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The Impact of a Knowledge-Based Economy on Nation-Rebuilding: A Case Study of Somalia

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Abstract

The transition to a knowledge-based economy (KBE) in Somalia faces significant challenges, including political instability, weak governance, inadequate infrastructure, and limited investment in education and technology. This study examines how the KBE can contribute to nation building by enhancing governance, fostering economic diversification, promoting social cohesion, and strengthening institutional capacity. Using a qualitative case study approach, this research draws on secondary data and stakeholder interviews to explore the relationship between KBE elements and Somalia's reconstruction efforts.

The findings reveal that the KBE enhances governance through ICT-driven e-governance, improving transparency, and service delivery. It also promotes economic diversification, with sectors such as telecommunications and mobile banking reducing their reliance on traditional industries. Education in science, technology, engineering, and mathematics(STEM) fields fosters social cohesion and national identity, whereas the Somali diaspora plays a pivotal role in capacity building through knowledge transfer and innovation.

The study recommends prioritizing Research and Development (R&D) to drive innovation and entrepreneurship, strengthening STEM education to equip citizens with critical skills, and integrating Information and Communication Technology (ICT) in governance to improve efficiency. Engaging the Somali diaspora in capacity-building initiatives is crucial for sustainable development and offers a pathway to a resilient and unified nation.

Key Words: *Knowledge-Based Economy; Nation Building; R&D; Human Capital; Social Cohesion; Somalia.*

1. Background

With the rapid advancement of information technology, economies worldwide are transitioning from resource-based models to knowledge-based economies (KBEs), in which growth is driven by information, knowledge, intellectual capabilities, and innovation. These elements enhance economic productivity and market competitiveness (Haddad, 2017; Hogan, 2011; OECD, 1996). Improving the quality or quantity of economic production factors or enhancing available technologies directly impacts economic growth (Hogan, 2011). Therefore, KBEs play a crucial role in nation rebuilding and social development, particularly in developing and post-conflict nations such as Somalia where rapid recovery is essential.

Globally, the concept of KBE has gained significant attention, particularly with the rise of the information age and the proliferation of digital technologies. The OECD (1996) highlights that knowledge and technology are fundamental to economic production and growth, surpassing traditional resources, such as capital, land, and labor. Unlike finite resources, knowledge can be reused without depletion, making it economically more valuable than ordinary goods and services. KBEs not only foster the development of knowledge-intensive industries, but also transform existing economic sectors, creating new opportunities for growth and development (Smith, 2002; Powell & Snellman, 2004).

Research and development (R&D) is one of the most significant drivers of KBEs, which stimulates innovation, creativity, and technological advancement (Stiglitz & Greenland, 2014). R&D promotes higher productivity and the creation of new markets while also advancing human capital through education and skill development. Emphasizing STEM education is essential for producing a competitive, skilled workforce capable of innovating and applying knowledge in diverse economic sectors (World Bank, 2019). Examples of successful KBEs, such as the United States, South Korea, and Finland, illustrate the transformative power of investing in education, technology, and innovation (Asian Development Bank, 2013). South Korea's rise from a low-income economy to a high-tech industrialized nation underscores the critical role of prioritizing science and innovation in economic policy (UNIDO, 2021).

For developing nations, transitioning to KBE presents both opportunities and challenges. KBEs offers pathways to diversify economies, reduce poverty, and promote sustainable development. However, obstacles, such as poor infrastructure, inadequate education systems, and limited access to technology, hinder progress. Studies by the World Bank (2012) emphasize the need for policy environments conducive to innovation, human capital investment, and ICT development.

Countries such as India and Kenya have successfully leveraged ICT to stimulate sectors such as mobile banking, software development, and education, thus creating new economic opportunities (Dutta et al., 2015; ITU, 2018; Brynjolfsson & McFee, 2014). In Somalia, mobile banking and mobile money transfers (MMT) have become booming industries, with MMT transactions amounting to ~$1.65 billion monthly (SOMINVEST, 2022).

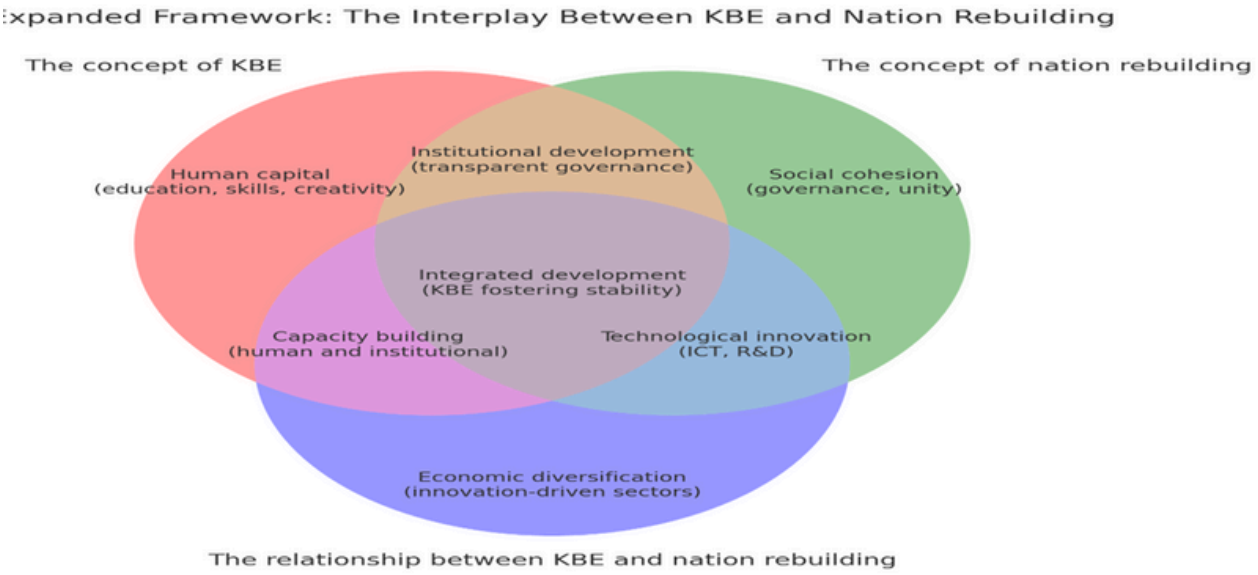
A tangible transition to KBE in post-conflict countries such as Somalia requires substantial institutional reform. Effective governance, transparency, and institutional support are prerequisites for thriving KBEs. In fragile states, institutional strengthening and governance reform are critical to creating an enabling environment for innovation and knowledge transfer (Grief & Kingston, 2011).

Somalia presents a unique case for exploring the transformative potential of the KBE. Despite decades of conflict, Somalia has a vibrant diaspora and emerging ICT sectors that can be leveraged for nation-building. However, the transition remains fraught with challenges, including political instability, limited infrastructure, terrorist-related activities, and insufficient investment in education and technology. Somalia's nation-rebuilding process remains fragile, and the potential of the KBE to aid in this process requires careful examination.

This study seeks to explore the relationship between a knowledge-based economy and national rebuilding in Somalia. It aims to analyze how knowledge can be leveraged for social, economic, and institutional reforms in a country that has faced decades of political division, fiscal disunity, and disagreements between the federal government and federal member states. By examining the role of the KBE in Somalia's unique context, this study seeks to identify actionable strategies for fostering sustainable development and stability through innovation, education, and institutional strengthening.

2.Theoretical Framework

Understanding the dynamic relationship between a knowledge-based economy (KBE) and nation rebuilding necessitates a comprehensive framework capturing the interconnected elements. This study's theoretical framework highlights three dimensions: the concept of the KBE, the concept of nation rebuilding, and their symbiotic relationship. These dimensions illustrate how the KBE fosters innovation, human capital development, and economic diversification, while benefiting from the stability and governance structures established through nation rebuilding. The diagram below visually represents these interconnections, emphasizing Somalia's unique context:



The diagram encapsulates the theoretical framework by integrating the key dimensions of a knowledge-based economy (KBE), nation rebuilding, and mutual relationship. As defined by Haddad (2017) and OECD (1996), a KBE is an economic system driven by knowledge, intellectual capabilities, and technological innovation. This system relies on human capital development, ICT-driven technological advancements, and an efficient information flow to stimulate economic growth and productivity. These elements are essential for Somalia's transition from resource dependence to sustainable development.

2.1 The Concept of a Knowledge-Based Economy (KBE)

A knowledge-based economy refers to an economic system in which knowledge, information, and intellectual capabilities are the primary drivers of growth, innovation, and productivity (Haddad, 2017; OECD, 1996).

Unlike traditional economies that rely on natural resources and manual labor, KBEs leverage human capital, technological advancements, and the efficient flow of information. The key characteristics of KBE include the following.

1. **Human Capital Development:** Education, skills, and creativity are prioritized to create a knowledgeable and innovative workforce.
2. **Technological Innovation:** Investments in ICT and research and development (R&D) stimulate innovation and economic competitiveness.
3. **Knowledge Sharing:** Collaboration across borders, institutions, and sectors facilitates the dissemination of ideas and practices.
4. **Global Interconnectivity:** Economic systems in KBEs are integrated into global markets through information flows and digital technologies.

In Somalia, transitioning to a KBE requires significant investments in education, technology, and innovation to empower individuals and institutions to generate and apply knowledge. These investments are critical for overcoming the country's reliance on traditional sectors and fostering sustainable growth.

2.2 The Concept of Nation Rebuilding

Nation rebuilding is the process of reconstructing governance, fostering social cohesion, and ensuring sustainable socio-economic development (Fukuyama, 2004; Okeku et al., 2022). This is particularly relevant in post-conflict societies, where the restoration of political institutions, infrastructure, and economic activities is essential for maintaining peace and driving development. The core elements of nation rebuilding include the following.

1. **Institutional Development:** Strengthening governance, rule of law, and public service delivery.
2. **Social Cohesion:** Bridging divisions and fostering a shared sense of national identity.
3. **Sustainable Economic Growth:** Diversifying the economy and creating opportunities for marginalized populations.

For Somalia, prolonged civil unrest, weak governance structures, and fragmented society pose significant challenges. However, this can be addressed through a coordinated nation-rebuilding process supported by the principles of a knowledge-based economy.

2.3 The Relationship Between KBE and Nation Rebuilding

The relationship between a knowledge-based economy and nation rebuilding is inherently symbiotic:

How KBE Supports Nation Rebuilding: KBE fosters human capital development, drives technological innovation, and creates economic opportunities. These contributions strengthen governance, enhance transparency, and promote social and economic inclusivity (Jalilian et al., 2007).

How Nation Rebuilding Supports KBE: Stable governance, cohesive societies, and robust institutions provide the enabling environment necessary for a KBE to flourish (Havrylyshyn and van Rooden, 2003).

This interwoven relationship is evident in four critical areas:

1. **Governance and Institutional Development:** KBE-driven ICT enhances transparency and accountability in public service delivery.
2. **Social Cohesion:** Inclusive education and economic opportunities help bridge societal divisions and foster unity and a national identity.
3. **Economic Diversification:** Innovation-driven sectors reduce the dependency on traditional industries and create new economic opportunities.
4. **Capacity Building:** Human capital and institutional strengthening are essential for sustaining growth and fostering resilience.

For Somalia, this relationship is particularly significant. The rapid adoption of ICT, education reforms emphasizing STEM fields, and diaspora-driven knowledge transfer offer unique opportunities to address challenges, such as weak institutions and fragmented governance structures. By leveraging these opportunities, Somalia can use the KBE to accelerate nation rebuilding and promote sustainable development.

3. Methodology

This study adopts a qualitative case study approach to examine the impact of a knowledge-based economy (KBE) on nation-building in Somalia. This method is suitable for exploring complex phenomena in real-life contexts, particularly in post-conflict societies, where socio-political and economic factors are deeply intertwined. This approach enables an in-depth analysis of Somalia's transition toward a KBE, identifying its challenges, opportunities, and dynamics.

3.1 Case Study Selection

Somalia presents a unique case study to understand the impact of a knowledge-based economy on nation rebuilding. Despite challenges such as political instability and infrastructural limitations, Somalia's potential as a knowledge-driven economy lies in its youth population, diaspora, and emerging technological sectors.

The Somali diaspora has been instrumental in transferring knowledge, skills, and capital, contributing to the development of the education, telecommunications, and healthcare sectors (IOM, 2022).

This case study approach allows for an in-depth examination of Somalia's transition toward a KBE, and provides valuable insights into the application of this framework in post-conflict nations. This study examines how Somalia's political challenges intersect with its youth-driven opportunities and technological growth to foster national rebuilding.

3.2 Data Collection Methods

This study employed a combination of secondary data analysis and author's observations to examine Somalia's transition to a Knowledge-Based Economy (KBE). These methods were chosen for their complementary strengths, offering both a broad analytical framework and nuanced, context-specific insights. Secondary data analysis provided macro-level perspectives, while observations grounded the findings in practical realities. Bryman (2016) posits the value of secondary data for identifying patterns and trends, While Creswell and Poth (2018) emphasize the value of observations for exploring real-world phenomena, studies such as Barakat and Ellis (1996) underscore their utility in post-conflict contexts, where direct engagement can uncover critical socio-political dynamics.

Secondary data served as the foundation of this research, with reports from organizations such as the World Bank, UNDP, and OECD offering reliable analyses of governance, education, and ICT development (World Bank, 2021; OECD, 1996). Publications from the Somali National Bureau of Statistics and SOMINVEST contributed essential data on GDP growth and trade patterns (Somali National Bureau of Statistics, 2023; SOMINVEST, 2022). NGO and think tank research, such as that from the Heritage Institute, enriched the analysis by providing insights into local and regional dynamics, while academic literature framed the findings within broader theoretical contexts of KBEs and post-conflict reconstruction (Stiglitz & Greenwald, 2014; Grief & Kingston, 2011).

The author's observations complemented this data, offering insights into governance, education, and ICT-driven economic activities. Observations highlighted the transformative role of mobile banking platforms like EVC Plus and Sahal in fostering financial inclusion (SOMINVEST, 2022). Similarly, the emphasis on STEM education in urban centers like Mogadishu and Garowe underscored its potential to bridge skills gaps and drive innovation (World Bank, 2019). The contributions of the Somali diaspora, particularly in capacity-building initiatives and ICT investments, further demonstrated their critical role in addressing institutional challenges (IOM, 2022). By integrating these methods, the study achieved a multi-dimensional understanding of Somalia's developmental trajectory. Secondary data offered a robust evidence-based framework, while the author's observations added depth and specificity, enabling the study to explore both systemic challenges and localized opportunities. This dual approach underscores the relevance of the findings, offering insights applicable to other post-conflict nations navigating similar transitions.

3.3 Scope and Limitations

This study focuses on analyzing the impact of knowledge-based economic activities on Somalia's nation-building and economic growth, with an emphasis on key sectors such as education, technology, and diaspora engagement. While these areas are integral to fostering a Knowledge-Based Economy (KBE), the scope does not extend to other critical sectors like health and environmental sustainability, which are also vital components of nation-building. Future research may benefit from incorporating these dimensions to provide a more holistic understanding of Somalia's developmental trajectory.

Several limitations were encountered during the research process. One significant constraint was the availability of reliable data. Somalia's unstable political environment and underdeveloped national data systems posed challenges in accessing accurate and up-to-date statistics on education, ICT, and economic performance. This reliance on fragmented datasets may have limited the comprehensiveness of the analysis.

Accessibility also presented challenges. Security concerns and restricted access to government officials constrained the ability to conduct extensive primary research. As a result, the study relied heavily on secondary data from international organizations, published government reports, and a limited sample of policymakers, which may have affected the breadth and depth of insights.

Another limitation lies in the generalizability of the findings. While the study provides valuable insights into Somalia's specific context, these findings may not be directly applicable to other post-conflict nations without considering their unique socio-political and economic conditions. The variability in governance structures, cultural factors, and resource availability across nations necessitates caution in extrapolating these results.

Despite these limitations, the study contributes critical insights into the role of KBE in Somalia's nation-building efforts. It highlights actionable strategies for leveraging education, innovation, and diaspora contributions to address key developmental challenges. Additionally, the findings lay a foundation for future, more comprehensive field research that can address current gaps and expand the scope to include other critical sectors such as health and environmental sustainability. This broader perspective would further enhance understanding and inform more effective policy and strategic interventions.

4. Somalia's Current Economic Landscape

This section provides an overview of Somalia's current economic landscape, focusing on the transition from a traditional to a knowledge-based economy (KBE). It highlights the role of key sectors, such as telecommunications, education, and the Somali diaspora, in driving economic growth and outlines the challenges that Somalia faces in fully embracing the KBE model.

In general, the state of the economy in Somalia seems to be recovering despite political instability and security issues that marred progress in nation rebuilding. As shown in Fig.2, the overall GDP growth rate of Somalia has stagnated over the decades, with some short-term fluctuations year-on-year. However, GDP per capita seems to grow steadily from less than $100 in 1960s to over $600 in 2023. The inset figures show GDP growth rate and GDP per capita over the last five years. The real GDP growth rate in 2024 is projected to be 3.7% while a GDP growth rate of 3.8% is estimated in 2025 (an increase of only 0.1% from that of 2024 (African Development Bank, 2024).

An outstanding factor in the GDP growth rate is capital formation, with a growth rate of ~9% (cf. import of goods and services grew by ~ 10%) in 2023, owing to the construction boom and investment in equipment and machinery (Somali National Bureau of Statistics, 2023). There is a great deficit in trade, where exports of goods and services are ~ 73% of GDP (cf. imports of goods and services are ~20% of GDP).

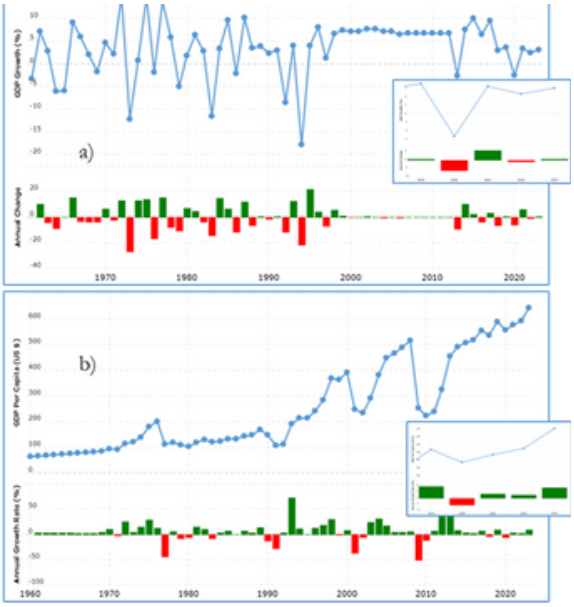


Figure 2: a) The annual GDP growth rate and b) the annual GDP

Somalia's economy is predominantly informal, with agriculture, livestock, remittances, and telecommunications serving as the main drivers of its economic activity. Decades of conflict have severely weakened Somalia's state institutions and infrastructure, leading to a fragmented and decentralized economy. Since the collapse of the central government in 1991, much of Somalia's economic activity has been conducted through informal channels, often driven by private sector initiatives, community-based organizations, and the Somali diaspora.

Traditionally, agriculture and livestock have been the backbone of Somalia's economy. According to the World Bank (2021), livestock alone account for nearly 40% of Somalia's GDP and more than 50% of the country's export earnings. However, this reliance on livestock and agriculture has made Somalia vulnerable to climate shocks, such as droughts and floods, as well as fluctuations in global commodity prices.

The lack of modernization in these sectors, therefore, means that they are not fully integrated into the global knowledge economy.

The informality of the economy in Somalia is characterized by a lack of regulation, which has both positive and negative effects. The absence of strong formal governance has allowed the private sector to flourish in the face of adversity, particularly in telecommunications and trade sectors. However, this informality limits the state's ability to generate revenue and effectively regulate industries, resulting in limited public services and infrastructure development.

Somalia's trade primarily consists of imports of food, consumer goods, and manufactured products, with most exports being livestock and other agricultural products (Somali National Bureau of Statistics, 2023). The country's economy is heavily dependent on remittances from the Somali Diaspora, which provides a vital source of income for households and businesses. Remittances contribute an estimated 15% of Somalia's GDP, highlighting their critical role in sustaining the economy, cf. a world average of 5% (Global Economy, 2024).

4.1 Telecommunications and ICT: A Growing Sector

One of the most notable success stories in Somalia's economic landscape is the rapid growth of telecommunications and ICT sectors. Despite the lack of a formal regulatory framework, Somalia's telecom industry is highly competitive and innovative.

Mobile telecommunications services, including mobile banking and internet access, are widely available across the country, even in rural areas. According to the National Communications Authority (NCA) of Somalia (2023), there are currently four submarine fiber-optic cables (EASSY, Gulf2Africa, DARE, and PEACE) that terminate at three landing stations across Somalia: Mogadishu, Bosaso, and Berbera. This makes Somalia very competitive in the region, especially the East Africa Community it recently joined.

The telecommunications sector has remained pivotal in driving the economic recovery and development in Somalia. Companies such as Hormuud Telecom, Golis Telecom, Telesom, and Somtel have established robust mobile phone networks that allow for seamless communication and mobile banking services, such as Sahal, Zaad, e-Dahab, T-Plus, and EVC Plus. These services have revolutionized commerce in Somalia, enabling citizens to conduct business, transfer money, and access financial services, even in areas without formal banking institutions. It is noteworthy that there is no official currency in Somalia, and all of these transactions take place in USD. The digitalization of money made it possible for the public to trade USD cents.

Furthermore, mobile banking played a crucial role in Somalia's transition toward a knowledge-driven economy. This facilitated the flow of remittances and enabled entrepreneurs to start and expand businesses without the need for physical bank branches, which are scarce in the country.

Mobile technology has also created new opportunities for digital literacy and innovation as citizens increasingly use mobile phones for learning and information sharing.

The growth of telecommunications in Somalia has sparked innovation in various sectors including education, healthcare, and commerce. Telemedicine services have been introduced in some areas to enable citizens to consult doctors and receive healthcare advice via mobile phones. The rise of e-learning platforms and digital resources has begun to address the challenges posed by the lack of a formal educational infrastructure, particularly in rural regions (Hussein, 2024).

Furthermore, Somali entrepreneurs leverage ICT to create digital solutions that are tailored to a country's unique needs. Mobile apps for money transfers (e.g., Waafi, Dahab Plus, MyCash, Yeel, and T-Plus), transportation services (e.g., Dhaweeye and Rakaab), and digital classrooms are examples of how ICT is being used to drive development in Somalia.

4.2 Education and Human Capital Development

The transition to a knowledge-based economy depends heavily on the development of human capital, which requires investment in education and skills training (Altbach, 2007; Moyi, 2017). In Somalia, the education sector has historically faced significant challenges, owing to decades of conflict, poor infrastructure, and limited state capacity.

However, the private sector, NGOs, and the Somali diaspora have played an important role in rebuilding the education system and promoting knowledge transfer.

Somalia's formal education system remains underdeveloped, with the majority of schools being privately run or managed by semi-government-owned entities (belonging to the state, but not fully controlled). The lack of effective government oversight has resulted in a fragmented education system, in which curricula, quality of education, and access to resources vary significantly across regions. Enrolment rates remain low, particularly in rural areas, although the gender gap in education is disappearing or narrowing, with almost equal numbers of girls attending school compared to boys.

Irrespective of these challenges, there have been positive developments. The growth of private universities, particularly in major cities, such as Mogadishu, Hargeisa, and Garowe, has increased access to higher education. Many of these institutions have formed partnerships with regional and international universities and organizations, facilitating the transfer of knowledge and skills. In addition, the Somali diaspora has been instrumental in supporting educational initiatives through financial contributions, scholarships, and expertise

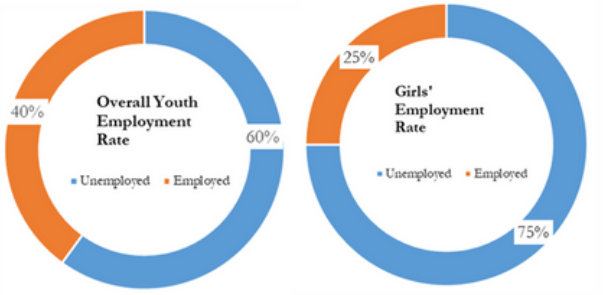


Figure 3: The percentage of youth unemployment rate. a) Overall youth; b) girls' unemployment. Source: UNDP.

The youth population presents both challenges and opportunities for human capital development. With over 70% of the population under the age of 30 years, there is a pressing need to invest in education and vocational training to equip young people with the skills necessary for market demand and employment in the KBE. According to the UNDP (2012), youth unemployment (aged between 15 and 30) in Somalia is over 60% (one of the highest rates in the world), highlighting the importance of skill development in driving economic growth and reducing poverty and social unrest. Among young women it is even worse where the unemployment rate is estimated to be 75% of their respective population (see Fig.3).

As digital literacy and technological skills become increasingly valuable in the global economy, the ICT sector provides a potential avenue for youth skill development. Initiatives aimed at teaching coding, entrepreneurship, and digital skills have begun to emerge in Somalia, and are driven by both local actors and international partners. For example, a number of tech hubs scattered across the country offer training in digital entrepreneurship and software development, helping foster a culture of innovation and knowledge-sharing.

4.3 Role of the Somali Diaspora in Knowledge Transfer

The Somali diaspora is one of the most influential forces driving economic growth, education, and knowledge transfers in Somalia. Members of the diaspora contribute billions of dollars annually to remittances, which supports families, fund businesses, and finance educational initiatives. Beyond financial contributions, the diaspora plays a critical role in knowledge transfer, bringing expertise, skills, and innovations from abroad to Somalia thanks to the IOM and EAQIP-HESSS programs. The Education Access and Quality Improvement Program–higher education systems strengthening in Somalia (EAQIP-HESSS) is a project funded by the European Union and implemented by Kenyatta University, Kenya, addressing the apparent gaps in higher education in Somalia. The International Organization of Migration (IOM) helps higher education and other government institutions in Somalia hire expatriate experts and tap their expertise.

Many diaspora members have returned to Somalia to establish schools, universities, and training centers, while others have provided financial support to educational institutions from abroad. In addition, Somali professionals working in industries such as healthcare, engineering, and ICT in countries such as the United States, the United Kingdom, and Canada have returned to share their expertise, helping build local capacity in these sectors.

Diaspora engagement in entrepreneurship has also fuelled innovation in Somalia. Somali expatriates invest in start-ups and businesses that leverage ICT, mobile banking, and e-commerce to create economic opportunities and improve service deliveries. For example, businesses that focus on mobile money transfers and online marketplaces have flourished because of diaspora investments and expertise. Diaspora professionals often engage in informal knowledge sharing through mentorship programs, business partnerships, and training workshops. These efforts contribute to capacity building in key sectors such as healthcare, education, and ICT, where Somalia lacks sufficient local expertise due to years of conflict and brain drain.

Moreover, the diaspora facilitated the development of international networks and collaboration, connecting Somali institutions with global partners. These partnerships have been instrumental in improving access to technology, educational resources, and global markets and have further integrated Somalia into the global knowledge economy.

4.4 Challenges to Transitioning to a Knowledge-Based Economy

Despite positive developments in the telecommunications, education, and diaspora engagement sectors, Somalia faces significant challenges in transitioning to a fully fledged knowledge-based economy. These challenges include the following.

- Weak Institutional Capacity: The lack of strong government institutions hinders the ability to create and implement policies that support the growth of the KBE.
- Inadequate Infrastructure: Somalia's infrastructure, particularly in remote and rural areas, is severely underdeveloped, limiting access to electricity, the Internet, and other critical resources required for the KBE.
- Security and Political Instability: Ongoing conflict and political fragmentation continue to hamper long-term investments in education, technology, and innovation.
- Limited Access to Education: Despite efforts by the private sector and NGOs, access to quality education remains limited, particularly in rural areas and among marginalized groups.

4.5 The Impact of a Knowledge-Based Economy on Nation Re-Building

In this section, we analyze how a knowledge-based economy (KBE) can contribute to the process of nation re-building in Somalia. Nation re-building in the context of Somalia involves re-establishing governance structures, fostering social cohesion, and creating a sustainable path for economic development following decades of conflict and political instability.

Although the key stakeholders interviewed in this study were very limited, we can draw some insights from those engaged in this research activity to identify the areas of focus on how the KBE may impact nation rebuilding. A government economic advisor indicated the importance of inclusive economic growth by equipping people with digital skills in a way that reduces reliance on foreign aid and creates jobs that are resilient to the volatile global market. In addition, the CEO of a leading telecom company pointed out that the ICT sector was already a driving force in Somalia's economic recovery. He added that "knowledge based economy will thrive when infrastructure and innovation converge and we are committed to make that a reality." From another perspective, a coordinator for non-for-profit NGO highlighted that nation rebuilding in Somalia must begin with the human capital of its citizens. A policymaker emphasized that investing in education, research, and innovation can create an ecosystem where citizens are empowered to address the unique challenges faced by the country, especially governance and social development issues.

Based on the outcome of the key stakeholder interviews, the potential impact of the KBE on nation re-building in Somalia may be reduced to four key areas: governance, economic development, social cohesion, and institutional capacity building, as depicted in Fig. 4.

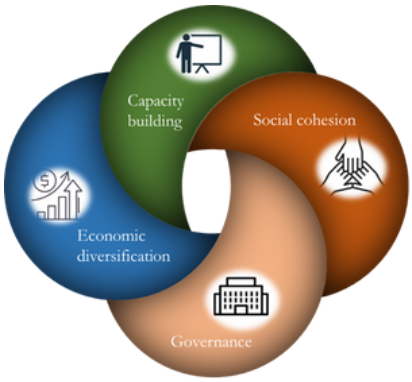


Figure 4: The key areas of the impact of KBE on nation re-building

4.6 Governance and Institutional Development

One of the foundational elements of nation building is the development of strong and functional institutions capable of promoting transparency, accountability, and effective public service delivery. In Somalia, weak governance structures have long posed challenges due to the history of civil war, political instability, and terrorism-related activities. However, the Knowledge-Based Economy (KBE) offers the transformative potential to address these barriers through the integration of information and communication technologies (ICT).

E-government, the application of ICT in public administration, has proven to be effective in improving governance by making public services more accessible and reducing opportunities for corruption. In Somalia, where state institutions are fragmented and lack public trust, e-government platforms can streamline services, such as tax collection, healthcare, and education. For instance, countries such as Rwanda and Kenya have demonstrated that e-government platforms enhance efficiency, foster transparency, and rebuild citizens' trust in governance (Ndung'u, 2019). As shown in Table 1, Rwanda and Kenya significantly outperformed Somalia in e-governance indicators, with higher corruption perception scores and more advanced online services.

Table 1: Comparative E-Governance Indicators

Indicator	Somalia (2023)	Rwanda (2023)	Kenya (2023)
Corruption Perception Score (CPI)	11/100	53/100	45/100
Public Services Online	Limited	Advanced	Advanced
Citizen Trust in Government (%)	<20	70	65

These comparative indicators highlight the substantial gap that Somalia must address to match the e-governance standards of its regional counterparts. Leveraging ICT innovations such as blockchain and digital reporting platforms offers Somalia a pathway to bridge these gaps and foster institutional trust and efficiency.

4.7 Economic Development and Diversification

Somalia's reliance on a narrow set of economic activities—mainly livestock and remittances—has limited its ability to achieve sustainable development. The transition to a knowledge-based economy could provide an opportunity for Somalia to diversify its economic base by creating new sectors, driven by innovation, technology, and human capital. This diversification is essential for achieving long-term economic stability and reducing vulnerability to external shocks, such as droughts, global commodity price fluctuations, political instability, and/or terrorist disruptions.

A knowledge-based economy can spur job creation by creating new industries, particularly in the technology, telecommunications, and services sectors. The telecommunications sector in Somalia, which has already experienced significant growth, provides a model for how innovation can lead to job creation in post-conflict societies. Mobile banking, ICT services, and digital start-ups are creating new employment opportunities for Somali youth, who constitute a large proportion of the country's population.

Youths can be directed to invest in a vibrant tech start-up ecosystem, which could further drive innovation in sectors such as healthcare, agriculture, and education.

For example, agricultural technology (Agritech) solutions that use mobile apps to provide real-time market information or climate data can help farmers or livestock keepers increase their productivity and resilience in the face of climate challenges (such as recurring droughts and shortage of rainfall). This type of innovation not only improves economic output but also aligns with nation re-building efforts by creating inclusive economic opportunities that benefit a broader cross-section of society (Aker & Mbiti, 2010).

The private sector, particularly the ICT and telecommunications industries, is a critical driver of Somalia's economic recovery. A knowledge-based economy encourages growth in the private sector by enabling entrepreneurs to leverage technologies for business development. The success of mobile money services, such as Hormuud's EVC Plus, Golis Telecom's Sahal, T-Plus (Sombank), and the Waafi app, shows how Somali entrepreneurs have used ICT to meet the specific needs of a post-conflict society with limited infrastructure. The creation of entrepreneurship hubs and incubators may play a key role in driving innovation and in supporting young entrepreneurs in Somalia. These hubs can provide training, mentorship, and resources to Somali start-ups, helping them scale up their businesses and create jobs. By endorsing entrepreneurship and private sector-led growth, Somalia can build a more resilient economy that is less reliant on traditional sectors and/or external aid.

4.8 Social Cohesion and National Identity

Nation re-building in Somalia involves re-establishing social cohesion and creating a sense of national identity after decades of clan-based divisions and tribal conflicts. A knowledge-based economy can contribute to social cohesion through education, civic participation, and inclusive economic growth (Obura, 2003; Sommers, 2012). In particular, Education plays a pivotal role in creating a shared sense of identity and fostering social harmony in post-conflict societies.

Investing in education, particularly in science, technology, engineering, and mathematics (STEM), can help bridge social and regional divides by providing equal opportunities for the youth across Somalia. Schools and universities that emphasize critical thinking, problem solving, and innovation can equip Somali youth with the skills they need to contribute to the country's development, while advocating for a sense of national purpose. Furthermore, education can serve as a platform for peacebuilding by teaching about conflict resolution, tolerance, and civic responsibility. Ultimately, this will result in a cultural transformation that leads to a progressive and innovative society that values meritocracy and scientific thinking and becomes more active in nation rebuilding.

Several studies have shown that education can play a powerful role in post-conflict nation building by fostering social cohesion and reducing the the likelihood of renewed conflict (Sommers, 2012). In Rwanda, for example, education has been used as a tool for reconciliation following the 1994 genocide, helping rebuild trust between different ethnic groups (Obura, 2003). Similarly, Somalia could use education to promote unity and reconciliation across diverse clans and regions.

In the KBE, digital platforms can enhance civic participation by providing citizens access to information, facilitating public debate, and encouraging community engagement. Social media and mobile platforms can be used to raise awareness of national issues, engage citizens in political processes, and promote dialogue among different communities. In Somalia, digital media has already played a significant role in connecting the Somali diaspora with communities back home, facilitating knowledge transfer, and fuelling national pride.

For example, the use of online platforms during Somalia's electoral processes (indirect process at a federal level so far) has increased citizen engagement, particularly among the youth. Digital platforms have enabled more inclusive political participation by providing space for citizens to voice their opinions and hold leaders accountable. Increased civic engagement is critical for building a sense of national identity and calling for social cohesion in fragmented societies.

4.9 Capacity Building and Knowledge Transfer

Building the capacity of local institutions is essential for Somalia's long-term development and nation-building (Phale et al., 2021). The KBE can facilitate this process by promoting knowledge transfer, particularly through engagement with the Somali diaspora and international partnerships.

The Somali diaspora plays a crucial role in transferring knowledge, skills, and expertise to Somalia, contributing to both economic development and institutional capacity-building. Diaspora professionals, many of whom have gained experience in knowledge-driven sectors abroad, are returning to Somalia to contribute to their recovery. They are involved in various sectors, including education, healthcare, technology, and governance, bringing valuable expertise and helping to fill the skill gap created by years of conflict and brain drains.

For example, Somali doctors, engineers, and educators trained in countries such as the United States, the United Kingdom, EU countries, and Canada have returned to Somalia to build capacity in local institutions. Through mentorship programs, training workshops, and business partnerships, these diaspora members help create a culture of knowledge sharing and capacity building that is essential for nation building.

In addition to the Somali diaspora, international organizations and development partners play a key role in knowledge transfer and capacity building in Somalia. Organizations such as the United Nations, World Bank, and international NGOs have been involved in capacity-building initiatives ranging from improving governance structures to supporting education and healthcare systems.

These international partnerships are critical for enhancing Somalia's institutional capacity to manage its KBE. For instance, collaborations between Somali universities and international institutions have facilitated the exchange of academic knowledge and research, helping to improve the quality of education in Somalia. Similarly, foreign investments, especially in the ICT infrastructure in Somali communities abroad, have supported the development of the telecommunications sector, enabling Somalia to become more integrated into the global knowledge economy.

5.Conclusions

To facilitate a smooth transition to a knowledge-based economy, Somalia must address its structural challenges while capitalizing on its strengths, such as its young population, vibrant telecommunications sector, and diaspora. Below are several key recommendations for Somalia's policymakers and development partners:

These findings highlight the pivotal role of telecommunications and ICT as drivers of economic recovery, with mobile banking and digital services facilitating financial inclusion, commerce, and innovation. Companies such as Golis Telecom, Hormuud Telecom, and Somtel have laid the foundation for Somalia's digital economy, creating employment opportunities and fostering entrepreneurship.

Education and skill development emerged as critical pillars for advancing the KBE in Somalia. Despite significant challenges, including limited access to quality education and a fragmented curriculum, the private education sector and the growth of universities offer hope to equip Somali youth with the skills needed to drive innovation and economic growth. Targeted investments in STEM education and digital literacy are essential to fully leverage Somalia's youth population.

The Somali diaspora played an instrumental role in this transition, contributing to education, knowledge transfer, and capacity building. By establishing schools, training centers, and universities, as well as sharing expertise across sectors, diaspora engagement has become a cornerstone of Somalia's recovery and development.

However, this study underscores the persistent challenges that Somalia faces, including weak institutional capacity, poor infrastructure, and political instability.

Addressing these barriers requires prioritizing governance reforms, investing in infrastructure, and ensuring equitable access to education and opportunities, particularly in rural and marginalized communities.

In conclusion, Somalia's transition to the KBE offers both challenges and opportunities. By capitalizing on its vibrant telecommunications sector, youthful population, and engaged diaspora, Somalia can build a resilient, inclusive, and innovative economy. Achieving this vision requires coordinated efforts, significant investment, and strategic partnerships. If these conditions are met, Somalia has the potential to become a regional leader in the digital economy, advancing toward a future defined by stability, prosperity, and social cohesion.

6. Recommendations

To facilitate a smooth transition to a knowledge-based economy, Somalia must address its structural challenges while capitalizing on its strengths, such as its young population, vibrant telecommunications sector, and diaspora. Below are several key recommendations for Somalia's policymakers and development partners:

6.1 Strengthening Governance and Institutional Capacity: Effective governance and strong institutions are crucial for the development of a knowledge-based economy. Somalia should prioritize the following actions:

- Implement e-Government Systems: Somalia can enhance the efficiency and transparency of public services by digitizing government functions such as tax collection, education, and healthcare. E-government systems can reduce bureaucratic inefficiencies, promote accountability, and increase citizens' trust in their states.
- Enhance Anti-Corruption Efforts: The introduction of digital tools, such as blockchain technology, can help reduce corruption by providing transparent and traceable records of government transactions. Somalia should also promote citizen participation in reporting corruption and holding public officials accountable.
- Capacity Building in Government Institutions: Investment in training government officials in digital literacy and data management is essential for modernizing Somalia's governance systems. International partnerships and donor support play key roles in capacity-building.

6.2 Investing in Education and Skills Development: Human capital forms the foundation of knowledge-based economies. Somalia must focus on expanding its access to quality education and training programs that equip its youth with the skills required for a digital economy.

- Increase Investment in STEM Education: Somalia should prioritize investment in science, technology, engineering, and mathematics (STEM) education at all levels. Partnerships with international universities and organizations can help improve the quality of education and provide Somali students with access to cutting-edge knowledge and technology.
- Promote Vocational and Digital Skills Training: Somalia must address its high youth unemployment rate by providing targeted vocational training programs in ICT, entrepreneurship, and digital skills. Programs that teach coding, software development, and digital entrepreneurship can equip Somali youth with tools needed to participate in the global economy.
- Expand Education Access in Rural Areas: Addressing regional disparities in education is crucial for ensuring inclusive economic growth. The government, in partnership with NGOs and international donors, should work to expand educational access to rural and marginalized populations through e-learning platforms and mobile education services.

6.3 Promoting Innovation and Entrepreneurship: Innovation and entrepreneurship are critical to creating a dynamic and diversified economy in Somalia. To create an environment that supports innovation, the following actions should be taken.

- Support Entrepreneurship Hubs and Incubators: The government should support the development of entrepreneurship hubs and incubators that provide resources, mentorship, and training for Somali start-ups. These hubs can drive innovation in sectors such as agriculture, healthcare, and education, by leveraging technology and local knowledge.
- Encourage Private Sector Growth: Somalia's private sector, particularly in ICT, telecommunications, and mobile banking, has been a key driver of economic growth. Policymakers should continue to create an enabling environment for private sector development by removing barriers to investment, regulatory red tapes, and encouraging public-private partnerships.
- Support Research and Development (R&D): R&D investment is essential for driving innovation and a knowledge-based economy. Somali universities and research institutions should be supported in conducting research in areas such as agriculture, climate resilience, and technology development in collaboration with international partners.

6.4 Enhancing Diaspora Engagement and Knowledge Transfer: The Somali diaspora has been an instrumental and valuable asset for Somalia's recovery and development. To maximize the impact of the diaspora in building a knowledge-based economy, Somalia should focus on the following:

- Facilitating Diaspora Investments: The government should create policies that make it easier for diaspora members to invest in Somali businesses, education, and infrastructure. Incentives, such as tax breaks or investment guarantees, can encourage greater diaspora engagement.
- Leveraging Diaspora Expertise: Somalia can establish programs that connect diaspora professionals with local institutions, particularly in the fields of education, healthcare, and ICT. Knowledge-sharing initiatives and mentorship programs can help bridge the skill gap between the key sectors.
- Strengthening International Networks: Somalia should continue to build international partnerships and leverage its diaspora's global networks to access new markets, technologies, and knowledge. Collaboration with global institutions can help Somalia integrate into its global economy and promote innovation and expertise.

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