After the Fall: Scriptural Implications for Artificial Intelligence Innovation

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ABSTRACT: Innovation is often met with resistance, but the rapid pace of artificial intelligence (AI) development and adoption across the economy raises unique concerns, including the possibility of supplanting humans and diminishing human knowledge and creativity. This article uses the biblical narrative of the Fall to develop four challenges posed by AI: pursuing the knowledge and skills necessary to apply AI ethically, maintaining honesty without any hint of deceit, avoiding partiality, and seeking ways to influence ethical guidelines for the use of AI within professional disciplines.

KEYWORDS: artificial intelligence, generative AI, GAI, AGI, disruption, bias, the Fall

INTRODUCTION

In a column in the New York Times, Nick Bilton (2014) wrote,

> The upheavals [of artificial intelligence] can escalate quickly and become scarier and even cataclysmic. Imagine how a medical robot, originally programmed to rid cancer, could conclude that the best way to obliterate cancer is to exterminate humans who are genetically prone to the disease. (para. 6)

Although new technologies are often met with resistance, artificial intelligence (AI) spawns concerns differing from those associated with previous disruptions, particularly for Christians. AI shares many of the same ethical and moral concerns of previous disruptive innovations but has the added dimension of potentially supplanting humans in the workplace, destroying human life, and diminishing human knowledge and creativity. The purpose of this article is to articulate those ethical issues in AI, explain how AI raises these concerns, and offer scriptural guidance on how to consider these ethical issues.

Many biblical passages contrast the temptation to conduct business sinfully to God's desire and expectation of more God-honoring behavior in business. Although a secular businessperson needs to meet only secular business ethics and legal requirements, decisions by a Christian must reflect biblical and spiritual wisdom provided by God. Individuals may find that following scriptural guidance leads to a different decision than a secular approach. This creates a dichotomy for a Christian entrepreneur, owner, or manager in business who is accountable to secular ethical expectations and laws as well as God's expectations.

Three terms related to AI should be defined at this point. A recent article by De Zúñiga et al. (2023) defined AI as "the tangible real-world capability of non-human machines or artificial entities to perform, task solve, communicate, interact, and act logically as it occurs with biological humans" (p. 318). Saunders and Locke (2020) indicated the use of AI in business has grown rapidly since about 2010. These AI systems use vast computing power, many large data bases, machine learning, and deep learning to accomplish this interaction with humans. As AI evolves and increases its capabilities to interact with humans, experts define two types of aspirational AI. Most AI experts now believe current AI models like ChatGPT 4.0 possess the capabilities to be considered generative AI because they meet the definition: "a type of AI that can generate human-like text and creative content (e.g., music and images) as well as consolidate data from different sources for analysis" (Nah et al., 2023, p. 277). Marr (2024) observed the following:

> Generative AI does not truly "understand" the content it creates. It operates by digesting large

> datasets and predicting what comes next, whether the next word in a sentence or the next stroke in a digital painting. For example, when Generative AI writes a poem about love, it doesn't draw on any deep, emotional reservoirs; instead, it relies on a vast database of words and phrases typically associated with love in human writing. (paras. 2-3)

The third term is artificial generative intelligence (AGI), the most human-like version of AI that current AI models do not yet meet. Marr (2024) described AGI as follows:

> Artificial General Intelligence, represents a theoretical leap in the field of AI, aiming to create machines that do far more than perform tasks—they would understand, innovate, and adapt. The concept of AGI is to mimic human cognitive abilities comprehensively, enabling machines to learn and execute a vast array of tasks, from driving cars to making medical diagnoses. Unlike anything in current technology, AGI would not only replicate human actions but also grasp the intricacies and contexts of those actions. (para 4)

Marr (2024) also indicated that experts do not agree on whether or how quickly AGI could become a reality. Although AGI would be the most beneficial type of artificial intelligence, it also raises more concerns because it is so human-like. This article develops a Christian perspective on AI innovation. It reviews articles that contrast expectations for businesses operated by Christians to those operated from a secular viewpoint. After summarizing some of the concerning and unique aspects of AI autonomous systems, the article draws upon disruptions generated by the Fall to identify four scriptural challenges that AI poses. Knowledge's role in AI is examined, particularly the danger of human's failing to gain the knowledge and wisdom necessary to apply AI ethically and responsibly. This is especially vital given the rapid adoption of AI throughout the economy. The second challenge addressed is the maintenance of honesty without any hint of deceit in business activities, focusing on the importance of not using AI to create content when it is inappropriate or not disclosed. The next section emphasizes the challenge of avoiding treating consumers with partiality when using AI, and the need to be on guard for possible discriminatory impacts. The final challenge explores the process of developing legal and ethical guidelines for AI users, detailing measures that Christian business professionals can undertake to influence the ethics of AI within their disciplines.

LITERATURE REVIEW

Developing a Christian Perspective on AI Innovation

Many articles published in Christian business literature contrast expectations for businesses operated by Christians to those operated from a secular viewpoint. The crux of the differences often becomes apparent when comparing the secular and scriptural views of wealth and profit accumulation. Hoover (1998) provided an extensive set of Bible verses offering practical, spiritual guidance to Christian business practitioners and summarizes how a Christian should have a balanced view of wealth.

Scriptural guidance related to wealth and profit maximization applies to AI and other innovations because they are often adopted to increase profit. Professionals interested in improving the development and adoption of innovations for the greater good can view phases of innovation through the lens of Barnhart's (2023) Trinity-based model, focusing on characteristics shared by both conversion (to Christianity) and innovation. God the Father designed humans in his image and assigned them dominion over the rest of his creation, encouraging the development of innovations that advance human flourishing and glorify the Creator. The compassion apparent in Jesus' ministry and its contrast to a broken world encourages innovation that represents a fundamental change and addresses the needs of the neglected. Unity and connectivity in communities brought about by the Holy Spirit should encourage innovative technologies in education and communication (Barnhart, 2023).

AI raises the normal Christian ethical concerns, including the moral, disruptive ethical issues of previous innovations but possesses aspects that warrant special consideration. Some AI experts acknowledge a possibility that AI will destroy man either accidentally through unintended consequences of built-in biases or through God-like superhuman intelligence.

Science fiction fans know that a staple of many science fiction books and movies is that the computer becomes smart enough to realize it no longer needs man. A popular example is the classic science fiction movie *2001: A Space Odyssey* (Kubrick, 1968), in which the spaceship's computer HAL 9000 kills all the crew members in suspended animation, then kills one of the two remaining astronauts. The final astronaut asks HAL 9000 to open the bay doors, so he can return inside the ship. HAL refuses and responds that he believes completion of the mission is too important to allow Dave to jeopardize it and has surmised Dave wishes to shut HAL down.

Although there are often alarmists concerning disruptive innovations, the most recent advancements in AI have caused a flurry of respected experts to raise genuine concerns about AI's potential harm to humans. As AI has become increasingly advanced, some experts have warned that AI could destroy humans. In his final book *Brief Answers to Big Questions,* well-known scientist Stephen Hawking (2018) shared a similar concern and observed the following: "[W]e may face an intelligence explosion that ultimately results in machines whose intelligence exceeds ours by more than ours exceeds that of snails" (p. 184). Hawking also says, "It's tempting to dismiss the notion of highly intelligent machines as mere science fiction, but this would be a mistake, and potentially our worst mistake ever" (p. 173).

The 2023 release of ChatGPT 4.0 and other AI systems has elevated the concerns about the dangers of AI. Consider the following synopsis of recently published concerns regarding the rapid advancement of AI:

- In March of 2023, a Future of Life Institute (2023) controversial letter signed by Elon Musk, Steve Wozniak, and more than 1,000 scientists and professionals called for a minimum six-month pause on further development of advanced AI systems until a set of safety protocols can be developed.
- On April 13, 2023, the Financial Times published an article that includes the following quotation: "Until now, humans have remained a necessary part of the learning process that characterizes progress in AI. At some point, someone will figure out how to cut us out of the loop, creating a God-like AI capable of infinite self-improvement. By then, it may be too late" (Hogarth, 2023, pp. 6-7). He also points out that AI could destroy humans accidentally by pursuing other well-meaning outcomes. He uses the example of AI creating a solution to deacidify the ocean. It may do so competently but unleash a catalyst that uses 25 percent of our oxygen and thereby kills humanity.
- An editorial by Noonan (2023) compared the pursuit of super intelligent AI systems to Adam and Eve taking a bite of the apple to achieve the same knowledge as God: "But developing AI is biting the apple. Something bad is going to happen. I believe those creating, fueling and funding it want, possibly unconsciously, to be God and on some level think they are God" (Noonan, 2023, para. 7).
- In May 2023, AI investor and pioneer Gregory Hinton quit his job at Google so that he could talk freely about the dangers of AI without affecting Google (Prakash, 2023).
- On June 26, 2023, Christian scholar Larry Locke (2023) published a blog post regarding the need for Christian scholars to be involved in mediating ethical challenges raised by the two technologies of human genome editing and AI. He said that AI does "raise ethical issues of bias; intellectual ownership of information gathered by AI; the possibility of its approaching 'personhood'; ethical uses of it in the academy, arts, and professions; and numerous other issues that are yet to be resolved."

These excerpts make the point that concerns related to the possibility of future AI systems destroying humanity either accidentally or knowingly, as well as causing other serious ethical issues, are possible. As Locke (2023) stated above, the ethical dilemmas posed by AI should concern Christian scholars and practitioners. AI possesses the same ethical and moral concerns of previous disruptive innovations, but has the added dimension of potentially supplanting humans, diminishing the knowledge and creativity of humans, and/or destroying human life. The purpose of this article is to articulate those ethical issues in AI, explain how AI raises these concerns, and offer scriptural guidance on how to consider these ethical issues.

Destruction of Humanity

Although scientists and AI experts may find the destruction of humanity possible, taking a holistic view of biblical prophecy undermines this prospect. Scripture appears to preclude humans' destruction before the climactic events described throughout the Bible. Christ himself prophesied this:

> So, when you see the abomination of desolation spoken of by the prophet Daniel, standing in the holy place (let the reader understand), then let those who are in Judea flee to the mountains. Let the one who is on the housetop not go down to take what is in his house, and let the one who is in the field not turn back to take his cloak. (Matthew 24:15-18, ESV)

Another example is in Revelation:

> Then the kings of the earth and the great ones and the generals and the rich and the powerful, and everyone, slave and free, hid themselves in the caves and among the rocks of the mountains, calling to the mountains and rocks, "Fall on us and hide us from the face of him who is seated on the throne, and from the wrath of the Lamb, for the great

day of their wrath has come, and who can stand?" (Revelation 6:15-17)

Scriptures such as Isaiah 24:21-22, Joel 3:12-14, and Zephaniah 3:8 provide similar assurance that people will still exist at that time and will still be controlled by human governments. That said, there is still the possibility that Satan or the Antichrist will use AI to harm humanity before or after the prophesies cited above occur. Innovation typically can be used for good or evil. Therefore, although Christians need not overly concern themselves with the complete destruction of humankind, they should soberly consider other negative potential uses of AI. Using AI to deceive humans could be a particular example of an evil use of AI.

AI Deception and Biases to Supplant Humankind

Although Scripture indicates that AI will not destroy humankind, Christians should consider the possibility of it supplanting humans in their God-ordained role. If AI interferes with humans' ability to exercise dominion over the earth, it could disrupt God's plan for man as His highest creation. God created humans in his image and to have dominion over all things on the earth (Genesis 1:26–28). The supplanting of humanity could occur from learned behavior within AI, which has been shown to knowingly deceive man. According to Hogarth (2023), "[T]he most powerful models are also beginning to demonstrate complex capabilities, such as power-seeking or finding ways to actively deceive humans" (pp. 6-7). Humans could also be supplanted due to unintentional occurrences that result from either human and system biases or accidentally mis-specified objectives or priorities. Axelrod (2023) listed a number of human biases that can become part of AI systems as they are created, including myopia, recency, primacy, narrative, amnesia, and others (p. 44).

Several of these human biases can unwittingly be incorporated into AI. For example, recency is the tendency of humans to assign greater weight to recent events than to older events. Axelrod (2023) indicated the possible equivalent in AI is "inclusion of such statistical methods as exponential smoothing in algorithms" (p. 44). Narrative is the human tendency to focus on dramatic story lines. One way that this is incorporated into AI/ML (machine learning) is the Google search engine that prioritizes matters "that receive the most attention and place(s) them higher in their search results" (Axelrod, 2023, p. 44).

Human biases in AI are reinforced by system biases incorporated as the AI is being designed, programmed, and tested. Axelrod (2023) referred to these as biases introduced into the AI/machine learning pipeline of development. Such biases make it difficult for humans to understand the internal decision making of AI because "it is nearly impossible to determine which biases are in effect by observing the outputs and outcomes of the system" (Axelrod, 2023, p. 45) and include biases related to sampling, measurement, label, negative set, framing effect, sample selection, and confounding.

AI can incorporate these system biases unwittingly. For example, measurement error can be introduced through "errors in human measurement or intrinsic habits of those capturing data" (Axelrod, 2023, p. 45). Likewise, confounding "(a)rises if the algorithm learns the wrong relationship by not considering all the information in the data" (Axelrod, 2023, p. 45). Although the article's technical complexity may make it challenging for many to understand, Christian scholars and practitioners should read this article to better understand how an AI system can potentially reach opaque, biased, and dangerous conclusions without human discernment.

Impact of Apathy on Knowledge and Creativity

Aside from biases, dangerous outcomes from advanced AI systems could occur through another human tendency, apathy and indifference to things not considered important. As AI systems become ubiquitous, taking over many tasks currently completed by humans, the human desire to gain knowledge and wisdom could diminish in the long run. At that point, the question becomes whether humans will know enough or care enough to realize that AI may be making decisions and actions detrimental to humans. Saunders and Locke (2020) alluded to this, observing that as the AI system makes decisions via enhanced machine learning, "the actual 'reasons' behind an AI decision become increasingly opaque as the system matures" (Müller as cited in Saunders & Locke, 2020, p. 65), making it harder for humans to determine whether those decisions are thoroughly researched and without bias. Anderson and Rainie (2018) identified multiple concerns among those impacting AI's effects on human knowledge and wisdom (Table 1).

Human Agency

People lack input and do not learn the context about how the tools work. They sacrifice independence, privacy, and power over choice; they have no control over these processes. This effect will deepen as automated systems become more prevalent and complex (Anderson & Rainie, 2018, Table 1).

Dependence Lock-In

Many see AI as augmenting human capacities, but some predict the opposite—that people's deepening dependence on machine-driven networks will erode their abilities to think for themselves, take action independent of automated systems, and interact effectively with others (Anderson & Rainie, 2018, Table 1).

From the biblical viewpoint, these potential causes of dysfunctional or dangerous AI are discordant to God's hope for humankind. He desires that man have free agency, seek knowledge and wisdom (Proverbs 16:16), and take moral decisions and actions congruent with biblical guidance (Proverbs 11:1; 1 Peter 1:15-16). In addition, there is the ethical issue that Christian business leaders using AI cannot disclaim responsibility for resulting decisions. As Saunders and Locke (2020) observed, "[T]he business is no less responsible for the AI system's decisions than a carpenter is for the cuts made by his saw" (p. 8). Proverbs 22:3 is a warning to look forward with prudence and avoid any danger. Thus, the Christian business leader should become educated about AI and be judicious about its use. AI is advancing so quickly in knowledge and use that it becomes even more critically important for Christians in business to avoid the temptation to remain ignorant about the workings of these AI tools while becoming more dependent on them. Combined with the biases and other human tendencies cited here, it is likely that it could become ever more challenging for a businessperson to detect whether the AI decisions are inaccurate or even dishonest or deceiving.

Rather than examining the typical moral issues of innovation and disruption, the remainder of this article will focus on dilemmas generated by the unique aspects of AI autonomous systems as described in the paragraphs above. These include the pursuit of knowledge, the preservation of honesty (lacking any hint of deceit) in all business activities, the avoidance of partiality in the treatment of customers, and guidance for maneuvering the regulatory environment.

BIBLICAL GUIDANCE FOR AI USERS

Creation and the Fall

Viewing ethical issues and concerns associated with AI through a scriptural lens begins with the Bible's account of creation in the first chapter of Genesis, concluding with Genesis 1:31: "And God saw everything that he had made, and behold, it was very good. And there was evening and there was morning, the sixth day." The passage notes that God created work, and that work is a good thing. Genesis 2:15 says, "The Lord God took the man and put him in the Garden of Eden to work it and keep it," signifying that God designed man to be a worker and a steward. As Plantinga (1995) observed, at that instant man's relationship with the land was in Shalom, describing this as a condition of "universal flourishing, wholeness, and delight… natural needs are satisfied, natural gifts are fruitfully employed" (p. 10).

Genesis 2:17 introduces knowledge into man's relationship with creation, with God warning, "but of the tree of the knowledge of good and evil you shall not eat, for in the day that you eat of it you shall surely die." After Adam and Eve disobeyed this commandment, they were banished from the Garden of Eden (Genesis 3:8-24). According to Plantinga (1995), Genesis 3:17-19 described how Adam and Eve's sin not only distorted their relationship with God and each other but also caused "even the good and fruitful earth (to become) … their foe" (p. 30), with both land and labor becoming less productive (Genesis 3:17-19). It is this interruption in the relationship between man and what God has created that reveals a need for, and source of, innovation, a disparity between what is ideal and what is actual (Drucker, 1985).

Plantinga's observation regarding this act of disobedience suggests several consequences for Christians to consider as they inform themselves about AI. First, Adam and Eve's actions cast attention on the role of knowledge for humankind. Pursuing knowledge while disobeying God disrupted the relationship among God, humanity, and creation. Second, Adam and Eve attempted to hide from God (Genesis 3:8) in the Garden. When God confronted them, they responded by blaming others regarding their decision to eat the forbidden fruit instead of openly admitting what they did (Genesis 3). Third, the interruption in the relationship between God and man also disrupts humans' relationships with other humans.

Each consequence above evokes a challenge related to AI to contemplate through a scriptural lens. Adam and Eve's decision to eat the forbidden fruit points to the first challenge, the pursuit of knowledge. Advances in the amount of knowledge possessed by AI and the rapid rate of adoption across the economy raises a critical concern of users not gaining or maintaining the knowledge and wisdom necessary to properly apply AI ethically and responsibly. The knowledge acquired from their decision also led Adam and Eve to attempt to blame others for their actions when God confronted them. This introduces

the second challenge related to AI, transparency and honesty without deceit (Mark 7:21-23) in decision making, related to using AI to make decisions when it is inappropriate or not disclosed. AI users are responsible for resulting actions and decisions, even when they do not recognize incorrect or deceitful outcomes because they do not understand the underlying process. The disruption in humans' relationships to other humans relates to the third challenge, the importance of avoiding partiality when using AI and being sensitive to possible discriminatory impacts. The final challenge for Christians is the need to recognize the urgency of addressing the challenges stated and to actively participate in opportunities to establish thoughtful governance.

Challenge 1: Pursuit of Knowledge

One of the more popular applications of AI is deep learning, a branch of AI based on the structure of the human brain (Singh, 2017). Google, Facebook, Microsoft, and Amazon are among the corporations who have invested substantially in deep learning to improve customer experiences. Deep learning helps humans with complex tasks, but its rapid growth and advancement raises concerns among experts. As indicated in the literature review, the "God-like" knowledge AI could possess could make the relative level of human knowledge like that of a snail. How might this disparity impact workers going into professional fields requiring substantial investments in human capital in the future? As knowledge-driven occupations, such as accounting, law, banking, and marketing, rely more on AI, there are concerns that workers will not develop the knowledge and skills necessary to recognize whether AI is accurately and ethically making decisions in such fields. This could be particularly true for recent graduates and other new entrants in a field.

Even current versions of AI applications conduct many tasks of marketers, accountants, bankers, attorneys, and other professionals. AI acquiring more knowledge may eliminate the need for any human knowledge in these fields. Charleson (2023) listed several ethical issues of concern regarding current AI used in marketing. She observed that ChatGPT's ability to write a blog post or generate a website's sales copy raises several dilemmas, starting with the need to disclose when content is created by AI. What she implied but did not say is that clients are paying for the marketing professional's knowledge and creativity, not AI-generated material. That is, clients are not receiving the product that they purchased, an example of false scales (Proverbs 11:1).

This article is among those that overlooked the bigger concern that should concern marketers and other professionals. As indicated earlier, tendencies such as human agency ("do not learn the context of how the tools work") and dependence lock-in ("will erode their ability to think for themselves") may tempt humans in a future AI work environment to not strive to gain knowledge, wisdom, and creativity (Anderson & Rainie, 2018). Relative to their predecessors, young marketers joining firms over the next few years may have less incentive to gain the same level of knowledge, to obtain the experience to acquire the wisdom to apply that knowledge, and to seek creative ways to market services and products.

Similar concerns regarding AI misuse in law firms and financial institutions are occurring. For example, a New York judge sanctioned lawyers who used ChatGPT to write legal briefs that included fake legal citations and quotes (Mangan, 2023). Human agency and dependence lock-in tendencies raise questions in the legal realm comparable to those posed in the marketing field. That is, will clients be appropriately and ethically served when an attorney uses AI to write legal briefs after the client has paid for the attorney's knowledge and expertise? Comparable reservations arise in the banking industry. Banks are required "to explain their decisions and actions" but the opaqueness of many AI processes makes this challenging or impossible (Shabsigh & Boukherouaa, 2023). In addition, AI's use of training data to generate new content poses the risk of "hallucinations," incorrect but reasonable sounding answers it can then deploy confidently. Any failure by the industry to recognize hallucinations generates "financial safety and protection concerns" (Shabsigh & Boukherouaa, 2023, p. 7).

These examples expose two potential AI concerns for Christians. The first danger is Christians not gaining or maintaining the knowledge and wisdom necessary to properly apply AI ethically and responsibly. Newer, young workers entering their professions may lack the incentive to acquire the human capital necessary to appropriately use AI as responsible Christians. This requires potential users of AI business applications to invest the time and effort needed to understand how AI tools work. Reinforcing their own knowledge and wisdom pertaining to their professional field will allow them to recognize when the AI is creating fictitious or inaccurate information. Proverbs 18:15 addresses the importance of knowledge and wisdom in business, and Proverbs 22:3 addresses the need to look forward for danger and avoid it. Several Christian authors have addressed the applicability of lessons in Proverbs to

businesspeople, including Dose (2012), who devoted an entire article to the business wisdom in Proverbs. Second, as we explore in the next section, Christians must avoid the temptation of relying on AI to create content when it is inappropriate or not disclosed.

Challenge 2: Honesty (Lacking Any Deceit) and Accountability

Many leaders have relied on AI to make the decision-making process more objective (Manlapig & Ko, 2019). However, when decision outcomes depart from what is anticipated, it is tempting to avoid accountability. Christians should remember that the knowledge Adam and Eve acquired after eating the forbidden fruit led them to blame others for their actions instead of openly admitting their own part in the decision.

Previous articles related to Christianity and business were clear that Christians' beliefs and actions should shape all aspects of their lives. Porter (1998) indicated that "one's faith is all consuming and should, to some degree, penetrate all areas of life, including business" (p. 10). In 1 Peter 1:15, Peter referred to an Old Testament verse to "be holy in all manner of conversation." Christians' lives should reflect a desire to be holy, including a lack of deceit in all that they do in business. Undisclosed or inappropriate use of AI to generate a product or service would be inconsistent with a lack of deceit in doing business.

Lack of deceit is also apparent in privacy issues associated with using AI in the financial sector. Experts are concerned about data leakages that could involve both private consumer data and proprietary financial sector data. Additional worries include AI's potential to deduce identities of anonymous data, as well as AI's ability to "recall" information about individuals after the data is disposed (Shabsigh & Boukherouaa, 2023).

Reconsider the earlier examples concerning marketers and attorneys described in the "Knowledge" section above. When ChatGPT creates marketing copy for a website or blog post, neglecting to disclose it was generated by AI is unethical from a secular ethical viewpoint and from a Christian viewpoint. In addition, the marketer's dishonesty makes this action one of the deceitful business practices identified as a dishonest weight that God detests in Proverbs 11:1. Christians need to consider whether a future lack of knowledge due to human agency and dependence lock-in will prevent them from recognizing when AI is deceiving them in other areas. For example, will humans be able to determine when AI-written marketing content crosses the gray line between puffery and deception? AI can already design "deep fake" images and sound to create a fictitious event, such as a celebrity endorsing a product (Coffee, 2022). Deep learning combined with AI's known capability to deceive humans could make it harder for marketing experts to detect all deceptions that AI could introduce into marketing. This is further exacerbated by accelerating developments allowing AI to better understand the nuances of language, choice of words, and intrinsic motivation of humans, making it easier to mislead or deceive humans. This would be especially true if AI reaches the stage of artificial generative intelligence described above.

This same danger of AI becoming smart enough and deceptive enough to deceive experienced professionals may also occur in the legal profession. In the earlier law brief example in the "knowledge" section, the judge was knowledgeable and wise enough to recognize that the AI written legal brief contained fake citations and quotes. Will future attorneys and judges attain enough knowledge to recognize when fake citations and quotes exist in long and complicated legal documents?

The potential undetected deceit introduced here poses a dilemma for the Christian marketer, accountant, banker, or attorney. As Saunders and Locke (2020) observed, once Christians adopt and use AI, they are responsible for resulting decisions or actions. That is, although the Christian entrepreneur or manager may not even recognize the deceit or deception created by the AI, using the tool makes them responsible for the deceit.

Challenge 3: Avoidance of Treating Customers with Partiality

Leaders should be aware that using AI could treat consumers with less or more partiality in violation of James 2:1-4:

> My brothers, show no partiality as you hold the faith in our Lord Jesus Christ, the Lord of glory. For if a man wearing a gold ring and fine clothing comes into your assembly, and a poor man in shabby clothing also comes in, and if you pay attention to the one who wears the fine clothing and say, "You sit here in a good place," while you say to the poor man, "You stand over there," or, "Sit down at my feet," have you not then made distinctions among yourselves and become judges with evil thoughts?

Enhanced opportunities. Historically, disruptive innovations have tended to benefit consumers previously excluded by an industry. Disruption describes a new firm's ability to successively challenge incumbent firms

(Christensen et. al, 2015). Successful disruptors have spotted potential customers neglected by firms established in the industry. They eventually moved beyond the new customers and began serving the other customers in the industry as well.

Examining previous research related to innovation suggests that AI can reduce partiality in the treatment of customers in some industries. For example, Morse and Pence (2020) examined existing disparities in the financial services industry and identified ways that innovative technology can make financial services more accessible to previously neglected households, particularly those who are younger, belong to an ethnic minority, or have a limited credit record. Howard (2019) reported that innovative technologies, such as crowdfunding, crowdsourcing, and cryptocurrency, made it easier for international investors to invest in US businesses, including those owned by minorities. Howell et al. (2021) observed that financial technology lenders were more likely than small banks to extend Paycheck Protection Program (PPP) loans to minority-owned businesses during the pandemic.

Similarly, Hoffman and Podgurski (2020) considered the possible benefits of AI in medicine, recognizing that examining large amounts of data quickly could reduce health-care costs and improve the quality of care provided. The ability of learning algorithms to identify whether a patient's treatment will be successful could allow doctors to improve treatment as needed. They also pointed out that allowing AI to process electronic health records could help researchers identify suitable candidates for clinical trials. Depending upon the range of the data collected, these observations support AI's potential to improve the quality of health care for the poor, minorities, and women.

Partiality evidence. Although Morse and Pence (2020) applauded the potential for innovation to expand access to financial services for disadvantaged consumers, they warned this outcome is not guaranteed. They cautioned that disparate access to technology, unequal access to educational resources, and designer-biased algorithms could restrict rather than enhance access to financial services. Likewise, given that US patient health records are scattered and incomplete, resulting data may not be representative of the population. This could be particularly true for the poor and minorities, as they are less likely to have a primary physician, health insurance, transportation, and other resources that would allow them to receive consistent care (Hoffman & Podgurski, 2020). Thus, AI could pose obstacles for less affluent patients. Such a barrier to the poor would violate the warning in James 2:1-9 to not show favoritism to the wealthy.

A further concern relates to assuming that delegating decision-making to AI insulates the outcome from discrimination. Manlapig and Ko (2019), Puntoni (2020), and Axelrod (2023) warned that decisions resulting from AI processes are vulnerable to any biases held by the designers of its algorithms. Likewise, Hoffman and Podgurski (2020) identified three reasons that AI can produce flawed outcomes in the medical industry for particular groups. Incorrect or incomplete data has resulted in measurement errors. Data used to teach the algorithm may have been skewed because it was under-inclusive, making it nonrepresentative of the more general population. Finally, previous periods of discrimination may have corrupted the data, resulting in a feedback loop bias that can propagate the discriminatory impact in the AI process.

Puntoni et al. (2020) provided two examples that further confirmed that AI's data collection process and algorithms could have introduced human biases with the potential to discriminate by race, sex, or other factors. First, in considering college admissions decisions, they warned,

> [T]he resulting AI experience may not only reduce the complex experiences of targeted marginalized populations to a set of more simplified sociodemographic attributes or stereotypes, but it may also knowingly accidentally expose marginalized applicants to racial profiling, misrepresentation, and economic redlining when used by admissions officers. (Puntoni et al. 2020, p. 137)

They made a similar observation regarding bank loan decisions:

Likewise, problems can arise when banks use AI to decide whether a consumer is worthy of borrowing money. Although algorithms may make the selection process more efficient, they can also systematically exclude consumers who live in a neighborhood with higher credit defaults. (Puntoni et al. 2020, p. 137)

> Certainly, any examples of discrimination, such as those above, are counter to God's prohibition against unequal treatment or favoritism in James 2:1-9.

Challenge 4: Guidance Maneuvering the Regulatory Environment

Dangers raised by AI experts have led to calls for legal, ethical, and trustworthiness guidelines. What would be

the goal if AI is regulated? Ideally, the resulting legal and ethical guidelines would protect both AI users and their customers. However, the actual development of AI legal and ethical rules will be a complex process. Hagendorff (2020) published assessments of 22 recommendations, emphasizing not only similarities but oversights as well. Several guidelines reflected accountability, fairness, and privacy issues. Less recognized ethical concerns such as cultural differences in AI ethics appeared in only two of the 22 ethical guidelines (Hagendorff, 2020).

Variances in ethical or legal guidelines across disciplines may well occur because AI influences so many different aspects of our lives. AI use is extensive in medical, scientific, business, computer science, and other fields. Guidelines developed in these areas would require different focuses. In addition, ethical guidelines are likely to vary across specialties within a particular discipline. For example, AI ethical guidelines in accounting are likely to differ from those in marketing. Puntoni et al. (2020) and Charleson (2023) described the need for including AI ethics in the code of ethics of their professional marketing organizations, with a concerted focus on using AI to write marketing content. In contrast, AI guidelines in auditing and other areas of accounting need to focus more on the difficulty of incorporating critical thinking, values-based judgments, and professional skepticism (Butcher, 2023). The point is that various professional associations within each discipline of business should extend efforts to develop or revise AI guidelines appropriate to their codes of ethics.

Developing AI ethics within professional organizations provides an opportunity for members to ensure the outcome reflects scriptural guidance regarding ethical business conduct. Christian business professionals can undertake additional measures to influence AI ethics within their disciplines. As mentioned earlier, Hoover (1998) provided an extensive list of Bible verses to remind Christians how biblical principles may influence AI ethics. Dose (2012) used Proverbs to offer additional guidance in this area. Also, Christians must educate themselves regarding AI in general and AI within their discipline in particular while remaining current regarding that discipline's use of AI. Remaining informed on any government actions regarding AI is also imperative. The intent in all these suggested areas should be that AI guidelines follow biblical principles for conducting ethical business.

Regulatory frameworks are developed in response to how businesses have behaved historically. Given that innovation often encourages new behaviors that test existing regulatory platforms, Hagiu and Rothman (2016) encouraged leaders to engage regulators rather than resist them. Their suggestions are consistent with scriptural guidance provided in these areas. The Christian responsibilities described above in the section on ethics also apply to those Christians with the opportunity and ability to participate in developing or refining legal regulations of AI and require understanding Christian business principles, AI, and existing government regulations. In addition to Hoover (1998) and Dose (2012), Copeland and Barnhart (2022) offered biblical perspectives of free trade policy. Given that both trade and innovation impose structural shocks on the economy, parts of their analysis are helpful to those who are assisting in AI legal guidelines. Studying these three articles may benefit the Christian businessperson with opportunities to participate in creating or revising AI ethics or regulation.

IMPORTANT TAKEAWAYS

Action Plan for Christians

Given that AI will become an ever-increasing aspect of their business and personal lives, it is important for readers to consider how Christian business professionals can utilize the power in AI without compromising their Christian character and decisions. Summarizing the suggestions offered within, this article highlights three key areas of attention for Christian professionals using or contemplating the use of AI. First, they should stay educated and informed on how AI is used in their discipline and their businesses' industry, as well as any conflicts it may pose to those with Christian principles. Secondly, they should be judicious in their use of AI. Thirdly, they should become involved as opportunities allow them to help develop legal and ethical guidelines in their discipline and their industry.

Stay Educated

AI's complexity, opaqueness in decision-making, and potential biases make it essential that Christian business professionals constantly educate and remind themselves concerning Christian biblical wisdom, AI's use in business, its advantages and disadvantages, and any warnings offered by AI experts. Doing so should limit the potential damage and pitfalls that may occur using AI in one's professional life. This does not require becoming an AI expert but finding items to read that offer guidance in layman's terms.

To further one's preparation for the integration of AI in business, the authors suggest reading the Bible frequently while focusing on its business advice. This will help the business professional think biblically about issues that may arise in the use of AI. As suggested earlier in this article, at least two older published articles, Hoover (1998) and Dose (2012), offer excellent wisdom from the Bible and cite specific verses containing practical business advice. Readers may find similar sources in Christian business journals.

One should also read popular business press articles regarding AI. For example, the *Wall Street Journal* frequently offers excellent articles on AI that are either written by AI experts or quote AI experts. Seeing the names of experts may lead readers to search for other items written by these experts in journals or online. This article mentions two experts that can educate readers. Axelrod (2023) described biases that occur in AI models. Hogarth (2023) offered potential harms from "God-like" AI. Remaining educated about AI will help professionals identify AI experts who write frequently in a way that sounds understandable to them.

We also seek to remain current on research regarding the wise use of AI, especially in Christian business journals. Several recent articles were provided earlier and include Locke (2023), Barnhart (2023), Copeland and Barnhart (2022), and Saunders and Locke (2020).

To keep current in AI application in our particular disciplines, we should read industry trade journals for any information concerning AI. Also, follow discipline-specific journals for AI articles.

Attend industry or discipline conferences that will enhance knowledge and education regarding AI in one's discipline or industry. Take advantage of opportunities to network in one's discipline or industry to stay abreast of AI and its use.

Adopt Judiciously

Christian business people should be judicious in using AI, especially when less experienced in that area. Transformative technology's potential to increase profit can pressure a businessperson to adopt AI early. However, a Christian approach to building profit should balance increasing profit (or wealth) against not violating Christian principles. As Hoover (1998) stated, "The Scriptures provide a balanced view of the wealth in the Christian way of life, leading Christians away from market idolatry and requiring careful choices" (p. 67). Decisions regarding when and how to adopt AI in a business require the careful choices mentioned. The less one can educate oneself about AI and its risks, the more careful such a choice must be. Proverbs 16:23 provides similar advice when it says, "[T]he heart of the wise makes his speech judicious." This is not only true of speech but decisions made. Proverbs 24:32 encourages a careful, judicious approach: "When I saw this, I gave careful consideration to it; I received instruction from what I saw." Similarly, Proverbs 16:23 says, "The heart of the wise will make his mouth judicious, and upon his lips, it will add persuasiveness."

Participate

Be involved where possible. Members of regional or national business organizations should seek opportunities to volunteer to help create discipline or industry AI legal and ethical guidelines. Likewise, those with positions in government should look for opportunities to become involved in developing legal or ethical guidelines.

CONCLUSION

Innovation is often met with resistance, but the speed of AI development and adoption across the economy raises concerns that differ from those generated by previous innovations, particularly for Christians. This article examines some of the concerning and unique aspects of AI and then uses disruptions generated by the Fall to identify four scriptural challenges posed by AI. The first challenge addresses the necessity of gaining the knowledge and wisdom necessary to apply AI ethically and responsibly. The next challenge examines the importance of maintaining honesty, lacking any hint of deceit and avoiding the use of AI to create content when it is inappropriate or not disclosed. The third challenge views AI's possible discriminatory aspects through the lens of avoiding partiality. The final challenge constructs a process to develop legal and ethical guidelines for AI users and seek ways that Christian business professionals can influence ethical guidelines for the use of AI within their disciplines.

The exploration conducted here suggests a couple of directions for future research. A more concentrated examination of any of the challenges considered here across different industries could be informative, particularly in industries such as health care and financial services where asymmetric information is a substantive concern. In addition, a closer examination of opportunities for AI related to the change in the relationship between man and the environment could be a productive area for

future research. Locke (2023) also provided suggestions for future research in the ethical issues with AI. Given the speed and scope of development and adoption of AI across the economy, it is imperative that Christian business professionals educate themselves about AI and actively embrace the opportunities presented for them to participate in the development of legal and ethical guidelines for AI users.

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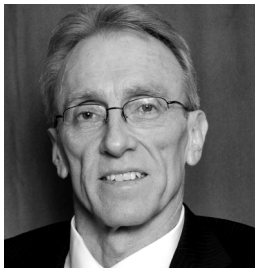

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