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IN SEARCH OF PEDAGOGICAL APPROACHES TO TEACHING BUSINESS ETHICS IN THE ERA OF DIGITAL TRANSFORMATION

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ABSTRACT

The authors explore the challenges in teaching business ethics in an era of digital transformation, provide an understanding of the limitations of traditional ethics approaches, and explore emerging approaches that may more effectively deal with the ethical complexities of the new digital era. Building on previous research conducted during December 2018 and January 2019 with regard to the skills required for jobs in the Big Data field, the authors argue that business ethics must be an essential skill for those working in this field. Ethical frameworks in Big Data and information management, including Universalist, Integrative Social Contract Theory, and Care Theory as well as agency, disciplinary, contextual, and outcomes considerations are discussed. The authors posit that traditional ethical frameworks, such as Universalist approaches, are no longer sufficient to guide decision-making in an era of digital transformation and the “datafication” of society. Business educators have a duty to cultivate ethical mindsets in their students and the adoption of “responsible innovation” principles such as those developed in the science and technology innovation literature.

Keywords *digital transformation, business ethics, Care Theory, Integrative Social Contract Theory, pedagogy, datafication*

1. Introduction

In January 2020, *The New York Times* published a leaked memorandum in which Facebook executive, Andrew Bosworth, discussed the outcome of the 2016 US election, quoting the political philosopher, John Rawls, to justify why Facebook's position on political advertising is fair and just:

The philosopher John Rawls reasoned that the only moral way to decide something is to remove yourself entirely from the specifics of any one person involved, behind a so called "Veil of Ignorance." That is the tool that leads me to believe in liberal government programs like universal healthcare, expanding housing programs, and promoting civil rights. It is also the tool that prevents me from limiting the reach of publications who have earned their audience, as distasteful as their content may be to me and even to the moral philosophy I hold so dear. ("Lord of the Rings, 2020" 2020)

Rawls published in the 1970s, and he is finding a new life as researchers and others search for answers to the vexing problem of what is the "moral" or "right" thing to do as new technologies emerge in all aspects of business, but particularly in Big Data, e-commerce, and artificial intelligence (AI). Given the relatively new ethical challenges arising from the digital transformation of society and business, research on Big Data and ethics is in the early stages of development (Kuc-Czarnecka and Olczyk 2020). Scholars have argued that teaching ethics should not focus on what students should think but engage students in discussions of often nonobvious implications of data science and AI (Heggeseth 2019). At a societal level, this concern is clearly visible in the public debates about the responsibility and power of technology corporations; the role of governments; and the responsibility of individuals as citizens, employees, and consumers. The seemingly ethical argument advanced by Facebook's Bosworth highlights how moral philosophy can be used to justify or account for actions that may have significant negative societal outcomes (Kim *et al.* 2021).

Teaching students how to evaluate such arguments is key to what educators need to do in the classroom, exposing the incubation of negative outcomes, particularly in the design of interactions of technology and humans. Tim Wu (2016), author of "The Attention Merchants" highlights "a sense of attentional crisis" that the human race is experiencing. He uses the term "homo distractus" to describe our species as now characterized by a short attention span and compulsively checking our devices. Further reinforcing the crisis, Wu quotes William James who opined that, at the end of our lives, we end up with experiences of "what we paid attention to," whether by choice or by default. He further emphasizes the role of ethics as addressed through the design of online interaction on social media. Design is what sets the terms of any online interaction, which he calls the "agenda-setter." Wu (2016) calls for a "human reclamation project," a key component of which is technologists who are devoted to a different ethic. He highlights the need of the hour, more tools that are designed to serve their owner's interests and less driven by other agendas. Instead of helping users achieve their goals, the design is often used to exploit users' weaknesses. Designers and companies must put users first and design tools that work for them, not against them. "Very few things are more important now to the future of humanity than design ethics," Wu says. "Design is the determinant, along with your will. But design creates the way you exercise choices" (Schwab 2018).

As companies shift from generating data to relying on data and data combinations to create business value (Berinato 2019; Goes 2014), we seek to revisit the responsibility of educators to ensure pedagogy equips students' ethical judgment vis-a-vis the societal implications of technology development. Zwitter (2014) argues that certain principles of contemporary philosophy of ethics might require changes in "philosophy, professional ethics, policy-making, and research." Berinato (2019) suggests that analytics projects add value when a team "asks smart questions, wrangle relevant data and uncover insights. Second, it must figure out—and communicate—what those insights mean for the business. The ability to do both is extremely rare ..." and requires a variety of capabilities, including project management, data analysis, data wrangling, design, and storytelling. In this paper, we suggest that asking "smart" questions and understanding what those answers mean to the business must be coupled with understanding the consequences of Big Data analysis for the individuals whose data are aggregated for our business purposes. Furthermore, our pedagogical approaches must highlight whether the decisions we make for business purposes may have detrimental individual or societal outcomes.

The need for ethics in data science has been frequently noted (Floridi and Taddeo 2016; Schwartz 2011; Fung 2015). For example, Fung (2015) recommends that every data science and analytics team should have onboarding training that covers the ethics of using data and exposes data scientists and engineers to the legal obligations and regulations of using data. Schwartz (2011) suggests that organizations should develop policies and designate a team of individuals to govern information management and analytics processes to align with ethics guidelines, laws, and regulations. It has also been noted that organizations that practice data science should provide ethical training and

participative ethical assessments to analyze ethical issues, but it is not clear that organizations have the breadth and depth of knowledge to effectively offer this training (Saltz and Dewar 2019). For business educators, how to integrate such critical thinking into curricula is a constant challenge and worthy of debate.

The research question addressed here is the following: How can business schools best educate students in data-related courses to ask “smart” questions by using ethical guidelines that they acquire while studying information management, Big Data, and analytics. Indeed, the National Academies of Sciences, Engineering and Medicine (National Academies of Sciences, Engineering, and Medicine 2018) recommend that disciplines should adopt a code of ethics as part of professional practice and that these codes be re-evaluated in line with new knowledge and developments. We argue that the time has arrived for business ethics practitioners and educators to heed this advice. The ubiquitous nature of Big Data (Kuc-Czarnecka and Olczyk 2020) and its critical link with creating value for businesses (Bazerman 2020) makes it imperative for a re-evaluation of pedagogical approaches to business ethics. We argue that there is a normative ethical case for including ethical approaches in the study of Big Data. However, we also argue that there is a business or “self-interested” approach to ensure that our students understand the ethical implications of Big Data processes to both individuals and society.

2. Background to the Research

This paper builds on research that we conducted as members of the New Jersey Big Data Alliance during December 2018 and January 2019 to develop a “New Jersey Big Data Workforce Roadmap” that could ensure a skilled workforce in the State of New Jersey is prepared for current and future technological changes (Johnson *et al.* 2021). In this research, we examined specific technological changes, such as AI, machine learning, and large-scale automation, that are impacting New Jersey’s major industry clusters (e.g., health care, logistics, food, financial services, clean energy, and advanced manufacturing), and the resultant skills needed for a competitive workforce. We found the fastest growing skills across these industries include predictive analysis, machine learning, and data visualization.

Also of interest was the significant demand for a workforce with “hybrid” skills, those that combine technological expertise along with softer skills, such as communication, teamwork, research, and problem solving, among others. Of importance, we provided a recommendation that stresses the need for lifelong training to maintain appropriate technology skills, which are rapidly changing, as a precondition for successfully participating in the data-driven economy. Our research concluded, “most companies have not realized the full potential of these technological advances due to a number of barriers, including talent shortages. By educating, training, and facilitating access to individuals with advanced computing and analytics skill sets, New Jersey can provide a competitive advantage for its employers” (Johnson *et al.* 2021). However, training in business ethics and applying ethical considerations through critical thinking skills was not a part of that research.

Although the initial intent for this paper was to conduct a systematic review of the extant frameworks in the research publications that focus on pedagogy and approaches to teaching ethics in Big Data and information management, we decided that an initial position paper on the topic would be more appropriate. We also decided to narrow the scope of this position paper to business ethics pedagogy and its link with Big Data, and to use an emergent approach to wrestle with the critical issues related to business ethics and digital transformation.

3. Pedagogical Approaches to Teaching Business Ethics: What Is the State of Play and What Is Missing?

Business school curricula typically include an ethics requirement as part of both undergraduate and graduate degrees. Such curriculum content typically resides in the core business curriculum (AACSB 2004) and can also be interwoven throughout the curriculum (Godwyn 2015).

Business ethics education, according to Association for the Advancement of Collegiate Schools of Business (AACSB) (2004), typically focuses on four themes. First, the responsibility of business to society (wealth creation, job creation, consideration of stakeholder interests, etc.). Second, business schools educate students about the importance of ethical leadership for effective management (ensuring that students understand the need to develop ethics decision-making skills and the relationship of normative ethics to business ethics). Third, students learn about frameworks that can assist with making ethical decisions (consequentialist, deontological, and virtue ethics are typically used) and guide ethical behavior. Fourth, to augment the shaping of ethical behavior, schools have incorporated corporate governance as an important facet of ethics training to ensure that students understand national and international legislation, guidelines, and professional codes of conduct.

Business school curricula cover these themes in core classes and in courses on Big Data, AI, information systems, and technology in business. Instructors use a mix of approaches, such as case studies, simulations, group discussions, and guest lectures, to improve students' understanding of ethics (Sexton and Garner 2020; Rutherford *et al.* 2012). However, Godwyn (2015) conducted qualitative research among business school students and educators across multiple continents and found that attitudes (and approaches) often conflicted. Godwyn (2015) found that, in many cases, educators who cared deeply about the underlying values and responsibilities of business often faced assumptions by students who demeaned ethics classes as unimportant, which led her to contend that:

Individuals manifest definitions of ethical behavior that fluctuate depending on the group or groups with which they are currently identifying. Using concepts introduced by Hannah Arendt and Emile Durkheim, I argue that because of the social solidarity ritualized in part by identification with the ethical values associated with the business world, business ethics and the resulting behavior often remain hidden and evade critical examination.

In echoing this concern, the AACSB report (AACSB 2004) notes that a persistent failure in business ethics is the "development of 'moral courage.' . . . Examples abound of individuals with 'solid' values who failed to do the right thing because of constraints imposed by authority structures and unethical corporate cultures."

Students drawn from generations such as Millennials and Gen Z have noted these failures across all four of the AACSB ethics themes. For example, in the sphere of ethical leadership at a societal level, students from these generations have been vocal participants in Black Lives Matter protests in 2020. In January 2021 Manchester United footballer, Marcus Rashford, aided by social media posts, exposed the abuse of UK government funding (for food aid) by a major food corporation during the pandemic (Campbell and Weale 2021). In both cases, young people used social media to expose leadership failures. However, social media use has also had negative consequences, and the limits to how business ethics are taught by faculty and received by students are more visible now because of the pace of change as well as a more fine-grained understanding of technology developments (and attendant problems). For instance, exploring factors that can affect trust in AI systems, Kumar *et al.* (2020) propose a framework for trustworthy AI that suggests that ethics of algorithms, ethics of data, and ethics of practice represent three distinct areas of concern. Besides AACSB, through Accreditation Board for Engineering and Technology (ABET), the science and engineering community has tried to explore the challenges of ethics in data science. "We have a responsibility to build a better world and that means arming students of applied science, computing, engineering, and engineering technology with the real-world skills and the moral courage to step into high-stakes environments with the clarity to know when something is right and when it feels wrong" (Milligan 2018).

The magnitude of societal implications of the ethical challenges in data science have become increasingly complex and incomprehensible in many ways over the years. For example, let us compare the responsibilities of engineers and designers for engineering disasters, such as the defective fuel system design of the Ford Pinto car (Ford Motor Company, Dearborn, MI, USA) in the late sixties through the mid-seventies, with that of Cambridge Analytica's obtaining of 87 million individual Facebook profiles by Cambridge Analytica and subsequently selling this information to 2016 election campaigns. In Ford's case, the company recalled 1.5 million cars built during 1971–1976 and the case led to significant regulatory changes about car safety. In the latter case, the company filed for bankruptcy during mid-2018, and this led to several lawsuits against Facebook and Cambridge Analytica (London, United Kingdom), but regulatory changes are still being argued in Congress. Monitoring of customer behavior on the World Wide Web and exploiting that data for selling services and products (and selling the customer data to other companies) have become a rampant business. Technology companies have developed a new normal for how we learn, watch television, drive, communicate, shop, and even express our feelings.

Educators need to teach ethics of accountability. For instance, an educator might encourage students to question who is responsible when a social media company shares information used for much deeper political purposes. Alternatively, how does one deal with the ethics of a driverless car that kills a pedestrian or the tangible effects of AI on the future of American jobs, transportation, or warfare? Responsible AI that is designed to benefit and not harm people calls for ethical rationality, just as we expect of our engineered structures and products.

A recent AACSB International-sponsored initiative called Management Curriculum for the Digital Era, led by Stevens Institute of Technology, NJ, brought together 100 institutions of higher education to investigate and identify business disruption due to digital transformation and how the academic community is preparing to address this. One of the task forces within this initiative focused on data science. The report of this task force noted that there is a different philosophical approach to how undergraduate courses present ethics in analytics and data science, as opposed to graduate courses. For instance, although programs at both levels offer emphasis on concepts such as algorithms, machine learning, and Big Data, undergraduate programs have a much heavier focus on the ethics associated with the use of these technologies, in addition to decision support systems. Although 10 of 25 undergraduate programs reported including ethics and human factors in their curriculum, only 7 of 32 graduate programs reported the same (Lyytinen *et al.* 2020).

Table 1: Elements of innovation and impact questions.

Elements of Innovation	Indicative Impact Questions
Product	What are the risks and/or benefits, what are the impacts we know this will have, what do we already know, and what might we want to know?
Process	What standards have been applied and how do we measure risks and/or benefits; who is in control and participation, and how do we know we are right?
Purpose	Why is the innovation or technology being developed? Who benefits and are those motivations transparent and in the public interest? What do the developers gain and what are the alternatives?

Table 2: Codes of ethics principles.

Principle	Guidance
Beneficence	Do good (promote individual and community well-being and preserve trust in trustworthy agents)
Nonmaleficence	Avoid harm (also by protecting security, privacy, dignity, and sustainability)
Autonomy	Promote the capabilities of individuals and groups (also by protecting civic and political freedoms, privacy, and dignity)
Justice	Be fair, avoid discrimination, and promote social justice and solidarity
Control	Knowledgeably control entities, goals, process, and outcomes that affect people
Transparency	Communicate your knowledge of entities, goals, process, and outcomes, in an adequate and effective way, to the relevant stakeholders
Accountability	Assign moral, legal, and organizational responsibilities to the individuals who control entities, goals, processes, and outcomes that affect people

Over the past decade, there has been an increasing awareness of the need for responsible or ethical development of technologies, and the history of this movement in terms of research policy has been covered by various authors (Stilgoe *et al.* 2013; Owen *et al.* 2012). Supported by science foundations and government science councils in the United Kingdom and the United States, the more recent focus in developing technologies with some “foresight” recognizes that innovation creates unintended externalities, which renders the conventional response of governing such consequences through regulation insufficient. Stilgoe *et al.* (2013) suggest that considering a regulatory framework before implementation might be required so that “data before market” can inform implementation. In the science and technology domains, there is a shift from governance of risks toward governance of innovation, and responsible innovation requires that we ask questions about the impacts across the dimensions of product, process, and purpose of the innovation (Stilgoe *et al.* 2013). These elements are in Table 1.

Stilgoe *et al.* (2013) provide four dimensions for a deliberative framework to govern innovation: anticipation, reflectivity, inclusion, and responsiveness. Some of these elements are found in the guidance of the European Commission’s Ethics Guidelines for Trustworthy AI (European Commission 2019) and they recur in the themes that Loi *et al.* (2020) discern in their evaluation of codes of ethics made public by 20 leading technology companies and summarized in Table 2.

4. The Limits of Universalist Approaches—Rise of Professional Codes?

In most professional disciplines, including business, the primary ethical frameworks used in the classroom draw on Universalist approaches. By Universalist, we refer to approaches to ethics that adhere to Western philosophies grounded in the idea that there are norms that hold true and transcend historical periods (Evanoff 2004). These broadly include a teleological approach that centers ethical decision-making around providing a positive outcome to some defined population or community. The Utilitarian conception of “the greatest good for the greatest many” is a prime example of an ethical and moral philosophy that conceptualizes “good” and “ethical” as what brings the most “utility” to the largest community. However, the focus on outcomes allows for morally defensible arguments that boundaries can be set on the community in question. As such, what is “good” and “ethical” for a

company, a community, or a nation state could become, what is good for “my” company, community, or nation state.

In contrast to the teleological approaches, deontological approaches also posit a standard set of norms that hold across historical periods but argue that there exists a set of universal moral truths (in general, do not kill, steal, or hurt) that transcend not just time but community. It is always wrong to violate a universal truth in this conception of ethics and morality. However, the difficulty with this approach is that the subset of universal moral truths is admittedly small (as noted, killing and stealing and perhaps the more amorphous hurting). This often results in the concept that all other decisions and acts outside of these universal moral truths are open to interpretation. For instance, lying is generally bad, but because one can lie without intent to hurt, kill or steal, lying may be acceptable under some circumstances.

Another important approach to ethics in the professional education setting is the importance of ethical decision-making. The basic conception is that professional students need practice in confronting ethical dilemmas and in developing a process by which they can confront and process underlying assumptions. The goal and hope of this approach are that, by practicing and solving ethical dilemmas in the classroom, students will be better positioned to solve those ethical dilemmas in the real world.

In recent years, researchers have raised concerns about the limits of these Universalist approaches to ethics for use in business, and specifically Big Data (Zwitter 2014; Evanoff 2004; Donleavy 2007). For Zwitter (2014), Big Data changes our assumptions about free will, power, and individuality, whereas Donleavy (2007) argues that ethics is and should be concerned with relationships rather than atomistic individuals. These contextual elements are missing from Universalist approaches (Evanoff 2004). However, classical frameworks developed by Kant (deontology), Hobbes (teleology) and more recently the work of Rawls (ethical decision-making), all assume that valid ethical stances presuppose universal application.¹ In addition, (Donleavy (2007) posits that Universalist frameworks can be exploited or abused by dictators (“ends justify the means”). Instead, recent approaches such as the Integrative Social Contract Theory (ISCT) and the Care Theory build on the essence of Universalist frameworks when considering context and including the realities of competition.

Expressing similar concerns about the limits to Universalist theories and, in particular, utilitarian frameworks, Taylor (2016) discusses the complexity that faces the growing responsible data movement in relation to data-sharing practices to tackle development problems in lower and middle income countries. Utilitarian perspectives assume that an objective “litmus test” can be developed to evaluate under what conditions digital data can be shared for humanitarian purposes and to advance the “common good.” Taylor (2016) considers the specific case of lower and middle income countries where mobile telephone operators have been cautious to share data. She provides a nuanced discussion of specific cases that involved European operators who are reluctant to share call detail records and uncovers reasons for their reluctance. Taylor (2016) discusses the assumptions made by different actors in the responsible data movement, the (underlying) disciplinary worldviews, and their incentives.

There are competing claims between the Big Data companies and the responsible data movement due to fundamental issues such as power, rights, and legal responsibilities, and the issue of the nature of knowledge versus the nature of data. Taylor (2016) endorses the perspective of Purtova (2015) that digital data are a “system resource comprising an ecosystem of people, platforms and profiles,” which makes data as a public good argument difficult to sustain. In line with Purtova (2015), Taylor (2016) believes that knowledge generated from digital data can be transformed and turned into a public good. Taylor (2016) cites the fact that the World Economic Forum adopted this distinction by referring to a “personal data ecosystem” to explain how knowledge produced through personal data is a commercial process that occurs through the contact that companies have with individuals. This development fits with the reshaping of individual data ownership and with compensating people for the use of their data (Berners-Lee 2019).

One important observation we make is that various disciplinary worldviews weigh the costs and benefits of using a dataset differently. Data scientists use a framework that moves from identifying risks and harms of using specific types of data and then evaluating the potential for these events to occur. Next, beneficiaries are identified and only then are the positive (or negative) effects that might result from the use of the data are determined. In contrast, social scientists move from identifying the context of a problem that needs solving and then finding the data to help solve the problem, as summarized:

- Identify risks of data usage and evaluate potential
- Apply to solving problems
- Identify social problems to solve
- Find data to solve problems

¹In addition to Evanoff (2004), we refer readers to the work of Bauman (1993) for a more comprehensive review of classical approaches to ethics. Baumann Z. 1993. *Postmodern Ethics*. Oxford: Blackwell.

ISCT requires prior consent of the contract parties to an engagement or transaction. Donleavy (2007) discusses the problems with prior consent as riddled with assumptions and contradictions. For example, contracts carry normative force because of prevailing power structures (having to agree to an online provider's terms of service even if one does not fully agree, just to gain access to that service); those signing the contract might not fully understand the implications to what they consent; and children are not generally covered well by ISCT.

Although ISCT tries to identify hyper-norms that have been difficult to specify clearly in business contracting, Care Theory fills that vacuum. A feminist ethicist (Noddings 2003) formulated the first Care Theory framework. She proposed that an ethical framework is concerned with justice and that this is merely the superstructure underpinned by a foundation posited to be the care and concern for the subject. Thus, Care Theory draws on the belief that justice is not possible without caring and a sense of compassion that moves on to consider rights, equality, or merit. Donleavy (2007) argues that a framework that merges Care Theory's contextual sensibility and a focus on needs rather than interests and a commitment to dialogue, provides a sound basis for moral deliberation. He ends by asserting that such a framework is participative rather than detached, must support Kant's moral norm of treating people as ends rather than means, and maintains a non-Universalist point of view, which considers local norms, traditions, and understanding.

Researchers in biomedical fields have raised concerns about ethics in their fields (Floridi and Taddeo 2016; Mittelstadt and Floridi 2016) as data sources and aggregated datasets proliferate. Medical and biomedical data are highly sensitive at the individual level and at the group level. When a private equity company such as Blackstone (New York, NY, USA) acquires Ancestry.com (Lehi, UT, USA), ethical foresight is necessary to anticipate the implications that arise from making a profit from a DNA testing database and associated information about individuals and families. What are the interests of the investors? Furthermore, how do those interests conflict or align with those of families who wish to understand their cultural and biological heritage? Will those emotional needs that lead to individuals signing up to become an Ancestry client supersede the profit needs of the investor?

Smart questions also include asking whether the company and the clients using its technology define value the same way. Floridi (Mittelstadt and Floridi 2016) suggests that gaps in perspective occur in the following areas:

1. Informed consent
2. Privacy rights, including anonymization and data protection
3. Ownership of data
4. Epistemology and objectivity, including assessing ethics of Big Data
5. Big Data divides
6. Group-level ethical harms
7. Fiduciary relationships that become data saturated
8. Distinction between commercial and academic practices and harm to subjects
9. Future problems of ownership with data generated from aggregated datasets
10. Meaningful access rights to data subjects who lack resources or knowledge.

Nunan and Di Domenico (2013) echo these concerns as well as Zwitter (2014), who argue that we are often forced to judge by using ordinary moral norms in "unchartered realms." As Blackburn *et al.* (2020) show, from data collected globally, the Fourth Industrial Era society is so digitally connected that power is often distributed and networked. Individual agency is often compromised, and Zwitter (2014) quotes Simon (2016) that individual knowledge and ability to act is one of the most difficult phenomena that we witness for the "governance of socio-technical epistemic systems." For example, during the summer 2020 Black Lives Matter protests in the United States (and globally), many individuals who felt aligned with the goals of the protests but concerned about the violence, were confused about how to signal their support. Many felt that social media posts by friends and acquaintances left them no choice in how they discussed their support, and some felt it best not to say anything. In contrast, many organizations and corporations saw the opportunity to post messages of support, despite having a history of racism or lacking values aligned with those of the protesters. This "networked agency" (Floridi and Taddeo 2016) becomes a factor when judging the moral responsibility of individuals or agents.

5. Toward a New Pedagogy of Business Ethics

It is important to acknowledge the ongoing polemic contrasting normative and behavioral approaches to teaching ethics (Kim *et al.* 2021; Bazerman 2020). It is clear that we need both approaches in teaching business ethics to

provide a fuller understanding of the complexities of this issue. Students need to understand that normative approaches emphasize prescriptive evaluations of alternative courses of action (Stahl and De Luque 2014; Tenbrunsel and Smith-Crowe 2008; Treviño and Weaver 1994), whereas behavioral ethics approaches focus on understanding factors that influence ethical behavior (Cropanzano and Stein 2009; De Cremer, Mayer, and Schminke 2010; Treviño, Weaver, and Reynolds 2006; Banaji, Bazerman, and Chugh 2003).

De Los Reyes *et al.* (2017) suggest that normative (how) and behavioral approaches (why) offer complementary perspectives and integration can provide business practitioners with guidance to act ethically while understanding that, as humans, there will be behavioral challenges in specific contexts (De Los Reyes *et al.* 2017). In other words, these approaches cultivate a moral code and establish what moral courage is, while encouraging self-reflection and curiosity with regard to outcomes that may be inconsistent with both the accepted definitions of moral code and moral courage.

Thus, how should pedagogy change to incorporate these approaches in curricula? Kuc-Czarnecka and Olczyk (2020) suggest that the behavioral sciences (economics, management, business, political science, and sociology) lag in publishing on the issue of ethics and Big Data and contend that a unique set of competencies are required to understand the issues:

the contextual and multi-level phenomenon of ethics and Big Data is a demanding research area, requiring extensive knowledge, both philosophical and purely technical. These factors contribute to the relatively low popularity of the issue . . .

Saltz and Dewar (2019) noted that, because data science is a new domain, the full breadth and depth of its ethical challenges have yet to be fully explored, and although the field has grown, it often excludes ethical analysis in both practice and academia. In addition, there is disagreement about what constitutes ethical versus unethical use of data science. They suggest the creation of a framework of the different ethical challenges that a team might encounter when working on a data science project. Furthermore, they suggest that these identified challenges can then be used proactively when executing the project.

Saltz and Dewar (2019) also noted an increasing dialog on the subject of ethics in data science as demonstrated by the significant increase in the number of recently published articles on this subject, with the majority of the identified papers reported to have been recently published, only 8 of the 80 identified articles were published before 2014. The highest concentration of articles was published in information technology focused journals and/or conferences (17), more than five papers published in each of the journals and conferences focused on philosophy and/or ethics, information technology and/or engineering ethics, and Big Data and/or data science, and the remaining seven in law and health.

Insight from the research of Saltz and Dewar (2019) with regard to pedagogy could provide a useful framing for the classroom. They acknowledge four challenges, including the need for an ethics framework, the newness of the field, data-related challenges, and model-related challenges. The latter two themes are identified as two general paths to potentially cause harm:

1. Data-related challenges: the preparation, storage, and dissemination of data could impinge on the privacy or anonymity of the subject or cause bias in the resulting analytics. For example, just because data are available does not make it ethical to use that data.
2. Model-related challenges: incorrectness of a data science model, for example, in which some subjects could be misclassified, resulting in harm. A model might operate correctly, but the objective of the model is inherently unfair to some subjects. Although data science can bring objectivity to decision-making, there is subjectivity within data science modeling that involves making decisions about which algorithm to use, which data sources to use, whether one data point should be used as a proxy for a missing fact, and how to interpret results.

A *New York Times* article (Singer 2018) compares the ethic of the medical profession “First, do no harm” with that of the Silicon Valley “Build it first and ask for forgiveness later!” Now, with the role of social media in question for creating an “alternate reality” for different sets of consumers, there are serious ethical implications for big tech companies. Some universities that helped produce some of Silicon Valley’s top technologists are introducing ethics in their design and data science curriculum. Harvard University and the Massachusetts Institute of Technology jointly offered a new course on the ethics and regulation of AI. Stanford University and Cornell University of Texas at Austin now have courses in computer science ethics. Cornell introduced a course in data science that focuses on teaching students “how to deal with ethical challenges.”

The Harvard–Massachusetts Institute of Technology courses focus on the ethical, policy, and legal implications of AI. Some jarring examples of bias and stereotyping are covered, such as the spread of algorithmic risk scores that

use data to predict the probability of someone committing a crime based on whether a person was ever suspended from school or how many of his or her friends have arrest records. These courses that teach about the ethical issues in technology development have now become a necessity in the teaching of powerful tools such as machine learning, AI, Deep Learning, and other similar tools that involve computer algorithms that can autonomously learn tasks by analyzing large amounts of data. The fear is that such tools could ultimately alter human society by controlling social communications and responses. The consequences could be irreversible.

6. Conclusion

In this research, we reviewed the prevailing approaches to teaching business ethics and provided specific examples of how these approaches are insufficient in the era of digital transformation. The question that will continue to drive the concerns of educators is how to integrate these findings within a data science curriculum. These ethics concepts could be integrated within existing classes with the creation of key questions for students such as those outlined by Mittelstadt and Floridi (2016). These questions would provide students with a basic toolkit to think about ethical challenges embedded in a data science project.

We contend that faculty should revise traditional teaching approaches to contextualize ethics teaching in the context of the ongoing rapid digital transformation in global business. Emerging technologies such as AI and visualization pose unique ethical challenges that need to be addressed in business ethics curricula. We reviewed the current approaches to teaching business ethics and highlighted the deficiencies in these approaches in addressing the ethical challenges that face an increasingly technology- and data-driven world. We discussed the limits of Universalist approaches to ethics in current business environments in which decision-making is driven more and more by data, technology, and algorithms. We then outlined an approach toward a new pedagogy in business ethics that incorporates both normative and behavioral approaches while addressing the modern-day data- and model-related challenges.

Our aim in this paper was to explore the research question: How can business schools best educate students in data-related (data acquisition, processing, storing, visualizing, and reporting for decision-making) courses to ask “smart” questions by using ethical guidelines that they acquire while studying information management, Big Data, AI, visualization, and analytics? In essence, we tried to make a normative case that traditional Universalist approaches to teaching ethics are inadequate when the subject matters are Big Data and AI. We support this contention primarily by examining previous research on teaching ethics in business schools and by looking at the accreditation standard. We then report on emerging ethical approaches such as the feminist centric ethic of care and integrated social contract theory as possible alternatives to existing approaches to teaching ethics. Throughout this paper, we also attempt to situate the discussions of ethical frameworks as delivered in the classroom, with the ethical dilemmas and ethical problem solving needed in the real world. Taken together, our limited aim is to identify possibilities for improving ethics education within the context of teaching business school students about Big Data and AI.

Our paper has limitations. The exploratory nature of the paper means that we have not empirically tested or presented any statistical data. The intent was to curate literature that addresses what accredited business schools are supposed to teach in ethics classes. It is possible that business schools are already adjusting to the need to alter ethics education in the new world of Big Data and AI. We see little obvious evidence of this based on our own experiences, but, clearly, deeper and more systematic analysis of business ethics education today would be welcome additions to this exploratory work. A second limitation was that we do not attempt to explore the teaching of ethics outside the United States, although we have introduced frameworks that originate in Europe (Kuc-Czarnecka and Olczyk 2020; Floridi and Taddeo 2016; Lyytinen *et al.* 2020; Owen *et al.* 2012; Nunan and Domenico 2013), we have not considered emerging economies. We also recognize that the problems we identify and our suggested solutions may not translate outside of the context of US business schools. Future research should examine how well the frameworks presented here translate to other cultural contexts.

Many business schools are initiating new pedagogical approaches in business ethics and are attempting to address it by incorporating approaches that draw on critical thinking aligned with principles that question assumptions that reveal nonobvious ways that Big Data use incubates negative outcomes. Although this is a start in the right direction, business schools need to go further in revamping their ethics curricula in light of the challenges laid out in our research. Business schools should consider ethics education as a vital part of their curricula and not relegate it to the periphery. Further research into innovative ethics curriculum designs and innovative methods of delivering ethics education will help in revamping business ethics education for the modern world. As proposed earlier, embedding the practical examples of ethical take-aways embedded in internship projects and capstones should be explored further.

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