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Play, Chat, Date, Learn, and Suffer? Merton's Law of Unintended Consequences and Digital Technology Failures

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Introduction

Words and phrases such as 'zoombombing,' 'cyber-attack,' 'cyber espionage, and 'data breach,' are commonplace among a global vernacular. Undoubtedly, digital technologies, including mobile applications, social media, and online games, have impacted the ways that people communicate, learn, play, date, and entertain themselves. Although digital technologies offer their users many benefits, these technologies also expose their users to risks. Indeed, many digital users have been victims of cyberbullying, identity theft, and data breaches, Further, some national governments and local jurisdictions use digital technologies to engage in new forms of warfare, to curtail their citizens' freedoms, and to enforce laws that criminalize private, consensual, same-sex sexual activity.

Nearly a century ago, the sociologist Robert Merton (1936) coined the term "unanticipated consequences" to describe the unwelcome side effects of social actions, including technological innovations. Merton concluded that individuals would fail to comprehend all the outcomes arising from innovations out of ignorance, human error, or inexperience. Since then, social scientists have built on Merton's conclusions by employing terms such as "unanticipated" and

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"unintended" consequences of actions (De Zwart, 2015). For example, the theoretical underpinnings of the law of unintended consequences posit that actions always produce unintended or unanticipated outcomes (Garfield, 2004; Norton, 2020). Although such consequences may consistently arise from the commercialization of digital technologies, these two terms are not interchangeable and warrant clarity.

The goal of this article is two-fold. First, we apply Merton's (1936) Law of Unintended Consequences to explaining why and how commercial digital technologies fail consumers. In doing so, we define the terms unanticipated and unintended consequences, which should help future researchers avoid reasoning pitfalls. Second, we put forth a matrix that shows how the intersection of (un)anticipated and (un)intended consequences impacts organizational and managerail responses to the potential harm that often arises following the commercialization of digital technologies.

Defining (Un)intended and (Un)anticipated Consequences

Intended consequences refer to outcomes that are expected or intended from an organization's purposeful actions, such as the development and commercialization of digital technology. In most instances, intended consequences are positive to consumers, as digital technologies are typically designed to satisfy unfulfilled consumption needs in an ethical manner. After a technology, such as a mobile application, is commercially launched, it may be leveraged by users in ways that were unexpected or unintended. Thus, unintended consequences lead to unexpected outcomes that may be positive, negative, or perverse, with historical evidence suggesting that these consequences are quite often disadvantageous, counterproductive, detrimental, fraudulent, and often dangerous to individuals and communities.

Anticipated consequences refer to outcomes that an organization foresees, enabling it to engage in strategic planning to eliminate or mitigate the negative impact of these outcomes on users and other entities. By contrast, unanticipated consequences represent outcomes that organizations did not foresee prior to commercial launch or purposefully chose to ignore when they emerged. In some cases, managers may have anticipated the possible emerge of unintended outcomes and have strategic plans in place to confront them. In other cases, managers may have failed to plan for or anticipate the emergence of unintended consequences; in other words, they may have erred to fully understand the execution of the technology (Merton, 1936). Figure 1 illustrates the intersectionality of these two concepts as they apply to digital service technologies. In the following discussion, we turn attention to defining and developing each quadrant in Figure 1.

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The Intersection of (Un)anticipated and (Un)intended Consequences of Digital Technologies

The intersection of anticipated and intended consequences refers to "strategic preparedness." In this quadrant, all outcomes associated with the commercialization of digital technology are foreseen and visible to all organizational decision-makers. That is, senior management, along with research and development (R&D), are aware of the positive, negative, and potentially perverse outcomes that could ensue from the use of digital technologies by consumers. Furthermore, all organizational parties have strategically considered how they will eliminate or minimize negative outcomes when they emerge. For example, technology manufacturers typically anticipate and plan for security breaches regarding identity theft. Therefore, corporate responses to identity theft are typically preventive and well-strategized when they emerge.

The intersection of unintended and anticipated consequences refers to "organizationally responsive." In this quadrant, management is unsure of the positive, negative, or perverse outcomes that may emerge from the commercialization of digital technology. Despite this lack of clarity, management is committed to eliminating or minimizing the negative outcomes that emerge during or after commercialization. For example, Zoom's privacy and security vulnerabilities were quickly exposed as educational institutions and organizations gravitated to the platform following government-mandated lockdowns during the COVID-19 pandemic; however, the company quickly moved to acknowledge and correct these unanticipated outcomes (Marks, 2020).

The intersection of unintended and unanticipated consequences refers to "managerial blindness." In this quadrant, management is unsure of the positive, negative, or perverse outcomes that may emerge from the commercialization of digital technology. In addition, it lacks a commitment to eliminating or minimizing these outcomes emerging during or after commercialization. Managerial ignorance and human error characterize this quadrant. For example, in 2018, Uber agreed to pay $148 million to settle allegations from 50 states and the District of Columbia that the ride-hailing company violated data breach laws when it waited a year to disclose a hack affecting tens of millions of its riders and drivers (Gaglione, 2019).

The final quadrant represents the intersection of intended and unanticipated consequences, which we refer to as "unethical organizational behavior." At first, this quadrant may seem an oxymoron, as it implies that management is aware of outcomes that will emerge from the commercialization of digital technology, but it fails to eliminate or minimize them, despite their negative or perverse nature. Furthermore, this quadrant implies that management may break a "social contract" with consumers and society in general, by launching a digital technology that it knows may be harmful. For example, many consumers turn to their smartphones to re-

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duce stress and anxiety or alleviate depression and, in doing so, spend countless hours using social media, playing video games, or engaging in other activities. In turn, excessive usage of these digital services can result in negative outcomes, such as impairment in personal, family, social, educational, occupational, or other important areas of functioning (Király et al., 2020). Despite this realization, digital technology providers have not attempted to prevent problematic Internet usage in any way (e.g., using health warnings), despite internet addiction being an escalating crisis that needs to be addressed with psychological care.

Figure 1. (Un)Anticipated and (Un)Intended Consequences of Digital Technologies.

Consequences	Anticipated	Unanticipated
Intended	Strategic Preparedness Management is aware of positive, negative, or perverse outcomes that will emerge from the commercialization of a digital service. Management can eliminate or minimize the negative or perverse outcomes that emerge during or after commercialization.	Unethical Organizational Behavior Management is aware of positive, negative, or perverse outcomes that will emerge from the commercialization of a digital service. Management can eliminate or minimize the negative or perverse outcomes that emerge during or after commercialization; however, it fails to do so.
Unintended	Organizationally Responsive Management is unsure of the positive, negative, or perverse outcomes that may emerge from the commercialization of a digital service. Management is committed to eliminating or minimizing the negative or perverse outcomes that emerge during or after commercialization.	Managerial Blindness Management is unsure of the positive, negative, or perverse outcomes that may emerge from the commercialization of a digital service. Management lacks a commitment to eliminating or minimizing the negative or perverse outcomes that emerge during or after commercialization.

Conclusion

Through specific reference to the modern digital technologies, this article develops Merton's (1936) seminal thesis that technologies often have unanticipated outcomes on people and societies and to clarify the difference between the concepts of (un)anticipated and (un)intended consequences.

Figure 1 offers academicians and practitioners an understanding of the need for management to strategically plan for positive and negative outcomes that can arise after commercial launch. Yet, Figure 1 shows situations in which organizations not only are aware of negative

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outcomes of using their digital technologies but also do nothing to eliminate or minimize these outcomes. The proposed figure suggests that some digital technology providers forgo ethical concerns when they realize that their technologies have perverse outcomes and yet, they opt to overlook the need to minimize these outcomes when they arise.

Managerial, Societal, and Legal Implications

In a similar vein, recent studies have increasingly shown that Internet gaming disorders are correlated with Internet pornography usage (Voss et al., 2015), with both types of addictions being associated with diminished positive mental health and well-being. At some point, digital technology providers will need to confront the reality that their technologies are fostering addictions that are harming not only the individuals themselves but also their families and, perhaps, national health and economic productivity. Additionally, some governmental agencies, including police departments, routinely use mobile applications to conduct sting operations to arrest gay men for "cruising" behavior. Clearly, this is an extreme example of digital technologies failing to meet their commercial intent, while being an unconscionable example of human rights abuse (Yeck & Anderson, 2019).

Despite the absence of industry-specific regulations and the existence of some regulatory immunities, digital technology providers have an ethical duty and maybe obligated under applicable tort law principles, to take steps to prevent unintended harm to consumers before launching their technologies into the marketplace. Global experts have recognized that individual and collective harm caused by social media technologies is comparable to property owners who operate their businesses for commercial purposes and therefore argue that a statutory duty of care stemming from negligence tort theory should apply (e.g., Domino, 2020; Woods & Perrin, 2019). Even absent a regulatory framework, depending on the jurisdiction, a duty-of-care approach would hold technology providers liable for either causing or failing to prevent foreseeable mental, physical, or financial harm caused to users in the same manner as any other commercial establishment.

We argue that digital technology organizations will have difficulty claiming ignorance when a negative unanticipated outcome emerges after commercialization. For example, manufacturers are aware that the artificial intelligence technology designed for navigation of autonomous cars will occasionally err, either causing or failing to avoid injurious accidents (Chagal-Feferkorn, 2019). Most experts agree that in the absence of a statutory framework addressing this issue, driverless car lawsuits best fit under product liability tort theory, which holds manufacturers responsible for injured consumers for the products they develop, even when the negative outcome was neither intended nor foreseen (Roe 2019; Wu 2019).

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Digital technology providers regularly include a clause limiting users' ability to sue the provider for injuries associated with technology usage (O'Dorisio, 2017). Despite the apparent limitation of liability of these clauses, they do not free an organization from legal and ethical obligations when otherwise avoidable injuries occur (Jaffe, 2020). We encourage digital technology providers to determine the extent to which law enforcement agencies, policymakers, and regulators use their services for purposes other than their original intent. That is, it is the onus of digital technological organizations to uphold their responsibilities in adhering to local and national jurisdictions, which may require efforts to prohibit users from locales that ban specific technologies. To reduce potential harm to consumers and the possibility of legal liability, digital technological organizations should take reasonable measures to identify and prevent injury associated with their services, even though this recommendation may limit some consumer rights (Yadegarfard, 2019).

Accordingly, instances will arise in which digital technology users' bear the brunt of responsibility for misuse; however, one may speculate the extent to which juries will demonstrate favoritism to consumers during litigation under "deep pockets" theory. Despite the party at fault, drawing on Merton (1936), we put forth that all technologies have negative outcomes and that technology manufacturers must strategically plan for and anticipate how they will respond when these negative and perverse outcomes arise—*as history shows, they will arise.*

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