

Internet as a Human Right: Public Policy Innovation in Estonia

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Abstract

The internet has become a critical component of modern life, serving not only as a medium of communication but also as a key enabler for education, political participation, and information access. Recognizing the importance of internet access, Estonia became a pioneer in declaring internet access as a human right in 2000. This research explores Estonia's public policy innovation in recognizing internet access as a human right and examines its impact on governance and societal development through the lens of public administration theories. This study employs a qualitative literature review methodology to identify, analyze, and synthesize relevant academic articles, government reports, and documents from international organizations. The research findings demonstrate that Estonia's internet policy has driven the country's digital transformation, significantly enhancing government efficiency, promoting social inclusion, and fostering economic growth. Estonia's experience reflects an eclectic approach to public administration, integrating aspects of Old Public Administration (OPA), New Public Management (NPM), New Public Service (NPS), and New Public Governance (NPG). The study highlights Estonia's digital transformation as an innovative application of public administration paradigms and underscores the role of inclusive digital policies in advancing governance and societal development.

Keywords: internet access, human rights, policy innovation, digital policy, Estonia, e-government

1. Introduction

The internet has become a crucial element of daily life. It not only provides new services but also creates opportunities to strengthen and support fundamental human interests [1]. In various aspects, such as communication, education, political participation, and access to information, the internet plays a key role. As a global communication medium enabling expression and the distribution of information, the internet has facilitated widespread social transformation worldwide.

Internet access is a fundamental prerequisite for active participation in society [2]. It directly relates to essential capabilities that form the foundation of a meaningful and dignified life [3]. It is no surprise that many scholars argue that internet access should be recognized as a human right, as it supports the fulfillment of other rights [1].

Recognizing the importance of the internet in modern life, the United Nations Human Rights Council (UNHRC) issued a resolution in 2016, stating that rights applicable offline must also be protected online. This resolution emphasized the importance of promoting, protecting, and utilizing the internet and its role in supporting citizen participation and community development [4].

Long before this UN resolution, Estonia, a small Baltic nation with a population of 1.4 million had pioneered the recognition of internet access as a human right [5,6]. Estonia made the internet a central pillar of its national development following its independence from the Soviet Union in 1991. Facing significant economic and social development challenges, Estonia successfully overcame them by implementing innovative public policies that adopted digital technology as a key pillar. In 2000, Estonia

became the first country in the world to legislate internet access as a fundamental right for its citizens [7]. This step reflects Estonia's commitment to digital transformation, integrating the internet into everyday life through comprehensive and innovative public policies.

As a leading country in digital transformation, Estonia has built robust digital infrastructure while protecting digital rights and civil liberties in cyberspace. In terms of e-government, Estonia is considered a remarkable success story [8]. The country has developed an e-government system that allows nearly all public services to be accessed online, ranging from healthcare to voting. Estonia demonstrates how digital technology can enhance welfare and democracy. Unsurprisingly, Estonia is often referred to as the "Digital Republic" [9]. Regarding democracy, the Freedom on the Net 2024 report by Freedom House ranks Estonia second globally in internet freedom, reinforcing its position as a leader in digital governance and online rights. [10]. Estonia's policies show that internet access is not only about physical infrastructure but also about inclusive and democratic digital governance.

2. Method

This article aims to explore Estonia's public policy innovations in recognizing internet access as a human right, analyze the underlying challenges, and evaluate their impact on governance and community development. It also examines Estonia's policy innovations through the lens of public administration. To achieve this, the study employs a literature review method with a qualitative approach [11,12]. This method enables researchers to identify, analyze, and synthesize various relevant sources, providing a robust foundation for discussing the topic. The reviewed literature includes academic journal articles, government reports, official websites, and institutional documents from diverse organizations, providing a comprehensive perspective on Estonia's internet and digital transformation policies. By synthesizing these sources, the literature review aims to provide a holistic understanding of how Estonia's internet policies serve as a model for public policy innovation and their application in addressing national challenges.

3. Results and Discussion

3.1. Challenges in Estonia

Estonia, now recognized as a pioneer in digital government, achieved its status as a digital republic largely due to the pressing challenges it faced. After gaining independence from the Soviet Union, Estonia confronted significant issues such as the legacy of corrupt and bureaucratic Soviet governance, lagging behind neighboring countries, limited resources, and a digital divide. These challenges drove Estonia to undertake radical policy innovation, framing internet access as a human right. This initiative aimed not only to enhance governance but also to foster a more inclusive, efficient, transparent, and prosperous society.

3.1.1. The Soviet Legacy

The Soviet occupation, lasting over five decades, is widely regarded as unproductive period, hindering development that could have otherwise occurred [13]. Specifically, the Soviet legacy left Estonia with outdated industrial structures and widespread aversion to industrialization. Upon independence, Estonia faced severe challenges, including economic collapse, inflation surpassing 1,000%, and heightened social instability. The delayed start of reforms compared to other Central and Eastern European nations meant that Estonia had to tackle far graver conditions when initiating its transformation. The prolonged Communist system not only devastated the economy but also caused deep societal disarray in its final years [14].

Estonia's initial success stemmed from the "sweep the place clean" policy, which severed many ties to its Soviet past and brought a generation unaffected by prior experiences into governance [15]. A critical step in breaking away from Soviet legacies was embracing digitalization

in governance. Estonia viewed digital technology as a primary tool for addressing its outdated bureaucracy and restoring public trust in state institutions.

3.1.2. Lagging Behind Neighboring Countries

Geographically close to Scandinavia, which boasted one of the fastest-developing telecommunications sectors in the 1990s, Estonia lagged economically and technologically in the post-Soviet era. Challenges included an underdeveloped economy and infrastructure compared to neighboring countries like Finland, Sweden, and Norway, which had modern governance systems and advanced digital infrastructure.

To bridge this gap, Estonia opted for radical innovation, drawing lessons from the best practices of Scandinavian countries [13,16]. Finland's success, particularly with Nokia's technological advancements, served as a key reference point. Lennart Meri, Estonia's first post-independence president, posed the now-iconic question, "What is our Nokia?" [13]. This approach aimed not only to catch up with advanced nations but also to leapfrog them by capitalizing on digitalization and sustained reforms [13,17]. For instance, when Finland offered its analog telephone system for free, Prime Minister Mart Laar declined, opting instead to develop a digital system. This decision underscored Estonia's vision of bypassing outdated technologies and directly adopting innovative solutions, which were instrumental in establishing one of the world's most advanced digital societies [18].

The digital initiative symbolized Estonia's ambition to leapfrog advanced countries, combining rapid technological advancements with a determination to become a global pioneer in technology.

3.1.1. Resource Constraints

As one of Europe's smallest nations, Estonia faced significant challenges in terms of limited budgets, resources, and workforce to support its economy and development [19]. With a small-scale economy, Estonia could not rely on abundant natural resources like larger nations. Furthermore, its small population meant a limited labor force and domestic market to drive economic growth.

Following 50 years of foreign domination, Estonia began rebuilding under conditions of severe technological scarcity and minimal resources. However, this challenge became a hidden opportunity for policymakers, providing a rare chance to construct a technological infrastructure from scratch. By focusing on quickly closing the gap with Western countries, Estonia designed cutting-edge, efficient, affordable, and accessible technological systems. This approach allowed the country to overcome resource limitations and establish a strong foundation for economic growth and modernization [19].

3.1.1. The Digital Divide

In the 1990s, Estonia faced significant challenges related to the digital divide. With a relatively low standard of living, few people owned personal computers. Most computer use occurred in workplaces or schools, with schoolchildren comprising the largest share of users. At the time, the prevailing perception was that computers were only useful for children's homework or adults' jobs, while many felt that computers were not for them [20].

By 2000, when internet access was declared a human right, only 29% of Estonia's adult population used the internet [20]. This statistic highlighted significant disparities in digital access, with only a minority benefiting from it. Recognizing that this divide could exacerbate social inequality and hinder progress, the Estonian government prioritized making internet access universally available. This policy aimed to create a more inclusive and equitable society, ensuring that the benefits of connectivity were accessible to all citizens.

3.2. Policy Innovations

In 2000, Estonia took a groundbreaking step in its digital transformation by enshrining internet access as a human right through legislation passed by its parliament [6,21]. This milestone was preceded by the *Tiigrihüpe* (Tiger Leap) project, aimed at developing and expanding internet networks and improving computer literacy. The initiative digitized schools nationwide, preparing Estonian society for digital literacy while modernizing information technology infrastructure [8,16,22,23]. Tiger Leap prioritized computer skills, laying the groundwork for e-Education, now recognized as one of the world's best digital education systems [19].

The government began the digital transition by granting a monopoly to *Eesti Telefon*, the national telecommunications company, ensuring the foundational development of telecommunications infrastructure and equitable access to remote areas [18]. This state intervention was pivotal in addressing potential market failures that could have left rural areas without adequate digital services.

As the monopoly ended in the early 2000s, Estonia liberalized its telecommunications market. This reduced internet costs and spurred innovation through healthy competition among providers [24]. Public-private partnerships, exemplified by initiatives like the Look@World Foundation, accelerated technology adoption and expanded digital penetration [20].

In 2000, the government introduced three key digital services: e-Cabinet meetings, e-Tax, and m-Parking. These services streamlined governance, taxation, and urban mobility management, reflecting Estonia's commitment to reducing bureaucratic hurdles through digital solutions [25-27]. By 2001, Estonia launched its first public Wi-Fi areas, enabling widespread wireless broadband access and making internet connectivity a standard facility [28].

The 2001 introduction of X-Road, an open-source data exchange layer, was a cornerstone of Estonia's digital ecosystem. X-Road ensured secure, standardized data exchange between public and private systems, significantly enhancing transparency and reducing legacy system vulnerabilities [29-30]. Estonia further solidified its digital leadership in 2002 with e-ID and digital signatures, providing secure, universal access to government and private sector services [19,31].

Estonia's digital innovations continued with the launch of i-Voting in 2005, enabling online voting and enhancing democratic participation, particularly in sparsely populated regions [29, 32]. Following a significant cyberattack in 2007, Estonia became a global leader in cybersecurity, introducing measures such as KSI Blockchain to protect data integrity [9,33,34].

Healthcare digitalization began in 2008 with e-Health, which provided integrated access to electronic health records. Subsequent innovations like e-Prescription in 2010 streamlined medical processes, significantly transforming healthcare services [35,36]. In 2013, the Public Services Green Paper was launched to address challenges and propose solutions for advancing e-government services, ensuring the sustainability and continuous improvement of digital public services [19]. The introduction of e-Residency in 2014 attracted global talent and business, making Estonia the first nation to offer a digital passport to its virtual economy [37,38].

In 2017, Estonia launched the world's first data embassy as a digital backup to ensure national continuity during crises, while also partnering with Finland to establish the NIIS X-Road Consortium for improving cross-border e-government solutions. In 2018, the Seamless Services Roadmap introduced proactive government services that respond automatically to citizens' life events with minimal bureaucracy, followed in 2019 by the Government AI Strategy, which prioritized artificial intelligence to accelerate digital transformation in public and private sectors. By 2020, Estonia introduced Proactive Child Care, automatically granting benefits to families with newborns, and launched Remote Verification for Notaries, enabling secure online notarization [19].

In 2021, Estonia introduced Liisu, the world's first hydrogen-powered autonomous vehicle, showcasing its commitment to eco-friendly transportation and future mobility solutions. By 2022, the nation launched e-Marriage, enabling residents to marry conveniently online. Remarkably, divorce remains the only process still requiring a physical presence in Estonia [19].

Estonia's success in digital governance is grounded in three principles: system restructuring to eliminate redundancies, citizen empowerment through efficient public services, and minimizing bureaucracy using digital tools [6]. This strategic framework has enabled Estonia to lead globally in digital transformation.

3.3. Impact of Policy Innovation

Estonia's bold decision to recognize internet access as a human right has catalyzed a digital revolution, transforming various aspects of life within the country. This section delves into the profound impacts of Estonia's digital policies, including reforms in education, governmental efficiency, economic transactions, public services, and its global standing in cybersecurity and technological innovation.

3.3.1. Digital Literacy and Educational Quality

According to the PISA 2022 report, Estonian adolescents ranked first in Europe and among the top eight globally in mathematics, science, and reading, showing less decline compared to other countries following the COVID-19 pandemic [39]. Despite global setbacks in student performance due to the pandemic, Estonia's students experienced a smaller impact. This success is closely linked to Estonia's status as a digital republic, underpinned by robust digital infrastructure and high levels of digital literacy, which facilitated a swift transition to remote learning. The country had already established widespread access to digital technologies and online educational platforms, supported by an integrated e-government system that ensured effective coordination in education during crises.

3.3.2. Government Efficiency and Public Services

Digital reforms in Estonia have significantly reduced bureaucracy and enhanced governmental efficiency. For instance, cabinet meetings, which once took up to five hours, now average just 30 minutes [19]. The X-Road platform serves as the backbone of e-Estonia, enabling seamless interoperability between public and private sector information systems. As a result, 99% of public services are available online [6,19,36].

Administrative processes have also become more efficient. Tax filings, for example, now take an average of three minutes, with 98% of Estonians filing electronically [19]. This capability has saved significant time and increased transparency in government operations.

The transformation has also improved public service delivery. Electronic health records streamline patient management, reduce bureaucracy, and provide critical access to information during emergencies. Similarly, 99% of medical prescriptions are handled online, allowing routine refills without visiting a doctor [35,36]. Estonia's digital services extend convenience to citizens, with even parental allowances for newborns processed automatically [19].

Moreover, a third of votes in national elections are cast online, making Estonia a pioneer in electronic voting. Its i-Voting system, introduced in 2005, enables citizens, particularly those abroad to participate in elections conveniently. In the latest election, Estonians in over 110 countries voted online, demonstrating the system's efficiency and security, which leverages advanced digital infrastructure such as e-ID and blockchain technology [19]. Estonia's position as the top-ranking country in the EU's 2022 Digital Economy and Society Index (DESI) further underscores its leadership in digital public services [40].

3.3.3. Economic Advancements

Digital adoption in Estonia has transformed its economic landscape. For example, 95% of parking fees are paid via mobile phones. Digital signatures, which save approximately 2% of Estonia's GDP annually, eliminate excessive paperwork and bureaucracy [13,41].

The e-Residency program has digitally expanded Estonia's borders, attracting global entrepreneurs and businesses. This initiative has generated over €150 million in state revenue, underscoring Estonia's global leadership in digital governance [37].

3.3.4. Cybersecurity and Global Leadership

Estonia's focus on internet access as a fundamental right has also made it a leader in cybersecurity. Hosting the NATO Cooperative Cyber Defence Centre of Excellence and the EU IT Agency in Tallinn highlights its commitment to global cyber defense. Estonia has integrated blockchain into several government registries, ensuring secure and transparent operations (19).

3.3.4. Environmental Innovation

Estonia's digital transformation includes sustainability initiatives, such as Liisu, a hydrogen-powered autonomous vehicle [19]. Although hydrogen buses are still in trial phases, their adoption reflects Estonia's commitment to eco-friendly alternatives. These advancements position Estonia as a forward-thinking nation leveraging technology to enhance societal and environmental well-being [42,43].

4. Conclusion

After examining Estonia's public policy innovations, it becomes evident that the nation's digital transformation offers valuable insights into the adaptive application of public administration theories. As Estonia transitioned from its Soviet past, it embraced innovative strategies to establish a robust digital infrastructure. In its early stages, Estonia adopted the principles of Old Public Administration (OPA), where the government maintained full control and acted as the primary driver of initiatives like Tiger Leap. By granting a monopoly to Eesti Telefon, the government ensured the equitable development of telecommunications infrastructure, adhering to centralized and hierarchical principles to guarantee internet access even in rural areas. These measures reflect an OPA approach, characterized by strong bureaucratic control and centralized decision-making, aimed at achieving significant objectives [44,45].

Over time, Estonia began incorporating elements of New Public Management (NPM), focusing on efficiency and effectiveness through the liberalization of the telecommunications market. Following the end of Eesti Telefon's monopoly, the government shifted its role from a direct controller to a regulator, promoting healthy competition in the information and communication technology sector. Indicators of success in this approach included reduced internet service costs and improved efficiency in telecommunications service delivery, embodying the managerial logic of NPM, which emphasizes resource optimization through market competition [46].

Subsequently, principles of New Public Service (NPS) emerged in Estonia's digital policies, particularly through the declaration of internet access as a human right in its legislation. These policies emphasized inclusivity and equal accessibility for all citizens, addressing digital divides. Public services such as e-Education, e-Tax, e-Health, and i-Voting illustrate Estonia's commitment to responsive and democratic public service delivery, placing citizens at the center of governance. For example, i-Voting enables online political participation, broadening access for all societal groups to engage in democratic processes—a core aspect of NPS focused on inclusive public services [47].

In later stages, elements of New Public Governance (NPG) became central to Estonia's digital transformation. Within this framework, the Estonian government shifted from being the sole provider of services to a facilitator within collaborative networks involving the private sector, civil society, and international institutions. Initiatives such as the Look@World Foundation, which united banks and telecommunications companies, and the development of X-Road, enabling seamless data exchange between public and private sectors, exemplify the strength of network-based governance. This reflects a

core principle of NPG where effective public services rely on collaboration among diverse stakeholders rather than the efforts of a single actor [44].

The public policy innovations driving Estonia's digital transformation exemplify an eclectic approach to public administration, where diverse theories are adaptively applied to meet technological and societal needs. By blending principles from OPA, NPM, NPS, and NPG, Estonia has created a digital ecosystem that is adaptive, inclusive, and innovative. This demonstrates that digital transformation is not merely about technological implementation but also about leveraging various public administration theories flexibly to establish effective and sustainable governance centered around citizens. This eclectic approach has positioned Estonia as a global leader in digital policymaking, offering inspiration for other nations to design similar policies.

5. Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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