

Dark Side of Digitalization: Who to Blame? Users or Providers?

Reza Vaezi
Kennesaw State University
reza.vaezi@kennesaw.edu

Abstract

AI-enabled digital technology appears to be transgressing the ontological boundaries associated with technology as known to humanity over the history of its existence. Today's digital technology is active and autonomous; it interacts with humans and other AI-enabled technology and achieves its objectives mostly independent of human intervention. It shapes human experience and is shaped by it. Hence, we need to revisit our assumptions about AI-enabled technologies and reconsider individual and organizational roles and responsibilities toward such technologies. This theoretical paper questions the well-established logic that is used to protect technology makers against the users' misuse of their technology and offers possible solutions within the context of digital social networking and media platforms.

Keywords: AI, provider responsibility, AI philosophy, AI ontology, corporate liability.

1. Introduction

Humans invent technologies to make their lives easier and more efficient (e.g., cutting tools and internal combustion engines, digital technologies). Each new invention, rooted in the human mind, inevitably and inherently possesses and demonstrates positivity and negativity as its creator mind and existence does. The positive and beneficial side of technology is typically the main driver behind its invention and adoption, and because of that, it is given more attention and salience at the beginning of the adoption cycle. Naturally, much less attention and thought are given to possible negative aspects of an invention at the design time. In fact, many of the negative or dark consequences of technology may only come to light as a result of its adoption and use by a wide range of users over time.

As such, the benefits of digital technology are given more attention at the beginning of the usage cycle as they provide primary measures of success for new technological innovations. Hence, the benefits of digital technologies for individuals and groups (e.g., organizations, governments, and communities), such as

enhanced connectivity, increased efficiency, improved decision-making, and economic growth, are extensively studied and well documented (e.g., Piccoli & Ives, 2005; Roberts, Galluch, Dinger, & Grover, 2012; Todd & Benbasat, 1992). Over time, digital technology users and stakeholders who may initially be ignorant of the possible dark side or unintended consequences of new technology gradually start considering such outcomes. As a result, some scholars have shifted their focus onto studying the dark side of technology use and documenting its unintended consequences in order to better understand and mitigate such adverse effects on individuals and social groups (Turel, Qahri-Saremi, & Vaghefi, 2021).

To this date, most of the existing studies of the dark side of technology focus on either user characteristics or the interaction between technology and user from the users' perspective to explain observed adverse effects of adoption and use of digital technologies among individual users and communities. Research has considered user addiction to digital technologies and studied the phenomenon mostly from users' personality traits perspective, indicating what kinds of users are more prone to get addicted to digital technologies in general and social media specifically (e.g., Lapointe, Boudreau-Pinsonneault, & Vaghefi, 2013; Qahri-Saremi, Vaghefi, & Turel, 2021; Vaghefi, Lapointe, & Boudreau-Pinsonneault, 2017; Vaghefi, Qahri-Saremi, & Turel, 2020). Similarly, technostress research mostly has considered individual characteristics and their interaction with environmental stressors (e.g., job characteristics, role characteristics, etc.) in the management of such stress (Tarafdar, Maier, Laumer, & Weitzel, 2020) and how abstention from digital technology use can reduce general stress in users (Turel, Cavagnaro, & Meshi, 2018). In addition to these areas, extant research considers users' experience of simultaneous positive and negative attitudes (ambivalence) toward technology use (Qahri-Saremi & Turel, 2020), as well as the cyberbullying and other deviant user behavior arising from user-generated contents (e.g., Liu & Karahanna, 2017; Lowry et al., 2019), and adverse health outcomes (Serenko, Turel, & Bohonis, 2021).

Except for a few notable works (e.g., Ayyagari, Grover, & Purvis, 2011; Tarafdar, Cooper, & Stich, 2019), research largely has ignored the technology and technology providers' side of the relationship between humans and technology, creating a gap in our knowledge of how digital technology providers might be contributing to observed adverse effects of technology use. Existing studies also mostly focus on technology design and how design modifications can impact negative effects; These studies mostly fall short of considering what mainly informs the technology design and features. In other words, it appears that the research has primarily concerned itself with the symptoms (implemented technology features) instead of what may cause them, namely, the technology providers' corporate strategies and goals. Such high-level organizational strategies are believed to inform product design decisions and determine final technology capabilities (McLaren, Head, Yuan, & Chan, 2011).

It can be argued that the underlying goal for most successful private businesses is to increase their revenue and profit through various means. Within the digital social media and networking industry (this paper's context), such an objective has mainly manifested through maximizing user engagement with the platform to increase the time spent interacting with the digital tool while minimizing operating expenses. The increased engagement and time spent can lead to more advertising and sometimes product sales income which translates to more profits (Claussen, Kretschmer, & Mayrhofer, 2013; Orlowski, 2020; Aral, 2021). Consequently, it is expected that technology capabilities and design choices are also aligned with the overarching goal of driving profit by increasing the time each user spends on the platform. Extant research indicates that the length of time that users spend on these platforms is directly linked to many observed adverse individual outcomes (e.g., Singh, Amiri, & Sabbarwal, 2017; Vannucci, Flannery, & Ohannessian, 2017; Primack et al., 2017).

Mainly focusing on the user traits that may expedite or enable the dark side of technology while limiting our investigations to technology features' impact on the observed adverse outcomes of technology use can only give us an incomplete and distorted view of the dark side of digitalization and technology use. Turel and Ferguson (2020) acknowledge that technology providers may possibly contribute to some of the observed negative consequences of digital technology use, but they dismiss further investigations into this matter using a well-known and widely accepted argument that a tool-maker is not responsible for the misuse of the tool by end-users unless the observed misuse could be attributed to design, manufacturing, or delivery processes flaws and negligence as reflected in existing product and service liability laws. This line of reasoning also appears to be

the primary explanation behind the scarcity of research on technology providers' role in observed negative outcomes of digital technology use within the Information Systems and Technology literature.

The rest of this paper scrutinizes the current framework and its appropriateness for existing AI-enabled technologies that are employed in the digitalization of individuals through social networking and media platforms. Relying on the ontological transformation of technology and a peculiar philosophical stand on the nature of perceived reality, this paper argues that technology providers considerably contribute to observed adverse outcomes of technology use and call for further research on the link between corporate strategy and observed negative outcomes. Moreover, considering technology providers' role, the paper proposes possible underlying causes for the observed adverse effects of technology use and suggests remedies that could alleviate the existing problem while enabling technology providers to maintain or even increase their profit levels.

2. Philosophical Considerations

2.1. Ontological Transgression of AI-enabled Technologies

The argument that technology users should assume the sole responsibility for their misuse of a digital tool as users and consumers of that tool because users have almost always been held responsible for their *abuse* of technology suffers from two elemental flaws. First, it assumes that AI-enabled technology is similar to most other technologies of the past (e.g., automobiles, guns, knives) in their ontology, purpose, and functionality. Second, it ignores a fundamental aspect of how reality is perceived by humans and what that means for the burden of individual responsibility.

Today's AI-enabled digital tools are not passive and static like guns or cars in their functionality and form, but are highly dynamic ones that actively adapt themselves to user behavior in real-time. The capability of AI-enabled technologies to alter and be altered by other entities that interact with them suggests that they are gradually becoming ontologically indeterminant from known life forms (Hoffman & Novak, 2018). AI-enabled technologies can now modify themselves autonomously and adapt to new situations according to their predefined objectives.

Specifically, AI-enabled technologies facilitating our social interactions are not similar to automobiles that stay the same once they are made. They do not have a fixed physical form, and a limited range of functionality as almost all other tools and machines of the past had. In other words, AI-enabled technology is

not passive; it is an active one that vigorously shapes and is being shaped by the human experience (Demetis & Lee, 2018). These technologies possess dynamic user interfaces whose contents are personalized for each user. The only shared experience that they provide for their users is limited to a high-level structure and presentation format of contents. We have not encountered such tools and technologies in the past; In addition, unlike other communication technologies (e.g., radio, television, etc.), social media and social networking platforms actively control media transfer and exposure. Today's social media technology is capable of controlling what is being heard or seen by others. Thus, the argument that only end users are responsible for their *misuse* of a tool does not entirely hold true in this situation and needs to be revisited as these tools are fundamentally different from their predecessors.

To make this more relatable, let us consider a generally accepted rule that a car manufacturer has no responsibility toward drivers of the car violating the speed limit. This argument is logical and holds true for today's society, but imagine a distant scenario in which a good chunk of car manufacturer revenue and associated profit is dependent on the amount of time a driver spend in a car, and the car uses an AI-enabled technology to understand what makes a driver spend more time inside an automobile. Based on driving habits, the technology determines that exceeding the speed limit is associated with spending more time driving. As a result, it pushes the driver toward exceeding the speed limit more often than usual through playing music associated with such behavior. In such a hypothetical scenario, should the car manufacturer that is also the owner of the AI-enabled technology managing the automobile entertainment and information centers be held responsible at least partly for drivers exceeding the speed limit?

Today's novel and AI-enabled digital technologies have not had any historical precedent and should not be regulated according to past traditions. Especially our interactions with them are vastly different from our interactions with other existing technologies. Therefore, the ancient and well-accepted rule of limiting the liability of tool makers in the face of *misuse* of the tool should be revisited as we are facing kinds of tools that are ontologically different from any other tool that humans have created throughout history. They can independently and autonomously manipulate humans to achieve their given objectives! And these objectives are determined mainly by technology owners and providers.

2.2. Human Perception of Reality

There are various philosophical perspectives of truth as perceived reality. The detailed treatment of such perspectives is outside the scope of this paper; however, to provide some background understanding, major philosophical perspectives are reviewed before the paper's position on this issue is stated and how this position may inform us of technology maker responsibility toward negative outcomes of technology use is discussed.

The positivist and post-positivist philosophies of science state that objective reality exists independent of human perception. According to this philosophy, our understanding of the objective world is limited only by instruments of perception (measurement) errors (Orlikowski & Baroudi, 1991; Popper, 1963). The interpretivist school, on the other hand, believes that reality is socially constructed and promotes individual subjectivity of truth (Morgan, 1980). According to this view, the objective reality of the positivist school is considered an intersubjective phenomenon that exists because of shared perceptions among a social group (Percy, 1958; Zaner, 1961). Needless to say, positivist philosophy and its offshoots dominate and govern most scientific endeavors and form the basis of our legal system (Giroux, 2020).

This paper, however, does not completely subscribe to either of these philosophical standpoints; instead, it takes on a view advocated by the contemporary psychiatrist and philosopher Ian McGilchrist, that perceived reality is neither objective nor subjective. It is rather both subjective and objective at the same time. According to McGilchrist (2019), reality, as perceived by humans, has a betweenness characteristic. A reality is formed as a result of interactions between two parts. For example, a corpse (object) can create different realities and meanings for various observers (subjects). A coroner forms a different perception (reality) of a corpse compared to that of a police forensic examiner or a person without any expertise. The object of the perception is the same, but perceived realities are different to some extent yet shared to a good degree among all subjects involved in the observation.

Similarly, users' reality and consequently their behaviors are not being formed in a vacuum. It is being produced as a result of their interactions with technology. For example, addictive user behavior could be attributed to users' reality that is being formed through their interaction with AI-enabled technology. Such reality and consequent behaviors are not formed in a void and should not only be attributed to user personality traits. It is true that some personality traits may mediate this relationship and influence the degree of observed addictive behavior, but such behavior could

not become a reality if the other part (technology side) was missing or maybe if it was not actively rewarding such addictive behaviors. Ignoring the fact that human reality is a by-product of their interaction with other players and parts within their environment results in an overly simplified and biased understating of human cognition and behavior. The kind of theories and solutions which mostly rely on such a one-sided viewpoint typically have a limited application for the everchanging and highly dynamic reality (positive or negative) of humans. This issue becomes even more important in light of the fact that the other party in this betweenness relationship is an autonomous, active, and everchanging tool with a predefined goal that is determined by its owners.

3. Dark Side of Social Media Providers

There is an accumulating body of literature establishing the link between the amount of time individuals spend on social media and social networking platforms and the observed negative outcomes. For example, the extant literature links the length of time spent on social media to escalating user anxiety (Singh, Amiri, & Sabbarwal, 2017; Vannucci, Flannery, & Ohannessian, 2017), depression (Primack et al., 2017), negative body image and eating disorders (Holland & Tiggemann, 2016), dissatisfaction with life and decline in affective well being (Kross et al., 2013).

As mentioned, the individual side of these generally correlational observations is extensively studied, while the providers' side of the relationship was left mostly unattended due to the belief that users are solely responsible for their *misuse* and resultant adverse effects. The applicability of the logic behind that belief to today's AI-enabled technology should be questioned. It could be argued that providers' overarching goal of driving more profit from user interactions may be a major contributor to the dark side of technology use. Such goals are eventually reflected in corporate strategies and find their way into the design and training of the AI algorithms in charge of content generation as well as design choices for the platform structure and format. The effects of some of the platform structural design choices (technology features) on observed adverse outcomes have been studied in the past, but to our knowledge, no research has considered the role of AI design and training optimizations in creating and maintaining the dark side of technology usage. Such design and training objectives are also mainly informed by the overarching goal of keeping users engaged with the platform for longer periods of time (Claussen, Kretschmer, & Mayrhofer, 2013; Aral, 2021). Therefore, considering the literature on the relationship

between time spent on platforms and observed adverse effects:

Proposition 1: The AI training objective of keeping users engaged with the platform contributes to the number and severity of the observed adverse outcomes of social media use.

However, it might be wishful thinking to get platform providers to change such an objective. Also, It can be argued that the capital needed for further innovation and technological advancement is tied to technology providers pursuing profit by keeping users engaged with the platform. It is neither logical nor viable to get technology providers to change their general goal of becoming more profitable. However, increasing or maintaining profit levels is a multidimensional problem where time spent on the platform is only one of its dimensions. The other important factor in revenue generation and profit extraction considers the total number of active users on the platform.

It is evident from the literature and individual experience that digital social media simultaneously evokes positive and negative emotions and results in both positive and negative outcomes (Weinstein, 2018). Such simultaneous experience of positive and negative emotions and thoughts toward an object is characterized as the specific mental state of ambivalence (Qahri-Saremi & Turel, 2020). Ambivalence is considered to be a source of psychological discomfort that individuals would try to avoid or resolve by discontinuing the utilization of ambivalent tools (Bala, Labonté-LeMoyne, & Léger, 2017; Rothman, Pratt, Rees, & Vogus, 2017). According to Qahri-Saremi & Turel (2020), users cope with the state of ambivalence toward digital social networks through various responses. Two of the more common responses are either completely stopping their utilization of the platform or vacillating between usage and stoppage. Both of which eventually lead to platforms losing active users and their engagement time. Reducing users' ambivalence toward a specific technology is suggested to boost the adoption and use of that technology by diminishing a source of psychological discomfort (Vaezi, 2022). Consequently, if digital social network providers can reduce the platform-induced ambivalence, they are expected to gain more users and increase their adoption and use.

Therefore, it can be argued that digital social network providers can possibly maintain or even enhance their profits by introducing additional high-level goals of safeguarding users' well-being while training their content generator AI engines. Amending the overarching goal of keeping users engaged with the platform with safeguarding their well-being could

reduce user ambivalence toward the technology and enhance AI-enabled social network platforms' adoption and use rate. Such adoption and use rate improvements could translate to additional revenue and profit that may compensate for the lost revenue resulting from AI training goal adjustment. Various possibilities of such amendments are further discussed in the next section.

Proposition 2: Amending the AI training objectives with that of users' well-being results in a higher rate of adoption and use of digital social networks.

4. Discussion

Given the unprecedented ontological transformation of tools and machines utilizing AI technologies to become active and autonomous and the nature of human perception of reality, it is time to start considering the role of technology providers in technology misdeeds and negative consequences. The role and consequently the liability of technology providers, especially social network providers, should be further scrutinized and researched. Open and fierce discussions and considerations of corporate impact on users' well-being may lead to the introduction of novel corporate strategies and new rules, policies, and judicial frameworks.

Similar debates and discussions have already started among legal scholars resulting in suggestions for modification of existing legal frameworks (Kingston, 2016; Villasenor, 2019) and the introduction of new legal doctrines and regimes (Lai, 2021; Sullivan & Schweikart, 2019). These discussions, however, need to go beyond the community of legal scholars and information systems researchers into the general population if meaningful changes in laws and legal regimes are to be expected.

A possible solution might be to model new rules and regulations after the existing parents and guardian laws to hold platform providers responsible for outcomes that their AI-enabled products have cocreated through their interactions with humans. As guardians are responsible for the conduct of their minors to a certain degree, maybe we should also partly hold AI technology providers responsible for the conduct of their AI-enabled technology. A range of possible solutions of this kind is suggested under the corporate and AI personhood in legal literature (e.g., Lai, 2021; Sullivan & Schweikart, 2019).

Possible solutions, however, are not limited to the advent of new legal doctrines. This paper argued that social media platform providers not only may not lose part of their revenue and profit but may increase them by becoming more socially responsible and amending

the current AI goals and optimization algorithms to give more weight and importance to users' well-being.

With advances in computational power and deep neural network algorithms, AI could be trained to detect and analyze emotional cues to understand the current emotional state of users and predict their future emotional states. From a technical perspective, such amendments could possibly be done by modifying AI optimization algorithms using a reinforcement learning approach that utilizes asymmetric reward functions (e.g., Elthakeb, Pilligundla, Mireshghallah, Yazdanbakhsh, & Esmailzadeh, 2020). Such AI technologies are known as feeling AI within the business literature and are slowly becoming the trend within industries reliant on AI technology (Huang & Rust, 2021). It is predicted that moving toward feeling AI is inevitable, and the future of AI technology will be dominated by feeling AI in various industries (Rust & Huang, 2021).

Consequently, amending the existing AI in charge of content generation and moderation in social networks with feeling AI capabilities to detect human emotional states from their activities on the platform would be a viable solution. Such technology can be trained to act accordingly to maintain or improve users' well-being while optimizing engagement time with the platform. For example, once a user's progression toward anxiety is detected, the AI could change the content feed to reverse or stop such progress; or when addictive behavior is sensed, the AI could restrict and regulate the usage time as well as the content.

Another possibility for moving toward more platform accountability in the future is to utilize conscious empathic AI. Esmailzadeh and Vaezi (2022) outline a theoretical framework that charts a possible path toward general machine intelligence or conscious AI. They claim that conscious empathic AI would be capable of empathizing with other conscious entities and sensing other's internal emotional states. Conscious empathic AI is envisioned to revolutionize digital social networks and introduce various novel applications of AI that currently do not exist, such as AI-enabled psychotherapy. It promises moral and accountable AI technology under the assumption that a conscious AI technology eventually can empathize with humans and would be able to sense their pain (physical or mental) and joy. Ultimately it can be trained to reduce users' pain and suffering or promote joyfulness in them.

In addition to existing ontological transformation, the aforementioned technological advances (conscious AI) will entail the epistemological transgression of human-made tools into the realm of living beings. Such epistemological transgression will make machine-generated behavior almost indistinguishable from that of humans. Trying to find new solutions on how to deal

with today's AI-enabled technologies that are ontologically indistinguishable but still epistemologically different from humans can be good practice for a future that seems inevitable, as predicted by experts. Considering the exponential rate of technological advancement in combination with a survey of AI experts, the renowned AI philosopher Nick Bostrom discusses that a form of general machine intelligence (consciousness) is almost a certainty through the path of superintelligence (Bostrom, 2015).

5. Future Research

Future research should try empirically examining the ideas laid out in this paper in collaboration with existing technology providers. Scholars can measure how user behavior and well-being indicators change by manipulating AI-training objectives for a subset of representative users and see whether those manipulations could lead to better or worse individual and community outcomes as well as profit levels for providers. Two kinds of manipulations could be examined, one that completely eradicates the higher user engagement goal and one that amends it with user well-being or a set of other moral objectives.

The research communities of various disciplines (e.g., information systems, law, sociology, and political sciences) should also come together to discuss possible ways that AI technology providers could be held responsible for their part in the creation of the dark side of technology. Research should clarify the extent to which, *if any*, such companies should be held responsible and suggest possible solutions (e.g., laws, regulations, policies, and amended objectives) to inform lawmakers and organizational decision-makers. Such solutions can guide decision-makers in establishing new laws and organizational policies to meet today's challenges arising from the unprecedented change in the essence of technologies through the application of AI. These communal efforts are vital in advancing the discussions that may lead to tangible results as each discipline can only see and investigate the issue from its own perspectives and methods. Hence, it is necessary to

integrate various scholarly views to create a comprehensive shared understanding of the issue.

Finally, this paper only focused on and theorized about AI-enabled digital social media and how AI training objectives might affect observed negative outcomes of utilizing such platforms. Future research should consider AI in other contexts (e.g., healthcare, legal defense, and military) and other AI-enabled technologies (e.g., team or personal AI assistants, AI-enabled recommender engines, autonomous driving, and decision-making technologies). The research should investigate how AI training goals might affect observed or possible adverse outcomes of AI-enabled technologies in such contexts.

6. Conclusion

Individuals, societies, and organizations are facing a novel and active kind of technology unlike any other that humans have experienced during their history of existence. AI-enabled digital technology continues to transform our individual and social activities and functions in unforeseen ways. It is becoming a central player in our individual and organizational life through creating digital representations of our lives. In light of such steady progression, societies and organizations can no longer rely on their traditions since these were designed to work with passive and static technology and may not meet today's individual and social needs. Accordingly, this paper questioned traditional reasoning that granted technology providers a liability against users' *misuse* of their tools. It also suggested that the current platform objective of maximizing profits by keeping users engaged with digital social networks could be a major contributor to the dark side of digitalization and proposed that the addition of user well-being goals to current AI-training objectives could lead to similar or even better profit margins through promoting adoption and use by reducing users' ambivalence toward technology.

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