DIGITAL TRANSFORMATIONS IN UZBEKISTAN: TECHNOLOGICAL AND SOCIOCULTURAL FACTORS

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Introduction

Shifting from the initial emphasis on technology and human capabilities, recent discussions on digital transformation are increasingly focusing on the sociocultural aspects of digital development and inclusiveness. For instance, The Economist's Inclusive Internet Index (3Is) evaluates internet inclusiveness in education, taking into account factors such as the level of online education and the availability of content in local languages.

Building upon these broader perspectives of digital inclusiveness, conducted research explores the specific context of Uzbekistan. It aims to extend the understanding of digital inclusiveness in Uzbekistan, by conducting an analysis of the technological, human, and sociocultural factors that affected online education during the COVID-19 pandemic. In so doing, this study provides academic and policy insights for enhancing inclusiveness in the process of Uzbekistan's digital transformation. Additionally, study offers a more nuanced and comprehensive understanding of digital inclusiveness, which encompasses not only the technological accessibility but also the user satisfaction with online education services. This includes examining the level of consumption and satisfaction with online education services, and implementing research design and statistical analysis to identify factors influencing these aspects. It is also offering recommendations for enhancing the inclusiveness of digital education in Uzbekistan, suggesting ways to improve its broader inclusiveness and effectiveness.

Current State of Digital Transformation in Uzbekistan

Since its independence, the Uzbek government has demonstrated a keen interest in the development of Information and Communication Technology and its application across various sectors. Recently, there has been a heightened focus on fast-tracking the adoption of digital technologies in Uzbekistan's economic and social sectors. Moreover, the development of ICTs has gained prominence as a key component of the national development agenda. In 2020, the Government of Uzbekistan officially launched the "Digital Uzbekistan 2030" strategy, marking a significant commitment to this digital advancement. This strategic approach demonstrates a significant investment in digital transformation, addressing both technical aspects, such as internet infrastructure expansion, and human and sociocultural dimensions, notably the enhancement of digital literacy and the broadening of educational opportunities to bolster digital usage skills. The "Digital Uzbekistan 2030" strategy outlines the execution of over 1,600 projects aimed at enhancing digital capabilities across Uzbekistan's 12 regions, including the Autonomous Republic of Karakalpakstan. Within this framework, 29 districts have been selected for initiating various projects between 2020 and 2022. This initiative stems from the Uzbek government's recognition that ICTs are crucial drivers of national well-being and economic growth. This understanding has spurred notable progress in the country's digital transformation.

Provided research examined digital transformation in Uzbekistan by exploring three principal dimensions: technological capabilities, human capabilities, and sociocultural capacities.

Regarding technical capabilities, research results show that Uzbekistan has made significant strides in developing its telecommunications infrastructure. From 2016 to 2020, there was a marked

expansion in the country's fiber optic network. The total length of these lines grew roughly 3.8 times, increasing from 17,900 kilometers to 68,600 kilometers. By 2021, the extensive expansion of Uzbekistan's digital infrastructure yielded notable results. Optical communication lines reached 67% of residential areas, a marked improvement in digital connectivity since 2017. As a result, internet usage rose by 22%, mobile phone subscriptions by 29%, and fixed broadband subscriptions by 9.29%. Additionally, the number of wireless base stations in Uzbekistan saw significant increase in 2021, with 14,150 new installations, bringing the total to 45,890 stations. With the expansion of the wireless base station network, it is estimated that 99% of Uzbekistan's population now has access to wireless communication services (2G or higher), and up to 75% can access high-speed communications (LTE/WiMax or higher). However, as of September 2023, the average internet speeds in Uzbekistan were 23.63 Mbps for wireless and 58.03 Mbps for fixed broadband downloads, as reported by Ookla's Speedtest Global Index. These speeds are significantly lower than the global average fixed broadband download speed of 85.31 Mbps and are more than half slower than Moldova, with fastest internet speed among the CIS countries with the average broadband download speed of 119.89 Mbps. In summary, while Uzbekistan faces limitations due to relatively slower internet speeds, there is clear evidence of accelerated improvements in the technical capacities of its digital transformation, with significant advancements in both the speed and extent of these developments.

Human and sociocultural dimensions of Digital Transformations

In terms of human capacities, the Uzbek government has focused on developing digital competencies through school curricula and plans to establish IT specialized schools in all regions. From the 2020/2021 academic year, computer skills and programing courses were introduced into the curriculum of all higher education institutions by a Presidential Decree. Additionally, the IT Academy, overseeing the dissemination of IT technical education in Uzbekistan, has launched the "One Million Uzbek Coders" platform (Bir million O'zbek Dasturchilari), with the goal of providing basic programing skills education for the wider population. As a result, Uzbekistan exhibits a conducive environment for enhancing human capacities in its digital transformation process. The population capable of using copy-paste functions increased from about 19% in 2017 to 24% in 2021, and those able to use basic arithmetic formulas in spreadsheets rose from 10% to 14% in the same period. In terms of sociocultural capacities, the diversification of internet use languages and the increasing routine use of internet media indicate that digital transformation is significantly impacting everyday life in Uzbekistan. For example, the number of websites broadcasting news in the local language has increased, and online platforms broadcasting entertainment and information programs in Uzbek have emerged as strong alternatives to traditional TV. Influential social groups, such as bloggers on platforms like YouTube, Telegram, and TikTok, are expanding their audience. In summary, while improvements in digital capacities for women and the elderly are still needed, overall, digital transformation in Uzbekistan is progressing effectively in terms of human and sociocultural capacities.

Research outcomes of human and sociocultural dimensions in digital transformations indicated several distinctive facts. It was found that women consume online education services at a higher level than men, and individuals who use the internet for a wide variety of activities are more likely to utilize a diverse range of online education services. However, IT sphere is perceived solely as a male-dominated. To enhance the participation of women in online education and IT fields, a multifaceted approach is needed. First, develop educational content that resonates with women, focusing on areas like financial literacy, entrepreneurship, and STEM subjects, which are often seen as male-

dominated. This content should align with women's interests and career goals, addressing their unique learning requirements. Secondly, establish supportive online communities and mentorship programs for women in online education. These platforms can provide peer support, enable knowledge exchange, and help overcome the sense of isolation that women might experience in male-centric online learning environments. Lastly, address the societal biases that deter women from IT fields. This involves launching awareness campaigns and educational programs that challenge existing cultural stereotypes and inspire girls and women to explore and excel in technology-related careers.

On the other hand, the influence of language use, specifically speaking Russian, on online education service consumption was not found to be significant. Subsequently, personal background factors such as age and place of residence significantly influence satisfaction with online education. Specifically, younger individuals and residents of the capital city tend to have higher satisfaction levels. However, income level does not significantly affect satisfaction with online education services. Secondly, the measure of technological capability, internet connection satisfaction, was found not to significantly influence satisfaction with online education services. Thirdly, human capability factors, namely educational level and participation in digital education, both positively and significantly impact satisfaction with online education services. Higher educational levels and experience in digital education are associated with higher satisfaction. Fourthly, sociocultural capabilities measured by the level of internet usage and language use significantly influence satisfaction, but gender does not have a significant impact. Russian speakers, compared to those who speak other languages, show higher satisfaction with online education services, and individuals who utilize a variety of internet services tend to have higher satisfaction levels.

The study highlights human and sociocultural capabilities as key drivers influencing both the level of use and satisfaction with online education services. Interestingly, technological capability, particularly in relation to internet-based education service usage and satisfaction, doesn't show a substantial effect. This underlines the need for policies focused on enhancing human and sociocultural skills in the long term. A notable finding is that higher education levels are linked to both varied use of online education services and increased satisfaction. It's crucial to acknowledge that while engagement in digital education doesn't significantly boost usage, it positively affects satisfaction. Therefore, providing basic digital skills training is crucial to help users effectively search for and utilize educational content that suits their needs.

Conclusion

This study contributes to academic discourse in two significant ways. Firstly, by synthesizing existing research implications and examining factors influencing the inclusiveness of online education, it contributes to expanding academic diversity. Moreover, the academic contribution of this paper is clear, given the scarcity of research analyzing online education in Uzbekistan. However, given the insufficient examination of the operational mechanisms of the extracted factors, it will be necessary to explore these mechanisms in greater depth in future research. Secondly, the statistical analysis conducted through surveys offers relatively concrete policy implications, providing a comparative advantage to the study. However, further discussion is required to practically implement the policy implications suggested by the analysis findings.

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