Digital governance in exile

Examining the National Unity Government's digital services efforts in Myanmar

August 2025

By Kyaw Lwin and Myat Su Thwe

Acknowledgment

Contents

Summary

This research comprehensively analyzes the challenges in implementing digital services initiated by the National Unity Government (NUG), Myanmar's government-in-exile formed in opposition to the 2021 military coup. Employing a sociotechnical framework, the study seeks to untangle the complicated relationship between technological systems and the socio-political context in which they operate. The focus is on digital initiatives undertaken by the NUG, dissecting the multifaceted challenges obstructing their effective deployment. This research aims to provide a holistic understanding of NUG's obstacles to pursuing effective digital services by recognizing the interplay between technology, social dynamics, and political nuances.

The NUG commitment to providing digital services to the public enhances the current democratic movement and strengthens the role of NUG's governance capacity. As a parallel or people's government, the NUG's provision of digital public services is a defining feature that sets the Spring Revolution apart from earlier democratic movements in Myanmar's history. Hence, this study aims to produce a detailed and comprehensive research report on NUG's initiated digital services while discovering the challenges and barriers hindering their effective deployment for better policy development and practices regarding digital services. Given the lack of fair and secure public services from the State Administration Council (SAC) ministries, and public reluctance to engage with SAC's entities, this research is vital for both the local populace and the international community. The focus will be on three ministries under the NUG: the Ministry of Health; the Ministry of Planning, Finance, and Investment; and the Ministry of Education. The research questions aim to identify key digital services introduced by the NUG and the challenges obstructing their adoption. Methodologically, a combination of in-depth interviews, surveys, and secondary data analysis is employed, engaging key stakeholders, digital experts, and the public to garner diverse perspectives. Furthermore, the research acknowledges the importance of gender and ethnicity considerations, ensuring inclusivity in the study. The assessment of user-friendliness challenges and providing digital services in ethnic languages form integral components. This study will offer valuable insights for both academic and practical purposes into Myanmar's digital services in the current situation.

Background

Immediately after the military coup in Myanmar, the Committee Representing Pyidaungsu Hluttaw (CRPH) swiftly emerged on February 5, 2021, comprising 17 elected parliament members with a mission to resist the illegitimate seizure of power. Building on the CRPH's mandate, the National Unity Government was formed on April 16, 2021, with 17 ministries to function as a parallel government. Crucially, the NUG's ministries include public servants and students from the Civil Disobedience Movement (CDM), integrating them directly into ministries' bureaucratic structures.

These ministries aim to provide alternative governance services in opposition to the State Administration Council's controlled ministries, which aligns with the NUG's overarching objective of running a parallel government. These ministries are currently providing innovative public services in the digital space, as seen in services like Tele Kyan Mar (online clinic services) by the Ministry of Health, Spring Development Bank (online banking service), NUG Pay (money wallet service), and Nway Oo Lottery (lottery service) by the Ministry of Planning, Finance, and Investment, and Myanmar Nway Oo University (alternative education services) by the Ministry of Education. However, as a parallel government, significant challenges and constraints are witnessed while delivering such public services in the digital space. Persistent security threats, resource constraints, public awareness gaps, and public fears and concerns about digital tools hinder the NUG's ability to deploy e-services effectively.

Hence, in the current situation where SAC-controlled ministries are not providing fair and secure public services, in addition to people's unwillingness to cooperate with SAC's ministries, the public and international community need to understand alternative public services provided by NUG. Therefore, a comprehensive, detailed research report is necessary for the public to clearly understand NUG's services and the challenges and barriers hindering the effective deployment of NUG's digital services. Consequently, implementable policy recommendations reflecting overcoming such barriers should be provided to ministries under NUG, NUCC, and other relevant stakeholders. Innovations in service delivery to citizens highlight how governance can enhance public administration. Government services refer to the activities and functions governments undertake to address the needs of their citizens and improve societal welfare. This encompasses a broad range of services including, but not limited to, healthcare, education, public safety, and infrastructure services that are crucial for societal functioning and welfare. This can underscore the importance of innovative practices in the public sector that make government operations more efficient and responsive to the needs of the public. By adopting new technologies and simplifying administrative processes, governments can enhance the quality and accessibility of public services, thereby increasing public satisfaction and trust in government institutions. These services are integral to building a healthy relationship between governments and citizens, focusing on transparency, efficiency, and the effective management of public resources. This paper emphasizes that improving government services is not only about enhancing operational efficiency but also about ensuring that these services are citizen-centered, addressing the specific needs and conditions of the population.

Digital government, also known as e-government or virtual government, involves the use of the internet and other information technologies (IT) to influence governance. It generally refers to the creation and provision of information and services within the government and between the government and the public, utilizing various information and communication technologies (Fountain JE.,2001). This paper analyzes the NUG as a digital government. Formed after the coup as a parallel administration with a popular mandate, the NUG now operates primarily through underground and digital means. The post-coup political scenario is highly associated with digital arena where digital resistance is central with mobilization for movement and protesting are mostly done through online and on the other hand, the digital oppression is done by the SAC such as tracking, doxxing and misinformation campaigns. Unlike traditional e-government services, which often expand from established state institutions, the NUG's digital services emerged entirely online—without the backing of a physical bureaucracy.

The NUG has faced criticism for allegedly operating primarily online, which some argue could limit its effectiveness and outreach, especially in regions with poor internet connectivity or in rural areas where digital literacy is lower. This criticism highlights the challenge of providing governance and essential services through digital means alone, particularly in a country with diverse needs and varying levels of infrastructure. While many of the NUG's ministries provide services digitally, several crucial services, especially those related to health, home affairs, defense, and humanitarian efforts, are offered in person, which is vital for reaching all demographics and ensuring inclusivity (Appendix 1). The strategic mix of digital and in-person services aims to leverage technology to enhance reach and efficiency while maintaining a physical presence in areas where it is most needed. This balanced approach is especially crucial in regions controlled or influenced by the NUG, where the provision of in-person services helps to cement its legitimacy and effectiveness as a governing body amidst challenging circumstances. According to our research limitations, this paper focuses on and studies only three ministries: the Ministry of Health, the Ministry of Planning, Finance, and Investment, and the Ministry of Education, which is currently at the forefront of providing public services in the digital space. The study will use a sociotechnical framework to examine how technological systems interact with Myanmar's current political and social environment.

The digital transformation of public services is widely recognized as a critical pathway for improving governance, transparency, and citizen engagement. However, in contexts of political upheaval and institutional fragmentation, such as post-coup Myanmar, implementing digital services presents unique and urgent challenges. The NUG functioning as a parallel governance structure, has sought to deliver essential services through digital platforms despite facing severe constraints in infrastructure, security, and legitimacy. While digital tools offer an alternative route to governance in the absence of physical state capacity, little is known about how these initiatives are functioning, what barriers they face, and how they are perceived by diverse communities across Myanmar. This study is motivated by the need to fill this critical gap by analyzing the NUG's digital service delivery through a socio-technical lens, offering timely insights into both the promise and perils of e-governance in contested, transitional political environments. The framework highlights that effective digital governance is not solely determined by technological capacity, but also by social factors such as trust, user engagement, and institutional legitimacy. In contexts like post-coup Myanmar, digital tools are deployed under fragmented authority, contested legitimacy, and constrained infrastructure. This perspective enables a more holistic analysis of both the potential and limitations of e-government initiatives.

Research questions

1.   What are the key digital services and initiatives the National Unity Government introduced, and how do they aim to modernize administrative processes and enhance citizen services?

2.   What are the challenges and obstacles that obstruct the adoption and effectiveness of the National Unity Government's digital services and tools?

Methodology

This study adopts a socio-technical framework as the core analytical lens to examine the digital service delivery of the NUG. The framework recognizes that the success or failure of e-government initiatives depends not only on technological infrastructure and design but also on the social, organizational, and political contexts in which they are embedded. In the case of the NUG operating under conditions of political contestation, limited physical infrastructure, and fractured legitimacy, this approach is particularly relevant. By integrating both technical variables (such as internet access, cybersecurity, and platform design) and social dimensions (including trust, digital literacy, stakeholder engagement, and inclusivity), the socio-technical framework enables a holistic understanding of how digital governance is implemented and experienced. The framework informs both the research design and analysis stages of this study: guiding interview protocols, survey instruments, and coding schemes to assess how digital services are designed, delivered, and received by diverse users in Myanmar. This methodological approach helps illuminate not only the structural challenges facing NUG's digital initiatives but also the adaptive practices and collaborative efforts that sustain them in a volatile socio-political environment.

This paper conducted mixed-method research using both qualitative and quantitative data sources from primary and secondary sources. For primary data sources, this research conducted in-depth interviews and online surveys to answer the research questions.

Firstly, this paper used semi-structured in-depth interviews by using "purposive sampling," in which the researchers purposively select the relevant key stakeholders to interview. The researchers selected 1-2 representatives from three ministries, based on the following criteria:

1.   The respondent should have at least six months of working experience at the relevant ministry.

2.   They should be someone who has been involved in the ministry's digital public services work.

The respondents from the ministries were contacted and interviewed physically in Maesot and Chiang Mai, Thailand. Some respondents answered the interviews online.

Secondly, the researchers consulted digital and technology experts from non-government organizations to provide insights on the research questions. This included experts who have been working in the digital field for at least a year.

Thirdly, the researchers created a survey form for approximately 40 to 60 people from various age groups and areas to address the second research question. Based on the survey results, two groups were categorized: (1) people who are familiar with and utilize digital services provided by the NUG's ministries; and (2) people who do not utilize or are familiar with such digital services. For secondary data sources, this paper utilized reports published by relevant NUG's ministries, CRPH and NUCC, news, articles, reports, and academic papers.

The collected data were transcribed and analyzed based on themes and categories. For the first research question, researchers separated the data based on services provided by each ministry. Here, each of the services and related data were analyzed in three elements under socio-technical framework: 1) social aspect;2) technological aspect; and 3) organizational aspect. The main intention of this categorization is to fully understand how these aspects interconnect with each other in the process of technological tools being utilized to solve the socio-political issues in post-coup Myanmar and how NUG as a government institution organize these arrangements. As for second questions, data related to challenges and obstacles are categorized into each relevant theme. To better understand how people are using NUG's digital services, researchers created a survey and collected responses from over 100 users. These included people from different age groups, regions, and backgrounds some living in conflict zones or abroad. The survey asked about how easy the services are to use, whether people trust them, and what challenges they face, like poor internet or lack of digital skills. This paper used tools like Google Forms to collect answers and sorted the responses into groups: those who use the services and those who don't. This helped us see what's working and what still needs to be improved.

Results

NUG Ministry of Education's alternative education services

Despite operational limitations, the Ministry of Education of the NUG continues to offer sustainable alternative education services to support students participating in the CDM. The NUG's interim educational services can be primarily divided into two categories: digital education and on-ground education, both of which are often interconnected. The enrollment of students in these services is largely dependent on their access to the internet and the security situation in their respective areas. For on-the-ground education, more than four thousand schools have reportedly been established in liberated areas, providing in-person learning opportunities. While the SAC education system operates in major cities, the NUG's education system is active in liberated zones. It would be inaccurate to claim that students in urban areas are exclusively enrolled in SAC-affiliated schools and universities. At the outset of the Spring Revolution, SAC's education system was significantly disrupted by a large-scale CDM movement, leading to the establishment of interim education providers under the NUG and the development of alternative education systems. Many students in major cities, particularly at the higher education level, have actively resisted the education system of SAC by joining the CDM and enrolling in institutions affiliated with the NUG or other independent educational entities providing alternative services.

The NUG's MoE offers education services across basic education, higher education, and vocational training. For basic education, schools in liberated and ethnic areas are providing in-person learning, while digital education services via online schools are also crucial for ensuring continuous access to education. The MoE oversees currently oversees 65 online schools, which must be officially recognized and comply with the Ministry's information and technology security guidelines. These online schools offer education from kindergarten (KG) to grade 12, with curricula tailored to different regions of the country.

Admissions to NUG educational programs are carefully managed according to security protocols. Guardians or students can initiate contact via social media platforms, where they are required to submit documentation verifying their participation in the CDM. This verification process involves a recommendation letter from a CDM teacher, university, or student council. Students must also complete an admission form, and the Ministry provides video tutorials for each step, including how to anonymize identities and avoid sharing sensitive personal information. The curriculum provided by the MoE is designed for home-based learning, though schools have the academic freedom to adopt various curriculums. Some schools utilize non-formal curriculums, social science-focused syllabi, and others in ethnic areas adopt curricula that align with local languages, cultures, and political contexts. Many schools follow the curriculum recommendations of the NUG, which emphasize the development of good citizenship and respect for diversity. This decentralized and flexible approach to curriculum design contrasts sharply with the centralized, Burmanization-driven curricula of the SAC, which have faced widespread criticism.

The teaching methods in online schools are student-centered and highly innovative, utilizing digital tools. Traditional textbooks have been replaced by digital resources such as videos and animations. For example, in biology lessons, teachers use digital videos to explain concepts like plant growth, encouraging students to engage in hands-on activities such as planting and documenting their progress on a digital

platform for teacher evaluation. This innovative, experiential approach contrasts with the rote memorization methods used in SAC's education system. For assessment and certification, students who complete grade 12 can take the Basic Education Completion Assessment (BECA), conducted by the MoE. This certification is essential for further educational or career opportunities. The BECA is conducted online with students required to use their cameras. In 2023, more than 60,000 students participated, with over 50,000 passing, though some faced challenges due to technical issues and instances of fraud (Interview with Headmaster of Myanmar Basic Online School,21 July 2024). For lower-grade assessments, mid-term and year-end exams are primarily conducted via Google Forms, with questions in multiple-choice, fill-in-the-blank, or short-answer formats. As for technical difficulties, exams may be provided in PDF format, and some are administered via Telegram calls. In addition to exams, students are assessed throughout the year through assignments, presentations, and homework submitted via Google Classroom and Google Drive. Student performance is evaluated holistically, factoring in test scores, attendance, participation, and overall conduct, which differs from SAC's system, which is heavily reliant on exam results alone.

The NUG's efforts to provide alternative higher education services are especially significant, as university students have played a central role in the CDM and the Spring Revolution. Student and teacher unions from various universities have established interim councils to offer alternative educational opportunities in collaboration with the MoE. These councils attempt to provide degree and certificate programs across various disciplines. In addition to pre-existing institutions such as arts and science universities, medical colleges, and technical colleges, new institutions affiliated with the NUG have been created. For the 2024-2025 academic year, 59 degree programs from 17 universities will be offered through online platforms, including a Learning Management System.

For assessment and quality assurance, students are required to earn credits by completing assignments, projects, and class participation. For instance, students at Wunzin Online University must submit a thesis under the supervision of their professors to earn credits for graduation. These students also have the opportunity to present their research at international conferences, such as those in the United States, in connection with their university. At vocational institutions like Spring Film Academy, students must complete 12 courses per year, earning 3 credits per course, with a final project, such as producing a film, required for graduation. To complete their studies, students must maintain 75% class attendance and meet credit requirements (Interview with a CDM Professor working at online higher education institution affiliated with the Ministry of Education, National Unity Government of Myanmar, 23 July 2024). To overcome the issue of CDM students lacking opportunities to proceed to further education by bridging into international universities, the MoE is attempting to link and sign Memorandums of Understanding (MoUs) with international universities. The ministry has successfully signed MoUs with regional and international universities that allow students to continue their education at such institutions. The MoE's digital education efforts aim to address accreditation challenges and bridge gaps in higher education and employment opportunities faced by youth in post-coup Myanmar.

Analyzing the digital education service of NUG through a sociotechnical lens highlights the interplay between technological strategies and socio-political contexts. The NUG's digital and on-ground education systems serve not merely as alternative educational platforms but also as tools of sociopolitical resistance, strengthening resilience amid political instability and security threats. The establishment of decentralized, flexible curricula and student-centered methodologies directly responds to the centralized

and authoritarian of SAC education model, promoting academic freedom and educational integrity. Furthermore, digital platforms embody Education 5.0 principles by integrating adult learning methodologies, lifelong learning practices, and home-based education approaches, effectively adapting to Myanmar's diverse socio-cultural contexts. Nevertheless, the effectiveness of these services hinges critically on internet accessibility, digital literacy, and user trust, emphasizing the need to continuously balance technological innovations with social considerations to sustain engagement and legitimacy.

NUG Ministry of Health's digital healthcare services

Driven by a robust population of healthcare workers participating in the CDM, the Ministry of Health (MoH) of NUG stands out as a pivotal institution in the provision of both digital and on-ground healthcare services. The NUG's Ministry of Health provides four interlinked healthcare services: on-ground, emergency, primary, and online care. Despite security challenges, it operates a structured health system reaching 198 townships (60% of Myanmar), especially in revolutionary-controlled areas. From April 2021 to March 2024, it treated over 1.1 million outpatients, performed 40,169 surgeries, and managed 4,140 referrals. Services are supported by 77 hospitals, 377 clinics, and 250 mobile units. Emergency care and the National Immunization Programme are key in conflict zones, with school health services reaching 962 schools. These efforts reflect the MoH's broad and resilient healthcare delivery. However, due to research limitations, this paper will focus specifically on the ministry's online healthcare services.

Telekyanmar, launched on 19 June 2021 by the NUG's Ministry of Health, is a fully online telemedicine service run by CDM healthcare workers. Accessible via Telegram and Facebook Messenger, it provides remote medical consultations to people in Myanmar and abroad. Patients book appointments through its Facebook page and are directed to general clinics via Telegram. Based on symptoms, they may be referred to one of 25 specialist clinics. Physical exams and diagnostic tests are done locally, with follow-up consultations conducted online. Telekyanmar offers a secure, innovative healthcare alternative amid ongoing conflict and limited physical access.

Telekyanmar has the policy of refusing to handle emergency situations, advising patients to contact local hospitals or clinics. However, in critical situations where patients cannot visit physical clinics, Telekyanmar's doctors provide guidance on how to manage the patient's condition. According to a CDM doctor working at Telekyanmar, most users seek initial discussions to understand their symptoms and receive treatment instructions rather than who would like to get medical services that can completely cure diseases such as surgeries. Following consultations, doctors provide prescriptions for patients to purchase medications at local pharmacies and offer ongoing monitoring and treatment in subsequent sessions (Interview with a CDM doctor working at Telekyanmar, the Ministry of Health, National Unity Government of Myanmar,27 July 2024). In its first year, Telekyanmar served patients from 298 townships in Myanmar, with usage increasing each year, reaching 319 townships in its second year (refer to Fig. 1 below). Over three years, the MoH reported that Telekyanmar provided more than 170,000 free consultations, covering 321 out of 330 townships nationwide and Myanmar citizens from 47 different countries.

FIGURE 1: MAP ILLUSTRATING THE REACH OF TELEKYANMAR USERS ACROSS 319 TOWNSHIPS (HIGHLIGHTED IN RED) BETWEEN JUNE 19, 2021, AND JUNE 6, 2023.

Telekyanmar provides a "Social Media Service," designed to respond to inquiries submitted by users through its social media platforms. This service is particularly suited for individuals seeking general information about diseases and conditions without requiring a detailed medical consultation. Common inquiries include symptoms, causes, and general treatment recommendations for minor conditions such as allergic reactions, constipation, or swollen eyes, etc. The service is especially beneficial for members of the PDF and internally displaced persons (IDPs) in conflict areas, where access to healthcare facilities is limited. When internet access is available, users in these areas can send questions to Telekyanmar, enabling them to receive essential medical guidance remotely.

Telekyanmar supports mental health through two key services: a Primary Mental Health Clinic and a Psychiatric Clinic, offering general and specialized care. It also runs the "Zero-Suicide Campaign," a hotline addressing psychological distress amid Myanmar's crisis. Inter-ministerial coordination enhances care, with the Ministry of Women, Youth and Children providing counseling for gender-based violence survivors via the "Tine Pin Phaw" program and referring severe cases to Telekyanmar. Patients with chronic illnesses are directed to relevant clinics, and those needing legal aid are referred to the Ministry of Justice's "Mhyata Lan Nyun" platform.

The post-coup socio-political landscape in Myanmar has created an urgent need for accessible and affordable public services, particularly in the healthcare sector. Digital health platforms such as Telekyanmar have emerged as critical socio-technological interventions. A significant proportion of its users are individuals from economically vulnerable backgrounds, many of whom have been further impoverished by the economic instability induced by the coup. Another key user group includes populations residing in rural and conflict-affected areas, where access to conventional healthcare infrastructure such as hospitals and clinics is severely limited. In addition to physical health, mental health services have become increasingly vital in post-coup, especially for individuals affected by conflict and violence. NUG's digital services have stepped in to fill this gap by offering remote psychological support and counseling. Hence, the delivery of NUG's digital services fulfill the needs of post-coup Myanmar society by using technology as a bridge to these essential services. This socio-technological relevance was further witnessed during the April 2025 high-magnitude earthquake. In the wake of this disaster, the NUG's digital platforms deliver non-emergency healthcare, including mental health support, to victims and rescue workers. This eased pressure on SAC-run hospitals which are already overwhelmed with emergency patients, and it showed how technology can bridge service gaps and ease the social needs in crisis.

NUG's Ministry of Planning, Finance and Investment's digital financial services

Digital financial services are another remarkable sector of NUG's digital service delivery. Currently, the Spring Development Bank (SDB) and the NUG pay are in service for bringing alternative financial platforms that are decentralized and operating in digital way. These digital financial services are revolutionary and innovative, established to contribute to the Spring Revolution by providing alternative financial services for the general public instead of saving in the banks in Myanmar, which are under the control of the junta-backed Central Bank of Myanmar. The public's choice to avoid moving funds into the military-based financial system can weaken that system, and hence, NUG's alternative financial services can be termed a "financial war". Moreover, since frequent cases of junta-controlled bank services monitor, track, and freeze the bank accounts of the users, choosing NUG's alternative financial services can provide safety and privacy.

The SDB, established by the NUG's Ministry of Planning, Finance and Investment and licensed by its Interim Central Bank, provides secure digital financial services to support the resistance and enhance financial access in Myanmar's crisis (Mizzima, 2023). Operating entirely online, SDB offers multi-currency transfers, fixed deposits, stablecoin withdrawals, and remittance services via authorized agents globally. Additional services include digital gold savings, e-lottery sales, and decentralized currency exchanges. It also facilitates real estate sales through the "End of Dictatorship" campaign and offers stock shares via

Initial Coin Offering (Interview with SDB Executive, 26 July 2024). Complementing SDB, the blockchain-based NUG Pay mobile wallet enables users to save, transfer, and pay in various currencies, helping SMEs transition to a digital economy.

Under the sociotechnical perspective, the widespread adoption of the digital financial services of SDB and NUG Pay underscores a significant shift in public trust and financial behavior in Myanmar. People increasingly prefer these alternative platforms for their perceived security, privacy, and resilience against the SAC surveillance and control, reflecting a collective resistance through financial independence. Furthermore, the blockchain crowdfunding for 2025 April earthquake technology utilized by NUG not only ensures transparency, which is critical in managing humanitarian assistance and contributions to the earthquake and pro-democracy movement, but also enables citizens to contribute without the burdens imposed by traditional financial systems and also aids in protecting citizens from inflationary pressures driven by the military's economic mismanagement. Therefore, these digital financial services embody a dual sociotechnical purpose: empowering citizens economically and reinforcing socio-political resilience through technological innovation.

Challenges and obstacles

The digital governance services have marked under the risk situation a significant evolution in how NUG interacts with citizens inside Myanmar and along with the Border Area of Myanmar and also include IDP community delivery services and ensure transparency. However, despite its potential to streamline operations and improve access to services, implementing digital governance services is fraught with many challenges. These obstacles not only hinder the effective delivery of services but also raise critical concerns about equity, security, and efficiency in governance processes. Understanding the key barriers is essential for governments to navigate the complexities of this digital transformation and create resilient, inclusive systems.

Internet connectivity and power shortage issues

Due to security concerns, the NUG primarily relies on online services rather than in-person engagements. On-the-ground operations are vulnerable to military airstrikes and informants, which complicates establishing any permanent physical presence. According to the data highlights from the Myanmar Internet Project the widespread internet shutdowns across 313 townships in Myanmar (Appendix 4). The far-reaching impact of internet shutdowns on Myanmar's townships significantly hindering communication and access to information across the country. Although the NUG is capable of providing some in-person services in certain regions, the risks necessitate that many functions, such as banking (Spring Development Bank), digital payment (NUG Pay), health services (Telekyanmar), and issuing birth certificates, operate mainly through internet-based platforms. As a result, internet access has become crucial for maintaining these services.

Internet connectivity is limited in conflict areas like Sagaing, Magway, and parts of Tanintharyi. These regions are primarily served by Mytel, a military-controlled operator, which primarily serves these regions, which raises concerns about surveillance. The Myanmar military not only targets the NUG service providers but also arrests individuals using these services. Since the 2021 coup, telecommunications operators have received directives to block access to major social media platforms, including Facebook, Twitter, Instagram, Signal, and Telegram. Additionally, the Myanmar Military imposed new restrictions on Virtual Private Networks (VPNs), which were previously used to bypass these blocks. While less popular VPNs are still accessible, a complete clampdown remains challenging. A resident from Kareni State remarked, in armed conflict areas, the internet is more than just a tool for communication, and it is a lifeline. Timely access to information on military raids or airstrikes can mean the difference between life and death, and internet connectivity is also essential for reporting human rights violations and staying connected with family. Consequently, NUG has turned to Starlink, a satellite-based internet service, as an alternative.

Starlink has gained traction in Myanmar, despite the challenges associated with its availability and legality. Officially, Starlink is not authorized in Military controlled area in Myanmar or Thailand, where most of the equipment is being imported from, which forces people to use it through unofficial channels. Starlink's equipment is sold at significantly inflated prices, reaching up to $4,500, compared to its official market price of $599. The NUG claims to have facilitated satellite-based internet access in over 150 areas, including parts of Sagaing, Magway, Kareni, and Kachin. However, the use of Starlink remains complex.

The Thai government recently confiscated several Starlink devices, initially suspecting them of being involved in illegal activities. Though some detained individuals were released after investigation, Starlink remains considered an illegal device in both Thailand and Myanmar. Moreover, Starlink's performance in Myanmar is unpredictable due to the limited number of satellites passing over the region, and using the system poses significant risks. Some NUG digital experts indicate that resistance offices using Starlink have been targeted, with the devices being cut off during raids. If international directives lead to Starlink discontinuing service, users could face an immediate and total loss of internet connectivity. Therefore, while Starlink presents a potential solution to internet access issues in Myanmar's conflict zones, its high cost, legality concerns, and the risk of discontinuation limit its effectiveness. The need for secure, reliable, and accessible communication remains critical for both governance and civilian survival in Myanmar's volatile environment.

The ongoing power cuts in Myanmar have compelled many businesses to rely on generators, though the rising cost of fuel has made this an increasingly expensive solution. Power outages are particularly severe in Yangon, Myanmar's commercial capital, including its previously vibrant industrial zones. Residents and business owners report that the duration of blackouts has at least doubled since mid-August. Typically, blackouts are rare during the rainy season, from June to October, when hydropower dams are full, and electricity production is at its peak. About 40% of Myanmar's electricity is generated from hydropower. In Yangon, the duration of planned electricity cuts varies by township; however, on average, electricity cuts have increased from four hours to at least eight hours a day in residential areas, with some neighborhoods experiencing even longer outages. In areas controlled by the NUG and ethnic groups, electricity has already been cut off entirely, forcing residents to rely on solar panels and generators. However, in parts of Kachin, Chin, Kayah, and Rakhine states, the Myanmar military has restricted access to fuel, further exacerbating power shortages. Limited imports from China have also contributed to electricity shortages, particularly in northern Shan and Kachin states.

Urban areas such as Yangon and Mandalay are also experiencing reduced access to electricity due to a shortage of hydroelectric power, natural gas, and fossil fuels. The SAC limited foreign currency reserves, much of which are diverted to military spending, have made it difficult to secure sufficient energy supplies. This shortage of electricity has affected the use of AC/DC-powered digital devices, complicating access to digital services. The impact on education has been significant. Many basic and secondary schools rely on digital platforms, and the electricity shortage makes it challenging to charge and use computers. While higher education institutions can adapt more readily to online learning, basic education requires consistent teacher-student interaction, which is difficult to achieve without a stable power supply. Despite these challenges, many Myanmar residents are already accustomed to living with limited electricity for cooking, lighting, and other daily needs. As a result, while the lack of electricity is a major difficulty, it is often considered secondary to the shortage of internet connectivity, which has a more direct impact on communication, education, and daily life.

Military restrictions and cybersecurity concerns

The 2021 military coup drastically impacted digital services, education, and governance, leading to severe restrictions on internet access, high surveillance, and cyber threats. The NUG, formed in resistance, launched alternative digital infrastructure such as online schools, health care, and banking services to ensure access to basic needs, while bypassing military control. One of the most significant sectors affected by military restrictions is education. After the coup, many university students rejected the military's education system, opting to join the resistance or seek alternative learning paths. In response, the NUG established online institutions, including Myanmar Nway-Oo University (MNOU), to offer education to those boycotting the junta's schools. However, this created direct confrontations with the military regime, which has threatened parents and teachers with legal action under the Counter-Terrorism Law for enrolling in or supporting NUG-affiliated schools. A recent data leak from the Free Online Educational Institution Myanmar (FOEIM) escalated these tensions, as the military used the breach to justify more arrests and intimidation. The constant threat of arrest and surveillance has forced many teachers into hiding, highlighting the dangerous intersection between education and cybersecurity in conflict zones.

Similarly, digital banking services, particularly the SDB Bank, have faced significant cyber threats. The bank is closely linked to the NUG's alternative financial system, established to support citizens while bypassing military-controlled financial structures. Despite robust cybersecurity efforts, the bank remains under constant cyberattack. Financial services are highly attractive targets for hackers due to their association with monetary transactions, which complicates the identification of whether military actors or opportunistic financial hackers drive them. Nevertheless, the bank has successfully mitigated these threats so far, maintaining the safety of user information and funds. Still, the risks remain high, with new attacks continuously emerging. The military's digital crackdown is not limited to education and finance. Telegram, widely used by activists and NUG officials for communication, faces intense scrutiny and cyberattacks. NUG's IT teams work tirelessly to bolster the platform's security, organizing training sessions and continually enhancing protection mechanisms. However, the broader problem of fragmented digital infrastructure complicates these efforts. With Myanmar lacking a unified international database, many services operate in silos, making it difficult to ensure comprehensive security across all digital platforms. This fragmentation not only weakens cybersecurity but also limits the NUG's ability to scale its services effectively.

A key challenge underlying these digital vulnerabilities is the lack of digital literacy among the general population and service providers. Despite the NUG's efforts to build a robust cybersecurity framework, many users remain unaware of how to protect themselves from digital threats, making them more vulnerable to phishing, surveillance, and hacking attempts. This gap in digital literacy is particularly concerning in the context of ongoing military surveillance. For example, the discovery of sensitive communication on a teacher's phone by the military regime highlights the ease with which security breaches can occur in environments where users lack adequate digital safety knowledge. Moving forward, improving digital literacy across Myanmar's population will be critical for enhancing cybersecurity. The NUG's Ministry of Communications, Information, and Technology has already made strides in collaborating with other ministries to implement comprehensive digital security protocols, but much more needs to be done. Educating citizens and service providers on how to secure their digital interactions will not only bolster individual safety but also strengthen the overall resilience of NUG's digital governance structures.

Shortage of skilled IT professionals

The shortage of skilled IT professionals presents significant challenges to the effective implementation of digital governance services. The digital transformation of governance relies heavily on the expertise of IT professionals who ensure that government systems remain secure, efficient, and sustainable. However, digital skill shortages, particularly in public sectors in armed conflict situations, restrict governments' capacity to efficiently offer services and manage the risks associated with technological advancements. This issue is particularly pronounced in countries like Myanmar, where the infrastructure and digital literacy gaps further exacerbate the challenge of digital governance.IT professionals are important for the success of digital governance services. Their work includes overseeing data governance, which involves ensuring that public data is securely managed and utilized appropriately for policymaking and service delivery. In Myanmar, where infrastructure gaps have historically been an issue, digital governance initiatives have faced additional challenges. The country, despite efforts made under the NLD government, is still far from fully transitioning towards Industry 4.0. This is partly due to a lack of skilled IT professionals, as many civil servants lack even basic digital literacy. The public sector's reliance on external technical companies to provide digital services, such as license applications, online exam announcements, and website development, highlights the absence of in-house IT expertise. The result is a dependency on outsourced digital solutions, further compounded by the effects of the military coup.

Digital literacy, which refers to the ability to understand and use digital technologies effectively, is a foundational skill that must be developed among public servants. In Myanmar, however, this digital literacy gap is a critical barrier to the country's digital transformation. As a result, digital governance in the country increasingly relies on skilled IT professionals and workers rather than civil servants with limited IT knowledge. After the Military Coup, many IT professionals have left the country due to security concerns, seeking remote employment in safer regions or other countries. This exodus of talent has further depleted the pool of available professionals who can support digital governance. Although some of these professionals continue to contribute to digital governance in Myanmar, their involvement is often part-time or through voluntary efforts. For instance, some professionals first participated in fundraising activities before becoming more involved in the digital governance operations of NUG, providing important support to the Ministry of Communications, Information, and Technology (MoCIT).

The MoCIT plays a central role in Myanmar's digital governance under the NUG. The ministry focuses on modernizing and enhancing the country's communications and technology infrastructure. Through its Post & Telecommunications sector, MoCIT ensures that affordable telecommunications services, such as satellite, mobile, and fiber services, are available. Its Media and Communications division fosters independent media while overseeing digital content management and national archives. Additionally, the Finance and Administration department manages financial control and resource management, while its Information, Technology and Cyber Security department oversees critical cybersecurity-related policies. Despite the efforts of MoCIT, the ministry faces significant challenges in acquiring and retaining skilled IT professionals. While MoCIT includes a dedicated group of IT volunteers, the shortage of IT professionals across other government ministries remains acute. Although some ministries have in-house IT experts, their numbers are far fewer than MoCIT, leading to reliance on MoCIT for many digital governance services. The critical role that IT professionals play in maintaining systems that allow the government to

respond swiftly to emerging challenges, such as armed conflict or humanitarian crises, underscores the value of building a robust digital infrastructure.

Most IT professionals working in Myanmar's digital governance sector face significant hurdles. Many of them reside along the Thai-Myanmar border or in other countries due to security concerns and the ongoing electricity shortages in Myanmar. This displacement has created additional financial challenges, as many professionals struggle with daily survival and insufficient income. As a result, their ability to fully participate in the digital governance activities of the NUG has been hindered, contributing to a gradual shortage of IT professionals available for the country's digital governance needs. One of the key contributors to the success of digital governance initiatives has been the trust and belief that citizens and volunteers place in these efforts. For instance, in the case of the Telekyanmar initiative, the project began without a budget, relying on free IT platforms and the voluntary participation of skilled professionals. The initiative's success is attributed to the mutual trust between volunteers and citizens and the shared belief in the project's goals. This reliance on volunteerism, while commendable, raises concerns about the long-term sustainability of digital governance projects if skilled professionals continue to face financial and security challenges.

The shortage of IT professionals in Myanmar's digital governance landscape reflects a broader trend seen in many developing countries struggling to bridge the digital divide. The lack of investment in building digital literacy among civil servants and the exodus of skilled IT professionals due to security and economic reasons present significant barriers to the country's digital transformation. However, while digital governance is an area where investment in skills development is crucial, the shortage of skilled professionals can also be attributed to systemic issues within the country's governance structure. The reliance on voluntary participation and the inability to offer competitive salaries or stable employment conditions further compound the issue. Although many IT professionals are motivated by their belief in the NUG and the cause of digital governance, their capacity to contribute is constrained by external factors, such as security risks and financial instability. Additionally, the limited number of in-house IT professionals across government ministries suggests that the government needs to prioritize skills development, recruitment, and retention strategies to ensure the sustainability of digital governance projects. In the long run, building digital governance capabilities in Myanmar will require a more structured approach to skills development. Investment in training programs that enhance digital literacy among public servants, alongside efforts to retain skilled IT professionals within the country, is essential. Furthermore, the use of free and open-source digital platforms, while pragmatic in the short term, may not be sustainable as the country's digital governance needs become more complex.

Security and control challenges

Security and control challenges have become more pressing, particularly in the digital governance domain. The military regime has rapidly expanded its digital surveillance apparatus, using a combination of technologies such as SIM card registration and mobile banking surveillance to monitor and track individuals. These measures give the military greater control over financial transactions, particularly targeting those suspected of supporting anti-regime movements like the PDF. A headmaster from Myanmar's Basic Online School highlighted that security and control are among the most significant challenges in providing digital governance services. As the regime intensifies its grip on digital communications, the potential for abuse, suppression of freedoms, and the silencing of dissent has grown significantly.

One of the most alarming trends since the coup has been the use of platforms like Telegram by pro-junta groups to publicly expose and dox individuals involved in pro-democracy activities. These groups share personal information such as addresses, private details, and even social media content, leading to arrests and detentions. Such actions have created an environment of fear, with activists and citizens needing to carefully manage their digital presence to avoid becoming targets. This form of surveillance is not limited to financial activities but extends to the broader online ecosystem, making digital privacy nearly impossible to maintain the military's proposed cybersecurity law further compounds the situation. The law aims to tighten the regime's control over online spaces by restricting digital communications and increasing surveillance of social media platforms. This move not only compromises individual privacy but also restricts the flow of information, effectively curbing freedom of speech in the digital realm.

The challenges of security in NUG digital governance financial services, where the risk of cyberattacks is ever-present. An executive member of the Spring Development Bank noted that while financial concerns are not the primary challenge, security issues, especially those linked to armed conflicts, pose significant obstacles. The bank has faced several cyberattacks since its establishment, and while none have critically impacted operations, they required immediate resolution. The bank's security team, responsible for 24/7 monitoring, has played a crucial role in addressing these attacks and preventing future incidents. The team's ability to quickly resolve and defend against these threats has so far ensured that no user information or financial resources have been compromised. However, identifying the source of these attacks has been challenging, as cyberattacks on financial services are not uncommon. Financial hackers often target these institutions because of the money involved, making it difficult to determine whether the attacks are specifically aimed at the bank or part of broader attempts by opportunistic hackers. Regardless, the bank continues to prioritize cybersecurity and IT security as its top concern to ensure the safety of user information and financial transactions.

Another critical area affected by security challenges is the education sector, particularly online education services. As one of the headmasters of Myanmar Basic Online School pointed out, security and control remain vital issues in the digital governance of education. While ensuring security is essential, taking risks is also necessary to continue offering education services. Without taking such risks, online education and the CDM would not have come this far in the face of the military's oppressive measures. The transition from physical classrooms to online platforms has introduced new security issues. Teachers should now navigate the complexities of teaching through digital platforms while ensuring that both students and teachers remain safe from digital threats. One of the main challenges faced in online education is the issue of camera usage during lessons. According to one of the NUG Education 18 policies, neither students nor teachers are allowed to turn on their cameras during classes. This restriction makes monitoring student engagement difficult, as teachers cannot see what students are doing during lessons. To address this, teachers have implemented Zoom's Focus mode to monitor the class, though they remain cautious of potential security breaches.

Apart from security concerns, the online education system also faces significant technological and financial challenges. Data support, drive space, and internet connectivity are among the biggest obstacles for both teachers and students. While some students have access to good data support and drive space, they may suffer from poor internet connectivity. Conversely, others with strong internet connections may

lack adequate devices or data support. Teachers often find themselves teaching under difficult conditions, making do with whatever resources are available.

The cost of data is another pressing issue. Larger schools often charge fees to cover teachers' salaries, which range between 400,000 and 800,000 MMK. However, smaller online schools, which operate purely on a voluntary basis, do not charge fees, and teachers do not receive salaries. These schools rely entirely on donations to cover costs like data support for teachers. For instance, one hour of teaching costs around 1,500 MMK, and with each session consuming 400 to 600 MB of data, most of the donations go directly towards covering data expenses, leaving no room for paying salaries. As a result, many teachers work voluntarily, further complicating the sustainability of online education services.

In terms of devices, most teachers are using phones, which are often insufficient for effective teaching. Only 30% of the education service providers have access to laptops, which severely limits their ability to teach. Many teachers juggle teaching responsibilities across multiple schools using a single phone, which presents considerable challenges to maintaining quality education under such difficult conditions. Students also face significant challenges in online education, particularly regarding security, connectivity, and data costs. Many students who cannot address security concerns are unable to attend online classes. Additionally, disagreements within families about education create further barriers. For instance, grandparents may prefer that the child attend a military-controlled school, while parents may wish for the child to attend an online school. Such conflicts often result in the child not attending any school at all. Even if students manage to attend online classes, data interruptions caused by family members can disrupt their education, leaving many children without the opportunity to study.

User adoption and digital literacy are central to the success of NUG's digital services. While platforms like Telekyanmar offer innovative solutions for healthcare delivery, gaps in digital skills and infrastructure hinder their accessibility. Many students and educators in conflict-affected regions face challenges in accessing online education due to the high cost of devices and data, as well as unreliable internet connectivity. In some cases, communities pool resources to purchase shared devices, while students travel long distances to access areas with better connectivity. Similarly, digital financial services like the Spring Development Bank play a crucial role in facilitating secure transactions, but users often struggle with unfamiliar blockchain technology and limited withdrawal options, undermining confidence in these platforms.

Trust and legitimacy are critical for the broader adoption of digital governance services. The NUG's ability to deliver effective and inclusive services is a key factor in establishing its credibility as a governing body. While the NUG has made progress in engaging ethnic minorities and marginalized groups, historical grievances and cultural barriers remain significant obstacles. Efforts to promote inclusivity through translation services and localized solutions, such as Telekyanmar's Chin Tele App, demonstrate the NUG's commitment to addressing these challenges. However, limited infrastructure and frequent displacement in ethnic areas continue to impede service delivery.

TABLE 1: PEOPLE'S TRUST ON DIGITAL GOVERNANCE SERVICES

Survey aspect	Response
Efficiency of NUG's digital services	65.7% highly trust, 22.9% moderately trust
User trust in security protection of NUG digital services	62.9% express high trust, 25.7% moderate trust
People access to NUG digital services	37.1% show moderate access, 37.1% show low access
General trust in NUG digital services	45.7% express moderate trust, 34.3% high trust, 8.6% no trust
Reasons for non-use of NUG digital services	47.1% cite security issues, 44.3% cite lack of internet access, 4.3% question service quality

These findings suggest that trust in digital governance, particularly in crisis contexts, is contingent on both service quality and accessibility. In Myanmar's conflict-ridden environment, trust is not only a matter of perceived efficiency but also hinges on the capacity of governance structures to ensure secure and equitable access. Analysis of the survey data reveals that users generally have greater confidence in the efficiency and security of the NUG's digital services compared to those who express distrust. In contrast, non-users primarily cite concerns over security, limited internet access, and poor service quality as reasons for not engaging with the services. Additionally, responses indicate an even distribution between moderate and low levels of access to the NUG's digital platforms. These findings suggest that, although there is a significant degree of trust in the NUG's digital initiatives, their long-term success hinges on addressing key practical barriers particularly in terms of security and accessibility which are essential for building and maintaining public trust.

International support plays a vital role in overcoming these challenges. The lack of strong international assistance has limited the NUG's capacity to expand its digital governance initiatives. While some capacity-building programs and training sessions have been offered by international organizations, these efforts remain sporadic and insufficient. Enhanced technical and financial support for internet infrastructure, capacity-building programs, and digital literacy initiatives could significantly strengthen the NUG's digital governance capabilities. Recognizing internet access as a fundamental right and fostering global partnerships would not only address existing gaps but also enhance the resilience and legitimacy of the NUG's efforts to govern effectively in a politically fragmented Myanmar. By addressing these interconnected challenges, the NUG can build a more inclusive and sustainable digital governance system to support the country's transition toward democracy and stability.

Conclusion

This research reveals the complex challenges faced by the NUG in implementing digital services within Myanmar's volatile socio-political landscape. Utilizing a socio-technical framework, this paper illustrates how technical and social factors interact to influence the success of digital governance initiatives. On the technical side, challenges such as inadequate internet infrastructure, frequent power outages, cybersecurity threats, and a shortage of skilled IT professionals hinder the scalability and accessibility of NUG's services. On the social side, barriers including low digital literacy, trust deficits, and cultural diversity, particularly in ethnic regions, impede user engagement. These challenges are compounded by Myanmar's conflict-ridden environment, where military surveillance and repression create a climate of fear that further discourages the adoption of digital tools.

Despite these obstacles, the NUG has demonstrated remarkable resilience and innovation in its digital initiatives to fill the gaps in social side. Telekyanmar, its telemedicine platform, has reached over 170,000 patients across 321 townships, offering critical healthcare services, including mental health support and suicide prevention. Similarly, the Ministry of Education has provided alternative educational opportunities through digital platforms such as the Learning Management System (LMS) and Moodle and Myanmar Basic Education Home Applications including Moodle Boxes for offline learning. These efforts have enabled students in conflict zones and ethnic areas to access flexible curricula tailored to their cultural and linguistic needs. Financial solutions such as the Spring Development Bank and NUG Pay highlight the government's commitment to transparency and accountability, fostering trust among users despite the operational risks posed by cyberattacks and military control.

The research identifies key opportunities to enhance the effectiveness of NUG's digital services. Expanding internet connectivity through technologies like Starlink and investing in renewable energy solutions can improve access in remote and conflict-affected areas. Strengthening cybersecurity measures and educating users on digital safety are essential to safeguarding data and maintaining trust. Comprehensive digital literacy programs targeting marginalized populations can empower communities to engage with digital services confidently. Promoting inclusivity through collaboration with ethnic organizations and local leaders can address cultural barriers, ensuring broader adoption of services. Finally, fostering international collaboration is critical for overcoming resource constraints. Partnerships with democratic governments, international organizations, and tech companies can provide financial support, technical expertise, and advocacy for recognizing internet access as a fundamental right.

The NUG's digital services underscore the potential of innovation in governance, even under extraordinary circumstances. While challenges persist, the NUG has made significant strides in using technology to address critical gaps in healthcare, education, and financial services. By focusing on improving infrastructure, cybersecurity, and public engagement, the NUG can strengthen its role as a legitimate government entity and enhance its capacity to serve its citizens effectively. International support remains crucial to scaling these efforts, bridging the digital divide, and ensuring that digital governance contributes to the democratic aspirations of Myanmar's people. The lessons from this research not only provide practical recommendations for policymakers but also contribute to the broader discourse on digital governance in crisis contexts, offering a roadmap for resilience and inclusivity in the face of adversity.

References

Access Now. (2021). "Myanmar Coup: A Year of Internet Shutdowns, Censorship, and Arrests." Access Now.

Al Hussaini, Y. K. N. (2021). Implications of Socio-Technical Interactions for e-Government Implementation and its Success. Can Access https://livrepository.liverpool.ac.uk/3142921/1/201183436_Oct2021.pdf

Andersen, K. V., & Henriksen, H. Z. (2006). E-government maturity models: Extension of the Layne and Lee model. Government Information Quarterly, 23, 236–248.

Anthopoulos, L., Reddick, C. G., Giannakidou, I., & Mavridis, N. (2016). Why e-government projects fail? An analysis of the Healthcare.gov website. Government Information Quarterly, 33(1), 161-173. https://doi.org/10.1016/j.giq.2015.07.003

Baek, J., Kim, J., & Lee, Y. (2018). The impact of sociotechnical systems on the success of e-government implementation: Evidence from South Korea. Information Systems Frontiers, 20(4), 673-686. https://doi.org/10.1007/s10796-017-9763-1

Bekkers, V., & Homburg, V. (2007). The Myths of E-Government: Looking Beyond the Assumptions of a New and Better Government. Information Society, 23(5), 373-382.

Bostrom, R. P., & Heinen, J. S. (1977). MIS Problems and Failures: A Socio-Technical Perspective. MIS Quarterly, 1(3), 17-32.

Choi, H., & Chandler, S. M. (2020). E-government in the post-COVID-19 era: Challenges and opportunities. Journal of Public Administration Research and Theory, 30(4), 741-752. https://doi.org/10.1093/jopart/mua062

Dawes, S. S. (2008). The Evolution and Continuing Challenges of E-Governance. Public Administration Review, 68(s1), S86-S102.

Dawes, S. S. (2009). Governance in the digital age: A research and action framework for an uncertain future. Public Administration Review, 69(2), 286-298. https://doi.org/10.1111/j.1540-6210.2008.01974.x

Fountain, J. E. (2001). Building the virtual state: Information technology and institutional change. Washington (DC): Brookings Institution Press, p. 256.

Fortune, J., & Peters, G. (2005). Information systems: Achieving success by avoiding failure. John Wiley & Sons.

Gerbaudo, P. (2018). Tweets and the Streets: Social Media and Contemporary Activism. Pluto Press.

Gibreel, O., & Hong, A. (2017). A holistic analysis approach to social, technical, and socio-technical aspects of E-Government Development. Sustainability, 9(12), 2181. https://doi.org/10.3390/su9122181

Gil-Garcia, J. R., & Flores-Zúñiga, M. L. (2020). E-Government success factors and the role of contextual conditions: Insights from the Mexican government experience. Government Information Quarterly, 37(1), 1-13. https://doi.org/10.1016/j.giq.2019.101409

Glyptis, L., Christofi, M., Vrontis, D., Giudice, M. D., Dimitriou, S., & Michael, P. (2020). E-Government implementation challenges in small countries: A comparative analysis of Cyprus and Malta. Technological Forecasting and Social Change, 151, 119811. https://doi.org/10.1016/j.techfore.2019.119811

Goldfinch, S. (2007). Pessimism, computer failure, and information systems development in the public sector. Public Administration Review, 67(5), 917-929. https://doi.org/10.1111/j.1540-6210.2007.00776.x

Gunawong, P., & Gao, P. (2017). Understanding e-government failure in the developing country context: A process-oriented study. Information Technology for Development, 23(1), 153-178. https://doi.org/10.1080/02681102.2016.1214575

Heeks, R. (2003). Most eGovernment-for-development projects fail: How can risks be reduced? Institute for Development Policy and Management, 14(1), 1-23.

Heeks, R. (2006). Implementing and managing eGovernment: An international text. Sage.

International Crisis Group. (2021). Myanmar's Coup and its Aftermath. Crisis Group Asia Briefing No. 166.

Jaeger, P. T., & Bertot, J. C. (2010). Transparency and Technological Change: Ensuring Equal and Sustained Public Access to Government Information. Government Information Quarterly, 27(4), 371-376.

Joseph, R. C. (2013). A structured analysis of e-government studies: Trends and opportunities. Government Information Quarterly, 30(4), 435-443. https://doi.org/10.1016/j.giq.2013.05.002

Madsen, C., Berger, J. B., & Phythian, M. (2014). Lessons from the frontline: Do citizens have the right to e-government? Information Polity, 19(3), 165-180. https://doi.org/10.3233/IP-140333

Mizzima. (2023). "Myanmar's NUG holds a soft launch for its online bank". Mizzima. https://mizzima.com/article/myanmars-nug-holds-soft-launch-its-online-bank

Nesti, G., & Graziano, P. (2019). The democratic anchorage of governance networks in smart cities: An empirical assessment. Public Management Review, 22, 1-20. https://doi.org/10.1080/14719037.2019.1588355

Shackelford, S. J. (2020). *Governing new frontiers in the information age: Toward cyber peace.* Cambridge University Press. https://doi.org/10.1017/9781108562608

Trist, E. L. (1981). The evolution of socio-technical systems. Institute for Development Policy and Management. Retrieved from Research Gate.

Twizeyimana, J. D., & Andersson, A. (2019). The public value of E-Government – A literature review. Government Information Quarterly, 36(2), 167-178. https://doi.org/10.1016/j.giq.2019.01.001

United Nations. (2008). UN E-Government Survey 2008: From e-Government to Connected Governance. Retrieved from United Nations.

United Nations. (2020). UN E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development. Retrieved from United Nations.

Appendices

Appendix 1: NUG service area

Ministry	Service mode	Details	Area noted
Ministry of Defense	In-person	Security services in controlled areas	NUG Controlled areas
Ministry of Health	Mixed (digital/in-person)	Physical hospitals, mobile health units, Tele Kyan Mar	Sagaing, Magway, Kayah, Karen, Kachin, Thanintharyi
Ministry of Planning, Finance, and Investment	Digital	Online lottery, banking, mobile wallet	Online
Ministry of Foreign Affairs	In-person	Physical representative offices	International locations
Ministry of Education	Mixed (digital/in-person)	Physical basic education, online higher education, matriculation exam systems	NUG controlled areas/ Online
Ministry of Home Affairs and Immigration	In-person	Birth certificates, local administration, security	NUG controlled areas
Ministry of Federal Union Affairs	Digital	Policy foundation and coordination	Online
Ministry of Humanitarian Affairs and Disaster Management	In-person	Humanitarian aid	NUG controlled area, ERO controlled area and Border Area.
Ministry of Human Rights	Mixed (digital/in-person)	Human rights protection, data collection, online training, Human rights reporting, International Advocacy	NUG controlled area, ERO controlled area and Border Area.
Ministry of Natural Resources and Environmental Conservation	Mixed (digital/in-person)	Conservation efforts, forestry, online activities	NUG Controlled Area
Ministry of International Cooperation	Digital	International cooperation	N/A
Ministry of Women, Youths, and Children Affairs	In-person	Gender-based violence, youth development, protecting and promoting women's rights	NUG controlled areas, ERO controlled areas and border areas
Ministry of Labour	Digital	Labour affairs, union coordination	online
Ministry of Justice	Mixed (digital/in-person)	Court hearings, legal advice, marriage services	NUG controlled areas
Ministry of Communications, Information & Technology	Digital	Telecommunications and IT services	Online
Ministry of Electricity & Energy	Digital	Energy services	N/A
Ministry of Commerce	Digital	Online training	Online

Appendix 2: Areas of control
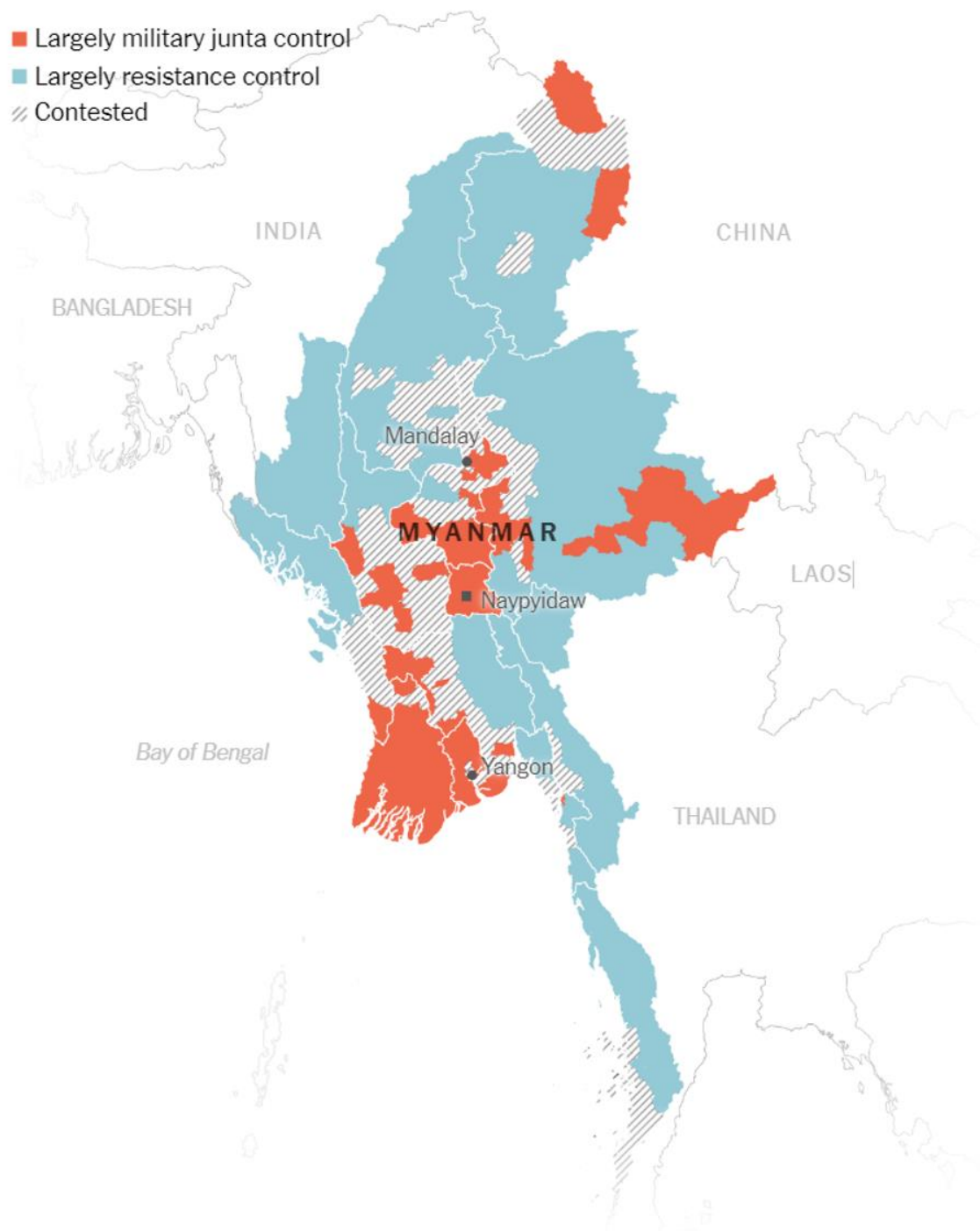
Source: *New York Times*, 2024

Appendix 3: Higher education institutions

This table shows the NUG Ministry of Education's recognized higher education institutions and provided degree programs that were accepting applications for 2024-2025 academic year.

No.	Name of host university	Collaborated universities	Type of degree
1	Myanma Nway Oo University	Economic Universities Yezin Agricultural University National University of Arts and Culture	Bachelor of Arts – B.A Bachelor of Science – B.Sc Bachelor of Laws – LLB Bachelor of Agricultural Science – B.Agr.Sc Bachelor of Economics (Economics) – BEcon (Eco) Bachelor of Economics (Statistics) – BEcon (Stats) Bachelor of Business Administration – BBA Bachelor of Population Studies – BPS Bachelor of Commerce – Bcom Bachelor of Accounting – BAct Bachelor of Public Administration – BPA Bachelor of Development Studies – BDevS
2	Wunzin Online University		Bachelor of Arts – B.A Bachelor of Science – B.Sc
3.	Spring Normal University		Bachelor of Education – B.Ed (Early Childhood) Bachelor of Education – B.Ed (Primary) Bachelor of Education – B.Ed (Lower Secondary) Bachelor of Education – B.Ed (Upper Secondary)
4	University of Teaching		Bachelor of Education – B.Ed (Primary) Bachelor of Education – B.Ed (Lower Secondary)
5.	Technological-Related Interim University Councils Network	Technological University- Monywa West Yangon Technological University (WYTU) Thanlyin Technological University (TTU) Mawlamyine Technological University	Bachelor of Engineering – B.E.
6.	Dawei Technological University		Bachelor of Engineering – B.E.
7.	Loikaw Technological University		Bachelor of Engineering – B.E.
8.	National University of Computer Studies (NUCS)		B.C.Sc B.C.Tech
9.	Forestry and Agricultural University – Yezin		Bachelor of Science in Forestry Bachelor of Environmental Science

10.	University of Traditional Medicine		Bachelor of Myanmar Traditional Medicine – B.M.T.M
11.	University of Medicine 1 – Yangon		Bachelor of Medicine, Bachelor of Surgery (MBBS)
12.	University of Medicine – Mandalay		Bachelor of Medicine, Bachelor of Surgery (MBBS)
13.	University of Medicine 2 – Yangon		Bachelor of Medicine, Bachelor of Surgery (MBBS)
14.	University of Medicine – Taungyi		Bachelor of Medicine, Bachelor of Surgery (MBBS)
15.	University of Dental Medicine		Bachelor of Dental Surgery (BDS)
16.	University of Nursing – Yangon		Bachelor of Nursing (B.N.Sc)
17.	University of Nursing – Mandalay		Bachelor of Nursing (B.N.Sc)

Appendix 4: Internet shutdowns

Internet shutdowns across townships in Myanmar (Myanmar Internet Project, 2024).

Region	Number of townships affected
Sagaing	89
Kachin	34
Chin	26
Kayah (Kareni)	21
Magway	23
Rakhine	20
Mon	10
Karen	11
Mandalay	15
Thanintharyi	9
Shan	30
Bago	13
Yangon	6
Irrawaddy	6