



ARTÍCULOS

Business transformation: Challenges and opportunities in the technological and educational context of Colombia

Transformación empresarial: Desafíos y oportunidades en el contexto tecnológico y educativo de Colombia

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Abstract

The overall objective of this reflective article is to analyze the relationship between business, technology, and education in Colombia, identifying the main challenges and opportunities arising from this dialogue and proposing possible solutions to maximize benefits and minimize difficulties in

the Colombian context. The central thesis of this study is that identifying and generating solutions to problems stemming from this interaction, such as the digital divide, insufficient technological training, mismatches in the labor market, and lack of educational quality, can significantly contribute to promoting economic growth, improving business competitiveness, and fostering social inclusion in the country. The main conclusion is that identifying and overcoming the digital divide in Colombia requires a comprehensive approach that combines the expansion of technological infrastructure with inclusive policies for access and digital literacy. This not only involves investing in expanding Internet coverage but also designing digital literacy programs targeted at marginalized communities and vulnerable groups. By overcoming these challenges, Colombia can fully capitalize on the transformative potential of technology to drive economic development, strengthen education, and promote social inclusion throughout the country.

Keywords: Vocational education, technical education, education and employment, industrial enterprise, appropriate technology.

Resumen

El objetivo general de este artículo de reflexión es analizar la relación entre empresa, tecnología y educación en Colombia, identificando los principales desafíos y oportunidades que surgen de este diálogo y proponiendo posibles soluciones para maximizar los beneficios y minimizar las dificultades en

el contexto colombiano. La tesis central de este estudio es que identificar y generar soluciones a los problemas derivados de esta interacción, como la brecha digital, la capacitación tecnológica insuficiente, los desajustes en el mercado laboral y la falta de calidad educativa, puede contribuir significativamente a promover el crecimiento económico, mejorar la competitividad empresarial y fomentar la inclusión social en el país. La principal conclusión es que la identificación y superación de la brecha digital en Colombia requiere un enfoque integral que combine la expansión de la infraestructura tecnológica con políticas inclusivas de acceso y formación digital. Esto no solo implica invertir en la ampliación de la cobertura de Internet, sino también diseñar programas de alfabetización digital dirigidos a comunidades marginadas y grupos vulnerables. Al superar estos desafíos, Colombia puede capitalizar plenamente el potencial transformador de la tecnología para impulsar el desarrollo económico, fortalecer la educación y promover la inclusión social en todo el país.

Palabras claves: Enseñanza profesional, enseñanza técnica, educación y empleo, empresa industrial, tecnología adecuada.

Introduction

In the contemporary landscape marked by rapid technological transformation and constant shifts in the business environment, the nexus between business, technology, and education has emerged as a topic of paramount importance both in Colombia and globally (Elliott, 2020; Rueda, et al.,

2018). This interchange not only delineates the operational frameworks and organizational paradigms of enterprises but also exerts a substantial impact on the economy and society at large (Angulo, 2017; Afanador, 2006). Within the Colombian context, where technology adoption and educational enhancement stand as pivotal elements for socioeconomic development, comprehending the challenges and opportunities arising from this interplay is imperative for propelling the nation's progress and competitiveness (Gómez, 2007; Hidalgo et al., 2002).

Indeed, the correlation among business, technology, and education in Colombia constitutes a complex and multifaceted subject involving myriad stakeholders and bearing implications across various spheres of the country's economic and social fabric (Gómez 2015a; 2015b; Katz, 2006). In this regard, a thorough examination of the challenges and opportunities stemming from this interaction is crucial, alongside the proposition of effective strategies and policies to address them (Rincón y Gómez, 2023). Through critical reflection and meticulous analysis, this article endeavors to enrich the discourse on enhancing the interaction between business, technology, and education in Colombia, thereby fostering a more inclusive and sustainable economic development trajectory for the nation.

Consequently, the overarching aim of this reflective article is to scrutinize the relationship between business, technology, and education in Colombia, discerning the principal challenges and opportunities

engendered by this dialogue and proposing viable solutions to maximize benefits and mitigate difficulties within the Colombian context. Henceforth, the central thesis of this study posits that identifying and devising solutions to issues arising from this dialogue, such as the digital divide, insufficient technological training, labor market mismatches, and educational quality deficiencies, can substantially contribute to promoting economic growth, enhancing business competitiveness, and fostering social inclusion in the country. Therefore, the problem statement posed is: How can enterprises, the educational sector, and the government collaborate to surmount the challenges and capitalize on the opportunities arising from the nexus between business, technology, and education in Colombia?

Digital divide in Colombia: challenges and opportunities

The persistent digital divide in Colombia constitutes one of the most pressing challenges in the interweaving of business, technology, and education. Despite progress in technological infrastructure, numerous Colombian communities still lack access to the Internet and digital technologies. This lack of access not only restricts economic and educational opportunities for large segments of the population but also presents a critical juncture for the design and implementation of public policies that promote digital inclusion and ensure equitable access to technology across the national territory (Gómez, 2021a; 2021b).

The digital divide, understood as the disparity

in access to and use of information and communication technologies (ICT), emerges as a significant obstacle to socio-economic development and educational equity in Colombia. Despite efforts to improve connectivity infrastructure in urban areas, rural and remote zones continue to lag behind in terms of access to high-speed Internet and basic digital services. This disparity perpetuates inequalities in access to job opportunities, educational resources, and healthcare services, deepening social and economic gaps in the country (Ibagón & Gómez, 2018; Cabero, 2003). In particular, the central issue stemming from the digital divide in Colombia lies in the limited participation of certain population groups in the digital economy and unequal access to educational opportunities. This digital exclusion translates into lower employability and labor competitiveness for individuals from low-income backgrounds, as well as a knowledge gap that perpetuates intergenerational inequality. Furthermore, the lack of access to digital technologies hinders the effective implementation of innovative educational models and the integration of digital tools in the teaching-learning process (Gómez et al., 2021; Bueno, 2002).

Digital divide in Colombia: challenges and opportunities

The persistent digital divide in Colombia represents one of the most pressing challenges in the convergence of business, technology, and education. Despite advancements in technological infrastructure, numerous Colombian communities still lack access to the internet and digital technologies.

This lack of access not only restricts economic and educational opportunities for broad segments of the population but also presents an opportune juncture for the design and implementation of public policies that foster digital inclusion and ensure equitable access to technology across the national territory (Gómez, 2021a; 2021b).

The digital divide, understood as the disparity in access to and use of information and communication technologies (ICTs), emerges as a significant obstacle to socio-economic development and educational equity in Colombia. However, efforts to improve connectivity infrastructure in urban areas, rural and remote regions lag behind in terms of access to high-speed internet and basic digital services. This disparity perpetuates inequalities in access to job opportunities, educational resources, and healthcare services, deepening social and economic gaps in the country (Ibagón y Gómez, 2018; Cabero, 2003).

Particularly, the central issue stemming from the digital divide in Colombia lies in the limited participation of certain population groups in the digital economy and unequal access to educational opportunities. This digital exclusion translates into lower employability and labor competitiveness for individuals with low resources, as well as a knowledge gap perpetuating intergenerational inequality. Furthermore, the lack of access to digital technologies hampers the effective implementation of innovative educational models and the integration of digital tools in the teaching-learning process (Gómez et al., 2021; Bueno, 2002).

Educational quality and labor relevance: challenges for the education system

The relationship between educational quality and labor relevance presents itself as a crucial challenge for the current education system. Educational quality refers to the extent to which educational institutions achieve their teaching and learning objectives, while labor relevance focuses on graduates' ability to meet the demands of the labor market and effectively contribute to the economy (Jara y Prieto, 2018; Cabrera, 2012).

One of the fundamental issues arising from this lack of alignment is the skills gap between graduates and the demands of the labor market. Many students graduate from educational institutions with skills and knowledge that are either irrelevant or outdated according to industry needs. This results in a high unemployment rate among young graduates and a shortage of qualified talent in key sectors of the economy (Rubio et al., 2019; Gómez y Rincón, 2016).

Furthermore, the disconnect between education and the labor market can lead to underutilization of human talent. Many graduates end up working in occupations that do not require the level of education or skills they possess, resulting in loss of productivity and human resource waste (Gómez y Barbosa, 2014; Cabero 2001). Another significant problem is the lack of coordination between educational institutions and employers in identifying labor market needs and designing relevant

educational programs. The lack of feedback and collaboration between these two sectors hampers the quick adaptation of curricula and the provision of experiential learning opportunities that prepare students for the workforce (Ferreira et al., 2018; Fernández, 2007).

To address these challenges, it is essential to implement measures that promote greater collaboration between the education sector and the business sector. This includes establishing business advisory boards that provide guidance on labor market needs and help inform the design of educational programs. Additionally, public-private partnerships should be encouraged to facilitate the creation of experiential learning programs, internships, and employment opportunities for students and graduates (Hanelt et al., 2021; Maldonado, 2021b).

Conclusions

Identifying the digital divide in Colombia demands a comprehensive approach that combines the expansion of technological infrastructure with inclusive policies for access and digital literacy. This entails not only investing in expanding internet coverage but also designing digital literacy programs targeted at marginalized communities and vulnerable groups. By overcoming the challenges of the digital divide, Colombia can fully capitalize on the transformative potential of technology to drive economic development, strengthen education, and promote social inclusion nationwide.

Technological training in the business

sphere represents a pending challenge that requires renewed and strategic attention from organizations. By identifying the digital skills gap, companies can enhance their ability to innovate, adapt to change, and maintain competitiveness in an increasingly digitized market. It is crucial to adopt a comprehensive approach that incorporates both technical training and soft skills, such as problem-solving, teamwork, and effective communication. This will ensure that employees not only acquire technical knowledge but also develop the skills necessary to apply that knowledge effectively in the business environment.

and social development of a country. By addressing the challenges associated with the skills gap and the disconnect between education and the labor market, the employability of graduates can be improved, promoting sustainable and equitable economic growth. Additionally, it is important to enhance career guidance and academic counseling to help students make informed decisions about their education and career paths. This may include incorporating vocational exploration activities and skills development into the school curriculum, as well as providing individualized counseling and guidance services.

Educational quality and labor relevance are fundamental elements for the economic



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