

# Unequal Shields: How Income, Education, and Age Influence Misinformation Vulnerability in North Macedonia

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## ABSTRACT

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North Macedonia presents a striking information paradox. Its population is broadly connected digitally, and yet remains among the most exposed to misinformation in Europe, as documented by multiple independent international indices. The country scores consistently in the highest-risk bands on EU-commissioned assessments of media pluralism, trails well behind regional and European peers on educational indicators, and is explicitly identified in press freedom reporting as an environment where widespread disinformation erodes public trust in media. The distance between connectivity and resilience points to something structural, a society in which access to information has expanded far more quickly than the capacity to evaluate it. This paper examines the roots of that vulnerability through three intersecting dimensions: the economic constraints that shape how citizens access and consume information, the educational deficits that limit their ability to evaluate it critically, and the age-differentiated patterns that determine how different generations engage with digital media. Drawing on the Knowledge Gap Hypothesis as its theoretical anchor, it argues that as the information environment grows more complex and adversarial, existing inequalities in resilience will deepen unless structural interventions actively close the gap. The paper uses Slovenia as an aspirational EU reference and Romania as a cautionary one, situating North Macedonia's challenge within its EU accession context and concluding with targeted structural recommendations across education, institutional capacity, and media policy.

**Keywords:** North Macedonia, misinformation, media literacy, Knowledge Gap Hypothesis, EU accession, digital inequality, media pluralism

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## 1. Introduction

The relationship between digital connectivity and civic resilience has become one of the defining questions of European democratic development. Across most of the continent, the expansion of internet access and social media adoption has been broadly accompanied by investment in digital literacy, press freedom, and critical media education. In North Macedonia, that relationship has taken a different shape. Indeed, the connectivity expanded rapidly and largely successfully, while the educational, institutional, and civic infrastructure needed to navigate it lagged considerably behind (Eurostat, 2023).

The results are documented across multiple independent international frameworks. The Media Pluralism Monitor, an EU-commissioned annual assessment produced by the Centre for Media Pluralism and Media Freedom at the European University Institute in Florence, consistently places North Macedonia in the medium-to-high risk category across key indicators of media independence, market pluralism, and media literacy (CMPF, 2023). Moreover, the OECD's Programme for International Student Assessment placed North Macedonia 71st out of 81 nations on reading literacy in 2022, well below the regional and EU averages (OECD, 2023). Finally, the Reporters Without Borders noted explicitly in its 2024 and 2025 Press Freedom Index that widespread disinformation and eroding media trust define the country's information environment (RSF, 2024, 2025).

Therefore, this paper examines why North Macedonia finds itself in this position and what structural factors sustain it. Three dimensions are at the center of the analysis: income, which determines what kind of information environment citizens inhabit; education, which determines whether they have the tools to navigate it critically; and age, which shapes the specific mechanisms through which different generations become susceptible to manipulation. Respectively, this paper draws on verified data from the OECD, UNDP, Eurostat, the European University Institute, Reporters Without Borders, GLOBSEC, and the Regional Cooperation Council (GLOBSEC, 2021; Regional Cooperation Council, 2024). It situates North Macedonia's position within the context of its EU accession and uses Slovenia and Romania as EU reference points.

## 2. Background and Context

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### Rapid Connectivity Without Corresponding Readiness

Over the past two decades, North Macedonia has made substantial investments in digital infrastructure. According to Eurostat, 86.4% of North Macedonians aged 16 to 74 used the internet in 2021, a figure comparable to several EU member states (Eurostat, 2023). In that regard, the mobile penetration is near-universal among adults, and social media platforms serve as the primary information channel for a large share of the population. However, according to UNDP research (2023a), documents that approximately 70% of citizens are estimated to be at risk of believing manipulative information without verification, a figure consistent with the structural indicators recorded in media pluralism and press freedom assessments. These findings indicate that the country is digitally present but structurally underprepared for what digital presence means in an adversarial information environment.

### What the International Evidence Shows

This research takes into consideration three independent international frameworks that converge on the same conclusion, each measuring a different dimension of the same structural problem.

- The Media Pluralism Monitor (MPM), produced annually by the Centre for Media Pluralism and Media Freedom at the European University Institute and co-funded by the European Commission, assesses risks to media pluralism across 32 countries, including North Macedonia explicitly as an EU candidate country. The MPM 2023 placed North Macedonia in the medium-risk band overall, with the Social Inclusiveness area, which includes the media literacy indicator, flagged as a particular concern (CMPF, 2023).
- Reporters Without Borders placed North Macedonia 36th out of 180 countries in the 2024 Press Freedom Index, with an explicit country note stating that 'widespread disinformation and a lack of professionalism contribute to the decline of society's trust in the media' (RSF, 2024). By 2025, the country had dropped to 42nd (RSF, 2025).
- The GLOBSEC Vulnerability Index assessed North Macedonia as displaying medium-level vulnerabilities in the information landscape dimension, susceptible particularly in the areas of media environment and civic space (GLOBSEC, 2021).

### **Slovenia as an Aspirational EU Reference**

Slovenia offers the most instructive EU reference for North Macedonia for reasons grounded in shared contemporary circumstances. Both are small, landlocked European countries with populations of approximately two million people. Both economies are structurally oriented toward the EU as their primary trade, investment, and regulatory destination, with the EU accounting for over half of North Macedonia's total trade flows (Eurostat, 2023). Slovenia has been an active direct investor in the Macedonian economy, and both countries treat EU integration as their central foreign and economic policy priority. On PISA reading, Slovenia scored 469 in 2022, close to the OECD average of 476, compared to North Macedonia's 359 (OECD, 2023). On the RSF Press Freedom Index, Slovenia and North Macedonia occupied comparable band positions in 2024, though Slovenia's trajectory within EU membership has been more stable (RSF, 2024). Romania's trajectory provides the cautionary dimension: an EU member since 2007, Romania scores below the OECD average on PISA (428) and has seen a declining RSF ranking, demonstrating that EU membership alone does not close the information resilience gap (OECD, 2023; RSF, 2024).

### **The Urgency of the Current Moment**

North Macedonia formally opened EU accession negotiations in July 2022. However, since then, this process has faced structural delays pending constitutional amendments (European Commission, 2024). For instance, the EU Progress Reports now explicitly benchmark media freedom and media literacy as accession criteria (European Commission, 2024, 2025). The reports indicate and urge for more transparent and secure media platforms that would allow citizens a safer environment and access to information. Indeed, the challenges of disinformation campaigns targeting the accession process itself have been documented by addresses by the Institute for Strategic Dialogue, the Metamorphosis Foundation, and the European Commission (ISD, 2024; Metamorphosis Foundation, 2025).

## **3. Theoretical Framework**

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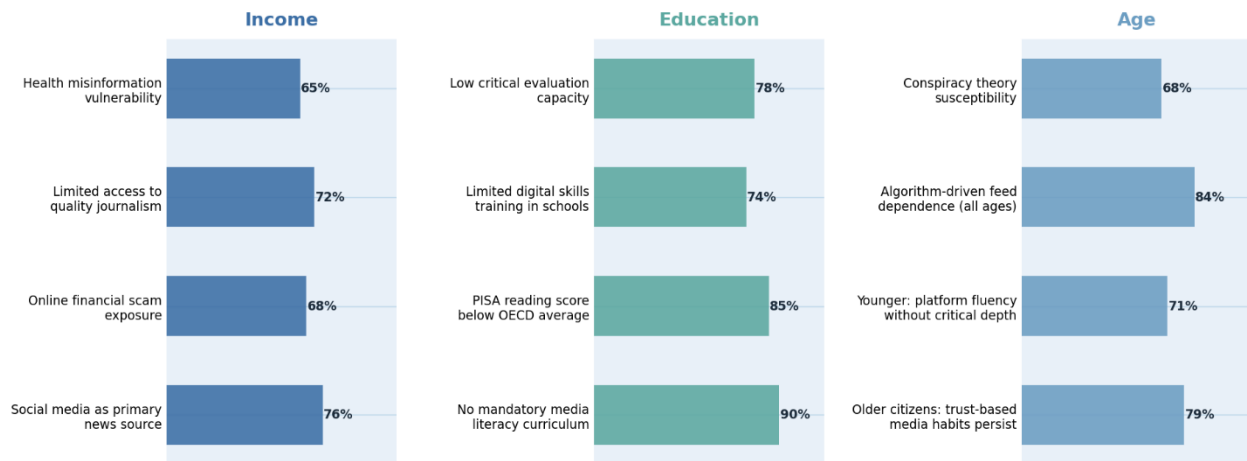
The analysis rests on the Knowledge Gap Hypothesis, developed by Tichenor, Donohue, and Olien in 1970 (Tichenor et al., 1970). The theory holds that as new information enters society, those with greater socioeconomic resources absorb and apply it faster, systematically widening the gap between the informed and the uninformed. In a media ecosystem that is not merely complex but actively adversarial,

this dynamic becomes considerably more consequential. Socioeconomic differences in resilience go beyond differences in information exposure; they become differences in susceptibility to systems designed to manipulate. For instance, clickbait was engineered to trigger emotional responses, financial scams targeting economic anxiety, and electoral disinformation aimed at populations with lower institutional trust all exploit structural vulnerability (UNDP North Macedonia, 2023b; GLOBSEC, 2021). In that regard, the Knowledge Gap Hypothesis predicts that as these systems grow more sophisticated, their capacity to exploit existing inequalities will increase unless structural interventions actively narrow the gap. Moreover, for North Macedonia, this prediction is consistent with what the international data shows. Individual awareness campaigns, while valuable, are insufficient as a primary response (CMPF, 2023). Therefore, in order to close the gap requires changes at the level of institutions, curricula, and economic structures.

### 4. Three Analytical Dimensions

The paper examines three interacting variables that together compose the structural vulnerability profile of Macedonian citizens. Each dimension has distinct characteristics and requires distinct interventions, but all three are mutually reinforcing.

**Structural Vulnerability Dimensions — Estimated Exposure Rates (%)**



Sources: UNDP North Macedonia (2023a, 2023b), OECD (2023), Regional Cooperation Council (2024). Note: values are composite risk estimates, not direct survey measurements.

Figure 1. Structural Vulnerability Dimensions: Estimated Exposure Rates (%)

Sources: UNDP North Macedonia (2023a, 2023b), OECD (2023), Regional Cooperation Council (2024). Note: values are composite risk estimates, not direct survey measurements.

#### Income and the Information Environment

Economic constraints shape the information environment in direct and measurable ways. Lower-income citizens in North Macedonia rely primarily on free, algorithmically curated social media platforms as their main source of news. According to the Balkan Barometer 2024, social media is the primary news source for a majority of citizens in the region, with trust in social media information being simultaneously the lowest of any source category and the most widely used (Regional Cooperation Council, 2024). Algorithmic curation rewards emotional resonance over factual precision, amplifying content designed to provoke fear or certainty. Additionally, UNDP research in North Macedonia documents that financially motivated online fraud ranks among the most frequently encountered forms of misinformation, and that lower-

income populations are its most consistent targets (UNDP North Macedonia, 2023b). Health misinformation that promises affordable solutions to real medical anxieties follows a similar pattern. To conclude, resolving this vulnerability requires structural investment in free, publicly accessible quality journalism and a reduction of media ownership concentration.

### **Education and the Deficit of Critical Capacity**

Formal education is the primary mechanism through which societies build the cognitive tools required to navigate complex information environments. These skills need to be deliberately taught (EACEA, 2024). In that regard, OECD PISA 2022 places North Macedonia's 15-year-old students at 359 in reading, well below the OECD average of 476 and 71st out of 81 nations (OECD, 2023). Reading literacy is directly relevant to media literacy, as the ability to comprehend, interpret, and critically evaluate written texts is foundational to evaluating online content. The Media Pluralism Monitor 2023 explicitly flagged the media literacy indicator within the Social Inclusiveness area as deteriorating, with candidate countries recording higher risk levels than EU member states (CMPF, 2023). In North Macedonia, media literacy is not yet a mandatory curriculum subject. Indeed, it is delivered unevenly without the systematic framework or assessment mechanisms that would make it meaningful at scale (EACEA, 2024). Therefore, based on this systematic inequality and structural variety, the EU Progress Reports for 2024 and 2025 both flag this as requiring legislative action (European Commission, 2024, 2025).

### **Age and the Two Faces of Vulnerability**

Age creates vulnerability through two structurally distinct mechanisms. Among older citizens, high media consumption coexists with low verification habits and a trust architecture built for a different media environment. Moreover, research on media literacy conducted among elderly citizens in North Macedonia confirms that older populations display the highest rates of single-source reliance and the highest susceptibility to health misinformation and electoral disinformation (NVO Info Centar, 2025). On the contrary, the younger citizens face the inverse problem. High platform fluency can mask significant critical gaps, because navigating a platform skillfully and evaluating its content critically are different competencies. Algorithm-driven feeds narrow the information environment for young users, reinforcing existing beliefs and limiting exposure to counterevidence (IFEX, 2024). Finally, persistent susceptibility to conspiracy theories and politically charged misinformation among North Macedonian youth has been documented by civil society organizations working in this space.

## **5. Comparative Evidence**

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### **Educational Performance: PISA 2022**

North Macedonia's 2022 reading score of 359 is 117 points below the OECD average of 476 (OECD, 2023). For comparison, Slovenia scored 469, close to the OECD average; Romania scored 428, and Serbia 440. Critically, North Macedonia's reading performance in 2022 returned to the level last observed in 2015, reversing gains made between 2015 and 2018, a stagnation signaling that the educational system is not improving its capacity to prepare citizens for the information environment they inhabit (OECD, 2023).

**PISA 2022 Reading Scores — Regional and EU Reference Comparison**

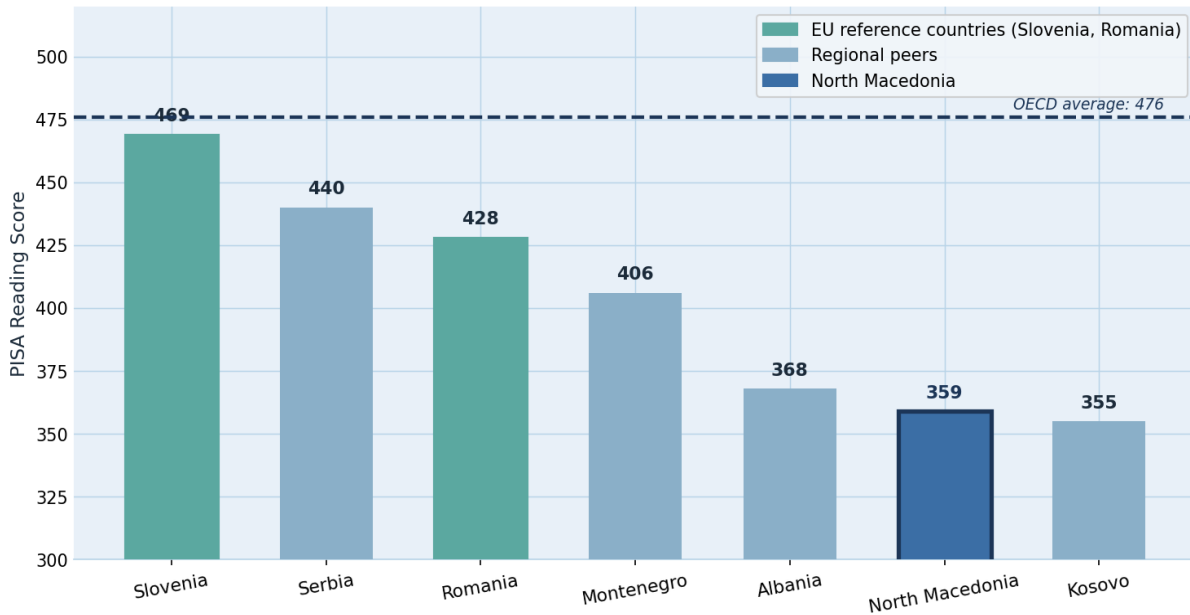


Figure 2. PISA 2022 Reading Scores: North Macedonia, EU Reference Countries, and Regional Peers  
 Source: OECD (2023). Programme for International Student Assessment 2022.

**Press Freedom and Media Independence: RSF 2024**

Reporters Without Borders provides the most widely cited independent assessment of the press freedom environment. In that regard, North Macedonia ranked 36th in 2024 and dropped to 42nd in 2025, with both country notes identifying 'widespread disinformation' and declining media trust as the primary concerns (RSF, 2024, 2025). Slovenia ranked 42nd in 2024. Serbia, for comparison, ranked 98th. These rankings directly determine the diversity of verified information sources available to citizens (RSF, 2024).

**RSF World Press Freedom Index 2024 — Selected Country Rankings**

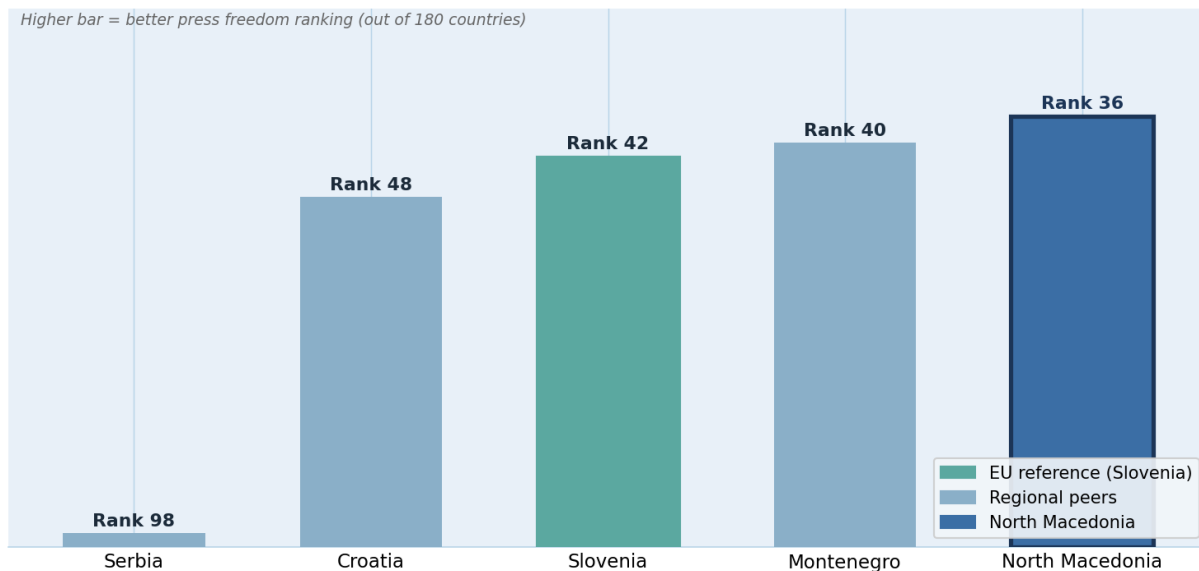
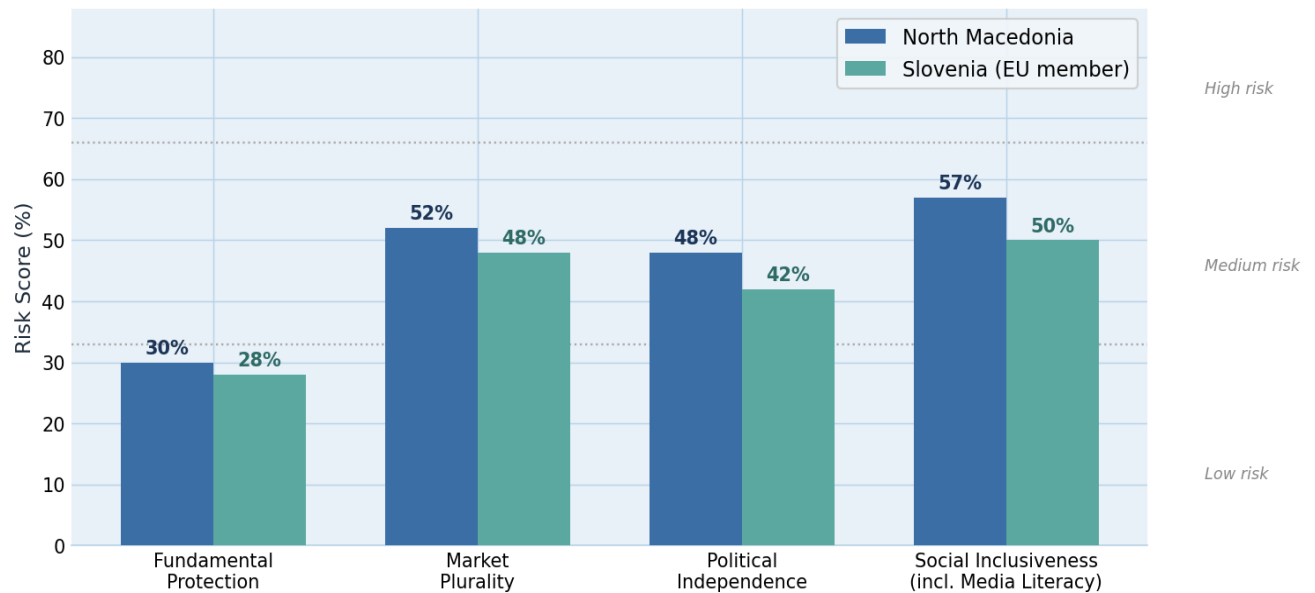


Figure 3. RSF World Press Freedom Index 2024: Selected Country Rankings  
 Source: Reporters Without Borders (RSF, 2024). World Press Freedom Index.

## Media Pluralism: The European University Institute Monitor

The Media Pluralism Monitor is co-funded by the European Commission and produced by the Centre for Media Pluralism and Media Freedom at the European University Institute in Florence (CMPF, 2023). In their work, they have explicitly included North Macedonia as an EU candidate country alongside all 27 EU member states, assessing risks across fundamental protection, market plurality, political independence, and social inclusiveness, the last of which includes a specific media literacy sub-indicator.

### Media Pluralism Monitor 2023 — Risk Scores by Area: North Macedonia vs Slovenia



Source: CMPF, European University Institute (2023). Risk bands: Low 0-33%, Medium 34-66%, High 67-100%. Scores are approximate based on published band classifications.

Figure 4. Media Pluralism Monitor 2023: Risk Scores by Area: North Macedonia vs Slovenia

Source: Centre for Media Pluralism and Media Freedom, European University Institute (CMPF, 2023). Note: Scores approximate based on published band classifications (Low 0-33%, Medium 34-66%, High 67-100%).

In that aspect, North Macedonia scored in the medium-risk band across market plurality, political independence, and social inclusiveness. Slovenia's scores across the same areas are in the lower portion of the medium-risk band, reflecting the effect of EU membership and sustained institutional investment. Romania's MPM profile confirms that medium-risk scores can persist for years after EU accession if underlying structural investments are not made (CMPF, 2023).

## 6. Challenges, Opportunities, and the EU Perspective

### Persistent Structural Challenges

Press freedom deterioration is ongoing. North Macedonia dropped six places in the 2025 RSF index, with the country note identifying media ownership concentration, declining economic sustainability of independent journalism, and government attitudes as compounding factors (RSF, 2025). Additionally, the urban-rural divide adds a structural layer of inequality, with civil society programs disproportionately concentrated in the capital city, Skopje (UNDP North Macedonia, 2023c). Foreign information manipulation is sustained and documented, with ongoing campaigns specifically targeting North

Macedonia's information environment often identified by some civil society organizations (ISD, 2024; Metamorphosis Foundation, 2025; GLOBSEC, 2021).

### **The EU Accession Opportunity**

The EU accession framework is the single most significant structural lever available for improving North Macedonia's information environment. Media freedom and media literacy are now explicit accession benchmarks (European Commission, 2024, 2025). For instance, EU funding instruments, such as Horizon Europe, Erasmus, and the Instrument for Pre-Accession Assistance, have already supported relevant programs. Additionally, the EU legislative frameworks, the Digital Services Act and the European Media Freedom Act, furthermore establish standards that North Macedonia will need to adopt as part of its alignment (European Commission, 2025). In that regard, Slovenia's trajectory within EU membership offers a concrete directional reference for what sustained institutional reform can produce.

### **Civil Society as a Bridging Mechanism**

The civil society sector plays a vital role in the process of social development of the country. Its work and engagement in the field of media literacy, combating misinformation, and raising awareness against spreading fake news, might have a significant influence on the level of citizens' inclusiveness and engagement in the decision-making processes in the country. For instance, the Metamorphosis Foundation has developed internationally recognized expertise in fact-checking, FIMI monitoring, and digital literacy education (ICFJ, 2024). What civil society cannot do alone is substitute for the structural investment that only government and the educational system can deliver at scale. The most productive model divides labor: civil society informs, pilots, and monitors, while the state provides the institutional framework and resources to embed those capacities systematically.

## **7. Implications and Recommendations**

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- Mandatory, systematically assessed media literacy education integrated across the national curriculum from primary through secondary level, with dedicated teacher training and regular measurement. The OECD PISA data and the MPM Social Inclusiveness indicator both identify educational capacity as the foundational lever (OECD, 2023; CMPF, 2023).
- Targeted digital literacy programming for older citizens, designed around trust-based media habits and low verification behavior, delivered through community-based civic networks and public broadcasting partnerships (NVO Info Centar, 2025).
- Structural investment in independent, quality journalism, including public funding mechanisms that reduce media dependence on advertising revenue and political patronage, directly addressing the RSF-documented decline in media economic sustainability (RSF, 2025).
- Proactive engagement with EU accession benchmarks on media freedom and media literacy, treating these as strategic opportunities to embed lasting improvements, drawing on Slovenia's experience and using the MPM as a monitoring framework aligned with EU institutional expectations (European Commission, 2025; CMPF, 2023).
- Systematic and decentralized activities of civil society media literacy programs, with dedicated funding for rural and regional outreach (UNDP North Macedonia, 2023c).

## 8. Conclusion

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North Macedonia's information vulnerability is the predictable outcome of a structural dynamic the Knowledge Gap Hypothesis identified half a century ago (Tichenor et al., 1970): when information complexity increases faster than the capacity to navigate it, existing inequalities deepen. In that regard, three independent international frameworks, the European University Institute's Media Pluralism Monitor, the OECD's PISA assessments, and the RSF Press Freedom Index, converge on the same structural diagnosis. Indeed, all of them conclude that income, education, and age are the architecture of that vulnerability. Lower-income citizens are structurally dependent on information channels that optimize for engagement rather than accuracy (UNDP North Macedonia, 2023b; Regional Cooperation Council, 2024). Educational attainment levels significantly below European averages leave citizens without the evaluative tools media literacy requires (OECD, 2023; CMPF, 2023). Finally, age creates vulnerability through opposite mechanisms across generational cohorts (NVO Info Centar, 2025; IFEX, 2024). In that sense, the Slovenia comparison confirms that meaningful improvement is possible through sustained structural investment aligned with the accession process. On the other hand, the Romania comparison confirms that membership alone does not produce it. As the information environment grows more complex and adversarial, the structural gap between the resilient and the vulnerable will widen unless deliberate, well-designed intervention actively closes it (OECD, 2023; RSF, 2024; CMPF, 2023).

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