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REIMAGINING

ENTREPRENEURSHIP IN THE DIGITAL AGE

REIMAGINAR EL EMPRENDIMIENTO EN LA ERA DIGITAL

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ABSTRACT

This paper delves into the transformation of entrepreneurship in the digital age, a period marked by profound technological changes following World War II. With the objective of examining the shift in entrepreneurial strategies, tools, and models due to digitalization, it discusses the impact of technological milestones, from Alan Turing's work to the massification of computers and the Internet, culminating in modern advances like big data and AI. It critiques the current trajectory towards a potential "digital dystopia," characterized by monopolistic behaviors, increased surveillance, and a reduction in competitive diversity. Through a thematic exploration, the paper reveals a nuanced digital landscape where innovation and efficiency introduced by digital tools coexist with challenges like privacy intrusion, socioeconomic disparities, and destructive entrepreneurship. It underscores how digital business models have reshaped the entrepreneurial ecosystem, fostering growth but also amplifying risks such as cybercrime and socio-digital divides. The paper investigates the unintended consequences of AI, the erosion of truth, and the rise of the "Silicon Valley Syndrome," where the concentration of power in tech behemoths raises ethical concerns. Drawing on interdisciplinary perspectives, it concludes with a call for balanced regulation and ethical entrepreneurship to harness the digital age's potential while mitigating its darker implications.

Keywords:

Digital transformation, entrepreneurship innovation, technological disparities, digital surveillance, ethical digital economy, digital economy.

RESUMEN

Este artículo profundiza en la transformación del espíritu empresarial en la era digital, un periodo marcado por profundos cambios tecnológicos tras la Segunda Guerra Mundial. Con el objetivo de examinar el cambio en las estrategias, herramientas y modelos empresariales debido a la digitalización, analiza el impacto de los hitos tecnológicos, desde los trabajos de Alan Turing hasta la masificación de los ordenadores e Internet, culminando en avances modernos como el big data y la IA. Critica la trayectoria actual hacia una posible "distopía digital", caracterizada por comportamientos monopolísticos, una mayor vigilancia y una reducción de la diversidad competitiva. A través de una exploración temática, el documento revela un paisaje digital lleno de matices en el que la innovación y la eficiencia introducidas por las herramientas digitales coexisten con retos como la intrusión en la privacidad, las disparidades socioeconómicas y el espíritu empresarial destructivo. Subraya cómo los modelos de negocio digitales han reconfigurado el ecosistema empresarial, fomentando el crecimiento, pero también amplificando riesgos como la ciberdelincuencia y las brechas sociodigitales. El documento investiga las consecuencias imprevistas de la IA, la erosión de la verdad y el auge del "síndrome de Silicon Valley", en el que la concentración de poder en gigantes tecnológicos plantea problemas éticos. Basándose en perspectivas interdisciplinarias, concluye con un llamamiento a una regulación equilibrada y a un espíritu empresarial ético para aprovechar el potencial de la era digital y mitigar al mismo tiempo sus implicaciones más oscuras.

Palabras clave:

transformación digital, innovación empresarial, disparidades tecnológicas, vigilancia digital, economía digital ética.

INTRODUCTION

In the digital age, entrepreneurship has undergone an exponential transformation, unveiling a vast landscape of opportunities and challenges. While technology has been applied productively, driving growth and fostering innovation, an unproductive side has also emerged, and, alarmingly, a destructive one. These multifaceted dimensions of entrepreneurship were articulated by Baumol (1990), who categorized the phenomenon in terms of productive, unproductive, and destructive entrepreneurship. Recently, many studies have focused on the entrepreneur's relationship with inefficient institutions, institutional voids, and in the realm of institutional entrepreneurship (Lucas & Fuller, 2017; Boudreaux et al., 2018; Sendra-Pons et al., 2022; Naudé, 2023). Despite this, there remains a gap in our understanding of how institutions can effectively respond and adapt in the face of a tidal wave of disruptive technological innovations.

The past fifty years have witnessed unprecedented technological advancements, with the digital revolution at the forefront. This period has been marked by ubiquitous computing, unparalleled internet connectivity, novel business models relying on vast data and smart algorithms, and the dawn of artificial intelligence (AI) (Naudé, 2023). Such rapid advancements demand a robust institutional response, as emphasized by Kavanagh (2019), and Economic Commission for Latin America and the Caribbean (2022). Without this adaptive mechanism, the digital entrepreneurial landscape risks veering into destructive territory, with potential outcomes ranging from predation, conflict, to outright crime in the digital realm (Naudé, 2023).

Digital entrepreneurship, despite its promises of innovation and progress, has brought along a set of challenges threatening the integrity of our economy and society. One of the most disturbing manifestations is the indiscriminate data collection of users. Dominant platforms have adopted aggressive data gathering strategies, which not only compromise individual privacy but also pose ethical and regulatory questions (Stückelberger & Duggal, 2018). This concentration of power in the hands of a few behemoths has created what is called "kill zones" for startups. That is, areas in the digital market where newcomers find it nearly impossible to compete due to unfair practices or monopolization of essential resources by the big platforms (Scott-Morton et al., 2019). This situation, in effect, stifles innovation and reduces diversity and competition in the digital ecosystem.

This dynamic erodes entrepreneurial autonomy and may divert innovation towards paths primarily benefiting these giants, not necessarily the overall well-being (Crémer et al., 2019). In security terms, the rise of digital entrepreneurship has been accompanied by an increase in cybercrimes and attacks, with devastating economic consequences. These cyberattacks, in some instances, have resulted in financial losses comparable to those of significant natural disasters or even exceeded the illicit profits from global drug trafficking (Lancieri & Sakowski, 2021).

But perhaps the most formidable challenge lies in the rapid pace of technological advancement. We stand on the edge of unparalleled technological developments, such as ubiquitous surveillance systems, potent digital weapons, and, most worryingly, the potential for general artificial intelligence (Păvăloaia & Necula, 2023). This latter, general AI, is seen by many experts as a potential existential threat to humanity if not appropriately addressed and regulated. These instances underline a grim scenario where unchecked digital technologies can steer entrepreneurial talents towards sinister purposes. Without adequate regulations, institutions, ethics, and tech design, the digital realm becomes a battleground, filled with infrastructural damages, dehumanization, elevated security expenses, and exacerbated transaction costs, among other issues (Tirole, 2021; Roche et al., 2022).

Therefore, this paper aims to shed light on the emerging issue of destructive digital entrepreneurship, an area so far scarcely explored in current literature. While researchers like Steininger et al. (2022); and Naudé & Liebregts (2023), have recognized the complexities and potential downsides of digital entrepreneurship, understanding its destructive aspect remains elusive. Through this exploratory analysis, we seek to close this knowledge gap and set some policy guidelines for future debates.

The following sections outline the backdrop of the digital revolution, explain the digital entrepreneurship paradigm, discuss potential digital dystopias resulting from its dark side, and reflect on the institutional and regulatory frameworks that could mitigate the associated risks. William Baumol's typology of destructive, unproductive, and productive entrepreneurship serves as a guiding framework, facilitating a deeper introspection of this contemporary issue. It concludes with a synthesis of the findings and their implications for the future.

Following World War II, information and communication technology (ICT) began to reshape both the global economy and our social fabric. This shift is often referred to as the digital revolution, as digital technologies have integrated into virtually every facet of our existence (Escobar, 2012). Thus, even entrepreneurs who didn't grow up in the digital age turn to technological tools, from computers and smartphones to electronic cash registers. The current entrepreneurial landscape is intrinsically tied to the data-driven digital realm, always in conjunction with computing (Soltanifar & Smailhodžić, 2021). In this context, a computer can serve as an advanced point-of-sale system (POS), a complex sales management system, or even a web portal.

This digital revolution has taken roughly 75 years to solidify. Some of its key advancements originated during wartime: amid the allies' efforts in World War II and the Cold War. Two achievements from this era stand out. The first was the decryption of the Nazis' Enigma code by Alan Turing and his team, which led them to create one of the world's first computers, the Bombe. The second milestone was the rise of ARPANET in the 1960s and 1970s, the precursor to the Internet, followed by the introduction of the World Wide Web (WWW) in 1989 by the U.S. Department of Defense (Leiner et al., 1997). Prior to these advancements, Turing (1937), published a paper laying the groundwork for modern computing, conceptualizing the "universal computing machine", also known as the Turing Machine (Copeland, 2004). This work is hailed as the most iconic theoretical document in computer science history. Turing also foresaw promising areas for artificial intelligence, such as chess and natural language processing. Today, we see these predictions realized in advanced language tools and models like Chat GPT-4.

Building on Turing's legacy, Shannon (1948), introduced "A mathematical theory of communication," laying the foundation for contemporary information theory. With the popularization of personal computers in the 1980s and the emergence of the WWW, the digital revolution went mainstream in the 90s. It was a time of optimism, marked by geopolitical events like the fall of the Berlin Wall. Many envisioned the digital revolution as heralding a new era of freedom and empowerment. However, as time went on, it became apparent that corporations, not governments, would be the ones to hijack this revolution for their own ends (Barbrook & Cameron, 2015).

The new millennium witnessed two trends that would influence the digital revolution: the rise of big data and advancements in AI, and the rapid expansion of digital connectivity (Păvăloaia & Necula, 2023). Events in 2006 and 2007, such as Apple's reinvention of the mobile phone and Satoshi Nakamoto's proposal of Bitcoin, catalyzed this evolution (Tapscott & Tapscott, 2016). With the onset of the COVID-19 pandemic in 2020, the push towards digitization intensified even further, and digital platforms became the most valuable companies globally (Amankwah-Amoah et al., 2021). But by 2022, the initial optimism had faded. Instead of a utopian digital future, we face challenges that some label a "***polycrisis***". As Naudé (2023), discusses, instead of the promised entrepreneurial economy, we've witnessed the consolidation of a stagnant economy. Now, instead of a digital renaissance, we face a potential digital dystopia.

Entrepreneurship and the rise of digital business models

Digital entrepreneurship can be envisioned as the relentless pursuit of opportunities anchored in the essence of digital media and ICT (Hisrich & Soltanifar, 2021). However a clear demarcation exists between digital and traditional entrepreneurship (Table 1). The digital nature of the opportunities, determined by the characteristics of the digital artifacts, becomes the cornerstone of this distinction. These artifacts result from the transformation of physical products or services into their digital counterparts (Von Briel et al., 2018).

Table 1. Features of Digital Entrepreneurship vs. Traditional Entrepreneurship.

Criterion	Traditional Entrepreneurships	Digital Entrepreneurships
Nature of business	Based on physical good or services	Based on digital goods or services or the digitalization of traditional solutions
Entry barrier	May require significant capital for infrastructure, inventory, or licenses	Low initial cost, mainly related to software development and digital marketing
Geographic scope	Geographically limited unless branches or distribution are established	Global from the start due to the nature of the internet
Scale and adaptability	Scaling often requires investment in more infrastructure or personnel	Rapid and dynamic scaling without significant increase in fixed costs
Customer interaction	Personal, face-to-face, or over the phone	Primarily digital via platforms, apps, and social networks
Variable cost	May increase linearly with production or sales	Low or even null after reaching a certain volume
Revenue model	Based on direct sales, subscriptions, or contracts	Diversified models: subscription, advertising, freemium, transactions, etc.
Innovation	Incremental innovations based on the product, process, or service	Radical and rapid innovations based on digital feedback and analytics
Data management	Limited use of data, often based on surveys and historical records	Intensive use of real-time data to improve and personalize the user experience

Source: Ferreira (2020); and Gujrati & Uygun (2020).

The adaptability and reconfiguration capacity of these artifacts are paramount for digital entrepreneurship. Innovators are now not only focused on creating something new but on adapting and combining pre-existing artifacts in clever ways and renewed contexts, accelerating the digitalization process in our society (Verhoef et al., 2021).

While digital artifacts are essential, we must not overlook the fundamental role of technological infrastructure and hardware. These elements, though not considered digital artifacts per se, provide the fertile ground necessary for them to emerge. This is where the concept of Digital Entrepreneurship Ecosystems (DEE) comes into play. These ecosystems, similar to their traditional counterparts, integrate digital infrastructure and governance within a given space, whether physical or virtual (Elia et al., 2020).

In the digital production matrix, platforms stand out as foundational pillars. To grasp entrepreneurship in the digital era, it's vital to understand these platforms and their business models (Economic Commission for Latin America and the Caribbean, 2022). Their central role in modern capitalism cannot be overstated. These platforms have become arenas where entrepreneurs compete, either across platforms or within a specific one (Ferreira, 2020). The dynamics and essence of these digital platforms lie in their role as technological frameworks connecting diverse actors in a multi-sided market. These players operate within set boundaries, collaborating and generating value. Like traditional platforms, the digital versions aim to bridge producers and users, but through electronic channels (Gawer, 2021). This intermediation in the digital economy has revolutionized how businesses function, obviating the need for physical infrastructure (Da Silva & Núñez, 2022).

Da Silva & Núñez also emphasize that network effects and economies of scale are central characteristics in these platforms. Airbnb, for instance, doesn't need to own properties to operate. Its model is focused on connecting homeowners with travelers, generating a continuous growth cycle. However, while these platforms have proven to be highly competitive and revolutionary, concerns arise about whether they promote genuinely productive entrepreneurship (Buckland et al., 2016). The lingering question is whether we're heading into a digital dystopia driven by ventures that disrupt more than they build.

In the current landscape of the digital economy, the term "dystopia" conjures an image of a market dominated by a few tech giants who hoard most of the resources, sidelining other players. Imagine a setting where a handful of companies dictate the rules and monopolize power, leaving little room for innovation and fair competition (Tirole, 2021). During the 80s and 90s, there was a debate about this dystopian view, focused on the concentration of media power in the hands of a few conglomerates, threatening the diversity and quality of content. This centralization was seen as a hazard to variety and creativity (Bagdikian, 1983; Herman & Chomsky, 2002; McChesney, 1999). As time went on, concerns shifted, centering on how digital tools could be used by governments to monitor and control their citizens in an even more intrusive manner.

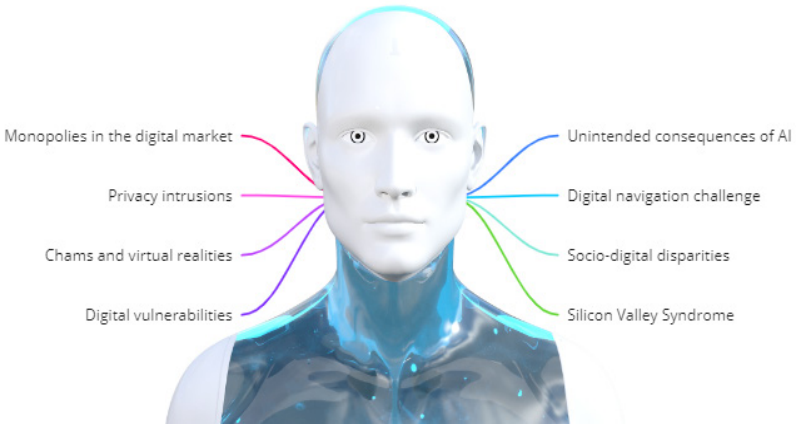

Figure 1. Dystopias Arising from Digitalization.

It's crucial to understand that the concept of dystopia is perfectly embodied in George Orwell's "1984" marked by injustice, suffering, and a bleak vision of the future (Orwell, 1949). Through this lens, we will delve into how digital entrepreneurship, defined as "the pursuit of opportunities supported by digital media and ICTs," might align with these dystopian features. The literature has pinpointed at least eight interconnected categories of digital dystopias (Figure 1). These categories will be analyzed in depth in the subsequent subsections.

Digital platform-based capitalism, as explored in the previous section, is not intrinsically dystopian. However, without proper regulation and when deviating from its original purpose, it can lead to alarming outcomes. These deviations might serve as precursors to digital dystopias, where justice and fairness become blurred. Companies grounded in digital platforms might unintentionally foster imbalanced dynamics in the marketplace.

Consider, for instance, digital entrepreneurs relying on platforms like the Apple Store, Amazon Marketplace, or Meta's Marketplace. These individuals are not only intrinsically tied to these digital ecosystems but are also at the mercy

of regulations that aren't always fair. Canayaz (2020); and Naudé (2023), have identified unfair competitive practices across various platforms, highlighting how certain policies can enable digital sabotage. The so-called "five-star bombs", "false positives", and "fake fires" are tactics that skew product perceptions and, regrettably, can lead to unjust suspensions of entrepreneur accounts trying to stand their ground against digital giants.

Yet, concerns go beyond this. There are indications that some platforms might favor their own products over those of independent entrepreneurs (Cutolo & Kenney, 2019). For instance, Amazon might be tempted to mimic and outpace smaller competitors, challenging entrepreneurial spirit. Varoufakis (2023), and his term "techno-feudalism" encapsulate how some entrepreneurs view these platforms as overbearing entities stifling their growth.

Moreover, the implications of digital platforms strengthening their dominance can't be overlooked. By leveraging demand-driven economies of scale, they could establish monopolies that stifle competition (Parker et al., 2020). While legal actions have been taken against these monopolistic tendencies, the remedies have been lukewarm, as exemplified by the case between the U.S. government and Microsoft (Petit, 2022).

The incursion of these platforms into new realms is another point of interest. The GAFAMs phenomenon stands out, which can disrupt entire industries with mere announcements. These maneuvers, termed "envelopment" strategies, showcase how these corporations can break into unexpected markets leveraging customer data (Eisenmann et al., 2011). In conclusion, it's vital to ponder the ubiquity of these platforms in our daily lives. The COVID-19 pandemic amplified our reliance on them, potentially steering us towards a society entirely mediated by the digital realm. Dwivedi (2022), suggests this trend might end in a loss of corporate autonomy and an ever-watching surveillance state.

Privacy intrusions: The Digital Big Brother

In a world reshaped by the digital revolution, technological tools have started to play a pivotal role in how governments interact with and oversee their citizens. Innovations stemming from this transformation, from massive data acquisition to advanced facial recognition algorithms, have provided authorities, irrespective of their political leanings, with more sophisticated means to influence social behavior and ensure compliance with their ideals (Tirole, 2021; and Quach et al., 2022).

This phenomenon, amplified by the circumstances of the COVID-19 pandemic, has led to an increase in state surveillance on a global scale. To define it, a surveillance state is characterized by preemptive monitoring of the population, with the aim to deploy, when deemed necessary, coercive mechanisms to control or influence certain groups or individuals based on political or other criteria (Naudé, 2023). This governance model is often referred to as "Informational Autocracy" (Cristiano, 2021). This concept conjures dystopian visions in the vein of Orwell. The level of adoption of this technology worldwide can be seen in Figure 2.

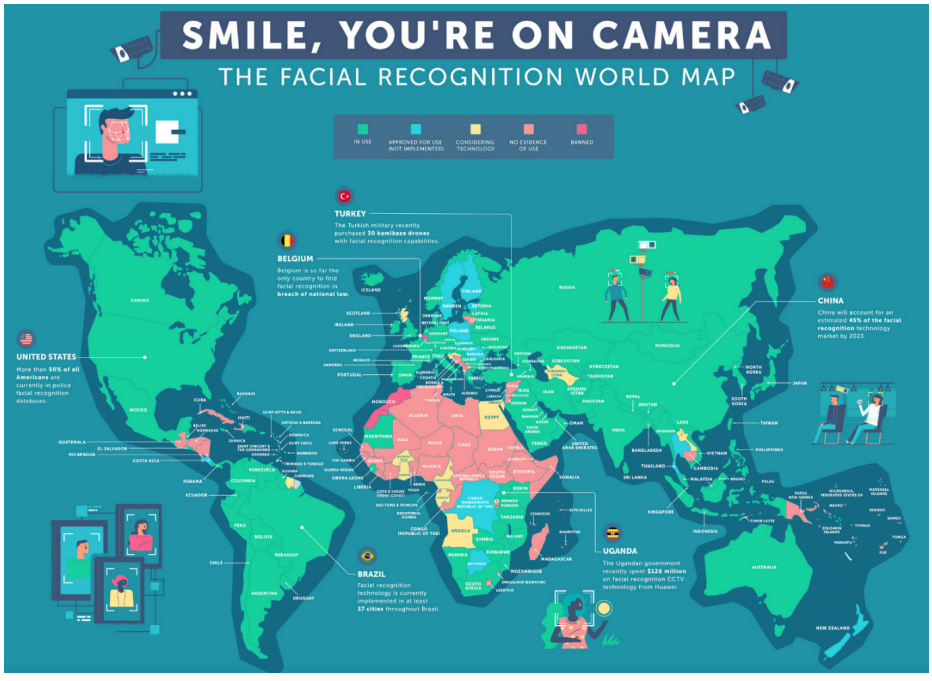

Figure 2. Use of Facial Recognition Technology by the Public Sector Worldwide.

Source: Ghosh (2020).

Intrinsically, the surveillance state is not an enterprise. However, its growth and efficacy are deeply tied to technologies devised by digital entrepreneurs. Just as arms trading can be seen as a potentially destructive form of entrepreneurship, entrepreneurs who design and sell surveillance technologies for malicious purposes engage in activities that can have harmful consequences for society. In these instances, the social costs often vastly outweigh the private benefits. This reality intersects with the concept of surveillance capitalism, a distinct but related notion. Zuboff (2023), describes it as a manifestation of informational capitalism that aims to predict and shape human behavior in order to generate revenue and dominate markets.

Large digital platforms collect and monetize data, often of a personal nature, to benefit advertisers and other stakeholders. A striking example is the Cambridge Analytica scandal in 2018, where data from millions of Facebook (now Meta) users was used without their consent for political aims (Teyssou et al., 2020). This blend of capitalism and surveillance can lead to adverse outcomes, jeopardizing the freedoms and political balance of a society.

Beyond direct consequences, such as the repression of dissenting views, state oversight can undermine social trust and weaken foundational institutions, inflicting more extensive damage in the long run. Reflecting on structures like the secret police in East Germany during the Cold War, surveillance can breed distrust and social isolation. However, it's crucial to recognize that not all technologies are inherently harmful. Surveillance tools can, and indeed do, serve beneficial purposes (Quach et al., 2022). Online reputation systems or surveillance technologies used for investigations and security are cases in point. It's essential to be aware of both the benefits and risks these tools offer.

Guo & Liu (2023), have shed light on the increasing contrast in the digital age, which might be characterized as a technological chasm, driven by corporate decisions within digital realms. This chasm isn't merely a byproduct of the digital era; rather, it's an amplification of pre-existing economic structures through the lens of digital power. When examining participation in the digital economy, it's clear that not everyone starts from the same baseline. Equitable access to the digital economy and its ecosystems is paramount for digital entrepreneurship to thrive.

However, the underlying reality is that as the digital economy progresses, pre-existing inequalities become more pronounced. For instance, in 2020, while Northern Europe boasted an internet penetration rate nearing 98%, regions like Central and Eastern Africa only reached about a quarter of that figure. Sub-Saharan Africa had a markedly diminished digital presence compared to Europe, especially in areas like collaborative coding and domain registration. These disparities aren't confined to intercontinental comparisons. Even in economic powerhouses like the UK and the US, millions still lack basic internet access (Figure 3).

Digital infrastructure is the backbone of this new economy. As noted by Miyamoto et al. (2020), those who control this infrastructure largely dictate the economic landscape. The ability to decide which data to collect, as well as how and when, not only underscores the digital divide but further exacerbates it. It's no surprise, then, that there is a clear correlation between the locations of the most influential digital entrepreneurs, data centers, and the networks of undersea internet cables.

A sinister consequence of these digital disparities is the presence of data voids and gaps. Data voids, often more pronounced in developing countries but not exclusive to them, hinder appropriate policy formulation. These gaps, on the other hand, can perpetuate and amplify pre-existing biases and inequalities. Minorities and marginalized groups are frequently underrepresented or absent from data sets, and such oversight can have dire consequences (UNCTAD, 2023). Biases in algorithms can lead to discriminatory practices. For instance, certain facial recognition systems in the U.S. have been found more likely to misidentify individuals of Asian or African descent compared to white males. Similarly, Amazon faced criticism over a job selection algorithm that exhibited bias against women.

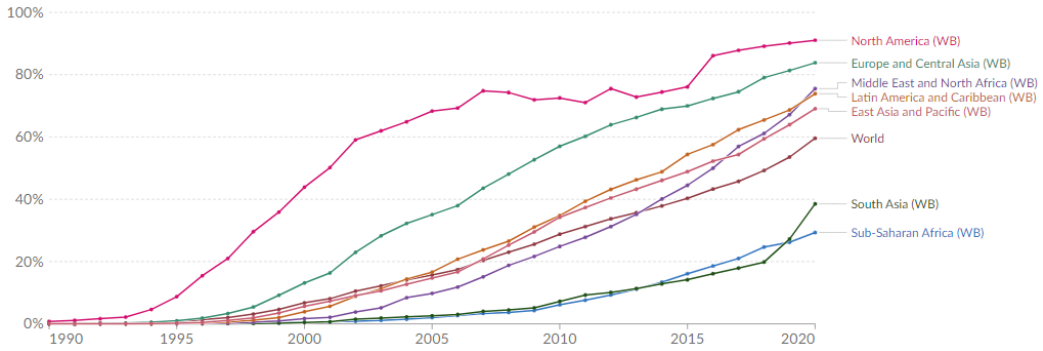

Figure 3. Share of the population using the Internet.

At the crossroads of crime and war, a new figure has emerged: the destructive entrepreneur, an individual who profits not from innovation but from exploitation, compromising the collective welfare in the process. This dynamic is strikingly apparent in the digital economy, where, as Muhammad (2018), posits, an insatiable thirst for "power, profit, and recognition" drives many. The swift technological evolutions expose vulnerabilities in systems yet to be regulated, making them prime grounds for illicit activities. The execution of a cybercrime can be almost instantaneous, while formulating appropriate regulations might span years (Gutiérrez, 2021).

Mabrrouk (2020), points to a concerning rise in cybercrime but emphasizes that accurate measurement of such offenses remains a challenge with current tools. Countries like China and the U.S. are notably vulnerable, but it's a worldwide issue. McLennan (2023), ranks cybercrime and cybersecurity threats among the top risks for the upcoming decade, underlining an uptick in attack aggressiveness and sophistication. Even more alarming is the advent of cyber warfare where, as Krepinevish (2012), articulates, assaults can go beyond financial ramifications to cause catastrophic physical harm, such as targeting nuclear systems.

From Baumol's perspective, the interplay between cybercrime and destructive entrepreneurship hinges on how the context directs entrepreneurial endeavors, be they constructive, neutral, or destructive (Minniti et al., 2023). Despite the research gap, it's evident that many cybercriminals operate with an entrepreneurial mindset. They capitalize on vulnerabilities, turning them into profitable ventures, a trend mirroring disruptive shifts across sectors (Anderson et al., 2021). Thus, in addressing cybercrime, it's paramount to integrate insights from entrepreneurial economics. Anderson et al. (2021), offers a framework that transcends mere technological or criminological solutions, suggesting the real answer may lie in understanding and reshaping the economic and business incentives fueling such behavior.

Artificial Intelligence (AI) has emerged as a pivotal piece in the digital economy landscape. Its rapid expansion is attributed to the confluence of advancements in computing, connectivity, data acquisition, storage, and data science; a blend that has propelled its evolution at a pace parallel to Moore's Law. It's nearly impossible to overlook the impact and presence of AI in today's digital landscape (ăledziewska & Włoch, 2021).

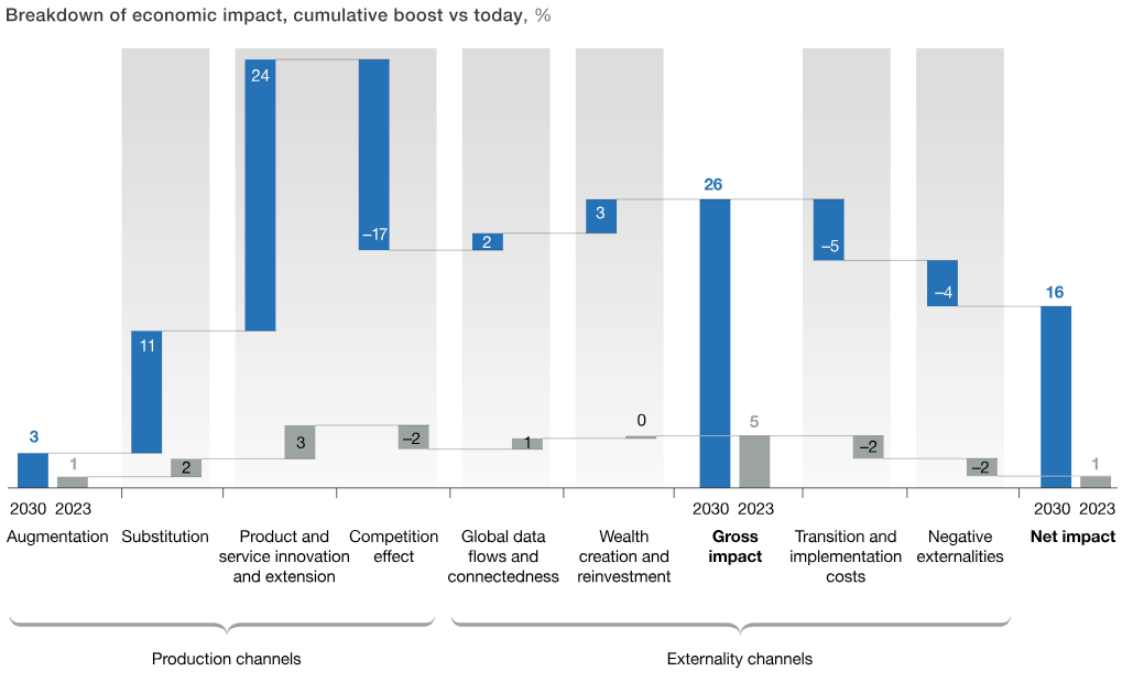

Figure 4. Artificial intelligence´s net economic impact has seven channels.

Source: Bughin et al. (2018).

Within the realm of digital entrepreneurship, AI has established itself as an invaluable asset. For startups and entrepreneurs, adaptability and efficiency are paramount, and AI provides the tools to achieve these aims. From search engines, virtual assistants, recommendation systems, content curation, tailored marketing, medical diagnostics, to Large Language Models (LLM) such as Chat-GPT-4, built upon the innovative Transformer architecture of 2017 (Perifanis & Kitsios, 2023), AI has reshaped how entrepreneurs engage with their audience and train their teams.

Leading digital platforms have deeply integrated AI into their operational frameworks, showcasing its potential to generate economic value. In fact, there's a growing perception of AI as a general-purpose technology, with the potential to trigger even more groundbreaking advancements in science and technology. Research like that of Bughin et al. (2018), suggests that generative AI might boost the global GDP by an additional 10% in the upcoming decade (Figure 4).

Despite its promising horizon, AI brings along challenges and risks. Concerns range from the monopolistic strengthening of digital platforms, widening inequality, erosion of privacy, to fears of intelligence potentially supplanting human labor. Voices like that of Roose (2023), have raised worries about potential AI-related catastrophes. However, it's essential to discern between alarmism and genuine challenges, as there might be interests behind certain alarmist narratives aiming to protect existing business domains. For the digital entrepreneur, understanding these challenges and opportunities will be crucial to successfully navigate the economy of the future.

Throughout his prolific career, Michel Foucault delved into how the construction of knowledge and truth are intrinsically tied to systems of power and control. This tendency to distort facts isn't exclusive to ancient times; rather, it has taken on a new dimension in the digital age. In contemporary times, fact distortion has been a recurring feature. A poignant example is the "yellow vests" crisis in France, where a widespread dissemination of misinformation and conspiracy theories via social networks was observed, exacerbating tensions and misleading the public (Carlson & Settle, 2022). Similar distortions in information were also evident in public perception during the COVID-19 pandemic, with unfounded theories and fake news proliferating about the virus's origin and treatment.

The digital economy, which serves as the foundation for many modern ventures, has introduced a new variable to this reality interpretation equation. Digital platforms, upon which many entrepreneurs base their businesses, have amplified the post-truth phenomenon, giving rise to what Newman et al. (2023), calls a society of "alternative facts". We live in an era where objective facts have lost sway in public opinion, making way for alternate interpretations and narratives that challenge objective and scientific truth (Wardle & Deakhshan, 2018).

The outcome of this post-truth environment is a crisis of interpretation. It's not just the spread of falsehoods but strategies designed to undermine trust in institutions and polarize societies, all while leveraging the digital tools that many entrepreneurs use to grow their ventures (Newman et al., 2023). The irony is that this erosion of truth primarily benefits businesspeople and politicians pursuing their own agenda. The interconnected nature of the digital economy, driven by disruptive ventures, has altered the dynamics of journalism and news distribution. Traditional news sources, once the gatekeepers of truth, now struggle to stay relevant (Carlson & Settle, 2022). Digital entrepreneurs, by monopolizing advertising, have challenged these traditional media to seek alternative financial models. In this new ecosystem, where any entrepreneur can wield influence, each individual has the potential to become a virtual journalist, ushering in the age of the influencer (Lou et al., 2022).

Within this landscape, largely driven by digital ventures, four mechanisms perpetuating post-truth emerge: a) Echo chambers and filter bubbles: Online, individuals cluster into like-minded communities, reinforcing their beliefs and worldviews (Wardle & Deakhshan, 2018); b) Clickbait: Digital platforms, the foundation for many ventures such as Google and Meta, rely on traffic to generate advertising revenue. These sensationalist headlines, often lacking a factual basis, serve to capture user attention (Wardle & Deakhshan, 2018); c) Deepfakes: AI technology, powered by innovative ventures, now enables the creation of content that appears authentic at first glance (Knight, 2018). Such deepfakes, like the shocking Mark Zuckerberg video from 2019, represent a new frontier in reality manipulation; d) Circular reporting: A crafty technique to amplify fake news. A piece of news gets repeated across multiple channels, gaining credibility with each iteration (Wardle & Deakhshan, 2018). The underlying situation is clear: the sense of reality, and thereby, trust in institutions and in digital entrepreneurship, is being eroded in this transformative age.

In the contemporary era, digital incursion has permeated nearly every sector of government, with hopes of maximizing efficiency and effectiveness in the delivery of public services. Globally, governments across all latitudes are enthusiastically embracing the shift towards a "digital welfare state" (Larasati et al., 2023). However, an unavoidable question emerges: Do these digital initiatives invariably benefit the most vulnerable in society? Or can the obsession with administrative efficiency overshadow or even compromise social objectives?

We face a landscape where critical systems like unemployment benefits and food subsidies are being translated into the language of bits and bytes. This metamorphosis poses challenges in humanizing decision-making. It is in this context that the term "Automated Poverty" emerges, highlighting the transformation of human needs into mere data, relegating empathy and human discernment to the confines of the past (Lima, 2022). In this environment, the impartial decision-making of machines could lead us to a sort of modern dystopia, a "digital almshouse for the poor" (Richardson et al., 2023), akin to Dickensian visions but stamped with a 21st-century mark.

The dangers of this digitization aren't mere speculation. In the Netherlands, a regrettable episode involving the deployment of an artificial intelligence algorithm by tax authorities triggered a national scandal in 2021. This system, designed to detect child care benefit fraud, was found to be biased and wrongly labeled many families, particularly those of low income and ethnic or migratory origins, as fraudsters (Amnesty International, 2021).

Another instance is the surveillance system used by the police in the United States, criticized for being biased and discriminatory towards people of color and impoverished neighborhoods. The system employs algorithms to predict criminal behavior and assign scores to individuals based on their likelihood of committing a crime. However, these systems often rely on historical data reflecting the racial and economic biases inherent in the judicial system, resulting in unjust discrimination towards certain groups (Guanche, 2023). These incidents highlight the underlying risks of overly relying on digital systems without adequate oversight and scrutiny.

Beyond algorithmic errors, another emerging concern lies in the involvement of digital entrepreneurs in the construction and expansion of so-called "Smart Cities." The Organization for Economic Co-operation and Development (2019), details how various tech startups, under governmental contracts, have been at the forefront of urban digitalization projects in several world metropolises. While these startups offer innovative solutions to urban challenges, they also control vast amounts of citizen data and often operate without the level of oversight and transparency expected for projects of such magnitude. This dynamic raise essential questions: Who safeguards and makes decisions based on these vast datasets? How protected is citizen privacy? In the zenith of digital transformation, inequalities are also evident. Despite the promises of Smart Cities, many marginalized urban areas still lack basic access to digital technologies. This disconnect can further sideline these communities, leaving them behind in the march towards a digital future.

In the contemporary digital age, the hegemony of tech companies, especially those American-centric in Silicon Valley, has set precedents in the fabric of global entrepreneurship. Giants like Apple, Alphabet (formerly Google), Meta (formerly Facebook), Amazon, Microsoft, and Tesla have been the guiding beacons not only for ambitious startups but also for visionary entrepreneurs aiming to replicate their success. These pioneering firms, besides offering groundbreaking products and services, have set the tone and pace for the world of digital entrepreneurship. Their bold and often disruptive approach has emboldened a new generation of startups, from fintechs like Stripe and Square to e-commerce platforms like Shopify, to rethink the limits and possibilities of the digital realm.

However, with great power comes great responsibility, and it can be argued that these leading companies have developed a form of technological exceptionalism. The notion that they are in a league of their own, operating beyond conventional norms. Phrases like Google's "do no evil" or Elon Musk's claims about colonizing Mars reflect an aspiration not just to lead the market but to reshape the human narrative (Taplin, 2023). While often inspiring, this mindset has also faced scrutiny. Such exceptionalist vision has led some tech leaders to contemplate radical detachments from contemporary society, whether through efforts at space colonization or escapades into advanced metaverses. This underlying philosophy, often linked to "Longtermism", suggests a belief in transcending present-day challenges in favor of broader futuristic goals (Gebru et al., 2023).

Historically, parallels can be drawn between these companies and the robber barons of the 19th century. However, where industrial magnates-built railroad and oil empires, today's tech titans shape the landscape of digital entrepreneurship, setting standards and dictating trajectories. Yet, as in the past, the excessive concentration of power and wealth can prove detrimental (Freeland, 2012). Digital entrepreneurship, at its core, is about innovation and diversity, and monopolistic dominance threatens that spirit. The emerging tensions between these mega-corporations and the regulatory environment showcase a growing unease about the direction and ethics of our digitally-driven world.

CONCLUSIONS

In a retrospective journey through technological development, a panoramic view is gained of the challenges we've faced from the post-World War II era to the current trials in an increasingly complex digital ecosystem. As we delve into the fourth industrial revolution, with technologies like Artificial Intelligence and Big Data reshaping our realities, the interplay between technology and society becomes increasingly evident and pivotal. These are not mere static tools; they shape and are shaped by our interactions, values, and institutional structures. Over the past five decades, digitization has driven significant and disruptive transformations. With the ubiquity of computing and internet connectivity, we've also witnessed the rise of digital entrepreneurship. While digital tools and platforms hold the potential to empower us, they can also control, restrict, and even foster monopolies. The ethical dilemmas arising from this duality are clear: the digital entrepreneur not only faces the challenge of navigating these waters but also bears the responsibility to uphold the internet's inherently free and open nature.

Jean Tirole underscores that the merging of digital technologies with governmental and corporate power structures paints a picture bordering on the dystopian. The nexus

between power, technology, and entrepreneurship goes beyond mere technological adaptation; it's a profound institutional challenge. Reflecting on this framework, digital revolutions call for adaptive institutional responses. How do we structure our institutions so that digital entrepreneurship serves the broader societal good? It's imperative to regulate this realm, especially as we confront the looming potential of digital dystopias. The dilemma is intricate. While certain regulations might stifle innovation, others are essential to curb the excesses of an unrestrained digital market. Regulations, like those proposed in the EU, indicate that technology oversight is a delicate act, focusing not just on the technology itself but on its application and outcomes. The business model of digital platforms, where titans like Google, Meta, Amazon, and Alibaba reign, poses evident regulatory challenges. It's not merely about dismantling; it's about ensuring dynamic competition, preventing abuses, and safeguarding user rights.

In conclusion, entrepreneurship transcends mere profit-seeking. It's about recognizing that both in the digital and traditional realms, there exist diverse objectives and motivations. It's crucial to allow these entrepreneurial forms to coexist and thrive while addressing their inherent challenges. Harmonizing knowledge, debate, and collective action is essential in striving for a digital future that reflects not only our current realities but also our higher aspirations as a global society.

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