Social Media Identity Manipulation: A Review in the Context of Industry 4.0 and Society 5.0

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Abstract

Industry 4.0 shaped Society 5.0 which focused heavily on people and gave equal merit to economic development and the resolution of public issues through the utilization of a system that immensely incorporates both cyber and reality. Cyberspace such as media social is heavily used and allows users to become completely anonymous which ultimately gave birth to a new type of crime such as identity manipulation. The advancement of technology has made it simpler for an average person to change the mannerisms, appearance, and physical makeup of another human being, which is often done without their knowledge. When it comes to identity manipulation done by an individual or law enforcement even for a good reason, arguments may ensue. Is it wrong for an individual or law enforcement to pull off identity manipulation in order to lure internet predators or to deter crime by arresting the perpetrator before the crime happened? Isn't this act can be viewed as the act of deceiving somebody into violating the law? These examples of formal arguments about the appropriate course of action that needs to be taken when confronted with a moral issue are known as ethical theories. The aim of this paper is to discuss the three different Ethical Theories including Kantianism, Utilitarianism, and Devine Command Theory on social media identity manipulation in the context of Industry 4.0 and Society 5.0 using secondary data and information acquired from the literature review. Finally, we can reach the conclusion that what is ethically right in societies should be respected and that people should never be used for another's self-gain.

Keywords: Ethical Theories, Information and Communication Technology, Identity Manipulation, Industry 4.0, Society 5.0

Abstrak

Industri 4.0 membentuk Masyarakat 5.0 yang memberi tumpuan yang besar kepada manusia dan memberikan merit yang sama kepada pembangunan ekonomi dan penyelesaian isu-isu awam melalui penggunaan sistem yang sangat menggabung kedua-dua alam siber dan realiti. Ruang siber seperti media sosial banyak digunakan dan membolehkan pengguna berselindung tanpa nama yang akhirnya melahirkan jenis jenayah baharu seperti memanipulasi identity individu lain. Kemajuan teknologi telah memudahkan orang biasa untuk mengubah ragam, penampilan, dan bentuk fizikal individu lain yang sering dilakukan tanpa pengetahuan individu tersebut. Apabila ia melibatkan manipulasi identiti yang dilakukan oleh individu atau penguatkuasa undang-undang walaupun atas alasan yang kukuh, hujah dan persoalan tetap mungkin berlaku. Adakah salah bagi seseorang individu atau penguatkuasa undang-undang untuk melakukan manipulasi identiti untuk memancing pemangsa internet atau untuk menghalang jenayah dengan menangkap pelaku sebelum jenayah itu benar-benar berlaku? Bukankah perbuatan ini boleh dilihat sebagai perbuatan memperdayakan seseorang supaya melanggar undang-undang? Contoh-contoh hujah formal mengenai tindakan yang sesuai yang perlu diambil apabila berhadapan dengan isu moral ini dikenali sebagai teori etika. Kertas kerja ini akan membincangkan tiga Teori Etika yang berbeza termasuk Kantianisme, Utilitarianisme, dan Teori Perintah Devine mengenai manipulasi identiti media sosial dalam konteks Industri 4.0 dan Masyarakat 5.0 menggunakan data sekunder dan maklumat yang diperoleh daripada tinjauan sastera yang menyeluruh. Akhirnya, kita boleh mencapai kesimpulan bahawa apa yang betul dari segi etika dalam masyarakat harus dihormati dan bahawa orang tidak boleh digunakan untuk keuntungan diri orang lain.

Kata kunci: Teori Etika, Teknologi Maklumat dan Komunikasi, Manipulasi Identiti, Industri 4.0, Masyarakat 5.0

■**1.0 INTRODUCTION**

Adaptation to technological advancement is vital in the current era, as technology has made many significant contributions to the development of society in modern times. Nevertheless, the progression of technology is typically associated with industrial revolutions, which are associated with the digitization of manufacturing in the way products are produced (Marr, 2018). Industry 4.0 is associated with the Fourth Industrial Revolution, which was formulated by Klaus Schwab. It is a planned industrial revolution that emphasizes the manufacturing environment's impact with radical changes in operations (Pereira et al., 2020). It was announced at the 2011 World Economic Forum in Davos, and Germany is the leader in implementing Industry 4.0, which aims to significantly reduce production costs due to the mass introduction of cyber-physical systems in production (Yilmaz et al., 2017). Furthermore, the characteristics of Industry 4.0 are associated with industrial management, where it promotes interconnection between people and systems through data exchange in real-time which enables enhanced digitization in the whole value chain (Pereira et al., 2020).

Society 5.0 is a concept to create a human-centric society that has a balance between economic advancement along with addressing social challenges so people can have a high quality of life (Fukuyama, 2018). The main purpose of Society 5.0 is to enhance the quality of life by benefiting from the technological and innovation modifications for the benefit of humanity acquired by Industry 4.0 (Pereira et al., 2020). The radical changes addressing social sustainability challenges enable organizations to provide goods that people require at the time most needed, therefore optimizing the whole process of sustainable livelihood in a local environment (Potočan et al., 2021). With the implementation of new methodologies in society, Japan is a step ahead compared to the rest of the world in Society 5.0, where many first-world nations are still adapting to the challenges created by Industry 4.0 (Pereira et al., 2020). Table 1 below illustrates the main aspects of Industry 4.0 and Society 5.0.

Table 1 Industry 4.0 and Society 5.0 (Pereira et al., 2020)

Industry 4.0	Society 5.0
End of 20th century	21st century
Information Society	Supersmart Society
Automation Information (computer, internet)	Digital transformation
Cloud	Big Bata

People have been living and adapting over the years with technology to advance their lifestyles from industry 1.0 to 4.0 and social 5.0. For many years, these were the keys to technological adaptation and evolution for people all over the world. Industry 4.0 is the digitalization of industries with smart manufacturing to excel in businesses, apart from that, Society 5.0 is a drift of concentration of system and cyber technology for netizens (Polat, 2021). Such technological advancement helps balance economic development and solve social issues with technology innovation systems, but it also leads to information ethics issues. Our daily lives include an increasing number of identification and authorization activities which also be used together with social media. Social media is defined as websites and applications that enable users to create and share content or to participate in social networking (Carr & Hayes, 2015). It has become the new trend of present-day communication, which has many benefits, as it is incorporated with much faster internet access, and the use of smartphones and social media applications has enabled people to interact easily at their fingertips (Sithy, 2020).

Table 2 Act of Identity Manipulation and Example

Act of Identity Manipulation	Example
Used of identify or trace a person's identity	Name, social security number, birth date, and location.
Information that can be connected or tied to a certain person	Health, finances, education, and work information.

The act of identity manipulation, as shown in Table 2, commonly include the use of personal data that carries the potential to establish or track an individual's identity, including their name, social security number, date of birth, and location and other information that allow the ability to be linked or correlated with a specific individual, including information pertaining to their health, financial status, educational background, and work. It is a pernicious crime that upends society and people's lives all around the world (Helser 2016). However, with the rise of social media and the advancement of technology, identity manipulation has become much easier to be done by anyone and even harder to combat. These ethical issues should not be taken lightly as Individuals, especially teenagers and younger adults between the ages of 15 and 25, make up a significant percentage of active users across all social media platforms and the use of such technologies is an integral part of their everyday lives (Sirola et al., 2021). Risks to minors include synthetic identity theft, which occurs when criminals create new identities by piecing together real and made-up information (Kelligrant, 2018). When applied to the context of social media, the phrase "identity manipulation" describes the act of inventing completely bogus online identities with the intent of defrauding or otherwise

exploiting other users of the platform. This can happen in several different ways, such as the creation of fake profiles, the impersonation of other people without their knowledge, and the use of bots in addition to other automated tools in order to post fake news or spread false information.

The invention of false online profiles for the purpose of attempting to manipulate other people is an act that can be used to coerce individuals into disclosing private information or to exert some form of control over their actions. This subject has given rise to a number of current challenges. Lack of research hinders our knowledge of identity manipulation, which is still a challenging issue to solve. Identity manipulation is a highly organized crime that frequently targets well-known people (Goode and Lacey 2018). These days, identity manipulation risks are developing at an exponential rate, and the real number of victims of identity manipulation and financial fraud can only be speculated (Berghel 2012).

■2.0 LITERATURE REVIEW

In the context of Industry 4.0 and Society 5.0, the term "identity manipulation on social media" describes the practice of misusing advanced technologies to generate and spread false or misleading information about people or organizations on social networking sites in order to manipulate an individual's or group's online reputation. In the environment of Industry 4.0, this is made easier through the utilization of artificial intelligence and the internet of things (IoT), both of which make it possible to generate and disseminate large numbers of multiple identities, photos, and video files. This is further made possible in Society 5.0 by the growing interconnectivity and integration of the physical world and the cyber world among individuals, organizations, and systems.

As the number of social media platforms and internet users grows, information can easily reach a global audience in a matter of seconds, even if it is inaccurate or misleading, which in turn makes it more difficult to detect and combat, resulting in serious repercussions for both individuals and society as a whole, including the weakening of trust in established organizations and the shaping of public sentiment (Amichai-Hamburger et al., 2013). For example, in most cases, the photographs and videos that served as evidence in legal proceedings or police investigations were regarded as trustworthy sources of information (Walker-Roberts et al., 2018). The software tool known as Deepfake, which is based on machine learning, has made it much easier to modify or manipulate videos and photographs. The introduction of Deepfake in recent times has intensified the issue of false information, including identity manipulation (Alibašić & Rose, 2019). The photographic or video evidence may no longer seem reliable (Wubet, 2020). There is growing concern regarding the possibility of Deepfake technology being used by people who prey on children as it manipulates identities even during live-streaming videos by converting an adult into the face of a child (Westerlund, 2019).

Table 3 Ethical Concern and Explanation

Ethical Concern	Explanation
Privacy	Personal information collected and shared without consent.
Deception	Misleading others by impersonating an individual.
Inequality	Facilitating the occurrence of prejudice, bigotry, and unfair treatment.
Responsibility	The dissemination of inaccurate information

Identity manipulation on social media raises several ethical concerns in the context of Industry 4.0 and Society 5.0 as shown in Table 3. First, privacy. The use of advanced technologies to manipulate another individual's identity or to distribute inaccurate or misleading information about them leads to a violation of their privacy and hinders their freedom. (Chesney and Citron 2018) say that there is a high chance that people will face serious consequences as a direct result, such as psychological harm, loss of credibility or job, physical threats, and more. Second, deception. It is possible to mislead people and influence public perceptions by utilizing AI-generated Deepfakes such as to generate an identity manipulation by pretending to be someone, especially someone influential. During the Christmas holiday, a British broadcaster aired a "Deepfake" speech that featured a fake version of Queen Elizabeth, which the audience didn't even realize until the fake Queen Elizabeth danced on the TV screens (Rahim, 2020). The stunt was intended to give a subtle warning of how advanced technology has enabled identity manipulation and the effortless spread of false news. Third, Inequality. It is possible for vulnerable groups to be severely impacted by the usage of advanced technologies in identity manipulation. This is because they could be more susceptible and don't have the same means to protect themselves. Revenge pornography using Deepfake is set in the context of gender inequality and usually affects women, causing emotional and reputational harm (Jaiman, 2020) and lastly, responsibility. A growing number of users turn to social media as a source of information (Atske, 2022) even though social media firms themselves are grappling with false information about political events, the pandemic, war, and any other issues on their platforms. Not all influencers or amateur companies that build for the purpose of sharing information and news via social media have the same expertise or resources as a big well-known news site which makes them prone to share unconfirmed news or inaccurate information. Some of these influencers or amateur companies even share the information for the sake of viral and to gain more views without taking responsibility to investigate the authenticity of the news or information.

Ethical theory is a subject area of philosophy that investigates questions pertaining to moral behavior and how individuals should have to conduct themselves in society. It offers a conceptual foundation for comprehending the ethical principles that underpin people's

actions and the choices they make. Different ethical theories present varying points of view on what constitutes moral right and wrong, and they are capable of being applied to a diverse number of ethical dilemmas. They can be useful in comprehending and reviewing ethical issues, and they can also assist individuals and organizations in making choices. Three of the ethical theory that will be discussed in this paper is Utilitarianism, Kantianism, and Devine Command Theory.

Utilitarianism is an ethical theory that determines right and wrong by focusing on the outcome that holds the belief that the outcome that produces the greatest good for the greatest number is the most ethical choice (Scarre et al., 2016). In other words, utilitarianism theory is an act or rule that is "right" depending on whether it results in the increase of the aggregate "happiness".

The categorical imperative, often known as Kantianism, is a commandment or ethical law that everyone is obligated to follow, irrespective of their preferences or their circumstances. The objective of this theory is to present a justification for the rational component that is a part of human activity, more especially the kind of behaviour that adheres to morality. In order to have a firm grip on how this theory is implemented in the real world, one must first have a solid understanding of the factors that contributed to its formation (Mensah & Agyemang, 2020). Kant wanted to build a moral code that rejected any idea of self-interest as well as specific personal situations. This was one of Kant's primary goals in developing his ethical theory. Kant wrote in his book "Groundwork of the Metaphysics of Morals", that he intended to seek out and define the categorical imperative as the most fundamental principle of morality (Jemberie, 2017).

According to the Divine Command Theory, morality is indeed related to God, and obeying God's orders fulfils one's moral commitment. According to the Divine Command Theory, the ethically correct course of conduct is the one that God demands or commands, since morality ultimately rests on God's instructions or character. The specifics of these divine orders vary depending on the faith and worldview of the unique divine command theorist, however, the central tenet of the idea is universal: God is ultimately responsible for morality and moral responsibilities, where holy books serve as the guide (Abubakar Zaria Ibrahim, 2021).

■3.0 METHODOLOGY

This case study paper examines social media identity manipulation in the context of Industry 4.0 and Society 5.0. This paper was developed using secondary data and information obtained from extensive reviews of relevant literature pertaining to Social Media Identity Manipulation, Industry 4.0, Society 5.0, and ethical systems associated with ICT. A total of 36 publications were reviewed while developing this paper.

■4.0 RESULTS AND DISCUSSION

Technological advancement and tools that are developed by Industry 4.0 play a significant role in improving the quality of life of society enabling a more motivated, happier, and satisfied community (Pereira et al., 2020). This merit promotes positivity and subsequently, an increase in productivity in the community where awareness of ethics will play a significant role as the community shifts the paradigm towards Society 5.0. Digital transformation creates new values and will be a pillar of industrialization for many countries. It is critical to leverage technological advancement and also manage the negative aspects of the "digital society" which involves security risks and privacy issues, that will become apparent (Fukuyama, 2018). Information and communication technologies (ICT) have had a major impact on many parts of society (Stephen, 2021).

Table 4 ICT Major Impact on Society

Major Impact on Society	Explanation
Borderless	There are no restrictions or limitations imposed by geographical borders or boundaries.
Social Interaction	Enables individuals to establish connections, engage in communication and exchange information regardless of physical distance
Vast access to Information	The extensive network of interlinked websites, databases, and resources encompasses an enormous volume of information.
New form of criminal activity	A new rise of crime often called as cybercrime

Four of the major impacts related to these studies are shown in Table 4. The ICT-enhanced interconnection and the world becoming borderless. People can now interact and exchange information with people around the globe enabling easy collaboration and knowledge exchange. Moreover, the use of social platforms allows individuals to interact and communicate with one another, which has made society more socially networked and active. In addition to that, a vast amount of information, including media coverage, access to education, and infotainment, is now easier to access thanks to ICT. As a result, society is now more well-informed and knowledgeable. Nevertheless, ICT has has also given rise to new types of criminal activity. Personal information is frequently plastered all over the internet and stored as electronic information, making it susceptible to data theft and other types of security breaches, making the use of ICT triggered security and privacy concerns and security (Rath & Kumar, 2021).

Ethical theory is highly important to be applied to ICT-related situations (Han, 2022). Transparency is one of the important elements in ICT. People have the right to control and choose how, when, and why their personal data is gathered, for what purpose, how it was utilized, and to whom and to what organization it will be shared to. The Same thing applied to Privacy. People should be aware that consent needs to be given before their personal data is being used and shared with any type of institution or organization. People should be treated fairly and without prejudice regardless of ethnicity, sexual identity, age, or other physical features. This concept is crucial as technology may be utilized to discriminate against specific demographic groups or establish social injustices. In the context of social media identity manipulation, there are many situations where one action looks ethical. In this section, we will be discussing identity manipulation with reference to 3 different Ethical Theories -Kantianism, Utilitarianism, and Devine Command Theory. In addition, this section will also examine events from the real world that are associated with identity manipulation in social media.

Utilitarianism theory states that the outcome that holds the belief that the outcome that produces the greatest good for the greatest number is the most ethical choice (Scarre et al., 2016). Firstly, the most common form of identity manipulation in social media is where press accounts have described online marketplaces in which criminals buy and sell stolen credit card numbers, along with the equipment and expertise needed to exploit them (DiNardo, 2012). Besides that, the police use another's information to assume his or her identity in daily life, for such purposes as opening a new phone or wireless account or services to catch the identity manipulator (Lai et al., 2012). In addition, children's use of the Internet raises the specter of sinister adults tricking gullible children into participating in activities that are exploitative and inappropriate (Simpson, 2005). Although these events from the real world may have some good in them, for instance, pertaining to the event related to the police, utilitarianism theory deems identity manipulation as not a good action as it involves theft or promise-breaking which are normally wrong (Scarre et al., 2016).

The concept that Kant's categorical imperative implies absolutism is one of the criticisms that are raised against it. Because of this imperative, there are no exceptions to the moral rules that are made, and everyone has to follow them (Mensah & Agyemang, 2020). We are now in the 4th industrial revolution, and society 5.0, is mostly defined by how much cyberspace and real space are mixed together. Technology makes it easier for the average person to modify the tone, appearance, and physique of another human. "Deepfake" permits the editing of one man's face onto another man's face in a video feed, and intelligent speech synthesis can replicate one's voice. These are all instances of how technology can be used to reconstruct parts of somebody's persona, often without their knowledge (Dunn, 2020). On the positive side, identity manipulation can be used to catch cyber criminals such as pedophiles. This concept can be explained with the help of a news snippet about the use of identity manipulation in social media in order to catch the cybercriminals who make use of this medium that is frequently used by people of all ages. One man in Colorado, USA, is taking matters into his own hands and asserting that more should be done to prevent child predators from luring juveniles on social media apps. The man takes on the persona of a young child with altered photographs of himself to entice adult men to meet him in person. He then broadcasts the meeting on a website that lets people watch live videos, exposing the older men who want to meet young boys and girls for sexual encounters, and then hands them over to the police (Ross, 2021). Finally, based on these cases, we come to the question. Is it ethical to impersonate a juvenile online to identify internet predators? The Kantian theory says identity manipulation is immoral, and one must not commit identity manipulation, even for a good reason. This case of identity manipulation, even for the purpose of catching a criminal, can be viewed as "tricking," which refers to the act of deceiving somebody into violating the law on purpose or attempting to do so in order to have them apprehended and brought to justice.

According to Divine Command Theory, examples of this theory can be illustrated by selecting several phrases from holy scriptures circulated among mainstream religions. The first example is the Islamic view: "O believers! Do not devour one another's wealth illegally, but rather trade by mutual consent." (Quran, 4:29). And the second example is, the Christian view: "Thou shalt not defraud thy neighbor, neither rob him." (Lev. 19:13). From these analogies, we can prove that God has instructed us not to commit theft. In relation to the topic of identity manipulation, any person who is of a believer in a religion, who is obliged to obey their holy scriptures based on God's command, is forbidden to perform identity manipulation based on the Divine Command Theory regardless of their good intention (Abubakar Zaria Ibrahim 2021). However, we can observe that in modern societies, awareness of this misconduct has not been thoroughly laid out. Further education and awareness-enhancing campaigns on religious guides within communities of the same faith should be conducted to curb this complication.

■6.0 CONCLUSION

Industry 4.0 and Society 5.0 have led to increased use of technology and cyberspace, including social media, which has created new ethical concerns, such as identity manipulation. Social media is a powerful tool for sharing information and promoting businesses, but identity manipulation is a growing ethical concern. Industry 4.0 and Society 5.0 have made it easier for small and medium-sized companies to connect with customers through social media platforms, but this also raises concerns about data and privacy. This study has examined the phenomenon of social media identity manipulation in the context of industry 4.0 and society 5.0. The findings reveal that social media identity manipulation is a complex and challenging issue that has significant implications for both industry 4.0 and society 5.0. The ability to easily and effectively manipulate identities on social media platforms has the potential to disrupt peace and undermine trust in online interactions.

In addition to these technical and societal implications, this study also considered the ethical dimension of social media identity manipulation. Based on Utilitarianism, Kantianism, and Divine Command theories, it can be argued that social media identity manipulation is morally wrong. The Utilitarianism theory suggests that it would not be in the best interests of the majority for individuals to manipulate their identities on social media, as it would lead to a breakdown of trust and cooperation. The Kantianism theory holds that social media identity manipulation would be a violation of individuals' autonomy, as it would allow others to control their online selves. The Divine Command Theory maintains that it is against God's will to manipulate someone else's identity and deceive others.

In light of these ethical considerations, it is crucial that we become more aware of the potential dangers of social media identity manipulation and take steps to mitigate them. Ultimately, it is up to the users in the internet community to be responsible digital citizens and to use social media in a way that is both ethical and beneficial for themselves and for society as a whole. In this sense, it is important to bear in mind that the use of social media should be guided by the principles of fairness, honesty, and respect for others. Thus, this study has concluded that what is ethically right in societies should be respected and people should never be used for another's self-gain.

Acknowledgement

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