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The Role of Artificial Intelligence and Fiber Optic Internet in Digital Entrepreneurship: Innovation, Technological Transformation, and Challenges for Public Health

The Role of Artificial Intelligence and Fiber Optic Internet in Digital Entrepreneurship: Innovation, Technological Transformation, and Public Health Challenges

The role of artificial intelligence and fiber optic internet in digital enterprise: innovation, technological transformation and public health challenges

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Summary

Digital transformation has promoted significant changes in contemporary society, driven by advances in Artificial Intelligence (AI), the expansion of fiber optic internet, and the growth of digital entrepreneurship. In this context, these technologies play a strategic role in innovating business models, increasing organizational competitiveness, and modernizing different sectors, including public health. This study aimed to analyze the relationship between Artificial Intelligence, digital entrepreneurship, and fiber optic connectivity infrastructure, highlighting their contributions to economic development and technological innovation, as well as the ethical and regulatory challenges arising from their use. This is a qualitative, exploratory, and descriptive study, developed through a narrative literature review. The results show that the integration between AI and high-speed connectivity enhances the creation of innovative solutions, favors the emergence of startups, and strengthens digital business models, in addition to increasing the efficiency of services in the health sector. However, it was found that the rapid evolution of these technologies still outpaces the development of regulatory frameworks and ethical guidelines capable of guaranteeing their safe, transparent, and responsible use. It is concluded that convergence

The interplay between Artificial Intelligence, digital entrepreneurship, and fiber optic internet constitutes an important driver of digital transformation, requiring public policies, regulations, and governance strategies that promote innovation without compromising fundamental rights, information security, and user protection.

Keywords: Artificial Intelligence; Digital Entrepreneurship; Fiber Optic Internet; Digital Transformation; Public Health.

Abstract

Digital transformation has significantly reshaped contemporary society, driven by advances in Artificial Intelligence (AI), the expansion of fiber-optic internet, and the growth of digital entrepreneurship. In this context, these technologies play a strategic role in fostering innovation in business models, enhancing organizational competitiveness, and modernizing several sectors, particularly public health. This study aimed to analyze the relationships between Artificial Intelligence, digital entrepreneurship, and fiber-optic

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connectivity infrastructure, highlighting their contributions to economic development and technological innovation, as well as the ethical and regulatory challenges posed by their adoption. This is a qualitative, exploratory, and descriptive study conducted through a narrative literature review. The findings indicate that integrating AI with high-speed connectivity accelerates the development of innovative solutions, fosters the emergence of startups, strengthens digital business models, and improves service efficiency, especially in the healthcare sector. However, the rapid evolution of these technologies continues to advance the development of ethical guidelines and regulatory frameworks that can ensure their safe, transparent, and responsible use. It is concluded that the convergence of Artificial Intelligence, digital entrepreneurship, and fiber-optic internet represents a key driver of digital transformation, requiring effective public policies, governance strategies, and regulatory mechanisms to foster innovation while safeguarding fundamental rights, information security, and user protection.

Keywords: Artificial Intelligence; Digital Entrepreneurship; Fiber-Optic Internet; Digital Transformation; Public Health.

1 INTRODUCTION

Digital transformation has been driving changes in various sectors of society.
driving innovation, competitiveness, and the creation of new business models.
Among the technologies that have most influenced this scenario, Artificial Intelligence stands out.
Artificial intelligence (AI), whose ability to process large volumes of data, automate
Task management and supporting decision-making processes are revolutionizing areas such as health, education,
Industry, commerce, and services. The expansion of fiber optic internet has
enabling a high-speed and stable infrastructure, making it a
an indispensable element for the functioning of increasingly complex digital solutions.
and connected.

In this context, digital entrepreneurship emerges as an important agent of
economic and social development, by stimulating the creation of innovative companies,
expand market opportunities and promote the transformation of models.
Traditional business models. The integration between Artificial Intelligence, high-level connectivity
Performance and entrepreneurship create an environment conducive to the emergence of startups and
digital platforms capable of offering more efficient, accessible and
customized solutions in strategic sectors, such as public health.
Despite the numerous opportunities offered by these technologies, their adoption
It also raises challenges related to information security and privacy.
data, responsibility for automated decisions, and the absence of regulations.

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Consolidated guidelines that direct its ethical and responsible use. In this way, it becomes
It is essential to understand not only the benefits of Artificial Intelligence and...
digital infrastructure for the development of entrepreneurship, but also the
social, economic and legal impacts resulting from this technological transformation.
Given this scenario, the present study aims to analyze the relationship between
Artificial intelligence, digital entrepreneurship, and the evolution of fiber optic internet.
as driving factors of digital transformation, highlighting their contributions.
for economic development and innovation, as well as ethical challenges and
regulatory issues associated with the use of these technologies. To that end, a
A narrative literature review, with the aim of gathering scientific evidence and
theoretical contributions that allow us to understand the role of these innovations in construction
of an increasingly connected, innovative and sustainable society.

2. THEORETICAL FRAMEWORK

The accelerated advancement of Artificial Intelligence (AI) in the 21st century represents one of the
The most significant and challenging technological phenomena in contemporary society.
Its development has brought about transformations in social and economic relations.
organizational and ethical changes, altering the way individuals, companies, and institutions operate.
interact with technology. According to Suleyman and Bhaskar (2023), this new wave
Technology has the potential to impact society in asymmetrical and unpredictable ways.
generating significant benefits, but also risks that are still poorly understood.
From this perspective, Baudrillard (2006) argues that machines are moving towards increasingly higher levels.
increasingly autonomous and adaptable, being shaped by interests
and by the decisions of those who control them. The rapid evolution of AI, coupled with its
This growing autonomy sparks important debates about the limits of its use.
of the responsibility for their decisions and the need for effective mechanisms of
regulation.
A significant transformation is observed in the business environment driven by
The digitalization of the economy. In this context, entrepreneurship is characterized as a
an innovative process focused on creating products, services, and business models capable
to generate economic and social value. The entrepreneur assumes the role of agent of

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changes, identifying opportunities, taking calculated risks and promoting
Innovative solutions to meet the demands of society. The growing search for
consumers seek practicality, speed, security, and flexibility in performance.
everyday activities, such as shopping, payments, studies and access to services,
It has spurred the emergence of digital entrepreneurship as a strategic alternative for
the creation of new businesses (Martins, 2023).

Digital entrepreneurship is based on identifying opportunities.
enabled by digital technologies, promoting continuous innovation and adaptation.
to market changes. In addition to income generation and competitiveness, this
This modality contributes to economic and social development through the creation of
jobs, market expansion, and the modernization of business models.

As highlighted by Abrão Junior (2024), digital entrepreneurship has become a
an essential element for driving contemporary organizations, breaking through
traditional paradigms and promoting sustainable development through
technological innovation.

In this scenario, connectivity infrastructure plays a strategic role in
Strengthening digital ventures. Entrepreneurs who invest in
Innovation finds in fiber optic internet one of the main pillars for the
Consolidation of their businesses. Business models such as e-commerce, fintechs,
Edtech, healthtech, and digital platforms depend on fast, stable, and reliable connections.
high capacity to offer high-quality and competitive products and services. In addition
Furthermore, the expansion of fiber optic internet favors the emergence of disruptive startups.
It expands the digital transformation of productive sectors and enables new
Entrepreneurs challenge traditional markets through technological innovation.
(Ferreira, 2025).

Although technological advances provide numerous opportunities for
entrepreneurship and various sectors of the economy, particularly in the health sector, persist.
Relevant challenges related to the governance of these technologies. The evolution of
Artificial intelligence still operates in a scenario marked by a lack of guidelines.
ethical and regulatory frameworks are well-established, which makes its use the subject of intense debate in the field.
fields of bioethics, law, and digital governance. Pesapane et al. (2018) highlight
that, despite the existence of regulatory initiatives in different regions of the world, these

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The regulations remain fragmented and insufficient to encompass the full complexity of...
Ethical, legal, and social challenges arising from the use of AI. In addition, Naik
et al. (2022) highlight that there are still no established regulations capable of
to comprehensively address the risks, responsibilities, and implications arising from
the application of Artificial Intelligence in medical environments, in which decisions
Automated systems can impact patient safety and quality of care.

3 METHODOLOGY

This study is characterized as qualitative research of an exploratory nature.
and descriptive, using narrative literature review as the method. According to Gil (2019), the
Exploratory research aims to provide greater familiarity with the
problem, making it more explicit or building hypotheses, while the research
Descriptive studies aim to describe the characteristics of a particular population or phenomenon.
or a relationship between variables.

FINAL CONSIDERATIONS

Analysis of the literature shows that Artificial Intelligence and digital entrepreneurship...
and the expansion of fiber optic internet are fundamental elements for the
The digital transformation of contemporary society. The convergence of these technologies.
has driven the development of new business models, expanding the
competitiveness of organizations and promoting innovative solutions capable of meeting
to the growing demands for efficiency, connectivity and accessibility in different
sectors of the economy, including public health.
The studies analyzed demonstrate that connectivity infrastructure is a factor.
strategic for strengthening digital entrepreneurship, enabling the
consolidation of companies based on technology platforms, in e-commerce,
in digital services and solutions based on Artificial Intelligence. Similarly
Thus, it can be observed that AI expands the capacity for innovation, automates processes and...
It supports decision-making, promoting productivity gains and improving...
quality of services offered to the population.

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However, the benefits provided by these technologies coexist with important challenges related to ethics, privacy, algorithmic transparency, and... Data protection and legal liability for automated decisions. The literature. This shows that current regulations are still insufficient to keep up with the The speed of technological evolution, in sensitive areas such as health, where the use of Artificial intelligence can impact patient safety and quality of care. assistance.

It can be concluded, therefore, that the advancement of Artificial Intelligence and digital connectivity... This represents a significant opportunity to boost entrepreneurship. To promote economic development and strengthen innovation in various sectors. of society. However, for this potential to be achieved, it becomes indispensable that development of public policies, regulatory frameworks and ethical principles capable of to ensure the responsible use of these technologies, reconciling innovation, security, Transparency and protection of fundamental rights. Furthermore, it is recommended that... conducting new research that investigates the impacts of Artificial Intelligence applied to digital entrepreneurship and public health, contributing to the formulation strategies that promote sustainable technological development.

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