Page *et al.*, 2020).



**Appendix 2.** Codes for the 29 main goals in the three sectors. Sub-goals are excluded.

Sector	Code	Goal
Energy	EG01	Reduction in emissions
	EG02	Cost-efficiency
	EG03	Renewable energy integration
	EG04	Energy sustainability
	EG05	Urban development
	EG06	Energy security
	EG07	Climate change
	EG08	Energy infrastructure
	EG09	Resilience
	EG10	Planning and policy integration
	EG11	Energy optimization
	EG12	Energy efficiency
Transport	TG01	Effective transport planning
	TG02	Traffic congestion reduction
	TG03	Traffic safety
	TG04	Environmental benefits
	TG05	Public safety
	TG06	Sustainable leisure and tourism
	TG07	Human mobility patterns
	TG08	Improved traffic flow and mobility
	TG09	Economic benefits
	TG10	Addressing climate change
	TG11	Sustainable urban development
Waste	WG01	Optimized waste collection
	WG02	Environmental sustainability
	WG03	Community engagement
	WG05	Quality of life
	WG06	Economic efficiency

**Appendix 3:** Correlation between Smart Energy goals (\*\*Correlation is significant at 0.01 level; \*Correlation is significant at 0.05 level; n=41).

		EG01	EG02	EG03	EG04	EG05	EG06	EG07	EG08	EG09	EG10	EG11	EG12
EG01	Cor	1.000	.234	.391**	.309*	.517**	.363**	.226	.246*	.195	.447**	.169	.485**
	Sig.	.	.065	<.001	.011	<.001	.003	.057	.045	.109	<.001	.183	<.001
EG02	Cor	.234	1.000	.100	.169	.346**	-.022	.155	.231	.219	.409**	.325*	.162
	Sig.	.065	.	.430	.194	.006	.869	.224	.080	.096	.002	.018	.197
EG03	Cor	.391**	.100	1.000	.195	.227	.561**	.278*	.355**	.205	.268*	.112	.378**
	Sig.	<.001	.430	.	.107	.055	<.001	.020	.004	.094	.032	.378	.001
EG04	Cor	.309*	.169	.195	1.000	.411**	.205	.036	.213	.179	.267*	.366**	.238*
	Sig.	.011	.194	.107	.	<.001	.105	.771	.091	.155	.038	.005	.047
EG05	Cor	.517**	.346**	.227	.411**	1.000	.207	.187	.304*	.221	.431**	.217	.503**
	Sig.	<.001	.006	.055	<.001	.	.092	.115	.013	.071	<.001	.089	<.001
EG06	Cor	.363**	-.022	.561**	.205	.207	1.000	.313*	.304*	.228	.220	.142	.364**
	Sig.	.003	.869	<.001	.105	.092	.	.012	.017	.075	.091	.285	.003
EG07	Cor	.226	.155	.278*	.036	.187	.313*	1.000	.170	.459**	.267*	.000	.302*
	Sig.	.057	.224	.020	.771	.115	.012	.	.169	<.001	.034	1.000	.010
EG08	Cor	.246*	.231	.355**	.213	.304*	.304*	.170	1.000	.144	.392**	.450**	.278*
	Sig.	.045	.080	.004	.091	.013	.017	.169	.	.258	.003	<.001	.022
EG09	Cor	.195	.219	.205	.179	.221	.228	.459**	.144	1.000	.200	.258	.232
	Sig.	.109	.096	.094	.155	.071	.075	<.001	.258	.	.123	.051	.055
EG10	Cor	.447**	.409**	.268*	.267*	.431**	.220	.267*	.392**	.200	1.000	.324*	.406**
	Sig.	<.001	.002	.032	.038	<.001	.091	.034	.003	.123	.	.016	.001
EG11	Cor	.169	.325*	.112	.366**	.217	.142	.000	.450**	.258	.324*	1.000	.181
	Sig.	.183	.018	.378	.005	.089	.285	1.000	<.001	.051	.016	.	.150
EG12	Cor	.485**	.162	.378**	.238*	.503**	.364**	.302*	.278*	.232	.406**	.181	1.000
	Sig.	<.001	.197	.001	.047	<.001	.003	.010	.022	.055	.001	.150	.

**Appendix 4:** Correlations for applications in smart energy application

		ED01	ED02	ED03	ED04	ED05	ED06
ED 01	Cor	1.000	.167	.500**	.447**	.388**	.542**
	Sig.	.	.158	<.001	<.001	.001	<.001
ED 02	Cor	.167	1.000	.227	.187	.416**	.054
	Sig.	.158	.	.055	.112	<.001	.646
ED 03	Cor	.500**	.227	1.000	.376**	.384**	.422**
	Sig.	<.001	.055	.	.001	.001	<.001
ED 04	Cor	.447**	.187	.376**	1.000	.291*	.357**
	Sig.	<.001	.112	.001	.	.013	.002
ED 05	Cor	.388**	.416**	.384**	.291*	1.000	.133
	Sig.	.001	<.001	.001	.013	.	.261
ED 06	Cor	.542**	.054	.422**	.357**	.133	1.000
	Sig.	<.001	.646	<.001	.002	.261	.

**Appendix 5:** Correlation between smart transportation goals. (\*\*Correlation is significant at 0.01 level; \*Correlation is significant at 0.05 level; n=40).

		TG01	TG02	TG03	TG04	TG05	TG06	TG07	TG08	TG09	TG10	TG11
TG01	Cor	1.000	.359**	.426**	.391**	.444**	.280*	.290*	.470**	.595**	.316*	.530**
	Sig.	.	.003	<.001	.002	<.001	.045	.022	<.001	<.001	.015	<.001
TG02	Cor	.359**	1.000	.266*	.228	.269*	.042	-.059	.489**	.251*	.127	.509**
	Sig.	.003	.	.029	.065	.033	.761	.637	<.001	.041	.322	<.001
TG03	Cor	.426**	.266*	1.000	.200	.602**	.083	.228	.642**	.343**	.249	.405**
	Sig.	<.001	.029	.	.111	<.001	.552	.071	<.001	.006	.055	.001
TG04	Cor	.391**	.228	.200	1.000	.327*	.370**	.101	.362**	.495**	.601**	.419**
	Sig.	.002	.065	.111	.	.012	.009	.430	.004	<.001	<.001	<.001
TG05	Cor	.444**	.269*	.602**	.327*	1.000	.187	.188	.423**	.352**	.297*	.426**
	Sig.	<.001	.033	<.001	.012	.	.194	.150	<.001	.006	.027	.001
TG06	Cor	.280*	.042	.083	.370**	.187	1.000	.210	.189	.398**	.518**	.358*
	Sig.	.045	.761	.552	.009	.194	.	.140	.170	.005	<.001	.011
TG07	Cor	.290*	-.059	.228	.101	.188	.210	1.000	.234	.311*	.234	.202
	Sig.	.022	.637	.071	.430	.150	.140	.	.060	.015	.078	.114
TG08	Cor	.470**	.489**	.642**	.362**	.423**	.189	.234	1.000	.368**	.426**	.567**
	Sig.	<.001	<.001	<.001	.004	<.001	.170	.060	.	.003	<.001	<.001
TG09	Cor	.595**	.251*	.343**	.495**	.352**	.398**	.311*	.368**	1.000	.479**	.633**
	Sig.	<.001	.041	.006	<.001	.006	.005	.015	.003	.	<.001	<.001
TG10	Cor	.316*	.127	.249	.601**	.297*	.518**	.234	.426**	.479**	1.000	.407**
	Sig.	.015	.322	.055	<.001	.027	<.001	.078	<.001	<.001	.	.002
TG11	Cor	.530**	.509**	.405**	.419**	.426**	.358*	.202	.567**	.633**	.407**	1.000
	Sig.	<.001	<.001	.001	<.001	.001	.011	.114	<.001	<.001	.002	.

**Appendix 6.** Correlations for applications within Smart transportation

		TD01	TD02	TD03	TD04
TD01	Cor	1.000	.650**	.318**	.150
	Sig.	.	<.001	.007	.212
TD02	Cor	.650**	1.000	.287*	.182
	Sig.	<.001	.	.020	.146
TD03	Cor	.318**	.287*	1.000	.168
	Sig.	.007	.020	.	.161
TD04	Cor	.150	.182	.168	1.000
	Sig.	.212	.146	.161	.

**Appendix 7.** Correlations for goals in smart waste management. (\*\*Correlation is significant at 0.01 level; \*Correlation is significant at 0.05 level; n=40)

		WG01	WG02	WG03	WG04	WG05
WG01	Cor	1.000	.227	.003	.090	.590**
	Sig.	.	.065	.981	.477	<.001
WG02	Cor	.227	1.000	.253	.301*	.408**
	Sig.	.065	.	.051	.022	.001
WG03	Cor	.003	.253	1.000	.421**	.174
	Sig.	.981	.051	.	.002	.175
WG04	Cor	.090	.301*	.421**	1.000	.204
	Sig.	.477	.022	.002	.	.117
WG05	Cor	.590**	.408**	.174	.204	1.000
	Sig.	<.001	.001	.175	.117	.

## **Liens ethniques transfrontaliers et activités illicites : une étude de leur interrelation aux frontières Nord et Sud Cameroun**

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### **Resume**

Véritables espaces d'interactions et de transactions protéiformes, les frontières Nord et Sud Cameroun sont caractérisées par une forte mobilité de personnes et de biens. Ils sont à cet effet, le carrefour d'activités licites et illicites. La présente réflexion examine les activités illicites qui y prévalent à l'épreuve des continuités ethniques transfrontalières qui les structurent. Elle repose sur la conjecture principale que, ces liens ethniques transfrontaliers jouent un rôle significatif dans la fluidification d'activités illicites qui s'y opèrent. A partir d'un dispositif théorico-méthodologique articulé autour du transnationalisme comme grille théorique, des entretiens et observations ont également été menés au sein de certaines localités frontalières des régions Nord et Sud du Cameroun. De celles-ci, il en ressort que, la configuration socio ethnique qui caractérise ces espaces respectifs gouverne la diversité d'activités qui y prennent corps. En effet, la triple territorialité des peuples *Eakang* dans le Sud (Cameroun-Gabon-Guinée Equatoriale) et *Mboum* dans la région du Nord (Cameroun-Tchad-RCA) s'est révélée pertinente à propos. A la suite, il se dégage que, les activités illicites protéiformes qui y prennent corps reposent sur des acteurs aux procédés variés. Bien qu'il soit difficile de tenir ces populations frontalières pleinement responsables des activités illégales qui se déroulent dans ces zones, car celles-ci impliquent de nombreux acteurs diversifiés, leur rôle reste significatif. Par conséquent, un dispositif sécuritaire hybride basé sur une coopération transnationale franche entre les

Etats impliqués et les autorités traditionnelles frontalières contribuerait à atténuer ce phénomène aux marges des frontières Nord et Sud du Cameroun.

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**Mots clés :** Frontières transfrontalières -liens ethniques- activités illicites – Cameroun- intégration régionale

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## **Liens ethniques transfrontaliers et activités illicites : une étude de leur interrelation aux frontières Nord et Sud Cameroun**

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### **Abstract**

True spaces of protean interactions and transactions, the North and South Cameroon borders are characterized by high mobility of people and goods. To this end, they are at the crossroads of licit and illicit activities. This reflection examines the illicit activities that prevail there in light of the cross-border ethnic continuities that structure them. It is based on the main conjecture that these cross-border ethnic ties play a significant role in the fluidification of illicit activities that take place there. Based on a theoretical-methodological device articulated around transnationalism as a theoretical framework, interviews and observations were also conducted in certain border localities of the North and South regions of Cameroon. From these, it emerges that the socio-ethnic configuration that characterizes these respective spaces governs the diversity of activities that take shape there. Indeed, the triple territoriality of the Ekang peoples in the South (Cameroon-Gabon-Equatorial Guinea) and Mboum in the North region (Cameroon-Chad-CAR) proved to be relevant. Subsequently, it emerges that the protean illicit activities that take shape there are based on actors with various processes. Although it is difficult to hold these border populations fully accountable for the illegal activities taking place in these areas, as these involve many diverse actors, their role remains significant. Consequently, a hybrid security arrangement based on frank transnational cooperation between the States involved and the traditional border authorities would help mitigate this phenomenon on the margins of Cameroon's northern and southern borders.

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**Keywords:** Cross-border borders - ethnic ties - illicit activities - Cameroon - regional integration

## Introduction

Dans un monde de plus en plus globalisé, les frontières nationales ne constituent plus des barrières infranchissables pour les échanges économiques, culturels et sociaux (Foucher (M). 2017). Les avancées technologiques, la libéralisation des échanges commerciaux et la mobilité accrue des personnes ont créé de nouvelles opportunités pour les échanges transfrontaliers (Sassen (S). (2006). Toutefois, il convient de noter que cette ouverture a également créée des opportunités pour des activités non seulement licites mais également illicites. De ce fait, la création des marchés frontaliers participe non seulement à l'étoilement des frontières étatiques mais également, elle institue et instaure des zones d'interfaces économiques. De ces espaces naissent donc une pléthore d'activités protéiformes.

Dans ce sillage, la densité des échanges qui s'opèrent généralement au sein de ces espaces sont d'autres multiformes. En ce qui concerne particulièrement les activités illicites prégnantes au sein de ces espaces, il s'agit notamment de la contrebande, la traite des êtres humains, le terrorisme et la criminalité. Aussi, dans la kyrielle des facteurs possiblisant ce phénomène figurent entre autres le faible maillage territorial (Ndong beka II (P). (2018)., la perméabilité des frontières (Lefebvre (C). (2015), ainsi que la précarité humaine. Toutefois, En Afrique centrale en général, à partir des régions Nord et Sud au Cameroun en particulier, les frontières héritées de la colonisation constituent entre autres l'un des facteurs sur lesquels repose la fluidité du phénomène. En effet, cela est d'autant plus perceptible en ce sens que, les dites frontières lors de leur tracé n'ont pas été calquées sur les composantes sociologiques et anthropologiques qui composaient les territoires au moment-là (Ouattr (K). (2014). La conséquence logique étant que, ces frontières territoriales aient séparé des familles. Qui, de manière légale et officielle, appartiennent désormais à différents Etats bien que conservant la même identité culturelle et se référant pour certains aux mêmes groupements ethniques (Essomba (J-M), Oum (O), (2011). Ainsi, la continuité ethnique transfrontalière qui caractérise les espaces Nord et Sud Cameroun contribue ainsi à alimenter le commerce qui y prend corps, mettant en interaction les populations frontières camerounaises avec celles du Tchad et de la RCA à partir du Nord, ainsi que celles du Gabon et de la Guinée Equatoriale à partir de la région du Sud.

Rappelons que les débats gravitant autour de la clarification du concept de frontière se structurent globalement en deux principales tendances (Foucher (M)., (2020) se fondant sur deux grilles théoriques en relations internationales (Battistella (D)., (2006). La première postule, conçoit et appréhende la frontière comme un lieu de rupture. Cela ressort des premières tentatives de clarification de ce concept qui considéraient celle-ci comme un lieu de conflictualité (Battistella (D). (2006). Cette approche considère ainsi les

espaces frontaliers comme des lieux de forte insécurité nécessitant une meilleure gestion. Dans ce sillage, figurent entre autres des travaux tels que ceux de Claude Abe (2003), Issa Saibou (2006), Ntuda Ebode (2010), Ndong Beka II Poliny (2020), Ebogo Franck (2020) et Alim Bakari Yaya & Benoho Baboule (2023). La seconde tendance quant à elle met en évidence l'idée que, les espaces frontaliers sont des lieux de fortes densités commerciales. La particularité de celle-ci étant qu'elle appréhende la frontière dès lors non plus comme un espace de rupture mais de continuités. Sous ce prisme, les frontières s'établissent comme des points d'interconnexion avec d'autres espaces par le truchement des marchés qui les travaillent. C'est ce qui ressort en substance des travaux des auteurs tels que Karine Bennafla (2002), Jonny Egg & Javier Herrera (1998), Ogunsula Igue (2006) et (Tchekote, et al. (2020).

Cependant, cette dichotomie entre frontières barrières et frontières trait d'union se révèle limitée parce que simpliste pour rendre compte de la complexité des réalités transfrontalières. En effet, les frontières peuvent revêtir de manière simultanée la facette barrière et espace de fluidité, selon les contextes et les acteurs impliqués (Bangoura (D). (2001). C'est la raison pour laquelle nous nous proposons d'examiner les interrelations entre liens ethniques transfrontaliers et les activités illicites qui s'opèrent au sein des régions Nord et Sud Cameroun, en vue de mieux saisir les mécanismes qui régissent ces phénomènes. La réflexion s'articule autour du questionnement selon lequel : comment les liens ethniques transfrontaliers contribuent aux activités illicites qui s'opèrent au sein des régions Nord et Sud Cameroun ?

L'étude se fonde sur la conjecture principale selon laquelle les liens ethniques transfrontaliers jouent un rôle significatif dans la fluidification des trafics illicites qui s'opèrent au sein des régions frontalières Nord et Sud du Cameroun. Cette recherche se vise pour objectifs d'examiner les liens ethniques transfrontaliers entre les communautés vivant aux frontières Nord et Sud du Cameroun ; analyser le rôle que ces liens ethniques transfrontaliers jouent dans la facilitation des activités illicites au sein de ses régions frontalières.

## **Outils et Methodes**

### **Présentation de la zone d'étude**

La présente étude prend corps au sein de deux espaces que sont le Nord et le Sud Cameroun. Toutefois, il convient de préciser les espaces spécifiques au sein desquels les données ont été collectées. Le choix s'est fondé entre autres sur la proximité géographique avec les pays voisins, de la densité des échanges commerciaux y prévalant et de la composition socio ethnique qui travaille ces espaces.

Dans la région du Nord, les données ont globalement été collectées au sein du département du Mayo-Rey, spécifiquement dans l'arrondissement de



**Image 2 : Cartographie de l'aire géographique Ekang en Afrique centrale**



Source : Ndong Beka (P), « les pratiques marchandes dans la région frontalière Gabon-Cameroun ». In revue histoire et analyse des relations internationales et stratégiques, 2022, 006

## **Méthodes de collecte de données**

Pour mener cette étude, nous avons effectué des descentes sur le terrain dans les deux régions concernées, pendant un total de 60 jours. Cette période s'est déroulée en deux temps : 30 jours dans la région Nord et 30 jours dans la région du Sud. Au cours de ces séjours, nous avons mené 57 entretiens approfondis, répartis entre la région Nord (25 entretiens) et la région du Sud (32 entretiens). Notre enquête de terrain a débuté en mai 2022, dans le département du Mayo-Rey, situé dans la région du Nord du Cameroun. Nous avons ensuite poursuivi notre investigation en novembre 2022, dans le département de la vallée du Ntem, situé dans la région du Sud. Pour collecter des données de qualité, nous avons combiné des observations directes et des entretiens semi-directifs, axés sur des thématiques précises. Nos entretiens ont été menés auprès d'une diversité d'acteurs, notamment des commerçants, des clients (locaux et étrangers), des autorités locales (administratives et traditionnelles), des populations locales, des agents de douane et des forces de maintien de l'ordre. Cependant, nous avons rencontré certaines difficultés dans le département du Mayo-Rey, où certaines populations ont fait preuve de réticence pour peur de représailles. Pour surmonter cet obstacle, nous avons

présenté l'autorisation de recherche délivrée par l'autorité locale compétente et nous avons garanti par écrit le caractère académique de l'étude. Compte tenu de la prépondérance de la langue locale, nous avons travaillé avec un interprète local pour fluidifier nos entretiens. Cette démarche a été suivie également lors de la collecte d'informations dans le département de la vallée du Ntem. En complément, nous avons mobilisé des données secondaires issues de travaux scientifiques (articles, mémoires, ouvrages, etc.). L'analyse des données s'est appuyée sur un dispositif théorique centré sur le transnationalisme.

## **Resultats**

Les résultats de la recherche portent sur la configuration socio ethnique des espaces comme fondement de la fluidification des activités illicites ; des activités illicites protéiformes ; des acteurs identiques aux procédés variés.

### **Configuration socio ethnique des espaces comme essence de la fluidification des activités**

Le département de la vallée du ntem dans la région du Sud Cameroun ainsi que celui du Mayo-Rey dans la région du Nord ont la particularité d'être tous deux travaillés par des peuples frontaliers ayant la singularité d'être présents de part et d'autre des frontières. La triple territorialité de ces peuples constitue un élément central dans la fluidification de la variété d'activités ayant lieu au sein de ces espaces frontaliers. Ces peuples se positionnent ainsi comme acteurs centraux parce que transnationaux, dans la fluidification des activités illicites qui s'opèrent aux marges du territoire. Il s'agit des « mboum » dans le département du Mayo-Rey et du peuple Ekang (fang-ntoumou) dans la vallée du ntem.

### ***La transnationalité du peuple Ekang***

Lorsqu'on parle du peuple Ekang, on fait référence aux peuples fang, Bulu et beti et leurs sous-ensembles respectifs (Ndougsa (V). (2018). Les territoires gabonais, Equato-guinéen, Camerounais et congolais sont tous travaillés par ce grand groupe ethnique qui se compose majoritairement d'autres sous-groupes, notamment les Mvaé, les Ntumu et les bulu. Les origines communes de ces différents sous-groupes contribuent à l'émergence de logiques fondamentalement communautaires, ceci à travers la célébration du sentiment d'appartenance au même groupe ethnique. Ce dénominateur commun qu'est l'appartenance à un socle ou une même souche culturelle participent à certains égards à l'émergence d'un imaginaire communautaire. Cela puise ses origines sur le postulat selon lequel tous auraient un ancêtre commun. En effet, tous les Ekang se réfèrent à un ancêtre appelé « *Afri Kara* », qui représente en soi, et ceci sur le plan de l'arbre généalogique, la racine de tous les Ekang. Les travaux d'Angèle Christine Ondo sur le mvét Ekang

montrent et démontrent que, malgré la pléthore de sous-ensembles ou sous-groupes que connaissent le peuple Ekang, tous savent qu'ils appartiennent et forment une même famille (Ondo (C). (2014). Cette assertion vient quelque peu fédérer le débat qui porte sur l'origine du peuple Ekang. En effet, une tendance portée par des auteurs tels que Engelbert Mveng, Théophile Obenga-Laburthe Tolra ou Mviena situe l'origine du peuple Ekang dans le Nord de l'Afrique, notamment l'Égypte (Obenga (T). (1989). Ce postulat s'est appuyé sur différents faits notamment les dessins du Mvet retrouvés dans les pyramides datant de 2600 avant Jésus-Christ et les similitudes troublantes entre le « kémite » langue des premiers égyptiens et l'ATI langue mère des langues Ekang modernes. Ces traces situent leur origine dans l'Égypte pharaonique notamment dans la vallée du Nil et précisément aux frontières de l'Éthiopie. Ce postulat est remis en question par d'autres auteurs tels que Abomo Maurin Marie-rose qui postule que le peuple Ekang serait originaire d'Asie. Pour cette dernière les Ekang auraient traversé la mer rouge au moment où le continent asiatique et l'Afrique formaient un bloc, plus précisément avant la construction du canal de Suez (Abomo-Maurin (M), (2012). Tout compte fait, il en ressort que ceux-ci appartiennent aux mêmes souches. La transnationalité du peuple Ekang constitue de par les opportunités qu'elle offre aux populations à fluidifier les activités commerciales diverses ayant lieu à partir de cet espace.

### ***La triple territorialité du peuple « Mboum »***

Bien que surclassé et dominé par les peuls, le peuple mboum reste et demeure autochtone au sein de cet espace. L'ethnonyme Mboum aurait des origines variées. En effet, plusieurs thèses s'opposent sur cette question (Boumane(O). (2022). On en comptabilise trois principalement. La première postule que l'ethnonyme mbum serait une corruption du mot « mbom », un condiment aromatisant adoubé par les ancêtres de ce peuple. La seconde thèse portée par Mohammadou Eldridge quant à elle postule que « mbum » tirerait son origine de « mbumga ». La dernière thèse qui s'appuie sur la littérature orale léguée par les ancêtres quant à elle postule que cet ethnonyme viendrait du cadet des princes mbum pendant la migration sur le plateau central camerounien à savoir le Sarà à mbum. Qu'importe la thèse qui semblerait la plus pertinente, il n'en demeure pas moins que ceux-ci de par leur continuité ethnique à travers les frontières constituent des acteurs importants dans la dynamique d'intégration régionale. En effet, bien que la question de leur origine fasse débat, le peuple mboum de par sa structuration et sa configuration dont la présence est remarquée de part et d'autre des territoires Camerounais, Tchadiens et centrafricains, s'établi comme un peuple transnational, ils sont taxés de peuple qui habite *un pays frontière* (Ladogana (T). (2010.). Comme toutes les ethnies, précisons que les mboum sont structurés en clans. Nos

enquêtes de terrains nous ont révélé trois grands clans notamment « mang Mboum », « mang mbéré » et les « mang ndéré ». Néanmoins, les travaux de Froelich (1959) nous en révèlent plutôt sept lignages, à savoir les Ngaou-Ha parfois on écrit Ngan-Ha, les Mbam, les Ouari, les Digou, les Boussa, les M'béré (de l'Est et du sud-Est), les Mana (au Nord de tignère et dans la subdivision de poli). Cependant les récents travaux d'olivier Boumane nous en ont révélé d'autres sous clans entre autres les Gongué, les karang, les Kuoh, les Mane, les Mbùsa, les Nzàkà Mbày, les Pana, les sapu les Sara à mbum, les Taari/Taali, les Wi mbum. Toutefois, seul ceux oscillant entre les frontières Tchadiennes et centrafricaines se révèlent centraux dans la fluidité des activités illicites au sein de ce triangle.

### **Des activités illicites protéiformes**

Les activités illicites ayant lieu au sein de ces espaces révèlent une certaine diversité. En effet, il se révèle que ceux-ci se distinguent les uns des autres aussi bien sur la nature des produits que sur le profil des acteurs qu'ils impliquent. Bien que ces activités soient variées une emphase a été mise sur la contrebande transfrontalière de boissons alcoolisées et des produits congelés dans la région du Sud Cameroun (a) et du le trafic de céréales et du bétail dans la région du Nord (b).

### ***La contrebande de boissons alcoolisées et des produits congelés***

D'abord en ce qui concerne de trafic de boissons alcoolisées, l'on remarque que le Cameroun fait partir des pays les mieux classés sur l'échelle des pays consommateurs d'alcool en Afrique, derrière son voisin le Gabon selon le rapport 2019 de l'organisation mondiale de la santé. En effet, selon ce rapport, les camerounais accordent une place particulière à la consommation d'alcool. Mieux encore, la consommation d'alcool s'est établie en habitus dans leurs conduites quotidiennes (Bourdieu (P). (2015). Toutefois, bien que le pays soit producteur de boissons alcoolisées, les camerounais sont également portés vers des boissons alcoolisées importées. Il s'agit notamment de whiskys et des champagnes. Produits pas toujours très accessibles pour le citoyen moyen. Comme alternative en vue de répondre à la demande sans cesse croissance de la population, une activité illicite a vu le jour. En effet, le caractère onéreux de ces produits constitue entre autres l'une des raisons qui fait émerger le phénomène de contrebande de boissons alcoolisées.

Ce phénomène se décline sous plusieurs formes. Il s'agit entre autres de la fabrication de boissons frelatées ou encore de la contrefaçon, et de l'importation frauduleuse de boissons (Ndangwa (L)., &Talla Fotsing (L)., (2017). Pour ce qui est particulièrement de l'importation frauduleuse de ces produits, l'on observe que c'est un phénomène récurrent et permanent dans la région du Sud Cameroun en général, au sein du département de la vallée du

Ntem en particulier. Cela tient du fait qu'il soit considéré, de par sa proximité géographique avec la Guinée Equatoriale comme une porte d'entrée pour ces produits. Ce lieu s'est établi au fil des années comme le siège du trafic des boissons alcoolisées (Medjo Medjo (B). 2024) Importées de la Guinée Equatoriale dans la majorité des cas, ces boissons constituent l'une des attractions non seulement pour les populations locales, mais également pour des commerçants en provenance de grandes métropoles. Les réseaux qui opèrent dans ce secteur d'activité se servent des connexions nationales et étrangères. Ainsi, des commerçants de l'hinterland viennent s'en approvisionner à des prix généralement très abordables. Ces produits sont ainsi remplis dans les marchés du département de la vallée du Ntem. L'on peut observer des boutiques spécialisées dans leur commercialisation. Cependant le différentiel de prix au-delà des arguments très souvent évoqués qui justifient leur attractivité. Le tableau ci-dessous est assez illustratif :

**Tableau 1** : Différentiel de prix de certaines boissons alcoolisées provenant de la Guinée-Equatoriale et commercialisées à Kyé-Ossi

Marques de vins	Prix d'achat (unité) en Guinée-Equatoriale	Prix de vente (unité) au marché de kyé-Ossi
Martini	5000	7000
St James	6000	9000
Ponge	8000	10000
Label.5	5500	8000
W. S	1500	3000

Source : Auteur, sur la base des informations collectées auprès des commerçants du marché central de Kyé-Ossi

Par ailleurs, en-dehors du différentiel de prix s'ajoute la paupérisation de la population et la quête de ressources pécuniaires supplémentaires. Celle-ci joue un rôle stratégique dans la densité de cette activité. Comme principal lieu d'approvisionnement en la matière, des commerçants locaux (département de la vallée du Ntem), s'y rendent régulièrement. En effet, il est récurrent pour les populations de kyé-ossi d'aller s'approvisionner au sein des supermarchés d'Ebebiyin en territoire Equato-guinéen. Ces derniers livrent en retour aux commerçants étrangers (ceux l'hinterland). Grâce à des connexions locales et transnationales, cette activité constitue l'une des expressions perverses de la dynamique des échanges commerciaux qui s'opère à partir de cet espace. Ainsi, Bien que l'importation soit encadrée non seulement par la loi camerounaise mais également au sein de la CEMAC, cette activité se déroule en marge de celle-ci. Les trafiquants mobilisent plus d'un tour en vue de contourner les obstacles. Etant donné que la quantité devrait être limitée, ceux qui en achètent en grande quantité, au risque de payer des taxes élevées, mobilisent des stratégies de contournement. La porosité des frontières et la rationalité mouvante des agents frontaliers favorisant cela.

Ensuite, pour ce qui est du trafic de produits congelés, loin d'être une réalité nouvelle, la contrebande de produits congelés qui s'opère au sein du triangle Cameroun-Gabon-Guinée Equatoriale participe du caractère pervers des échanges commerciaux qui ont lieu au sein de cet espace. Elle s'établit comme l'une des activités illicites mettant en interaction les populations de ces trois espaces. En provenance pour la plupart du Gabon et dans une certaine mesure de la Guinée-Equatoriale, ces produits congelés constituent l'une des principales attractions des populations locales. Considérés plus abordables que ceux commercialisés localement, ils suscitent un intérêt singulier non seulement pour les populations locales, mais également pour les contrebandiers. Malgré les mesures prises par les autorités administratives et locales, dans l'optique de stopper ce phénomène, l'on observe que celui-ci s'accroît au quotidien. Ainsi, malgré les mesures prises par les agents du MINEPIA, l'on continue d'observer ces produits au sein des marchés qui travaillent les localités de la vallée du Ntem, et même au-delà. Les mesures du MINEPIA ont pour ambition d'encourager la consommation locale ou « *made in cameroon* ». Par ailleurs, la provenance de ces produits, leurs conditions de stockage ne sont pas toujours réglementaires.

Les trafiquants s'approvisionnent très souvent au Gabon en mobilisant leurs réseaux et surtout en rentabilisant leur maîtrise des circuits d'approvisionnement et d'écoulement. Ces produits empruntent plusieurs circuits. Le premier va de Bitam dans la région du Woleu ntem au Nord du Gabon jusqu'au marché d'Abang-Minko'o passant par le pont sur le mboro et le carrefour Akoulzock. Le second circuit va de Bitam jusqu'à kyé-Ossi passant Meyo-kyé pour être acheminé jusqu'à Ebolowa. En effet Ebolowa s'établit comme lieu d'écoulement par excellence pour ces trafiquants. En témoigne ces propos d'une trafiquante qui affirme que :

*« Je fais ce trafic depuis bientôt 5 ans. C'est vrai que ce je fais est risqué mais qui ne tente rien n'a rien ! je me lève à 5H avec ma marchandise pour aller l'écouler à Ebolowa. Très souvent je sors à cette heure car il n'y a pas trop de contrôles en route. Au plus tard à 7H et parfois 6h45 je suis à Ebolowa. J'ai déjà des clients sur place. Lorsque tout se passe bien je peux effectuer 3 voyages par semaine »*

(Entretien avec une trafiquante de congelés à KYé-OSSI le 5 décembre 2023, de 13H à 14H11).

Certains choisissent donc la capitale régionale du Sud comme principal point d'écoulement de ces produits. Toutefois, l'on observe que les plus rusés arrivent jusqu'à Yaoundé avec leurs produits. Le tableau ci-dessous est assez expressif du différentiel de prix entre les deux espaces.

**Tableau 2** : Illustratif du différentiel de prix des produits congelés provenant du Gabon et commercialisés à Kyé-Ossi

Nom de produits	Prix d'achat (carton) au Gabon	Prix de vente (carton) au Cameroun (Kyé-Ossi)
Côtelettes de porcs	14000	18500
Cuisses de poulets	11500	13500
Ailes de poulets	13000	15000
Pattes de poulets	10500	12500

**Source** : Auteur, sur la base des informations collectées auprès des commerçants du marché central de Kyé-Ossi

On observe en parcourant le tableau ci-dessus que le différentiel de prix entre le Gabon et la Guinée-Equatoriale permet aux commerçants trafiquants de véritablement trouver leurs comptes. En effet, pour ceux des trafiquants qui réussissent à acheminer leurs produits jusqu'à Ebolowa le prix des produits augmente. Le carton de côtelettes de porcs qui est vendu à kyé-ossi à 18500 francs CFA varie entre 22000 et 24000 francs CFA à Ebolowa. Toutefois l'on observe qu'à coté de ce trafic se déroule également le phénomène de contrebande de véhicules et des produits pétroliers.

### ***Le trafic de céréales et du bétail dans la région du Nord.***

L'élevage du bétail est une activité prisée dans trois régions du Cameroun notamment le Nord, l'Est et le Nord-ouest. À cet effet, le cheptel bovin camerounais est estimé entre 3 et 5,5 millions d'animaux. Les grandes métropoles que sont Douala et Yaoundé font office de point d'écoulement. Aussi, dans le commerce du bétail et de la viande, le Cameroun est assez singulier car il est à la fois exportateur de bétail (vers le Nigéria, le Gabon, la Guinée-Equatoriale) et importateur de bétail (Tchad, Centrafrique). Par ailleurs, l'élevage est perçu comme un facteur identitaire générateur d'emplois. En effet, sur le plan social elle contribue à nouer des relations entre peuls, Haoussa, Kanouri, Mboum et leurs semblables dans les grandes métropoles. Toutefois, dans la région du Nord Cameroun en général, aux marges des frontières que le Cameroun partage avec le Tchad et la RCA, cette activité est encline à l'illicite (Liba'a Natali (K), Dugué (P) & Torquebiau (E), (2011).

Compte tenu de la configuration de l'espace et du caractère lucratif de cette activité, le vol de bêtes constitue une activité illicite assez singulière. L'association des Mbororo (Mboscuda) affirme qu'au cours du premier semestre de 2020, les éleveurs ont été dépouillés d'environ 1060 têtes de bovins.

Plusieurs situations participent de la fluidité de ce trafic. Bien que sur le plan local des facteurs tels que la pression démographique, la raréfaction des ressources naturelles et les aléas pluviométriques expliquent cet état de

choses, d'autres paramètres sont également convoqués. D'abord la déterritorialisation de la menace, partant du fait que les voleurs de bêtes oscillent et peuvent se mouvoir à travers différents espaces territoriaux (Alim Bakari (Y). (2024). Pour le cas d'espèce, ils servent de leurs affinités ethniques en vue de se jouer des frontières dans le but de faire circuler les bêtes volées. Les trafiquants mobilisent des connections transnationales en vue de fluidifier la circulation des bêtes. Ainsi, Provenant pour la plupart du Tchad, les bêtes commercialisées au marché de bêtes (hebdomadaire-samedi) de Touboro dans le département du Mayo-Rey. Il arrive que certaines soient volées à des bergers du côté Tchad soient vendues côté Cameroun. À cela s'ajoute la transhumance transfrontalière du fait pour les bergers de se déplacer avec leurs brebis au-delà des frontières dans la quête de verts pâturages. Très souvent cela a lieu durant la période de sécheresse. Les bergers s'exposent durant cette période aux vols et dépouillements de leur troupeaux. A l'image des parcs nationaux de Gashaka Gumti et du Faro situé à cheval entre deux entités étatiques, dans le Mayo-Rey, la zone Touboro-Bogdibo- kutéré (village tchadien) passant par la forêt, ou encore Mbaimoun-Touboro s'établissent comme des sanctuaires du vol de bêtes.

La transnationalité des réseaux mise en relation dans le processus de circulation de ces bêtes participe à l'illicite. Les bêtes volées empruntent plusieurs circuits. Deux ont cependant retenu l'attention. Le premier va des marges frontalières tchadiennes pour le Nord du Cameroun à destination de l'hinterland (intérieur du pays). Les bêtes volées aux bergers du côté du Tchad sont vendues sur les marchés frontaliers camerounais et ceux-ci sont transportés vers les grandes métropoles que sont Douala et Yaoundé. La seconde destination qu'emprunte ces bêtes volées c'est le Nigéria. En effet, compte tenu du fait que la province du nord Cameroun soient située en zone soudano-sahélienne et à la croisée des marchés du Nigéria, les bêtes volées se retrouvent sur les espaces commerciaux nigériens. Les acteurs de ce trafic mobilisent donc plusieurs astuces en vue de faire circuler ces produits.

Les céréales, principales sources d'énergie alimentaire pour l'humanité regroupent un ensemble de plantes cultivées pour leurs graines comestibles, telles que le maïs, le sorgho, le mil, le riz et bien autres (Rapport du FAO, (2020). Dans le département du Mayo-Rey en général, et dans l'arrondissement de Touboro en particulier, la culture de ceux-ci est légion. Néanmoins l'on remarque la prépondérance des produits céréaliers tels que le mils et le sorgho se distinguent par leur dominance. Par ailleurs, Les populations de cet espace produisent des tonnes de céréales chaque année. Les marchés frontaliers qui travaillent cet espace sont à cet effet bondés de ces produits. Le tableau ci-dessous est assez illustratif à propos.

**Tableau 3 : Bilan céréalier du Nord du Cameroun en tonnes**

Régions	Population estimée 2010	Besoins estimés	Production disponible	Excédent (+)
<b>Adamaoua</b>	905 562	184 612,3	252 767,2	+ 68 154,9
<b>Extrême-Nord</b>	3 384 230	617 621	679 468,4	+ 61 847,4
<b>Nord</b>	1 895 576	380 536,8	465 720	+ 215 185,5
<b>Total</b>	6 185 368	1 182 770,1	1 397 955,6	+ 215 185,5

Source : Fofiri (E), Temple (L) & Ndamé (J), « échanges agricoles transfrontaliers illicites et sécurité alimentaire urbaine au Nord-Cameroun » in Simeu-Kamdem & Touna Mama, les politiques de la ville en question : à la recherche d'une meilleure gouvernance urbaine en Afrique subsaharienne, Paris, l'harmattan, 2018, P.98

Le tableau ci-dessus met en évidence le bilan céréalier de la zone septentrionale du Cameroun. L'on observe particulièrement que la région du Nord se distingue avec un excédent de 215 185,5 tonnes. Cela témoigne du caractère assez dense de la production de cet espace estimée 465,720 tonnes (Fofiri (E), Temple (L) & Ndamé (J). (2018). Toutefois, en marge de la réglementation en vigueur, ces produits sont également au cœur d'un trafic qui s'opère entre les frontières camerounaise (Nord), Tchadienne, centrafricaine et parfois nigériane.

Dans le Nord-Cameroun, et particulièrement le long de sa frontière soudano-sahélienne qui porte le lac Tchad, le flux régional des échanges agricoles qui s'y opèrent se heurte ces dernières années à des restrictions administratives, argumentées par la vulnérabilité alimentaire de cette partie du pays exposée à des changements globaux. Ainsi malgré l'interdiction de l'exportation du céréale locale (mil, sorgho, maïs) par les pouvoirs publics dans le but de préserver la sécurité alimentaire de la région, l'on assiste à la création des moyens de contournements. La configuration de l'espace et la rationalité des acteurs de ce trafic participent à sa fluidité. A cela s'ajoute la perméabilité des frontières terrestre ainsi que les migrations (Iyebi Mandjeck (O). (2013).

Ces facteurs conjugués participent à la dynamique des échanges informels en ce sens que le Nord-Cameroun est largement ouvert aux échanges avec le nord du Nigéria et le Sud du Tchad, compte tenu des liens culturels et historiques qui unissent ces trois régions. Ainsi, partant du constat que le commerce des céréales est structuré en réseaux fondés sur des appartenances familiales et culturelles (Fusillier (J) & Bom Konde (P). (1996), ceux-ci réussissent tant bien que mal à contourner les contrôles des agents de l'Etat. Les circuits sont protéiformes et multifformes toutefois l'on observe que le Nigéria voisin s'est établi comme une véritable base d'écoulement de ces produits céréaliers. La relative absence des infrastructures ainsi que le personnel au niveau des postes phytosanitaires localisées à la frontière avec le Nigéria rend

relativement floue la quantification du volume réel d'exportation de ces produits.

### **Des acteurs identiques aux procédés variés.**

Les activités opérantes au sein de ces régions font intervenir plusieurs types d'acteurs travaillant pour la plupart en synergie. Pour le cas, un accent particulier est mis sur la prééminence des acteurs locaux tels que sont les populations et les autorités locales.

### ***La mobilisation des liens familiaux et de la langue traditionnelle comme stratégie des populations locales dans la fluidification des activités illicites transfrontalières par le Sud***

Par population locale frontalière il faut comprendre les populations résidentes au sein des frontières Cameroun-Gabon-Guinée Equatoriale. Il s'agit de celles qui y sont natives, c'est-à-dire, les populations autochtones ainsi que celles qui y sont pour des raisons professionnelles. Toutefois, une attention particulière est mise sur les populations autochtones du fait de leur ancrage territorial et transnational.

Les populations des villages frontaliers tels que ceux *d'Assock-Medzeng*, situé à moins d'un kilomètre de la frontière Gabon-équatorienne, sont « frères », du fait de leur appartenance à la tribu *Essangui*, au natif de *Mbolon-Zok* ou de *Ngou*, distant de moins de trente kilomètres de la même frontière. Cette réalité est également palpable sur l'axe frontalier Cameroun-Gabon à partir des villages *d'Esaben* et celles de *Meyo-kyé* qui appartiennent généralement aux mêmes familles. Plus loin, l'on observe la même réalité entre les villages *Eboro* et *Eking*. De manière concrète, la conduite et les pratiques de ces populations locales sont multiformes. Toutefois, une attention singulière est mise sur certaines stratégies érigées en mode de conduite, visant à faire circuler les produits illégalement. Il s'agit entre autres de la mobilisation des liens familiaux transfrontaliers, de l'usage de la langue locale comme instrument de reconnaissance et enfin de la maîtrise géographique de l'espace.

D'abord en ce qui concerne la mobilisation des liens familiaux, les populations riveraines que sont les fang mobilisent leur triple territorialité en vue d'alimenter le commerce légale et illégale. La contrebande de certains produits tels que les boissons alcoolisées et des congelés se déroule avec la complicité de ces derniers. Prétextant dans la plupart du temps des visites familiales en territoires voisins, ceux-ci en profitent très souvent pour faire circuler illégalement des produits. Leur statut ainsi que la qualité des rapports qu'ils nourrissent avec les agents frontaliers fluidifient davantage l'activité. Ces derniers ne trouvent pas souvent la nécessité de les soumettre aux

pratiques d'usage du fait de leur statut. Un agent exerçant à la frontière confie que :

*« Tout le monde est parenté ici ; ils sont de même famille, ils parlent la même langue. Il [les gendarmes] nous est impossible d'empêcher un individu de venir voir son frère, sa sœur, son oncle, etc. sous le motif qu'il est étranger ». Il renchérit en disant « Lorsqu'on empêche un citoyen camerounais de venir rendre visite à sa famille gabonaise, nous sommes menacés par nos propres compatriotes, qui nous injurient, nous prennent en partie... Parfois, ils font de faux rapports sur nous non seulement auprès de nos responsables hiérarchiques mais également auprès des responsables politiques locaux... Tout ceci parce que nous faisons notre travail ».*

(Entretien avec agent frontalier à Meyo-kyé, le 20 novembre 2023 à 10H-10H45).

La transnationalité ou la triple territorialité ethnique du peuple fang se révèle donc être une chance que les populations locales exploitent au mieux de leurs intérêts (Nkoum-me-ntseny, (L). (2005). Leur ancrage spatial participe donc de cet état de chose. Ces populations locales, notamment celles d'*Esaben* ont créé une piste entre *Kyé-ossi* et *Meyo-kyé* dans le but de faire circuler les marchandises en marge des contrôles douaniers. C'est à l'aide des pirogues que ces produits sont généralement transportés pour traverser la rivière *kyé*. Cette réalité est également perceptible entre la localité de *Adjou'ou* et *Akamsi* renvoyant respectivement à deux villages frontaliers camerounais et gabonais. Les trafiquants, avec la complicité des populations locales, font traverser leurs produits à l'aide des pirogues aménagées à cet effet. Ces pirogues sont très souvent fabriquées à l'aide de bois et n'utilisent pas de moteurs électriques. Pour se déplacer, le piroguier pagaille à l'aide d'un bâton. Les images ci-dessous en sont assez illustrative à propos :



**Image 1:** Chargement de produits coté Cameroun (Adjou 'ou)



**Image 2:** Embarquement pour le Gabon (village Akamsi)



**Image 3:** Débarquement coté Gabon (village Akamsi)

Source : Auteur, lors de la collecte de données dans la localité de Adjou'ou , village frontalier au Gabon par la rivière Kyé Ntem

Ensuite, l'usage de la langue traditionnelle locale fang-ntoumou s'avère être un outil stratégique du trafic. Plusieurs, se faisant passer pour des riverains dans le but de traverser la frontière en ont fait usage. La stratégie de contournement est de ce fait possible par l'entremise de la langue locale parlée. A cet effet, une enquête empirique menée par un chercheur fang d'origine gabonais qui visait à questionner le rapport entre l'appartenance à l'ethnie fang et le passage aux frontières camerounaises et Equato-guinéenne, celui-ci postule que :

*« ...De cette expérience, qui ne fut pas vérifiée au Cameroun par le fait que les agents en poste à la frontière n'étaient pas Fang, il ressort que mon identité communautaire qui s'est manifestée par l'utilisation de la langue est un outil qui permet de transcender la frontière artificielle établie par les colonisateurs européens. Cela est d'autant plus vrai que je n'étais pas natif des espaces frontaliers en question. Et, il ressort également que la frontière n'est pas seulement « ouverte » au seul frontalier, elle s'ouvre également aux personnes qui font usage de la langue Fang. De plus, on peut*

*se trouver dans un territoire autre que le sien et accéder au territoire tiers par la seule utilisation du dialecte local»*  
(Ndong beka II (P), (2018).

L'usage du fang-ntoumou, quand bien même l'on serait un étranger devient un instrument pour traverser illégalement la frontière. La maîtrise du fang astreint certains de leurs obligations. Ils ne sont donc plus contraints de remplir toutes les conditionnalités administratives. Cet état de choses participe donc à alimenter et à renforcer les activités illicites au sein de ce triangle spatial.

### ***Les interactions complexes des autorités traditionnelles locales dans le commerce frontalier***

Dans la fluidification de l'illicite au sein de ce triangle, en-dehors des populations, les autorités locales de ces espaces transfrontaliers se positionnent également comme des acteurs de ces activités. Toutefois, précisons que, par autorités locales nous entendons les entités administratives et traditionnelles locales. Ces autorités ont pour objectif de promouvoir la coopération et la coordination entre pays voisins pour résoudre des problèmes communs tels que sécuritaires, économiques, commerciaux et autres. Aussi, elles ont pour fonction de faciliter les échanges et la communication entre les différentes parties impliquées, et contribuent à renforcer les liens de solidarité et de coopération entre populations locales de l'espace frontalier. Concrètement, par autorités locales, il faudra inclure les chefs traditionnels locaux ainsi que les autorités administratives locales. Néanmoins, ces autorités se trouvent être des éléments importants que constitue la chaîne des acteurs de l'illicite en zone transfrontalière. En effet, compte tenu de leurs positions, ils s'établissent comme de véritables acteurs de l'illicite dans ces espaces à plusieurs égards.

D'abord en ce qui concerne les autorités locales, l'homogénéité culturelle transfrontalière qui travaille ces espaces constitue le levier directeur qui structure les activités illicites. Le fait que ces populations appartiennent généralement aux mêmes familles de part et d'autre des frontières participent à alimenter une variété d'activités notamment licites et/ou illicites. Et dans ce sillage, les chefs de villages jouent un rôle déterminant. Ainsi, les villages frontaliers qui servent généralement de circuits informels de passage de produits, surfent sur ce paramètre pour alimenter les trafics. Ces villages frontaliers s'établissent pour la plupart comme des pistes parallèles de circulations pour ces produits. Dans cet optique, les autorités locales notamment les chefs de villages y participent à plusieurs égards. En-dehors des connexions transnationales sur dénominateur ethnoculturel commun qu'ils activent de façon symbolique, ils facilitent la circulation de certains produits

à l'aide d'un nombre de pratiques. Aussi, en tant que figure de pouvoir au sein de leurs communautés, ils influencent les activités commerciales et participent aux activités illicites. Celles-ci varient d'un village à un autre.

Sur l'axe Cameroun- Gabon par le village *Adjou'ou*, un dispositif institué et instauré par le chef de village en complicité avec certains trafiquants renseigne à suffisance sur cet état de chose. Ce village est situé dans l'arrondissement de *kyé-ossi*, a la particularité d'être limitrophe au territoire Gabonais par l'entremise du fleuve Ntem. Il est à l'image de multiples villages qui structurent cet espace, une voie de contournement pour les trafiquants. A ce titre, la conduite et les pratiques de ces chefs de villages est palpable à plusieurs égards. En ce qui concerne par exemple la contrebande des produits congelés, lorsque les véhicules viennent réceptionner les cargaisons, chaque grande famille du village est sensée recevoir un carton de congelés. L'un des leurs nous confie que :

*« Lorsque le camion passe pour aller au Ntem récupérer les cartons de congelés qui viennent du Gabon, ce sont nos enfants qui les aident à faire traverser les choses. Et avant de traverser, le chauffeur laisse un carton à la chefferie parce que c'est la règle »*

(Entretien avec Engourou Eko Etienne Arthur/Chef 3ème degré village *Adjou'ou*, le 24 novembre 2023 de 11H-12H).

Ces propos témoignent à suffisance du fait que ce trafic est possible par l'entremise des populations locales avec l'assentiment et la complicité des chefs de villages. La proximité géographique des frontières permet aux chefs de villages transfrontaliers de contourner les lois et les réglementations en vigueur. Dans le même sillage, l'on observe que sur l'axe Cameroun- Guinée Equatoriale par *kyé-ossi*, un poste de péage instauré par le chef traditionnel de 3ème degré devant son domicile. Ce poste est stratégique en ce sens que tous ceux qui, voulant contourner la frontière officielle, passent par là. Très souvent des trafiquants y vont à motos récupérer des marchandises en provenance de *Ebebiyin* en Guinée-Equatoriale par l'entremise de la rivière *kyé*. L'image ci-dessous en est assez illustrative.

Sur l'image, on peut observer un monsieur vêtu de blanc assis sur une chaise tenant un bâton qui lui sert de barrière pour les motos et véhicules. Le dispositif mis en place repose sur certaines règles. Le prélèvement se fait uniquement au retour et non allée. Car, dans la plupart des cas c'est au retour qu'ils transportent des marchandises. Aussi, les prélèvements varient entre 500 et 1000 francs en fonction de la quantité et de la nature de la marchandise.

**Image 4** : Péage instauré par le chef traditionnel de 3<sup>ème</sup> degré de kyé-Ossi



Source : Auteur lors de la collecte de données dans la localité de Kyé-Ossi

### ***Intimidation, complicité et corruption comme stratégies des autorités locales traditionnelles dans le Nord***

D'abord en ce qui concerne les autorités locales traditionnelles relevons que au sein de cet espace comme dans le Cameroun septentrional en général, la tradition et la religion vont de pair. Ainsi, compte tenu du poids et de la centralité de la tradition et de la religion dans cette partie du territoire, les populations locales accordent plus d'estime au lamido. Aussi, précisons que « *Il est le chef de terre combinant le pouvoir spirituel et temporel, il préside aux destinées du lamidat en véritable souverain* » (Motazé Akam. (1998). Il est entouré d'une seigneurie féodale composée des membres de sa cour. Ce sont des obligés et c'est à eux qu'il confie des tâches à exécuter. C'est le rôle que jouent par exemple les *dogaris* qui sont ses représentants dans les circonscriptions de son territoire et qui constituent des chefs de 2<sup>ème</sup> degré choisis et recommandé par l'administration. Ces derniers, à l'aide des équipes à leur disposition, contrôlent les actions des populations de la circonscription, au point de faire le rapport au lamido de Rey. L'observation empirique renseigne qu'ils parfois tendance à en abuser. Dans le cas spécifique des activités illicites transfrontalières ayant lieu à partir du département du Mayo-Rey, Le lamido à travers ses agents, et selon les configurations, noue des partenariats avec des ravisseurs notamment les coupeurs de routes dans le but de faire chanter certains commerçants qui ne voudraient pas se soumettre à certaines règles édictées depuis le Lamida de Rey (Abe (C), (2019). Aussi, ils

reçoivent des pots de vin de la part de ses trafiquants comme contrepartie de leur silence. Les trafiquants développent ainsi de bons rapports avec les chefs traditionnels afin de bénéficier de leur protection en cas de soucis. A cet effet, le phénomène d'insécurité transfrontalière s'enlise dans ce triangle par le biais de ces autorités traditionnelles, administratives et même militaires. En effet l'on observe une complicité entre ces derniers. Alain Beauvilain souligne que :

*« La complicité éventuelle entre les coupeurs de routes et les autorités traditionnelles n'aurait rien d'innovant. A l'époque du mandat français, des chefs traditionnels ont souvent été mis en cause par l'administration dans ces affaires de banditisme »*  
(Beauvilain (A). (1989), cité par Nteanjemgnigni (Y), (2019).

Ces propos révèlent que cette complicité ne date pas d'aujourd'hui. En effet, depuis la période précoloniale jusqu'à la post colonie, en passant par la colonisation, le phénomène de grand banditisme dans l'espace septentrional du Cameroun a souvent bénéficié du soutien tacite des détenteurs de l'autorité. Justement, qu'il soit du pouvoir politique, traditionnel ou militaire, le banditisme rural représente une constance historique à travers une sorte d'accointance avec le pouvoir institutionnel établi.

Dans le même sillage, certaines de ces autorités traditionnelles n'hésitent pas à intimider des représentants de l'Etat notamment les agents frontaliers lorsque leurs marchandises sont interceptées à la frontière. Les agents de l'Etat sont ainsi influencés par les autorités locales traditionnelles dans leur exercice de lutte contre les trafics illicites. Ainsi, dans l'ordre des transactions commerciales transfrontalières, se tissent des liens de partenariat entre certains trafiquants et ces chefs traditionnels question de fluidifier leurs activités. La complicité entre ces derniers constitue ainsi, l'un des éléments moteurs de la densité des échanges informels au sein de cet espace.

## **Discussion**

Les espaces frontaliers Nord et Sud Cameroun sont des lieux de fortes activités commerciales de tout ordre. Les marchés qui travaillent ces espaces sont généralement des centres et des sièges d'une variété d'activités. Par ailleurs, les peuples qui structurent ces espaces constituent dans la plupart du temps des acteurs stratégiques dans la densité multiforme des activités y prenant corps. En effet, ils s'établissent comme éléments centraux du système transactionnel commercial y prévalant. Que l'on se situe dans le département du Mayo-Rey dans la région du Nord, ou dans le département de la vallée du Ntem dans le Sud Cameroun, les peuples frontaliers qui structurent ces milieux respectifs contribuent à bien des égards à la fluidification des activités aussi bien licites qu'illicites. La transnationalité des peuples *Mboum* et *Ekan* perceptible à travers leur triple territorialité renseigne à suffisance sur cet état

de fait. Leur présence sur trois espaces du fait de leurs appartenance socio ethnique en est assez illustrative. On remarque notamment que les *Fang-Ntumu* qui composent la vallée du Ntem partagent des liens familiaux avec ceux du Nord du Gabon (*Eking, Akamsi, Bitam, meyo-kyé* etc..) ainsi que ceux de la Guinée-Equatoriale (*Ebebeyin*). Cette réalité est palpable à partir du département du Mayo-Rey où l'on observe que les Mboum qui composent cet espace partagent des liens de parenté avec ceux du Sud du Tchad (*lumboko, koudaye, bitao ou mbitoye* etc..) ainsi que ceux de la RCA (*Doko, Nzoro, kosse* etc..). Leur mobilité au sein de leurs espaces respectifs échappe très souvent au contrôle des autorités administratives, car mobilisant dans la plupart des cas, des stratégies et circuits singulières ce qui participe davantage à enrichir et à accroître le phénomène de l'illicite.

En lien avec l'état de l'art sur la question et l'analyse des résultats, il se dégage que les peuples qui structurent les espaces frontaliers jouent un rôle important dans la pléthore d'activités ayant lieu au sein de ces espaces. (Owona Nguini (M-E) & Nestor Deli Sainzoumi (2005) en s'appesantissant sur les flux qui s'opèrent entre Ndjamena et Kousseri soulignent au passage l'importance des similitudes culturelles sur la variété de transactions qui s'opèrent entre ces deux espaces. Dans la même veine, les réflexions de (Ngodi, (E), (2011), (Saibou (I), (2010), (Yebega Ndjana., (2014) qui ont en commun l'idée de s'interroger sur l'insécurité prévalant au sein de ces différents espaces frontaliers. Les entretiens et observations menés au sein de ces deux espaces notamment Nord et Sud révèlent que les populations locales transfrontalières en dehors des autres acteurs qui alimentent l'illicite, jouent un rôle considérable. La capacité qu'ils ont à se mouvoir simultanément au sein de différents espaces de par l'opportunité que leur offre la continuité ethnique, leurs confère une marge de manœuvre assez considérable. A cet effet, ils peuvent commettre des forfaits dans un espace et traverser la frontière pour trouver refuge au sein du territoire voisin. Fort de ce constat, et compte tenu de l'interdépendance entre les acteurs nationaux et internationaux (Sindjoun (L), (2002) la valorisation des résultats produits par cette étude permettrait la mise sur pied d'un dispositif sécuritaire hybride. Celui-ci pourrait être basé sur une coopération transnationale entre les Etats impliqués et les autorités traditionnelles frontalières qui les composent. L'implication des autorités traditionnelles frontalières aux côtés des Etats, permettrait de lutter plus efficacement contre ce phénomène.

## Conclusion

Cette réflexion explore les activités illicites qui s'opèrent aux marges des frontières Nord et Sud Cameroun à l'épreuve des continuités ethniques qui les structurent. Généralement Considérés comme des espaces travaillés et caractérisés par de fortes densités protéiformes, notamment commerciales et

sécuritaires, les espaces frontaliers Nord et sud Camerounais sont à la base des portes d'entrées et de sorties de produits et des personnes. Théorisé par certains comme le triangle de la mort parlant de l'axe *Cameroun-Tchad-RCA*, et du triangle de l'opulence se référant à l'axe *Cameroun-Gabon-Guinée Equatoriale* (Ntuda Ebode, (J). (2010). Ces espaces respectifs ont la particularité d'être au-delà de la nature des transactions y prévalant, composés des peuples frontaliers dont le déploiement et la mobilité sont transnationaux. Ce transnationalisme ethnique se révèle être central dans l'illicite qui s'y opère à plusieurs égards.

Pour le démontrer, nous nous sommes appuyés sur un dispositif méthodologique et théorique composé des entretiens et observations menés au sein de certaines localités frontalières du nord (département du Mayo-Rey) et du sud (département de la vallée du Ntem) Cameroun. Les données collectées ont été éclairées par le transnationalisme comme grille théorique. De celles-ci, il s'est révélé que la configuration socio ethnique de ces espaces contribue à alimenter les activités illicites de par la mobilité triple territoriale qui caractérise ces peuples. En effet, le transnationalisme ethnique des peuples *Eakang* dans le Sud et des *Mboum* dans la région du Nord leur confère une marge de manœuvre considérable leurs permettant de pouvoir osciller simultanément au sein de différents espaces notamment le Gabon, la Guinée Equatoriale et dans une certaine mesure le Congo Brazzaville pour les premiers, et sur le territoire Tchadien et centrafricain pour les seconds.

A la suite, il se révèle que, les activités illicites protéiformes qui y prennent corps font appel à des acteurs aux procédés variés. En effet, variant d'un espace à l'autre, les activités illicites qui prévalent au sein de ces espaces respectifs divergent sur la forme et non dans le fond car la structuration est sensiblement la même. En effet, qu'il s'agisse de la contrebande des produits congelés et des boissons alcoolisées dans le Sud, ou du trafic des céréales et du bétails, il se dégage que les populations locales ainsi que les autorités traditionnelles qui les incarnent y jouent un rôle non négligeable.

Toutefois, bien que l'on ne saurait totalement responsabiliser les peuples frontaliers de l'illicite qui s'opère au sein de ces espaces étant donné que ce soit un système composé d'une diversité d'acteurs, ceux-ci jouent tout de même un rôle non négligeable. Pour mieux lutter contre ce phénomène, Un dispositif sécuritaire hybride axée sur une coopération franche entre Etats et autorités traditionnelles frontalières, permettrait de réduire ce phénomène aux frontalières Nord et Sud Cameroun. La pertinence de ce modèle tient de plusieurs raisons. D'abord sur le plan théorique, en ce sens que les relations internationales africaines sont marquées par une interdépendance entre les acteurs étatiques et non étatiques (acteurs transnationaux). Ensuite, sur le plan opérationnel, ce dispositif hybride permettrait un meilleur contrôle de la mobilité des peuples frontaliers en ce sens qu'il s'inscrira dans une sorte de

dialectique entre l'horizontale (autorités traditionnelles frontalières) et le verticale (les Etats). C'est de la coopération franche entre les acteurs du Haut et ceux du bas que la lutte contre ce phénomène sera plus efficace.

**Conflit d'intérêts :** L'auteur n'a fait état d'aucun conflit d'intérêts.

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## Transition psychosociale dans le monde du travail, quel soutien et accompagnement ?

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### Résumé

Les trajectoires professionnelles et institutionnelles s'entremêlent dans un processus de socialisation identitaire, qui se manifeste par des tensions entre les attentes individuelles et les multiples dimensions du métier. Les transitions psychosociales peuvent engendrer diverses répercussions sur le bien-être psychologique et social des individus. L'objectif de ce papier est de se lancer dans une réflexion théorique qui considère les transitions psychosociales comme un processus professionnel important sur le lieu de travail. Il vise également à examiner les facteurs qui influencent la transformation des parcours professionnels et leurs résultats par rapport aux aspects interpersonnels et organisationnels, ainsi qu'aux fonctions et responsabilités individuelles et organisationnelles. Pour ce faire, il nous a été nécessaire de nous baser sur les fondements théoriques des concepts de l'identité professionnelle et les ajustements nécessaires pour gérer le changement. Notre méthode repose sur un questionnement de la littérature scientifique relatif à la transition psychosociale, l'identité professionnelle, l'ajustement et l'adaptation. Pour répondre à comment la transition psychosociale impacte l'identité professionnelle ? Quels sont les principaux facteurs qui influencent les ajustements et les adaptations pendant les transitions professionnelles ? Quelles sont les mesures d'interventions et les accompagnements appropriés pour assurer la réussite de cette transition ? Les principales conclusions de notre réflexion théorique se sont assemblées pour rapporter que la transition psychosociale dans le monde du travail est un processus complexe qui nécessite un soutien adapté pour aider les individus à

surmonter les défis liés à leur situation professionnelle. Ce soutien peut prendre plusieurs formes, allant de l'accompagnement psychologique à des initiatives organisationnelles visant à améliorer le bien-être des employés et renforcer leur adaptation au nouvel environnement du travail.

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**Mots clés :** Transition psychosociale, socialisation, ajustement, identité professionnelle

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## **Psychosocial Transition in the Workplace: What Support and Guidance?**

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### **Abstract**

Characterized by conflicts between individual expectations and multiple dimensions of a profession, professional and institutional trajectories intertwine within an identity socialization process. Psychosocial transitions can lead to various impacts on an individual's psychological and social well-being. This paper aims to engage in a theoretical reflection that considers psychosocial transitions as a significant professional process in the workplace. It also seeks to examine the factors that influence the transformation of career paths and their outcomes in relation to interpersonal and organizational aspects, as well as individual and organizational roles and responsibilities. To this end, it was necessary to base our work on the theoretical foundations of professional identity concepts and the adjustments required to manage change. A survey of literature on professional identity, adjustment, adaptation, and psychological transition served as the foundation for our methodology. It seeks to answer issues like: What effects does psychosocial change have on one's professional identity? What are the primary determinants of adaptations and adjustments during career transitions? What kind of assistance and intervention strategies are required to make this transition successful? Key findings show that psychosocial transition in the workplace is a complicated process that calls for specialized assistance to help people overcome obstacles within the work environment. This support can come in many ways, such as organizational initiatives to improve employee well-being and improve their ability to adjust to the new work environment or psychological assistance.

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**Keywords:** Psychosocial Transition - Socialization - Adjustment - Professional Identity

## **Introduction**

Les trajectoires professionnelles et institutionnelles s'entremêlent dans un processus de socialisation, qui se manifeste par des tensions entre les attentes individuelles et les multiples dimensions du métier. Ils se démarquent aussi par l'établissement, d'une perpétuelle négociation entre la reconnaissance de l'identité professionnelle par autrui et le sens que l'individu veut donner à son appartenance.

Les transitions impliquent donc le plus souvent des transformations identitaires lorsque la personne quitte une certaine position dans un champ professionnel pour se trouver dans une nouvelle position. Ces repositionnements amènent certaines dynamiques de reconnaissance ou de non-reconnaissance aussi bien par les anciens que par de nouveaux pairs. Ceci est parfois désigné par la notion d'identité sociale, ou d'identité pour autrui (Masdonati, J. & Zittoun, T. 2012).

L'identité professionnelle joue un rôle majeur dans l'équilibre psychosocial de la personne, dans son inscription sociale et symbolique. Les transitions professionnelles se déroulent dans une sphère circonscrite de l'activité des personnes, qui va certainement affecter d'autres sphères d'expérience, comme la vie de famille ou la vie relationnelle des personnes, leur situation économique et leurs loisirs (Baubion B., A. & Hajjar, V. 1998).

La transition psychosociale dans le monde du travail fait référence aux changements et ajustements que les individus peuvent rencontrer lorsqu'ils passent d'un emploi, d'une entreprise ou d'un environnement de travail à un autre. Cette transition peut engendrer diverses répercussions sur leur bien-être psychologique et social.

Dans ce travail de réflexion, nous nous pencherons sur la transition psychosociale comme un événement professionnel, et sur son importance dans le monde professionnel ainsi que les facteurs qui influencent cette situation. Nous explorerons également les effets sur la carrière et le bien-être global des individus, en mettant en évidence les interventions ou les soutiens supplémentaires qui pourraient être nécessaires pour la réussite de cette transition.

Les périodes de transition professionnelle ne sont parfois ni voulues ni souhaitées par les acteurs concernés, mais peuvent dans beaucoup de cas être imposées par les responsables administratifs et soutenues par des cadres législatifs. Les contraintes économiques et le marché du travail imposent aussi des trajectoires, des mouvements et des déplacements qui ne sont pas toujours désirés. Faire face à cette mobilité souvent contrainte, désignée comme demande des ajustements et des capacités d'adaptation sociales et professionnelles.

## **Transition psychosociale en tant que processus complexe**

Qu'elles soient qualifiées de normatives, d'évènementielles, d'écologiques ou de psychosociales, les transitions professionnelles sont analysées à partir du processus réactionnel qu'elles déclenchent chez le sujet.

Ce processus reflète une perspective plus dynamique qu'adaptative ou réactionnelle, ce qui pousse à l'envisager comme « des espaces temps de co-construction du changement individuel et social » (Dupuy, R. & Le Blanc, A. 2001).

La thématique de transition permet d'analyser les interactions du sujet dans les divers systèmes d'activités dans lesquels il agit ; elle soutient également l'analyse des liens entre les différents espaces professionnels du même sujet.

La transition psychosociale est donc un processus complexe et profond par lequel une personne traverse des changements significatifs dans son environnement de travail et s'adapte non seulement à de nouvelles situations professionnelles, mais aussi à de nouveaux défis personnels et émotionnels. Cela peut inclure le passage d'un poste à un autre au sein de la même entreprise, le changement de cultures organisationnelles différentes ou même la transition vers la retraite pour certains individus.

Ce type de transition implique des ajustements psychologiques, émotionnels et sociaux importants, qui peuvent être à la fois stimulants et sûrement stressants. L'individu doit non seulement s'adapter à de nouvelles responsabilités et tâches professionnelles, mais aussi se familiariser avec un nouvel environnement de travail, de nouvelles normes et des attentes différentes. De plus, il doit faire face à des relations professionnelles en constante évolution, ainsi qu'à des collègues potentiellement différents. Tout cela peut entraîner des pressions, un sentiment d'incertitude et de l'anxiété.

Pour comprendre cette transition, il est déterminant d'analyser les divers aspects de ce processus. En comprenant les défis auxquels les individus peuvent être confrontés pendant cette période de changement, il est possible de fournir un soutien adéquat et de développer des stratégies d'adaptation efficaces. Les organisations peuvent jouer un rôle clé en offrant des ressources et des programmes de formation qui aident les employés à s'acclimater à ces transitions et à développer leurs compétences professionnelles. De plus, les individus eux-mêmes peuvent prendre des mesures pour faciliter leur transition psychosociale. Cela peut inclure la recherche de conseils auprès de l'établissement, des réseaux professionnels solides, des mentors, et même en participant à des activités de développement personnel.

En développant une approche proactive, en reconnaissant les sentiments de stress et en cherchant activement des solutions, il est possible de tirer le meilleur parti de cette période de transition et de se développer sur le plan personnel et professionnel. Bref, la transition psychosociale en milieu

du travail est un processus complexe qui nécessite une attention particulière et un soutien adéquat. En comprenant les différents aspects de cette transition et en fournissant des ressources et des stratégies d'adaptation appropriées, il est possible d'aider les individus à traverser ces périodes de changement de manière positive et à se développer tant sur le plan personnel que professionnel (Carvalho, S. 2023).

### **Perspectives de la transition psychosociale dans le monde du travail**

La transition psychosociale revêt une grande importance dans le monde du travail puisqu'elle a un impact direct et significatif sur la productivité, la satisfaction professionnelle et la santé physique et mentale des individus. Lorsque les employés sont face à des transitions majeures, telles que celles liées à une promotion, une mutation, une réorientation de carrière ou un licenciement inattendu, ils doivent non seulement s'adapter à de nouvelles responsabilités, tâches et exigences, mais aussi à un environnement de travail différent et à des relations professionnelles modifiées.

La manière d'appréhender les transitions s'inscrit dans deux perspectives (concurrentes :

- Une perspective développementale : représentée par le paradigme du cours de vie elle décrit les transitions comme des périodes de passage fondamentales et normales dans le cycle de vie (Elder, G.H Jr. 1994). Ces périodes relativement condensées dans le temps, enchâssées dans des trajectoires de vie plus longues, sont considérées comme des phases de co-construction entre individu et environnement passant par des moments d'épreuve ou de crise.
- Une perspective interactionniste dans laquelle l'individu est considéré comme participant de façon active au changement social : il utilise donc la transition pour faire des choix dans un environnement qui se transforme. Saisissant contraintes et opportunités du contexte, il décide, s'engage, et se projette. La transition est alors envisagée comme une chance de développement de la carrière ou comme moyen de renforcer/retrouver ses valeurs, comme une « phase de reconstruction active des valeurs et des normes fondant la reconnaissance et la valorisation de soi et d'autrui » (Dupuy, R. et Le Blanc, A. 2001).

D'une part, une transition mal gérée peut générer du stress, de l'anxiété et même des conflits inhérents à l'incertitude engendrée. Les individus peuvent se sentir déstabilisés dans leur routine quotidienne et ressentir une perte de contrôle sur leur vie professionnelle, ce qui peut nuire à leur performance et à leur bien-être en général. Les problèmes de santé mentale tels que la

dépression et l'épuisement professionnel sont également des conséquences possibles d'une transition psychosociale mal accompagnée.

D'autre part, une transition psychosociale bien gérée peut être une occasion de croissance personnelle et professionnelle. En comprenant et en soutenant les individus pendant cette période de changement, les organisations peuvent favoriser un environnement de travail sain et épanouissant. Cela peut se traduire par une amélioration de la satisfaction au travail, une augmentation de la motivation et de l'engagement des employés, ainsi qu'une meilleure fidélisation des compétences.

Pour soutenir efficacement la transition psychosociale, il est important que les organisations offrent des ressources et des programmes de soutien adaptés aux besoins individuels de leurs employés. Cela peut inclure des séances de coaching professionnel, des formations et des ateliers sur la gestion du changement, ainsi que des dispositifs de soutien médical et psychologique. Il est également essentiel d'encourager une communication ouverte et transparente lors de la mise en place de nouvelles politiques ou de modifications organisationnelles, afin de réduire l'incertitude et de faciliter l'adaptation des employés.

### **Facteurs d'influence durant le processus de la transition psychosociale**

La transition psychosociale au travail peut être influencée par une multitude de facteurs qui exercent une forte influence sur la façon dont les individus vivent et s'adaptent aux changements dans leur environnement professionnel. Parmi les facteurs clés qui peuvent avoir un impact significatif, on peut trouver les changements organisationnels, les évolutions de rôles et de responsabilités, et que les relations interpersonnelles. Chaque facteur joue un rôle crucial dans la manière dont les individus abordent la transition psychosociale et peut entraîner des conséquences majeures sur leur bien-être psychologique et social. Il est donc essentiel de prendre en compte tous ces aspects lors de toute transition au sein d'un contexte de travail.

En comprenant et en étudiant ces facteurs, il est possible d'améliorer les stratégies de gestion des transitions pour favoriser une meilleure adaptation des employés et garantir leur épanouissement tant sur le plan personnel que professionnel. (Pelletier, M. E. & Bareil, C. 2024)

### **Changements organisationnels**

Les changements organisationnels, tels que les réorganisations, les fusions d'entreprises ou les changements de direction, peuvent avoir un impact significatif et profond sur la transition psychosociale des employés. Ces changements, d'une grande envergure peuvent entraîner une instabilité sans précédent au sein de l'organisation, exigeant ainsi des ajustements psychosociaux majeurs. Ils peuvent également induire des modifications

profondes de la culture et des valeurs de l'entreprise, ce qui peut créer un sentiment d'étrangeté et de perte de repères pour les employés. Ainsi, les modes de fonctionnement sont souvent bouleversés, obligeant les employés à s'adapter rapidement à de nouvelles façons de travailler. Cela peut engendrer une pression considérable sur ceux-ci qui peuvent ressentir une incertitude profonde quant à leur position dans l'entreprise, leur sécurité d'emploi et les nouvelles attentes qui leur sont imposées. L'ambiance de travail peut également se trouver affectée, avec des relations professionnelles fragilisées et des collaborateurs pouvant retrouver en conflit ou en compétition les uns contre les autres. Dans ces moments de transition organisationnelle, il est essentiel d'offrir un soutien et des ressources adéquates aux employés afin de les accompagner dans leur processus d'adaptation et leur réajustement psychosocial. Des programmes de formation et de développement professionnel peuvent être mis en place pour aider les individus à acquérir les compétences nécessaires pour s'adapter aux nouveaux défis et aux nouveaux rôles qui leur seront confiés. Des mesures spécifiques peuvent également être prises pour maintenir un climat de confiance et de cohésion, afin de faciliter une transition en douceur pour atténuer les effets négatifs du changement.

Il est important de reconnaître que chaque individu réagit différemment au changement, et que certaines personnes peuvent rencontrer plus de difficultés que d'autres. En conséquence, il est indispensable de mettre en place un suivi personnalisé et des mesures de soutien supplémentaires pour ceux qui en ont le plus besoin. Cela peut inclure des séances de coaching individuelles, des groupes de soutien ou des initiatives de bien-être et de ressourcement. Les changements organisationnels peuvent également créer, une période de turbulence et de remise en question pour les employés. Cependant, avec le soutien adéquat, il est possible de surmonter ces défis et de favoriser une transition souple et réussie vers une nouvelle réalité organisationnelle. En investissant dans le bien-être psychosocial des employés, les organisations peuvent créer un environnement propice à l'adaptation, à la croissance et à la réussite à long terme (Colin, R. 2022).

### **Changements de rôles et de responsabilités**

Lorsqu'un employé voit ses responsabilités évoluer, il peut ressentir des attentes accrues envers lui, ainsi qu'une pression supplémentaire pour réussir dans ses nouvelles fonctions. Ce genre type de transition peut nécessiter une acquisition de compétences supplémentaires et un ajustement de l'identité professionnelle qui peut demander du temps et des efforts considérables.

Les individus peuvent également se sentir déstabilisés lorsque le changement de rôle implique l'abandon de tâches et de responsabilités auxquelles ils étaient habitués depuis longtemps. Il est essentiel de reconnaître

que ces changements ne sont pas seulement des adaptations superficielles, mais qu'ils peuvent également représenter des défis profonds et complexes pour la transition psychosociale des individus.

Lorsqu'un employé est confronté à de tels changements de rôles et de responsabilités, il peut être nécessaire de lui fournir un soutien approprié pour l'aider à surmonter cette période de transition. Cela peut inclure des programmes de formation et de développement professionnel pour acquérir les compétences nécessaires, ainsi que des ressources pour aider à renforcer l'identité professionnelle.

Il est également important de mettre en place des mécanismes de communication et de rétroactions ouverts afin de permettre aux individus de s'exprimer et d'exprimer leurs préoccupations ou leurs besoins pendant cette période de transition. Une approche proactive pour gérer ces changements peut contribuer à faciliter la transition psychosociale des employés et à atténuer les défis auxquels ils pourraient être confrontés. Les changements de rôles et de responsabilités au sein de l'entreprise ne doivent pas être sous-estimés en termes de leur impact sur la transition psychosociale des employés (Carvallo, S. 2023). Ils peuvent représenter des défis importants, tant sur le plan professionnel que sur le plan personnel.

### **Changements des relations interpersonnelles**

Les interactions et les échanges quotidiens avec les collègues, les supérieurs hiérarchiques et les subordonnés peuvent grandement influencer la façon dont les employés perçoivent, abordent et vivent cette période de transition. Il est certain évident que des relations de soutien, de bienveillance et de coopération sont nécessaires pour faciliter l'adaptation des individus au sein de leur environnement professionnel en constante évolution.

Lorsqu'il existe des liens interpersonnels solides, basés sur la confiance, l'écoute active, le respect mutuel et la compréhension, les employés se sentent soutenus, compris et encouragés à exprimer leurs besoins, leurs préoccupations et leurs idées. Ces relations positives sont extrêmement bénéfiques, car elles permettent aux individus de naviguer plus aisément dans cette période de changement, de s'adapter aux nouvelles attentes et de développer des compétences nécessaires pour relever les défis professionnels.

En revanche, des relations conflictuelles, marquées par des tensions, des malentendus et une mauvaise communication, peuvent engendrer des complications supplémentaires et entraver la transition psychosociale des individus. Ces situations conflictuelles peuvent créer un climat de stress, d'anxiété et de méfiance, rendant difficile voire impossible l'adaptation aux nouvelles conditions de travail. Il est donc primordial de cultiver des relations interpersonnelles saines, en favorisant la communication constructive, la résolution de conflits et le soutien mutuel.

Pour garantir une transition réussie sur le plan psychosocial dans le monde du travail, il est essentiel de reconnaître l'importance des relations interpersonnelles positives et de mettre en place des initiatives es favoriser. Cela peut inclure le renforcement de la collaboration, de l'esprit d'équipe et du respect entre les membres, ainsi que la mise en œuvre de programmes de développement des compétences relationnelles et de formation en communication. En investissant dans ces aspects, les organisations et les individus sont en mesure de bénéficier d'un environnement de travail propice au bien-être, à l'épanouissement personnel et à la réussite professionnelle.

Les relations interpersonnelles au travail revêtent une importance primordiale dans la transition psychosociale des individus (Christine, R. L., 2023). Les relations positives et soutenantes favorisent l'adaptation, le bien-être et la réussite professionnelle, tandis que des relations conflictuelles peuvent engendrer du stress et entraver la transition, il est donc essentiel de promouvoir des relations interpersonnelles saines, basées sur la confiance, la communication et la coopération, afin de favoriser garantir une transition réussie sur le plan psychosocial dans le monde du travail.

### **Conséquences de la transition psychosociale**

La transition psychosociale peut avoir diverses conséquences significatives sur les individus dans le monde du travail. Ces dernières peuvent impliquer un impact direct puissant et durable sur la santé mentale et physique des individus, provoquer par des changements profonds dans les niveaux de stress et d'anxiété, ainsi que les besoins d'adaptation nécessaires à un nouvel environnement de travail. Les répercussions de cette transition peuvent être très variables et dépendent de plusieurs facteurs, notamment la nature et l'importance du changement, les ressources disponibles pour soutenir les individus et les stratégies d'adaptation mises en œuvre face à cette situation complexe.

Par conséquent, il est primordial de bien comprendre et d'évaluer attentivement ces conséquences afin de prendre des mesures appropriées et efficaces pour aider les individus à faire face aux défis considérables de la situation transitionnelle, en fournissant un soutien adéquat et en mettant en place des ressources et des programmes d'accompagnement. Afin de préparer les individus à une transition plus harmonieuse et réussie, leurs permettant de surmonter les obstacles et de s'épanouir dans la nouvelle réalité professionnelle.

En outre, il est fondamental de mettre l'accent sur le développement et l'amélioration des compétences en matière de gestion du stress, de stratégies d'adaptation positive et de renforcement de la résilience, afin de fournir aux individus les outils nécessaires pour accepter correctement cette transformation.

En reconnaissant pleinement les conséquences de la transition psychosociale, en adoptant une approche holistique et en veillant à un soutien continu, nous pouvons véritablement améliorer le bien-être et la satisfaction des individus dans leur démarche professionnelle. (Rhirhay, H. & Rafiq, S 2022).

### **Impact de la transition psychosociale sur la santé mentale et physique**

La transition qu'elle soit d'ordre personnel ou professionnel, peut avoir un impact extrêmement significatif sur la santé mentale et physique des individus qui la vivent. En effet, le stress prolongé et l'anxiété constante qui accompagnent souvent cette période de changement peut fortement affecter le bien-être émotionnel des personnes concernées, et même augmenter considérablement leur risque de développer des problèmes de santé mentale tels que la dépression ou l'épuisement professionnel. De plus la transition psychosociale peut également engendrer des changements importants dans les habitudes de travail, l'environnement physique ou les exigences de performance auxquels les individus doivent faire face. Ces changements peuvent, à leur tour, avoir un impact notable sur la santé physique de ces mêmes individus.

C'est pourquoi il est absolument essentiel, voire indispensable, de le mettre en place des mesures efficaces visant à soutenir la santé mentale et physique de ces individus pendant cette période de transition psychosociale. Parmi ces mesures, figurent notamment la sensibilisation aux enjeux spécifiques de la transition, le soutien psychologique et émotionnel adapté aux besoins individuels, ainsi que l'accès facilité aux ressources appropriées en matière de santé mentale et physique.

Parallèlement, le soutien psychologique et émotionnel adapté aux besoins individuels offre un précieux soutien aux personnes en transition, leur permettant de mieux gérer leur stress et leur anxiété, mais aussi de développer leur résilience et leur bien-être émotionnel. Les ressources telles que des thérapies, des programmes de formation, des conseils en matière de nutrition ou de conditionnement physique peuvent s'avérer extrêmement bénéfiques pour soutenir la santé globale des individus pendant cette transition.

En fait, il est possible de gérer la transition, sachant que c'est une période potentiellement difficile et éprouvante pour de nombreux individus, si on met en place des mesures adéquates pour soutenir leur santé mentale et physique et les accompagner, telles que la sensibilisation, le soutien psychologique et émotionnel, ainsi que leur proposer des ateliers de partage de l'expérience et de la prise de parole pour exprimer leurs soucis.

Ces mesures peuvent être conçues comme des stratégies de soutien social pour aider les personnes à gérer les défis liés à la transition psychosociale. Cela peut être réalisé en encourageant la collaboration et en

favorisant un environnement de travail inclusif où les individus se sentent soutenus et compris. De plus, il faut leur offrir des opportunités de formation et de développement des compétences nécessaires pour réussir dans leur nouvel environnement de travail. En fin de compte, une transition psychosociale réussie peut conduire à une meilleure productivité et à des employés épanouis et engagés dans leur travail (Carvalho, C. 2023 ; Schaffner, D. et al., 2022 ; Bangali, M. et al., 2020).

La communication et la transparence jouent un rôle essentiel dans la facilitation de la transition psychosociale. Il est primordial d'établir un flux de communication ouvert et transparent entre les employés et la direction, afin de fournir des informations détaillées sur les changements à venir, les attentes et les objectifs de la transition. Cette communication bidirectionnelle permet aux individus de poser des questions, de partager leurs préoccupations et de faire part de leurs suggestions, favorisant ainsi un environnement de travail collaboratif et inclusif. La transparence renforce également la compréhension mutuelle et instaure une confiance solide entre les différentes parties prenantes impliquées dans la transition. Ces éléments clés, la communication et la transparence, sont donc indispensables pour une transition psychosociale réussie et harmonieuse. (Graffigna, G. & Barello, S., 2022)

### **Stress et anxiété**

La transition psychosociale peut entraîner un niveau élevé de stress et d'anxiété chez les individus. Les changements importants dans les responsabilités, les attentes et les relations de travail peuvent créer un sentiment d'incertitude et d'insécurité, ce qui peut augmenter le niveau de stress. De plus, la pression pour s'adapter rapidement à un nouvel environnement de travail peut également contribuer à l'anxiété. Il est essentiel de reconnaître et de gérer ces réactions émotionnelles afin de prévenir les effets néfastes sur le bien-être et les performances des individus.

Pour surmonter ces défis, il est important de créer un environnement de soutien. Offrir des ressources et des outils d'adaptation peut aider les individus à faire face aux changements et à réduire leur niveau de stress. En outre, encourager la communication ouverte et transparente peut permettre aux employés de partager leurs préoccupations et de trouver des solutions collectives. De plus, il est crucial de fournir des opportunités de développement personnel et professionnel. Cela peut inclure des formations, des séminaires ou des programmes de mentorat qui aident les individus à acquérir de nouvelles compétences et à se sentir plus confiants dans leur rôle. En favorisant la croissance individuelle, les entreprises peuvent contribuer à atténuer l'anxiété liée à la transition psychosociale.

Il est également important de souligner l'importance de l'équilibre entre vie professionnelle et vie personnelle. Encourager des pratiques saines telles

que l'exercice, la méditation et le temps de qualité en dehors du travail peut aider à réduire le stress et l'anxiété. De plus, offrir des avantages tels que des horaires de travail flexibles ou des congés payés peut permettre aux individus de trouver un équilibre entre leurs responsabilités professionnelles et personnelles.

La transition psychosociale peut être une période difficile pour les individus, mais en mettant en place des mesures de soutien appropriées, il est possible de réduire le stress et l'anxiété qui en découlent. Reconnaître et gérer ces réactions émotionnelles est essentiel pour maintenir le bien-être et les performances des individus dans un nouvel environnement de travail (Lemay, C. 2023 ; Béland, M. 2022).

### **Adaptation au nouvel environnement de travail**

L'adaptation à un nouvel environnement de travail est une conséquence courante et inévitable de la transition psychosociale, qui implique des changements significatifs au niveau des relations sociales, des tâches à accomplir, des outils et technologies utilisés, ainsi que des valeurs et de la culture d'entreprise. Les individus se retrouvent souvent face à une multitude de défis, parmi lesquels l'intégration et l'ajustement à de nouveaux collègues, de nouvelles méthodes de travail, procédures, normes et attentes. S'habituer à ces changements peut prendre du temps et demande souvent des ajustements psychologiques et comportementaux importants.

Il est nécessaire pour les individus de faire preuve d'une ouverture d'esprit, d'une flexibilité et d'une capacité à apprendre rapidement, afin de s'adapter efficacement aux nouvelles situations. Ils doivent être prêts à sortir de leur zone de confort et à s'engager activement dans le processus de transition. Une adaptation réussie repose également sur la volonté de se remettre en question et de développer de nouvelles compétences pour répondre aux nouvelles attentes et exigences en matière de performance.

Il est essentiel de faire preuve aussi d'une grande adaptabilité et de fournir des efforts supplémentaires pour maintenir un haut niveau de productivité, tout en s'adaptant à l'évolution constante du contexte de travail. La transition psychosociale peut représenter un défi de taille, tant sur le plan professionnel que personnel, mais elle offre également des opportunités de croissance et de développement. En surmontant les obstacles et en se concentrant sur les avantages de cette période de transition, les individus peuvent renforcer leurs compétences et leur résilience, ainsi que leur capacité à s'adapter à l'incertitude et aux changements futurs.

L'adaptation à un nouvel environnement de travail nécessite un investissement personnel important, mais cela peut également être une expérience enrichissante et formatrice. Il est crucial de rester ouvert, flexible et prêt à relever les défis, afin de réussir cette transition psychosociale et de

favoriser sa propre croissance professionnelle et personnelle (Scott, C. 2023 ; Dubuc, M. 2022).

### **Renforcement du soutien social et l'accompagnement**

Il est important d'offrir des ressources supplémentaires telles que des ateliers de développement personnel, des séminaires sur la gestion du stress, et des formations sur la communication et les compétences interpersonnelles. En mettant en place un système de soutien et d'accompagnement solide, les employés pourront mieux faire face aux défis liés à la transition psychosociale. Ils se sentiront soutenus émotionnellement et auront les outils nécessaires pour gérer efficacement les changements qui se produisent dans leur vie professionnelle.

Les programmes de mentorat et de coaching offriront un espace sécurisant pour les employés afin de partager leurs préoccupations et leurs questions, recevoir des conseils d'experts, et renforcer leur confiance en eux-mêmes. En outre, encourager les interactions sociales positives entre collègues est une autre stratégie essentielle pour faciliter la transition psychosociale. Organiser des événements d'équipe, des activités de team building, et des déjeuners collaboratifs favorisera un esprit d'équipe solidaire et renforcera les liens entre les employés. Ces interactions sociales positives offriront un sentiment d'appartenance et de camaraderie, créant ainsi un environnement de travail plus favorable à la transition.

En fin l ne faut pas sous-estimer l'importance de l'écoute active et de la reconnaissance. Les employés doivent se sentir entendus, compris et valorisés pour leur contribution pendant la transition psychosociale. En reconnaissant leurs efforts et en offrant des encouragements sincères, les employés se sentiront motivés et soutenus dans leur processus d'adaptation. En somme, en mettant en place un soutien social adéquat, des programmes de mentorat, des opportunités de formation, et en favorisant les interactions sociales positives, les employés seront mieux équipés pour faire face aux défis de la transition psychosociale. Cette approche globale permettra non seulement une adaptation plus facile, mais également une meilleure satisfaction et un bien-être psychologique durable au sein de l'organisation (Porat, T. et al. 2020 ; Hennel, T. & Rosenkranz, C. 2021).

Nous rappelons vers la fin de cette réflexion que la transition psychosociale dans le monde du travail évoque un processus de développement de l'identité professionnelle, vecteur essentiel de changement, qui suppose de prendre en compte des temporalités professionnelles. L'adaptation des individus au nouvel environnement implique la transformation de certaines valeurs, l'appropriation de nouveaux rôles et à travers eux une modification de l'image de soi, l'acquisition de nouvelles compétences, voire un changement de style de vie.

La transition professionnelle questionne les logiques de gestion de carrière chez les professionnels, et conduit à de nouvelles orientations individuelles et collectives en amenant de nouvelles nécessités et contraintes, et en poussant les individus et les groupes à développer des stratégies de régulation et d'adaptation. L'identité professionnelle qui est un parcours inachevé et un montage composite des représentations sociales des pratiques professionnelles, des attitudes envers le métier et des satisfactions vis-à-vis de la formation (Charyate, A. 2019). Ce qui reflète un construit social, relativement stable qui rassemble des normes définissant une profession qui se distingue des autres (Tardif, M. et Lessard, C. 1999). Celle-ci est le résultat d'une création collective d'un groupe de professionnels qui pour être connu socialement, définissent les caractéristiques de leur profession... (Barbier, J. M. 1996).

La continuité de la recherche sur l'identité professionnelle et les transitions professionnelles guide la manière dont le professionnel interprète ses situations de travail et les lie aux intentions sociales de la professionnalisation (Wittorski, R. 2008). Ce champ de recherche est orienté par des valeurs et une éthique, situées dans une ou plusieurs phases de vie professionnelle, inscrites et contextualisées dans des projets (institutionnels, organisationnels, personnels...). Ce type de socialisation professionnelle se vit comme une négociation quotidienne, à travers la reconnaissance par autrui et le sens que l'individu donne à son parcours.

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## Digital Assessment of Italian-English Translations of COVID-19 Reports

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### Abstract

The present work is concerned with assessing the quality of the English language in official reports published by the Italian Higher Health Institute and released through its website during the COVID-19 pandemic. The reports are the result of a translation from Italian into English, on which a quantitative analysis was carried out to assess the total number of errors, as well as their accuracy, adequacy, and readability. A qualitative evaluation was also undertaken focusing on the cohesive, lexical, and syntactic features of the reports, thus highlighting mistranslations. The quantitative analysis, carried out using the TAUS DQF system, evidenced a mean accuracy of 3 and a mean adequacy of 2. The Grammarly software counted a mean number of 109 errors. The Flesch-Kincaid readability tests, calculated using the Content Analysis SEO Tool, yielded a mean reading ease of 38 and a mean school grade of 8. The publication of official health reports addressed to the general public should be committed to improving lives and increasing the social impact of science. On the other hand, official health reports that are aimed at a specialized medical audience should respond to all the rules and norms of that specific language community. In both cases, the reports assessed in the present investigation seem to fail in their communicative function due to their linguistic ineffectiveness.

**Keywords:** COVID-19 terminology translations, accuracy, adequacy, Flesch-Kincaid readability tests, SEO Tools, Grammarly, TAUS DQF system

## Introduction

The COVID-19 pandemic was an exceptional, unexpected event that has caused changes worldwide, and the way people live has undergone metamorphoses, taking novel shapes and directions. To different degrees, everyone has become disease-phobic, so seeking health information has become necessary. During this period, all types of news dealing with COVID-19 were rife across all social media and effective and correct communication is more crucial than ever. During the pandemic, the general public faced difficulties in choosing where to find standardized authentic information (Back *et al.*, 2020). Many people relied on family doctors in an attempt to understand more about the disease, and governments and their appointed health institutions had to deliver information concerning the pandemic and the coronavirus infection (Reddy and Gupta, 2020).

In Italy, the Istituto Superiore di Sanità (Higher Health Institute, ISS) cooperates with the Ministry of Health, the Regions and the entire Italian Health System in guiding health policies as the main center for research, control and technical-scientific consultancy in the field of public health. The role of the ISS is to effectively communicate and update, and during the pandemic, it published frequent bulletins on the status of the pandemic in Italy. All the reports published by the ISS are in Italian, with an English abstract, and some have been translated entirely into English. As stated on the ISS website, “COVID-19 reports are mainly addressed to healthcare professionals to cope with different aspects of the COVID pandemic. They provide essential and urgent directions for emergency management and are subject to updates.....”. However, 10 of the 20 reports are addressed to the general public (iss.it, 2020).

In order to determine the quality of the Italian-English translations performed by the ISS, the translated English reports (TERs) were evaluated. When dealing with translations of official reports, it is necessary to keep in mind that they have a purely communicative function (Salager-Meyer, 1994; Caselli *et al.*, 2021), and are usually technical and formal (Iedema, 2012). There are several ways to conduct the translation of official reports, but the resulting translations should be endowed with two essential elements: language correctness and message understandability. Language correctness is the consequence of unambiguous lexical choices so that the specific terms employed to translate from one language to another have a precise meaning, which must be the same in both the source and the target languages (Newmark, 1988; Popel *et al.*, 2020). Language correctness is also obtained through the application of the appropriate grammatical and syntactic structures in the target language. The understandability of the message depends on how much of the meaning is transferred from the source language into the target language (Snover *et al.*, 2009). In the present investigation, the correctness of the

language used in the TERs was designated as accuracy, while the understandability of the message conveyed by the TERs was defined as adequacy.

Accuracy represents the quality of a text as being correct and free from errors, and it has been addressed in many ways in translation studies (Vinay and Darbelnet, 1958; Nida, 1964; Catford, 1965; Hale and Campbell, 2002; Wang *et al.*, 2007; Miyabe and Yoshino, 2009; Sipayung, 2018). An accurate translation has been discussed as “a translation of dynamic equivalence” that “aims at complete naturalness of expression and tries to relate the receptor to modes of behavior relevant within the context of his own culture” (Nida, 1964:159). Venuti appears to implicitly disagree with Nida, when claiming that “accuracy is consistent with dynamic equivalence” (Venuti, 1998:21-2) since accuracy is somehow related to a “sending-the-reader-abroad” strategy (Venuti, 1998:19-20). In many studies concerning the evaluation of texts translated by machines, language accuracy and language fluency are treated as synonyms (Ellender, 2012; Somers, 2012; Taleghani and Pazouki, 2018). However, fluency is a skill that distinctively belongs to the human brain (Eastridge and Mozzoni, 2005; Benjamin and Gaab, 2012), represents a measure of the accomplishment of the language skills, and provides an indication of the language performance of a learner (Charniak, 2000; Willis, 2008; Latif, 2013). Thus, although the two words share the basic meaning of language correctness, fluency deals with people, while accuracy involves texts. Consequently, language accuracy was used in the present investigation, as it represents a better measure of the correctness of a translated text. Therefore, accuracy is intended as the quality of a text as being correct and free from errors.

The concept of accuracy has been presented as ‘lexical meaning’ while that of adequacy as ‘conceptual meaning’ (Zaky, 2000). Language adequacy is the second feature assessed in the present investigation, and it has been viewed as the result of the rebuilding and restoring of the traits and functions of the source language into the target language (Chang, 2011). Actually, adequacy is acquired through the transportation of meaning from one language into another (Snover *et al.*, 2009). Toury uses adequacy and acceptability to elaborate his concept of equivalence. Adequacy derives from a translation process that moves towards the source language. A translated text is acceptable when the translation process moves towards the target language (Toury, 1981; 2004). Adequacy is determined on the basis of the comparison of the textual elements, whereas acceptability on the comparison of the target cultural elements (Delzendehrooy, 2010). Adequacy is simply the appropriateness of a translation, and acceptability implies comprising the cultural elements. Equivalence is a relation between the source language and the target language (Casas-Tost, 2012). An ‘adequate’ translation could be

defined as a translation that preserves the meaning of the source text and does not add any information to it. Considering the different languages, a number of actions may be undertaken to achieve lexical, semantic and stylistic meanings, so that the adequate communicative impact reaches the receiver. In this way, the translator reinterprets the source text and uses many strategies to reproduce adequacy in the target text (Chang, 2011). In the present investigation adequacy is a term that applies specifically to a feature of a translation, and it is meant as the result of the transportation of the meaning from one language into another (Snover *et al.*, 2009; Popel *et al.*, 2020).

To address these linguistic and translation phenomena, the Italian-English translations of the reports on the COVID-19 pandemic that were published by the ISS were studied. The application of methodologies that seem to be seldom considered and utilized in translation studies and translation quality evaluation related to medical writings was shared. The paper also discusses the centrality of language in relation to the problem of ‘good translations’, which are necessary for a comprehensive and capillary widespread of health and medical knowledge outside the boundaries of single nations.

## **Materials and Methods**

Twenty (20) of the Italian Covid-19 reports concerning the coronavirus pandemic in Italy have been translated into English and released by the ISS from April until December 2020. Assuming that all the original Italian reports had been written properly, only the TERs were utilized for the present analysis. Ten of these reports were addressed to the general public, six to health operators, and four specifically to doctors (iss.it, 2020). Translators were reported as being different for the 20 TERs, but no inquiry was made into their identity, experience or background. Both the Italian and English versions of the reports were downloaded directly from the website of the ISS (iss.it, 2020).

## ***Quantitative Analysis***

A quantitative analysis was carried out by applying methodologies, systems and scores that seem to be rarely considered and utilized in translation studies and translation evaluation related to medical writings. The TERs were probed using the TAUS DQF software, which has been specifically designed to evaluate translation quality by means of fluency and adequacy rating scales (taus.net 2020). The Translation Automation User Society (TAUS) Dynamic Quality Framework (DQF) includes various tools that have been utilized in many studies for the evaluation of translation quality (do Carmo, 2020; Kirchner, 2020; Chang, 2021; Firat, 2021; He, 2021; Jaccomard *et al.*, 2021).

The corpus included a total number of words of 222.744, with a mean number of words of 11.137, a minimum of 3570 and a maximum of 26.177 words. The total number of sentences was 20.551, with a mean number of sentences of 1028, a minimum of 418 and a maximum of 2506 sentences. In order to probe the TERs through the TAUS DQF system, each text was divided into fragments containing approximately the same number of lines (8-10). The total number of fragments was 1489, with a mean number of fragments of 78, a minimum of 23 and a maximum of 153 fragments (Table 5). Accuracy and adequacy means, medians, and modes were calculated using Excel flowsheets.

### *Modified Accuracy and Adequacy Rating Scales*

The accuracy and adequacy of the TERs were scored using an accuracy rating scale as well as an adequacy rating scale, both enabling the scoring of fragments from 1 to 4. These scales were modified respectively from the TAUS 5-score fluency rating scale and 5-score adequacy rating scale (taus.net 2020), in order to better adapt them to the specific text genre of the present analysis (Castilho *et al.*, 2018; Candel-Mora, 2022). The modified accuracy scale allowed scoring of the language correctness and precision in each fragment (Table 1).

**Table 1.** Modified Accuracy Scale

- Score 1 = incomprehensible language
- Score 2 = incorrect language
- Score 3 = good language
- Score 4 = flawless language

The modified adequacy score rating scale indicated how much of the meaning of the source Italian reports was conveyed into the TERs. It allowed scoring of the meaning in each fragment (Table 2).

**Table 2.** Modified Adequacy Scale

- Score 1 = none of the meaning in the source text is contained in the translation
- Score 2 = portions of the meaning in the source text are contained in the translation
- Score 3 = almost all of the meaning in the source text is contained in the translation
- Score 4 = all of the meaning in the source text is contained in the translation

### *Grammarly*

Along with the modified accuracy rating scale, to further test the level of language correctness (accuracy) of the TERs, the Grammarly software was used (grammarly.com, 2020), since it has been widely tested (Avila *et al.*, 2021; Iftitah and Kuswardani, 2021; Nguyen and Ngo, 2021; Sutaryo *et al.*, 2021; Tabrizi and Etemad, 2021). The software allows the number of spelling and grammar errors in a text to be counted.

### *Flesch-Kincaid readability tests*

In addition to the modified adequacy rating scale, in order to gain more insight into the understandability (adequacy) of the TERs, the Flesch-Kincaid readability tests were employed, which have been considered precious measures when evaluating the quality of translations, as they indicate the accessibility of a text (Dye, 1971; Karwacka, 2021). The Flesch-Kincaid readability tests include both the Flesch Reading Ease and the Kincaid Grade Level.

The Flesch Reading Ease test measures the readability of an English text in relation to its language complexity (Flesch, 1948; Avila *et al.*, 2021). It is an index of the reading ease and effectiveness of a writing in transmitting the message for which it was created (Table 3).

**Table 3.** Flesch Reading Ease

F > 90:	readability for middle school students
F > 60:	high readability
F < 50:	low readability
F < 30:	readability for college graduates and over

The Flesch reading ease ranges from 1 to 100, where 100 is an easy text and 20 is an extremely hard text to understand (such as an academic text) (Table 3). The optimal reading ease is around 60-70, corresponding to an average difficulty of the texts, which can be read and understood by about 80% of readers.

The Kincaid school grade also captures the readability of an English text using school grade level (1-12 and over according to the American education system, which is very similar to the Italian one – Table 4). The Kincaid school grade determines the schooling grade a reader must have in order to read and understand a text. A school grade of 6-8 ensures that the content of a text can be read by 80% of readers (Kincaid, 1975; Avila *et al.*, 2021).

**Table 4.** Kincaid Grade Level

Level 0 - 6	basic
Level 6 - 12	average
Level 12 - 18	skilled
Level > 18	academic

Therefore, the Flesch-Kincaid tests provide information on the readability of a text in relation to both its complexity and the reader's school grade. Indeed, a Flesch reading ease of 60-70 and a Kincaid grade of 6-8 indicate that a text can be read and understood by a large number of readers. In this investigation, both the Flesch reading ease and the Kincaid school grade tests were calculated using the Content Analysis Search Engine Optimization (SEO) Tool, which is a digital software used to analyze and modify the content of websites. Common tasks associated with SEO include creating high-quality

content and optimizing content around specific keywords (seoscout.com, 2020).

### ***Qualitative Analysis***

#### ***Error Analysis***

All 20 TERs were processed directly by the author of the present paper using the Error Analysis method (Corder, 1967, 1981; Schaumann and Stenson, 1976; James, 1998). Error Analysis has been explained as a systematic description of an error made by language users in their written production in the target language (Corder, 1981; Pym, 1992; Ellis, 1994; Brown, 2000). This means that in translation studies, error analysis could be interpreted as a process resulting from a comparison of the source language and the target language (Pym, 2023). Indeed, in this specific context, an error has been viewed as a systematic deviation from the accepted system in the target language (Norrish, 1983).

In the present investigation, the qualitative evaluation was aimed at disclosing exclusively the inaccuracies and mistranslations in the TERs, and the 4-Stage process was adopted (Ellis, 1994; Gass and Selinker, 2008). The first stage was the collection of the TERs as already described in the Quantitative Analysis section of the present paper. The second stage included error identification, which was obtained by reading the TERs and checking language consistency by comparing the source language in the Italian reports with the target language in the TERs. The third stage of the analytical process involved the assessment of the TERs via description and categorization of the errors detected (Ellis, 1994; Gass and Selinker, 2008), which were developed taxonomically, specifying errors in terms of linguistic categories (Dulay *et al.*, 1982). For the purposes of the present analysis, errors were classified according to language level (e.g. syntactic, etc.), general linguistic category (e.g. passive sentence, etc.), and more specific linguistic elements (e.g. articles, prepositions, verb form, etc.). Therefore, first, terminology and glossary adherence concerning medical technical and sub-technical terms used in the TERs were detected. Second, the grammar and syntax phenomena that were examined included articles, prepositions, possessives, verb use, subject-verb agreement and compound phrases. Third, cohesion was analyzed. Finally, internationalization of the TERs was studied in relation to how well the content had been prepared for localization in English; thus, dates, names of institutions, etc. were explored. The fourth stage of the analysis consisted in providing explanations on the nature and development of the errors observed, and attempting to determine how and why they had been generated (Ellis, 1994; Gass and Selinker, 2008).

## Results

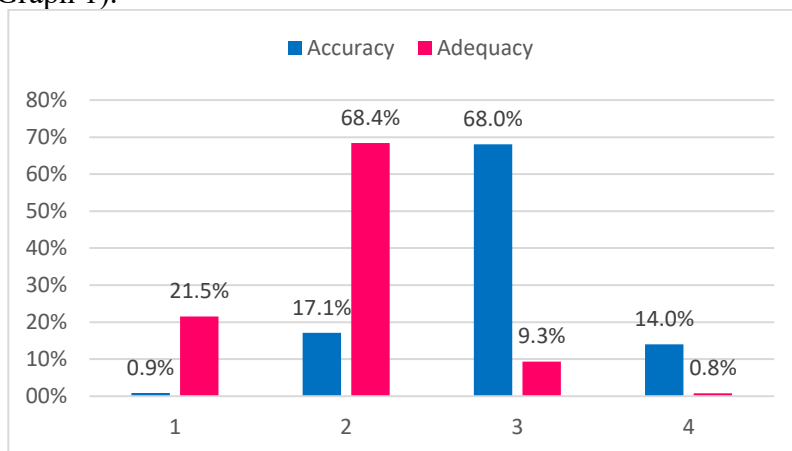
### Quantitative analysis

Considering the heterogeneity of the TERs and acknowledging the enormous number of mistranslations, a quantitative analysis could be done using only a limited number of variables. The total number of spelling and grammar errors counted by the Grammarly software was 2173, with a mean number of errors of 109, a minimum of 48 and a maximum of 281 errors. The errors include lexical entities as well as grammatical and syntactic features of the TERs, so the total number of errors was correlated with both the number of sentences and the number of fragments. Indeed, in the total corpus, 10.57% of the sentences and 145.94% of the fragments had some kind of error (Table 5). This latter percentage results because the total number of errors is greater than the total number of fragments; thus, a large number of fragments had one error and some had more than one.

**Table 5.** Quantitative results

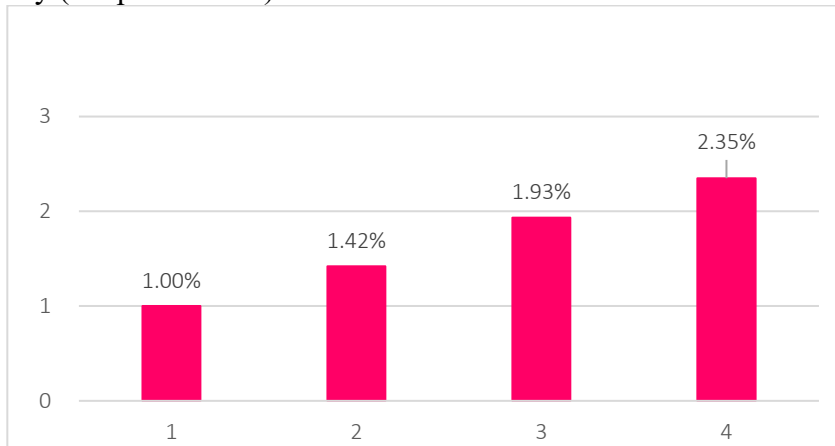
	Total	Mean	Minimum	Maximum	% with errors
<b>Words</b>	222.744	11.137	3570	26.177	---
<b>Sentences</b>	20.551	1028	418	2506	10.57%
<b>Fragments</b>	1489	78	153	23	145.94%
<b>Spelling and grammar errors counted by Grammarly</b>	2173	109	281	48	---

The fragments in the TERs scored through the accuracy and adequacy rating scales (Tables 1 and 2) modified from the TAUS DQF yielded a mean accuracy of 3 and a mean adequacy of 1.9. The fragments with an accuracy score of 1 were 0.9%, and the fragments with an adequacy score of 4 were 0.8% (Graph 1).

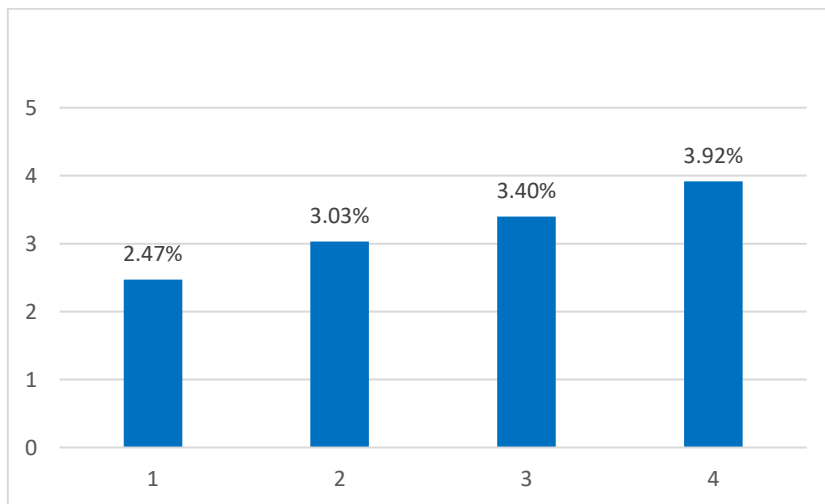


**Graph 1.** Mean accuracy and adequacy

In general, accuracy was 55% more represented than adequacy. Indeed, accuracy showed a mean value of 55% higher than adequacy. Conversely, adequacy had a value of 36% lower than accuracy; it seemed more difficult to obtain 4 in adequacy as well as 1 in accuracy. The accuracy mode was located at 3 (68% of the fragments), while the adequacy mode was located at 2 (68.4% of the fragments). In general, the data suggested a direct correlation between accuracy and adequacy, and as accuracy increased so did adequacy (Graphs 2 and 3).



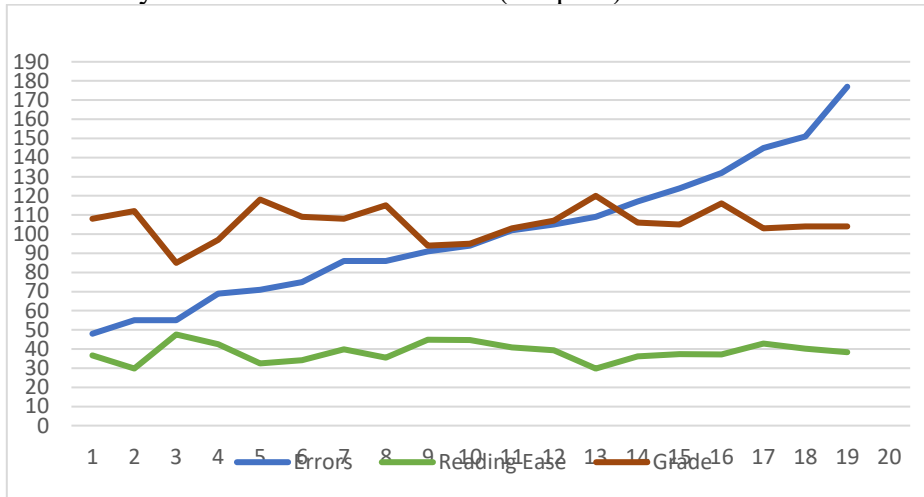
**Graph 2.** Mean adequacy vs. each accuracy value



**Graph 3.** Mean accuracy vs. each adequacy value

The mean Flesch reading ease was 39, with a minimum of 30 and a maximum of 48 (Table 3). The mean Kincaid school grade was 10, with a minimum of 8 and a maximum of 12 (Table 4). The median school grade was 10.6; while the median reading ease was 39.4. Means and medians of both the Flesch reading ease and the Kincaid school grade nearly overlapped. Neither

the Flesch reading ease nor the Kincaid grade and thus readability appeared to be affected by the total number of errors (Graph 4).



**Graph 4.** Reading ease vs. total number of errors; grade level vs. total number of errors

### ***Qualitative analysis***

The qualitative evaluation displayed a mixture of language patterns and yielded an enormous variety of linguistic elements. All the TERs had different language styles, and there was no consistency in terms of British/American spelling and English in general, even within the single TER. The TERs had been translated in such a wrong way that it was extremely difficult to understand their meanings and to group the linguistic items for a correct examination. A substantial number of paragraphs were like the one that follows, in which overt grammatical and linguistic errors could not be identified. However, the meaning is exceedingly hard to capture for a native speaker/reader of English due to a dense bureaucratism and an Italian-sounding style that make the passage opaque.

“Interventions must be implemented and adapted flexibly according to different needs, considering both elements related to the pandemic (level of local spread, the trend over time, phase) and professional, personal, and context elements that can determine higher risk of distress for workers” (iss.it, 2020).

### ***Technical and sub-technical terminology***

When translating official reports, lexical cohesion is imperative (Tanskanen, 2006; Alotaibi, 2015) so that the reader can immediately identify the word and match it with the meaning, which has to be the same throughout the entire text (Table 6).

**Table 6.** Lack of lexical cohesion

<b>Italian</b>	<b>Translation</b>	<b>Author's translation</b>
indicazioni	indications provisions recommendations guidance guidelines	guidelines
appendice	appendix annex	attachment
trasporto	transport shipping shipment	transportation
cartelle cliniche	clinical charts clinical records	medical records

The Italian word *indicazione* meaning ‘advice’ in the TERs was sometimes translated as ‘indications’ but other times as ‘provisions’, neither of which means ‘advice’ but ‘the action of providing or supplying something for use’. The word *indicazione* is used in medicine as ‘indications’ to denote that a particular drug has been created and can be used for a particular symptom or disease.

In Italian, the word *appendice* has a double meaning: (1) appendix of a book, and (2) ‘vermiform appendix’, which is a part of the intestine, and their plurals are respectively ‘appendices’ and ‘vermiform appendices’. The word *appendice* was translated as ‘appendix’ or ‘annex’, with the meaning of ‘attachment’. A similar term that appeared in the TERs is *indice*, which has different meanings in Italian: ‘index finger’, ‘index of a book’. In medicine ‘index’ expresses the index of an element or a process in the human body. Therefore, the plural for ‘index’ is ‘indexes’ when the terms are used in Standard English (e.g. indexes of books, etc.) and ‘indices’ in medical English (e.g. inflammatory indices, body mass indices, etc.).

The word *trasporto* was translated as ‘transport’, ‘shipment’ and ‘shipping’ without any distinctions between the latter two terms. ‘Transport’ means precisely the transfer of something from one place to another; ‘shipping’ is the transportation of goods by sea or some other means; ‘shipment’ refers to a large amount of goods sent to a place. The three terms are profoundly different and cannot be interchanged.<sup>1</sup>

Another anomaly that was revealed in the TERs is that some terms were applied mutually. The terms ‘illness’, ‘disease’, ‘pathology’ were all adopted to translate a state of unhealthiness. However, the three terms do not have the same meaning. In everyday medical conversation, a cold is an illness; cancer is a disease, each implying a different degree of involvement and the diverse severity of the state of unhealthiness. While the term ‘disease’ is a technical term used by doctors, the term ‘illness’ refers to the way patients perceive their own state of not being well. Instead, the term ‘pathology’ is used to indicate the science that studies the causes and effects of diseases, and can be divided into many branches of medicine. The problem is that this term can

<sup>1</sup> All the definitions are from the PubMed-Medline

be a false friend, because in Italian the term *patologia* has a double meaning: (1) the study of diseases involving man, animals and plants, and (2) ‘disease’; thus, a distinction must be made between Italian and English. Both *patologia* and ‘pathology’ involve the study of disease processes, but in Italian it includes all aspects of a disease, while in English, it comprises only the study of samples of body tissues, which in Italian is called *anatomia patologica*. Another example concerns translation of the phrase ‘sick person’, to which seven different variants were applied: patient, subject, person, citizen, case, resident and guest. In this context, one particular translation must be evidenced, ‘case’. This way of referring to patients has long been recognized as dehumanizing discourse and it should never be employed (Mintz, 1992; Robbins, 2018).

The terms ‘oxidative’ and ‘oxidizing’ were translated with the same meaning. Oxidizing is the act of chemically combining with oxygen, and reactive oxygen species undergo or cause a reaction in which electrons are lost to another species. Oxidative relates to the process or result of oxidizing or being oxidized. Although profoundly different, the expressions of ‘mortality’, ‘lethality’ and ‘fatality’ were used interchangeably.

Other extremely frequent linguistic items that could mislead are false friends, and Table 7 depicts the ones most frequently mistranslated and misused in the TERs. Among these *disposizione*, which means ‘availability’ must be pointed out, since it is always mistranslated into ‘disposal’ meaning ‘getting rid of something’. Also, the term *scala*, which in English has a double correspondent: ‘scale’ and ‘degree’, in this particular context should have been translated as ‘degree’.<sup>2</sup>

**Table 7.** False friends

<b>Italian</b>	<b>Translation</b>	<b>Author’s translation</b>
effettivo	effective	real, true
eventuale	eventual	possible
rilevante	relevant	important
disposizione	disposal	availability
...la scala del fenomeno.....	...the scale of the phenomenon....	...the degree of the phenomenon....

Table 8 shows other linguistic items that were studied in the TERs. Words like *informazioni* and *evidenze* in Italian have both singular and plural correspondents; this is not so in English, where instead both these terms are always singular and require a singular verb. These words are repeatedly mistranslated and applied as plurals, with consequent mistranslation of the verbs as well. Other plurals of sub-technical and technical terms that need to be exhibited are ones deriving from Latin or Greek, which were very often

<sup>2</sup> All the definitions are from the PubMed-Medline

misused and consequently matched with wrong verbs. Terms like ‘crisis’ and ‘analysis’ have respectively ‘crises’ and ‘analyses’ as plurals, but in Italian they are invariable and the same word is used for both singular and plural, *crisi* and *analisi*; these were always translated as singulars, even though they had a plural verb. In Table 8 the term *flogosi* must be evidenced; ‘phlogosis’ is an archaic word for ‘inflammation’, whereas *flogosi* is still used in Italian medical language, in English it is almost never seen because the word in use is ‘inflammation’.<sup>3</sup>

**Table 8.** Wrong plural nouns

Italian	Translation	Author’s translation
informazioni	informations	information
evidenze	evidences	evidence
crisi, analisi (plural)	crisis, analysis	crises, analyses
indici di flogosi	phlogistic indexes	inflammatory indices

### Grammar and Syntax

Tables 9 and 10 show some of the many misuses of articles and prepositions when translating from Italian into English, and the focus is on the fact that translators tend to comply with the source language.

**Table 9.** Articles

Italian	Translation	Author’s translation
il monitoraggio	the monitoring	monitoring
un monitoraggio di molti...	a monitoring of many	monitoring of many
alle differenze correlate al sesso	to the sex-related differences	to sex-related differences
in assenza di una possibile diagnosi alternativa	in absence of possible alternative diagnosis	in the absence of a possible alternative diagnosis

For the phrase...*alle differenze correlate al sesso...*, the correct translation into English is ‘...to sex-related differences...’. No article is required because ‘sex-related differences’ had never been mentioned or specified before, neither was the phrase supported by prepositions or relative pronouns that could justify the use of the article (e.g. ...*alle differenze correlate al sesso, che potrebbero condurre a risultati sbagliati...* ...to the sex-related differences that might lead to wrong results...). Needless to say, the lack of agreement between the article ‘a’ and the indefinite ‘many’ is a serious mistake.

<sup>3</sup> All the definitions are from the PubMed-Medline

**Table 10.** Prepositions

<b>Italian</b>	<b>Translation</b>	<b>Author's translation</b>
prima di arrivare nella biobanca	before arrival in the biobank	before arriving at the biobank
tra professionisti	between professionals	among professionals
separazione tra le aree di cura	separation between areas of care	separation among areas of care
in base alle attuali conoscenze	according to as current knowledge	according to current knowledge

From a grammatical and syntactic point of view, the translation of verbs was astonishing (Table 11). The translators confused the noun ‘breath’ and the verb ‘to breathe’.

**Table 11.** Verbs

<b>Italian</b>	<b>Translation</b>	<b>Author's translation</b>
dedicato all'ascolto dei lavoratori	dedicated to listen to workers	dedicated to listening to workers
la principale trasmissione della SARS-CoV-2 avviene attraverso	the main SARS-CoV-2 transmission occurs is through	the main SARS-CoV-2 transmission occurs through
respira aria calda	breath hot air from	breathe hot air

Many times, verbs were not accompanied by the corresponding subjects, and a lack of agreement resulted (Table 12).

**Table 12.** Subject-verb agreement

<b>Italian</b>	<b>Translation</b>	<b>Author's translation</b>
in breve, i soggetti maschi con normali livelli di attività di G6PD, non hanno alcuna carenza di G6PD	in summary, male subject with normal levels of G6PD activity, have no G6PD deficiency	in summary, male subjects with normal levels of G6PD activity have no G6PD deficiency
che lo psicologo identifica la persona	that the psychologist identify the person to	that the psychologist identifies the person to
sangue, urine e feci devono essere raccolti	blood, urine and feces has to be collected	blood, urine and feces have to be collected
perchè il virus è inattivato a 26-27 °C	because the virus inactivate at 26-27 °C	because the virus is inactivated at 26-27 °C
le caratteristiche cliniche della KD si sovrappongono	the clinical features of KD overlaps	the clinical features of KD overlap.....

In the TERs, a persistent absence of ‘esses’ for plural nouns and third person singular in the present tense of verbs was observed. This phenomenon could be explained by the fact that Italian language generally has a pattern of alternating consonants with vowels and almost all Italian words end with a vowel. Instead, English packs consonants together and most words end with a consonant. Italian speakers tend to impose vowel sounds where none appears

in English, like between consonants in clusters and at the end of words (McCully, 2009; Ashby, 2011).

Concerning compound phrases, one of the main and simplest rules of compounding is that nouns can act as adjectives, and in English, adjectives are always invariable, meaning that they cannot be plural. This is an extremely common mistake made by Italians when attempting to premodify, as premodification and compounding are specifically Anglo-Saxon and Italian has no corresponding forms. Italian cannot be premodified and compounding is not possible; thus, Italians have serious problems in translating compounds or even using premodification when writing in English (Musacchio, 2006; Pierini, 2015) (Table 13).

**Table 13.** Premodification and compounding

<b>Italian</b>	<b>Translation</b>	<b>Author's translation</b>
interazioni tra farmaci	drugs interaction	drug interactions
gruppo di età 0-60	0-60 years age groups	age groups 0-60 years
gruppo di età al di sopra degli 89 anni	over 89 years age group	age group over 89 years
i manager delle strutture	facilities managers	facility managers

No specific training is required to translate possessives correctly (Table 14), so they can be easily translated from Italian into English. Possessives can be utilized only with persons and animals, and the 'of' form must be used in other cases. A second choice could be to nominalize and compound. However, many mistranslations were captured in the TERs.

**Table 14.** Possessives

<b>Italian</b>	<b>Translation</b>	<b>Author's translation</b>
nome degli ingredienti	...ingredients' names...	ingredient names... OR names of the ingredients
settimane prima dello sviluppo dei sintomi	weeks before symptoms' development	weeks before symptom development OR weeks before development of symptoms
l'impegno del TVMR è	TVMR's commitment is	TVMR commitment is OR Commitment of TVMR is
l'impegno dell'associazione	the association's commitment	the association commitment OR the commitment of the association
i temi dell'epidemia	the epidemic's issues	the issues of the epidemic
gestire la comunicazione delle morti	managing death's communication	dealing with notification of death

*Internationalization*

The qualitative evaluation of internationalization items revealed a number of mistakes. In both American and British English variants, only two types of ‘disease experts’ are recognized: ‘medical doctors’ and ‘physicians’, who could respectively be either ‘family doctors’ or ‘general practitioners’. A third type of ‘disease expert’ is a ‘consultant’ or ‘specialist’, meaning a person who has further studied a specific branch of medicine (e.g. a gynecologist, dermatologist, internist, surgeon, etc.). In the TERs, six different translations were given to express these three types of ‘disease experts’, resulting also in a lack of cohesion (Table 15).

**Table 15.** Disease experts

<b>Italian</b>	<b>Translation</b>	<b>Author’s translation</b>
medico in servizio	attending physician	doctor, physician
medico del territorio	the doctor of the territory	doctor, physician
medico	physicians	doctor, physician
medico di base	general practitioner	general practitioner, family doctor
ex guardia medica	the care continuity doctor	general practitioner, family doctor
specialista	specialist doctor	specialist, consultant

In English, the use of the definite article ‘the’ with acronyms depends on the acronym itself. For example, the acronym F.D.A. requires the definite article, while the acronym WHO does not. Although at the beginning of some TERs a list of acronyms was provided, some of them were not accompanied by the article ‘the’. Other acronyms were difficult to understand since their original Italian forms were retained. For example, the acronym PCR has two different meanings; in Italian it means *proteina C reattiva* (C-reactive protein-CRP) and in English it means polymerase chain reaction (*reazione a catena della polimerasi - RCP*). Unless accepted and shared by the international scientific community, some acronyms should not be kept in their original forms, especially when they are included in texts addressed to different people with different backgrounds. The acronym ‘SARS-CoV-2’ needs to be highlighted, as it was translated as ‘Syndrome Acute Respiratory Severe Coronavirus 2’ instead of ‘Severe Acute Respiratory Syndrome Coronavirus 2’.<sup>4</sup>

The translation of dates is also worth mentioning. Dates need to switch the month with the number and this latter becomes ordinal instead of cardinal for American English (Garner, 2016). Their editing in the TERs lacked coherence with both American and English variants, throughout the texts (Table 16).

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<sup>4</sup> All the definitions are from the PubMed-Medline

**Table 16.** Dates

<b>Italian</b>	<b>Translation</b>	<b>Author's translation BrE</b>	<b>Author's translation AmE</b>
...che fino al 7 maggio	...that up until May 7	...that until May 7th	...that until May 7th
decreto del 24 aprile 2006	decree 24 April 2006	decree on 24 April 2006 OR decree on 24 <sup>th</sup> April 2006	decree on the 24 <sup>th</sup> of April, 2006 OR April 24 <sup>th</sup> , 2006
4 agosto 2006	4 August 2006	4 August 2006 OR 4 <sup>th</sup> August 2006	the 4 <sup>th</sup> of August, 2006 OR August 4 <sup>th</sup> , 2006

For institutions and associations that are present in one country but not in others, the choice of words should be as broad as possible. The name of the institution that created and hosted the TERs on its own website, *Istituto Superiore di Sanità* was translated in at least five different ways: ‘National Institute of Health’, ‘the National Institute of Health in Italy’, ‘the National Institutes of Health in Italy’, ‘Higher Institutes of Health’, and ‘Italian National Institute of Health’. The same is true for *Agenzia Italiana del Farmaco*, which is the Italian Drug Agency; it was translated as: ‘Italian Agency of Drug’, ‘Italian Medicines Agency’, ‘Italian Drug Agency’. The Italian words *Albo* or *Ordine* that were translated as ‘Register’ or ‘Order’ are actually nothing more than a list of names of people who are recognized as being part of a specific profession such as doctors, psychologists, lawyers, etc., so adequate and precise translations should be provided for each specific case. In addition, terms like ‘nationally’ or ‘national’ should be avoided. Instead, the name of the country should be favored, e.g. not ‘nationally’ but ‘in Italy’, not ‘on national ground’, but ‘on Italian ground’, etc.

## Discussion

The present study concerned the evaluation of the quality of 20 TERs issued by the ISS. The TERs resemble medical reports written using a certain amount of technical and sub-technical medical terminology together with a certain standard language. The corpus included a total number of words of 222.744, a sufficiently large corpus that can be subjected to statistical analyses.

The correctness and the understandability of the translations from Italian into English were reflected respectively in the accuracy and adequacy results derived from the two accuracy and adequacy rating scales. Indeed, the mean for accuracy was 3, indicating that the TERs had been written using some appropriate forms of English and reasonably good grammatical and linguistic structures, but were not devoid of mistakes. The mean for adequacy

obtained from the adequacy rating scale was 2, showing that only portions of the meaning in the original Italian reports were contained in the TERs. Furthermore, mean and mode (the value that appears most frequently in a data set) corresponded, being 3 for accuracy and 2 for adequacy, and denoting that these numbers truly mirror the situation of the mean and mode in the TERs.

The results demonstrate that accuracy is more represented than adequacy (55% more), implying that the English language had good grammatical and syntactic structures in the TERs. However, this was not sufficient to make translations understandable and appropriate, probably because these two latter features are strongly affected by the errors that were in any case present and by the Italian-sounding style used in the TERs, which made the texts awkward and ineffective. These phenomena are also evidenced by the fact that an accuracy score of 1 (the lowest score) alongside an adequacy score of 4 (the highest score) were both extremely difficult to obtain. Of course, as could easily be assumed, the direct correlation between these two traits highlights that the more a translated text is accurate and linguistically correct, the greater its adequacy and understandability, even though good language does not seem to be enough for good understanding.

The accuracy of the TERs was detected also using the Grammarly software to count the number of spelling and grammar errors in the TERs, and a mean number of 109 errors was found. The errors counted by the Grammarly software include both the lexical entities and the grammatical and syntactic features of the translations, and the evidence that almost 11% of the sentences and almost 150% of the fragments contained some kind of error is alarming. Although this quantitative analysis failed to identify both the type of error and where exactly the errors occurred in the texts, the data obtained show that only a negligible number of fragments was free from errors. Indeed, almost all fragments contained one error, and many fragments had more than one error (1489 fragments *vs.* 2173 errors), which is an enormous amount for translations of official reports that were aimed at communicating important information.

More insight into the adequacy of the TERs was gained by means of the Flesch-Kincaid readability tests. The optimal Flesch reading ease is around 60-70, corresponding to an average difficulty of the texts, which can be read and understood by about 80% of readers. The mean reading ease in the TERs analyzed was 38, being over half of what it should have been (38 *vs.* 60-70), and clearly revealing that the TERs were readable by a professional audience, but they were too difficult if they were intended for the general public. The TERs do not appear to be effective, and their communication purpose seems to be unfulfilled for both the general public, because much less than 80% of readers understand them, as well as for health professionals, because they lack a remarkable academic nature. The Kincaid school grade level of 10 was way

over 6-8, representing the grade levels that assure readability by 80% of readers. This datum indicates that the TERs are extremely difficult for the general public, being understood only by people in 10<sup>th</sup> grade and over. On the other hand, if the TERs were to deliver an effective academic message, they should have had a grade over 18. Both reading ease and grade level and thus readability did not seem to be affected by neither the total number of errors nor the accuracy of the texts, probably because the two tests depend largely on the linguistic and semantic complexity of the terms and of the sentences. On the contrary, the low mean adequacy of 2 (implying the scarce understandability of the TERs) appears to further support the global limited readability of the TERs. The data derived from reading ease and grade level analyses, if individually considered, appear to show the ineffectiveness of the TERs, when combined together, they suggest the total failure of the reports in delivering readable information to the general public with an average school grade as well as to health professionals having higher school grades.

Accuracy was assessed also qualitatively to complement the quantitative evaluation. Error analysis was adopted to identify, shape, and further support and strengthen the quantitative findings, and this allowed to shed light on some of the most frequent linguistic inaccuracies detected in the TERs. The Error analysis displayed no lexical cohesion among the TERs, since some terms were translated differently across the TERs and even within the single TER. This trait resulted probably because the translations had been carried out by different translators, as stated in TERs themselves (iss.it, 2020). The examined lexical items were mainly technical and sub-technical terms, as the linguistic nature of the TERs was distinctly medical. Surprising elements were the misused grammatical and syntactic items like verbs, verb-subject agreement, compounds, and the unsuccessful international adaptation of the TERs. The idea in reading the TERs is that they seem to have been performed using a meticulous word-for-word style without even re-reading what had been translated.

In the field of medicine and public health, especially in a period like the one that we are still going through with the coronavirus infection, inaccuracies are unacceptable. The present investigation yielded disappointing results concerning the translation of technical and sub-technical terms, as evidenced in the qualitative evaluation. The quantitative analysis highlighted the centrality of linguistics in the context of translating such complex writings (Jakobson, 1959; 2013; 2021), which favors the management of the customs and norms used in medical language and the creation of quality translations (Taavitsainen and Pahta, 2000; Valdes and Vandepitte, 2021; Veira *et al.*, 2021). The results of this work seem to show that grammar and syntax are still the cornerstones and pilasters for the construction of a good translation. However, a good and accurate translation does not appear to correspond to an

understandable, adequate and readable text, probably because other factors (e.g. cultural) play crucial roles.

It is worth noting that texts like the TERs are extremely hard to translate, and the main difficulties lie in the fact that sometimes, lexical items do not have a direct correspondence in the two languages (Larson, 1984; Carl, 2021; Mikhailov, 2021). This problem probably arises because the objects, the concepts or the terms do not exist in one of the two languages, so, in these instances, it is better to explain rather than translate. A second important element to underline is the extensive use of bureaucratese, which strongly affects correctness and understandability (Ross, 1983; Lutz, 1989; Orwell, 1990; Watson and Lynch, 1998; Hamilton and Foltzer, 2021). A third factor to take into account is the fact that these TERs use a variety of different registers that a single translator cannot in any way master alone; maybe in these cases, such texts should be approached by teams with different competences and specialties, and not by a single translator. Finally, these types of translations should be performed consistently with the target language, by persons who translate into their native language (Hatim and Mason, 2005), are fluent in the source language (Robinson, 2012), and have a good knowledge of the subject matter (Hatim and Mason, 2014).

The data derived from this investigation seem to demonstrate the ineffectiveness of the language used in the TERs. The reasons why such translations have been performed are not clear, since they are not specified in the reports. The ISS states that the reports were addressed to health professionals, but 10 of the 20 reports were targeted at the general public. Therefore, it could be hypothesized that they are intended to provide health information to both non-Italian speakers living in Italy during the pandemic, and readers and health professionals outside Italy, since Italy was the first country to undergo the total lockdown. The publication of official health reports addressed to the general public should be committed to improving lives and increasing the social impact of science. On the other hand, when official health reports are aimed at a specialized medical audience, they should respond to all the rules and norms of that specific language community. In both cases, the TERs seem to fail in their communicative function due to their linguistic ineffectiveness.

This investigation highlights some linguistic and translation phenomena as well as the application of new methodologies like the TAUS DQF system, the Grammarly software, the Flesch-Kincaid readability tests, and the Content Analysis SEO Tool, which could be useful for linguists in discussing new and better approaches to performing translations and evaluating translation quality.

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