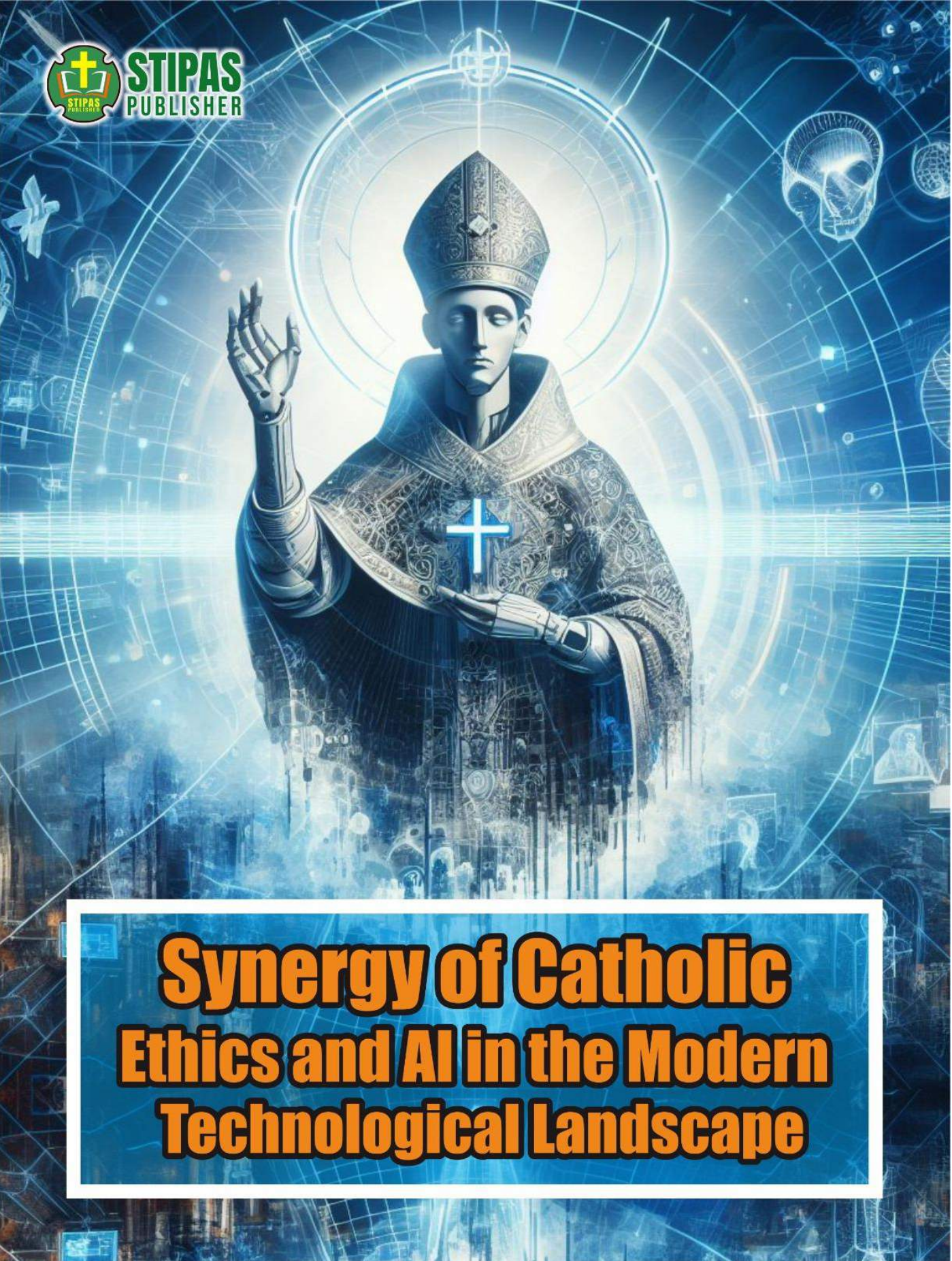

STIPAS
PUBLISHER
Synergy of Catholic
Ethics and AI in the Modern
Technological Landscape

Synergy of Catholic Ethics and AI in the Modern Technological Landscape

International Book Chapter

Publisher: Stipas Publisher

ISBN: 978-623-09-7875-3

January
2024

Preface

Greetings, dear readers,

The emergence of artificial intelligence/AI is inevitable in the modern world. This is an accident because it cannot be avoided and is a consequence of the pursuit of human reason. AI penetrates and spreads along with advances in digital technology.

The presence of AI has brought many changes to modern human life. AI has now become an inseparable part of various domains of life, including transportation, health, education, society, and even religion. However, the development and use of AI are not free from various challenges and ethical issues. AI has sparked various debates not only within the academic community but also within religious circles. In some cases, AI creates tension because of some of the consequences it produces, for example, more people losing their jobs. In the ethical realm, AI can erode human dignity.

Due to the many ethical problems that have arisen as a result of the emergence of AI, the Catholic Church as a religious institution is trying to reflect on its moral teachings so that adopting AI does not destroy the faith and moral values that are unique to the Catholic Church. Of course, the Catholic Church does not reject AI just as the Church does not reject the truths of knowledge and technological products. However, the Church remains careful and alert so that AI is in harmony with ethical teachings, not contrary to the Gospel and true human freedom.

Even though the Catholic Church does not yet have an ethical idea that specifically addresses AI and its consequences, through its leaders it is trying to call for the idea of a global ethic. Figures such as Pope Francis Pope Benedict and Pope John Paul II have called for this in their teachings in response to modern technological advances.

This book is presented to answer the need for ethical dialogue and AI technology. The authors examine various fundamental issues surrounding the impact of AI on individuals, society at large, and Catholics in particular. They formulated a Catholic ethical response to these problems. This book shows that Catholic ethics provides a powerful framework for assessing technological products including AI. On the other hand, AI can help realize Catholic ethical values in modern society.

It is important to create a dialogue between the Catholic faith and AI so that these two things can grow in harmony without sacrificing human values. AI must be a tool that upholds human values and advances civilization. In the context of the Church, AI must be able to serve as a servant for the progress of faith and humanity, and must even become a supporting tool for the spiritual progress of believers. To realize this, AI should walk in ethical and moral corridors so that it can show its authenticity for human progress. As Pope Francis said, The development of science and technology gives rise to an ever-deeper struggle between material progress and human dignity (Fratelli Tutti, 15). Therefore, the Catholic Church and its thinkers need to actively participate in the development of AI so that it always prioritizes human welfare.

AI does not need to be hostile and is considered a destroyer of faith and ethics. Instead, the Church must use it as a means of developing faith and humanity. To avoid the dangers of using this technology, ethics needs to be the basis and the Catholic Church through its thinkers has paid attention to the integration of AI and Catholic ethics.

This book is a valuable contribution to Indonesia's still-rearing dialogue between religious ethics and digital technology. This work shows that human values originating from large religious traditions such as Catholicism remain relevant and even increasingly important amidst the rapid flow of technological development. We very much welcome the publication of this rare work, especially within the Catholic Church. This work comes at the right time, when technological progress is unstoppable, while ethical ideas tend to stagnate. Hopefully, this book can spark wider discussion among Catholic academics, technology practitioners, Church stakeholders, and Catholic society in general.

Finally, we appreciate the efforts and hard work of the authors in presenting this cutting-edge work that bridges the fields of ethics and AI. We certainly hope that this book can trigger the birth of a clearer view of the Catholic Church's ethics so that the Church's presence remains relevant amid today's progress. Hopefully, similar works from other Catholic academics and intellectuals will appear soon. Shared concerns about the impact of AI on humanity should encourage closer collaboration so that ethical issues in digital technology do not lag behind the pace of innovation.

This book is the result of collaboration between several universities led by STIKAS Saint John the Cross. We, representing STIKAS Saint John the Cross, would like to express our gratitude to the writers, both from STIKAS Saint John

the Cross and from other universities. Thank you to STIPAS Publisher for being willing to publish this book. Thank you very much to Prof. Emiliana Sri Pujiarti for her patience in guiding the authors in-depth on the themes in this book. Without his hard work and guidance, this book would not have been published as it is today.

Pontianak, January 19, 2024

Greetings

Simplesius Sandur

List of Contents

Title Cover..... i
Preface..... ii
Author and Author PaperTitle v

Author and author paper title

Chapter	Title	Writer	Page
I	The World of Work and AI: Integrating Catholic Social Principles in the Technology Industry	1 Reyner Pejunis 2 Angelo Luciani Moa Dosi Woda STIKAS St. Yohanes Salib– West Kalimantan	1 - 14
II	Safeguarding the Digital Sanctuary: How the Catholic Church Helps to Secure the Digital World in the Age of AI	1 Steven Wijaya 2 Dorothy Binti Aging STIKAS St. Yohanes Salib– West Kalimantan	15 - 31
III	Artificial Intelligence (AI) Advances in Catholic Family Life: Opportunities and Challenges	1 Metodius Nasrani 2 Fransiskus Heryman Surya Gadur STIKAS St. Yohanes Salib– West Kalimantan	32 - 47
IV	AI and the Catholic Leadership Mission: Forming Character and Ethical Leadership	Simplesius Sandur STIKAS St. Yohanes Salib– West Kalimantan	48 - 65
V	Use of AI in Pastoral Care: Innovation to Serve Catholics	1 Shelomita Selamat 2 Metodius Nasrani STIKAS St. Yohanes Salib– West Kalimantan	66 - 79

Chapter	Title	Writer	Page
VI	AI and Medical Development: A Review of the Morals of the Catholic Church	1 Charles Endruw Kebing 2 Irwan Irwan STIKAS St. Yohanes Salib– West Kalimantan	80 - 92
VII	Morality and Ethics in AI: The Catholic Church's Perspective for Facing Technological Dilemmas	1 Rony Bin Jenis 2 Herwindo Chandra STIKAS St. Yohanes Salib– West Kalimantan	93 - 106
VIII	The Catholic Church and Digital Ethics: Building a Bridge Between Faith and Advanced Technology	Madalena Marseli STIKAS St. Yohanes Salib– West Kalimantan	107 - 124
IX	Communicating with God in the AI Era: Spirituality and Technological Transformation	Tantani Binti Longkiad STIKAS St. Yohanes Salib– West Kalimantan	125 - 140
X	Catholic Education in a Digital World: Strengthening Faith in the Era of AI Culture	Marianus Dinata Alnija STIKAS St. Yohanes Salib– West Kalimantan	141 - 153
XI	Ethical AI Development in Education: The Dignity of Learners According to Catholic Educational Views	Nancy Joseph Maison Generale 17, Gentilly, Paris, France	154 - 168

Chapter	Title	Writer	Page
XII	Towards a Just Digital Society: Shared Responsibility According to the Catholic Church	Wilfridus Vinsentius Sarah STP Dian Mandala Gunungsitoli-North-Sumatera	169 - 182
XIII	Tracing the Spiritual Path in the Digital Era: The Church's Responsibility in Educating Its People	Hermania Bhoki (srcarolasmg@gmail.com) Sekolah Tinggi Pastoral Reinha Larantuka	183 - 198
XIV	Designing Fair and Inclusive AI: Learning from the Social Teaching of the Catholic Church	Erly Lumban Gaol Stipas Tahasak Danum Pambelum Palangkaraya-Cantral Kalimantan	199 - 214

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER I

The World of Work and AI: Integrating Catholic Social Principles in the Technology Industry

Reyner Pejunis (raynerpejunis92@gmail.com)
Angelo Luciani Moa Dosi Woda (serafim.cse@gmail.com)

STIKAS St. Yohanes Salib – West Kalimantan

Abstract

Artificial intelligence (AI) is transforming various fields including the world of work, promising to increase efficiency and productivity but also raising ethical dilemmas. This paper analyzes the challenges and opportunities of implementing AI in the workplace based on the principles of the social teachings of the Catholic Church. The impact of AI on the nature of work is discussed, including the risks of technological unemployment and shifting patterns of employment relationships. Core principles of Catholic social teaching such as human dignity, solidarity, and social justice are outlined for their relevance in guiding the ethical implementation of AI. The role of the Church and Catholics in the technology industry is also explored as a form of digital spirituality. It was concluded that the integration of Catholic social principles in AI can mitigate threats and maximize the benefits of this technology for humanity.

Keywords: Artificial intelligence, Catholic social teachings, World of work, Digital spirituality, Technology Ethics

Introduction

Artificial intelligence (AI) is shaking up the landscape of modern life, evolving into a digital transformation force that is changing various sectors, including the world of work. Like a double-edged sword, on the one hand, AI promises huge leaps in terms of productivity, efficiency, and innovation; but on the other hand, it raises complex ethical dilemmas and challenges. AI technology is capable of surpassing human capabilities in discrete tasks, but a deeper understanding of how AI as a whole will impact the future of human work and livelihoods (Liang and Yu, 2022). Some studies suggest that in aggregate, AI's

impact on employment will likely be neutral, with slow adoption rates and job creation in new sectors (Acemoglu and Restrepo, 2022).

The use of artificial intelligence (AI) is increasing. According to IDC, 75% of commercial company applications will use AI in 2021. From the banking sector, leading banks in the country utilize digital technology as much as 50% according to the IDC report, at least 40% of customers will get services via digital by 2025 (Sudaryanto, 2023).

The increasingly rapid increase in public interest is not without reason. The use of AI has several benefits, namely saving operational costs, improving services, managing data & information more quickly and efficiently, and making it easier to access information. However, the potential of AI in the RI 4.0 era, brings several challenges that should not be ignored. These challenges can be seen from concerns about employment because automation and the use of robotics replace human jobs (Posner and Weyl, 2018). This has the potential to cause unemployment due to the loss of many jobs. So, parties involved in the technology sector must immediately take proactive steps in making decisions and ensuring AI is applied ethically for the benefit of everyone.

This article analyzes the impact of (AI) in the workplace and explains how principles of Catholic social teaching in the world of work with AI, the application of Catholic social principles in a technological context, and digital spirituality to realizing human values in the Era of Advanced Technology

Literature Review

Principles of Catholic Social Teaching in the World of Work and AI

the principles of the Church's social teaching can make a critical contribution, namely personal dignity, justice, subsidiarity, and solidarity. In his message, the Pope observed that the complexity of the technological world demands an increasingly clear ethical framework to make our commitment to serving each individual in his integrity, and all people, without discrimination or exclusion, truly effective.

Moreover, the Pope pointed out that algorithms can be a bridge that allows these principles to enter digital technology through effective interdisciplinary dialogue. However, he underlined that in the encounter between various world visions, human rights must become an important meeting point in seeking common ground.

Religious institutions, in this case, the Catholic Church, are the only institutions that, in detail, continuously formulate their attitudes and teachings in the face of constantly changing social and societal realities. His attitudes and teachings are contained in the Association of Social Teachings of the Catholic Church (ASGK). Although the principles and points raised in ASGK are very fundamental, because they concern humanity, this does not necessarily mean that these teachings are binding on all Churches. The Catholic Church demands that scientific and technological advances, such as artificial intelligence be used to promote social justice and human well-being (Rome, 2020).

ASGK highlights the basic rights of workers that must be upheld, such as the freedom to organize and strike as well as the right to honorable work, fair compensation, job security, and rest time (XVI, 2018). ASGK advocates a type of work that fully integrates employees to foster creativity, rejecting exclusive contractual relationships in the workplace that separate people from their work (XVI, 2018). One of them is the principle of the common good, which demands that the application of AI does not ignore human rights or widen socio-economic disparities in society (Rome, 2020). In addition, the principles of natural law in ASK emphasize that the development and use of AI must be in line with moral principles that can be universally understood by the human mind, such as justice, freedom, and human dignity (Communication, 2023).

Although less specific, the ASK principles can provide direction for AI-related policies and actions to be ethically appropriate (Hall, 2019). It is important to ensure that AI's impact on human rights is always taken into account and that this technology continues to serve the public interest, not just the profits of a few capital owners. In responding to the rapid pace of development of AI, ASK invites all parties to work together to advance technology for the common good by upholding human dignity.

The Catholic Church emphasizes that AI and automation must not make humans mere means of production or mere commodities in the wheel of the modern economy. Human workers have a dignity that deserves respect, so they cannot be completely replaced by machines (Francis, 2020).

Therefore, the application of AI in the workplace must continue to involve humans in important decision-making processes that impact the work and livelihoods of many people. Here the principle of subsidiarity is also relevant, which emphasizes that decision-making should be carried out at the level closest to the people affected (Sullivan, 2008). In this way, the negative threat of AI to

employment and the risk of increasing socio-economic inequality can be prevented or at least minimized. Meanwhile, the positive potential of this technology can still be optimized for the welfare and prosperity of all mankind, in line with the spirit of universal solidarity taught by the Catholic faith.

Catholic Social Teaching Supports Workers' Rights In The Industrial World

Catholic Social Teaching (ASK) firmly supports the basic rights of workers, which are seen as superior to the rights of capital. ASK teaches that every worker has the right to decent work, fair wages according to family living needs, job security, adequate rest and holiday time, limited working hours, health and safety protection, prohibition of discrimination, the right to organize and strike as a last resort (Vivit et al. al., 2022). The Church rejects the view that treating work solely as a commercial contract separates workers from the nature of their work. On the contrary, the form of work must integrate the worker as a whole and encourage the actualization of the individual's creative potential (Compend. Soc. Doctrin. Church, 2004).

The Catholic Church has consistently condemned the practice of exploiting workers and violating their rights throughout history (XVI, 2018). The Church's Social Magisterium responded to the injustices experienced by workers in the era of the Industrial Revolution by affirming universal and eternal principles in supporting workers (Kristiyanto, 2012). The Church also reminds Catholic company owners and entrepreneurs to be responsible for treating workers fairly and guaranteeing their rights, rather than opposing the trade union movement or obstructing the spread of the Church's social teachings (Sullivan, 2008) (Ho & Caals, 2021).

Thus, Catholic Social Teaching firmly defends the human rights of workers in the modern industrial world. The principles taught by the Church are universal and relevant throughout time to protect individual dignity and prevent dehumanization due to unjust economic or technological systems. The Church continues to work to ensure that workers' voices are heard and their rights are fulfilled.

Application of the Principle of Solidarity and Social Justice Values in the Use of Artificial Intelligence The principle of solidarity is applied in the use of artificial intelligence through several aspects. First, the development and implementation of AI must be inclusive by taking into account the needs of all

groups so that no one is discriminated against based on their background (Hall, 2019). Second, to protect human rights, the application of AI must be able to improve human living standards, not vice versa to oppress disadvantaged marginalized groups of society (Compendium, 2004).

Third, AI developers and users have a high sense of responsibility to consider the impact of the emergence of new products resulting from AI processes on society, so AI development must work transparently, and ensure guaranteed reliability and security of AI systems (Vivit et al., 2021). Fourth, to prevent discrimination in the use of AI from exacerbating social inequality, strict supervision, and legal accountability are needed (XVI, 2018). Therefore, it is very important to apply the concept of solidarity to AI under the social teachings of the Catholic church to maximize the benefits of AI for the welfare of all humanity.

By avoiding injustice, social manipulation, or prejudice because of algorithms, AI upholds the ideal of social justice. AI usage must uphold human dignity and universal principles like forgiveness and mercy (Rome, 2020). Furthermore, a transparent ethical and regulatory framework founded on the concepts of justice is required to protect human rights in the digital space (Sullivan, 2008). Adopting international agreements that control the ethical development and application of AI and promote a variety of creative applications for it would require global collaboration between countries (Communication, 2023). It is envisaged that AI would enable social justice principles to be upheld while also fostering a more compassionate and just world.

Discussion

The Impact of AI Transformation on the Nature of Work

The swift progress of artificial intelligence technology is altering the character of labor in several domains; in the US, 47% of employment could potentially be supplanted by automation (Frey & Osborne, 2017). For example, the driverless car and truck transportation sector utilizes AI technology which has the potential to replace the work of human drivers (Corberán-Vallet et al., 2021). The transformation of jobs with AI successfully imitates human intellectual capabilities through machine learning and natural language processing techniques, such as IBM Watson and AlphaGo. This indicates a large opportunity for replacing human labor in jobs from data analysis, and medical diagnosis, to lawyers and journalists in the future (Kaplan, 2021).

Several researchers assess that AI will change the nature of work, where elements of creativity, collaboration between people, and technical abilities are emphasized more (Brynjolfsson & Mitchell, 2017). Thus, human workers need to improve their technical and soft skills to adapt to the shifting nature of work in the AI era. Furthermore, fundamental changes are also predicted in the employment relationship between workers and the organizations where they work. AI-based digital platforms enable the implementation of flexible work mechanisms such as distributed workforces which change traditional work relationships into short-term project-based contracts (Kaplan, 2021).

This shift in employment relationship patterns is expected to increase job precarization, where workers receive less protection and benefits than permanent employees. On the other hand, the flexibility of working time and work location offered also provides certain benefits for certain groups of workers such as housewives and those with physical limitations (Kaplan, 2021). AI advances are thus fundamentally changing the nature of work relationships, tasks, and the skills required in many areas of work. This shift creates adjustment challenges that are not easy for workers. Therefore, appropriate policies are needed to ensure a just transition, while maintaining workers' rights and welfare, in line with the evolution of the world of work in the AI era.

Catholic Social Integration in the Technology Industry

The Catholic Church views the importance of integrating the values of the Catholic faith in the development of the digital technology industry. Pope Benedict XVI in his 2009 World Communications Day message called on Catholics, especially young people, to bring their testimony of faith to the digital world. According to the Pope, evangelization amidst new technology requires a deep understanding so that technology can serve the Church's mission well (Benedict XVI, 2009).

Pope John Paul II encouraged Catholic scientists and professionals to make competent contributions in sectors that impact human life and health (John Paul II, 1983). This shows the Church's recognition of the role of Catholics in the technology industry to improve human welfare. In addition, Pope Benedict XVI emphasized the importance of fair access to communications technology for marginalized groups. The Pope warned that it would be tragic if new communication tools widened the digital gap between rich and poor (Benedict XVI, 2009). The Church also appreciates the establishment of Catholic universities

in developing countries which provide access to quality education regardless of a person's social or religious background (Benedict XVI, 2009).

Through its compendium of social doctrine, the Catholic Church emphasizes that Catholic educational institutions can make valuable contributions by integrating the Christian message into various disciplines (Council for Justice and Peace, 2004). Pope Francis also views interreligious dialogue as important in questions of ethics and the search for the meaning of life in the digital era (Francis, 2019). Thus, Catholic social integration in technology is expected to take the form of fair access, competent scientific contributions, and constructive dialogue for the sake of humanity.

The Church encourages the active participation of its members in various strategic positions to realize the integration of the ideals of the Catholic faith in digital technology. For example, by being directly involved in development, research, and technological innovation at Catholic universities and research and development institutions. As emphasized by Pope Francis (2019), this involvement is important to ensure that every technological product and service developed is in line with human values and the spirit of serving the common good.

Apart from that, Catholics are also encouraged to play a role in formulating digital technology policies and regulations at the national and global levels that are in line with the principles of Catholic social teaching. For example, regulations that prevent monopolies and protect the privacy and security of technology users' data so that they are protected from potential misuse of personal data for certain commercial or political interests (Justice and Peace Council, 2004).

The role of Catholic entrepreneurs and executives in technology companies is also strategic to ensure their products and services provide benefits to the public and implement responsible business ethics (Benedict XVI, 2009). At the consumer or technology user level, Catholics can also contribute by using and distributing technology products and services that are in line with the values of the Catholic faith. This will create market demand for ethical digital technology products, which in turn will encourage industries to compete to provide better products for the public (Lee, 2021).

Application of Catholic social principles in a technological context

One of the challenges in applying Catholic social principles to technology is the breakneck speed of innovation, which makes it difficult to conduct a thorough evaluation of the ethical implications of new technologies (Vivit et al., 2021).

Therefore, a responsive and anticipatory ethical framework is needed. Principles such as prudence and subsidiarity can assist technology decision-making at various levels to ensure appropriate responsibilities (Scherz, 2021).

As explained in the Church's social documents, principles such as solidarity, social justice, and shared prosperity are relevant to be applied in the context of technology (Francis, 2019). These principles teach that technology should serve the purposes of advancing the common good and respecting human dignity. Technology must be responsible and must not harm or violate human rights. Several key principles that need to be considered are the protection of human life, respect for human dignity, promotion of social justice, and orientation to the common interest/good (Sullivan, 2008).

Engineers, scientists, and technology developers are taught by the individual principles of personalism and solidarity always to consider how their work will affect society and other people in addition to themselves (Vivit et al., 2021). Meanwhile, at the policy level, the state is responsible for protecting people from the dangers of technology through appropriate regulations by the principles of social justice and the common good (Díaz-Rodríguez et al., 2023). By applying a comprehensive framework of thought based on Catholic principles, it is hoped that technological development can be directed toward mutual benefit and the sustainability of human civilization.

Promoting social justice means ensuring that technology is used to expand access to education, health, and economic opportunities for all groups, especially the vulnerable (Fransiskus, 2023). Meanwhile, an orientation towards the common good requires technology to serve the welfare of all society, not just the interests of a few groups (Díaz-Rodríguez et al., 2023). Thus, an ethical evaluation of the impact of technology and efforts to ensure its responsible use is necessary (Rome, 2022)

Digital Spirituality: Realizing Human Values in the Era of Advanced Technology

In responding to the rapid development of digital technology today, the Catholic Church calls on its people to be wise and careful. On the one hand, progress in the digital and information technology fields is something to be grateful for because it brings many benefits to human life. However, on the other hand, this development holds challenges and threats, especially if it is not balanced with true ethical and human values.

The digital spirituality in question refers to efforts to translate human values such as solidarity and justice into the design, development, and use of technology in the digital era. The Catholic Church sees the urgency of digital spirituality to overcome the increasing digital divide between those who have access to information technology and those who cannot access it. The Catholic Church's social teaching views digital technology as part of good creation if used for the common good (Vatican Ministry of Information, 2022). Therefore, the Church seeks to ensure that the development of digital technology is in line with human values and the teachings of the Catholic faith.

Pope Francis (2020) emphasized that digital technology must respect human dignities and evangelical values, such as truth, justice, love, and the protection of human life. The Church also reminds its people to be aware of the bad risks of technology such as internet addiction and online games which can damage morals (Indonesian Catholic Bishops Conference, 2021). Pope Benedict XVI warned that failure to provide equitable access to communications and information technology could create new forms of marginalization of poor and vulnerable groups (Benedict The Church encourages Catholics to be involved in efforts to integrate faith and technology, spreading the values of the Gospel on the 'digital continent' as a form of authentic digital spirituality (Pontifical Council for Social Communications, 2002).

Therefore, according to Pope Francis (2020), digital spirituality is needed, namely serious efforts to ensure that evangelical values and human dignity remain upheld amidst the rapid flow of advanced technology. In the view of the Catholic Church, everyone plays an active role in realizing this digital spirituality, whether as individual technology users, digital industry players, or technology policymakers in society. Several principles in implementing digital spirituality (Vatican Ministry of Information, 2022), namely:

1. Prioritize the common good above individual or group interests
2. Respect privacy and human dignity
3. Protect all levels of society from the negative impacts of digital technology
4. Maintain a balance between online and offline life.

As individuals, everyone is required to be wise in filtering and sorting digital information, be alert to false propaganda, and avoid excessive dependence on gadgets and the internet which damage real social relations (Indonesian Catholic Bishops' Conference, 2022). Apart from that, users need to understand and protect the privacy of personal data, maintain time to interact directly with those closest to

them, and wisely use the money to subscribe to online applications so as not to waste it.

Meanwhile, entrepreneurs and developers in the digital industry must prioritize services for the common good, not just to achieve big profits. They are also required to implement security protocols and protect user data, carry out strict censorship of negatively charged content, and limit features that have the potential to cause digital addiction in users of their applications. The government and information technology policymakers are required by the Church to create regulations and public policies that protect human values in the use of the internet and advanced technology. For example, by enforcing the Personal Data Protection Law, limiting access to negative content, and digital literacy and digital spirituality education programs for the wider community.

Thus, according to the Catholic Church, digital spirituality can only be realized if all components of society—individuals, industry players, and policymakers—collectively strive to maintain human values and human dignity amidst the rapid progress of digital technology. The contribution of all elements is needed so that technology is always intended, developed, and utilized for the true benefit of all.

Conclusion

Many in the world of work have switched to using AI technology because many fields not only cognitive development in the world of education, government, and which have a direct impact are the industrial world. all impacted by automation. The use of human intelligence requires collaboration and solid teamwork so the development of automation technology is expected to benefit humanity as a whole in the future. It is important to consider the advantages and disadvantages of changing patterns of employment relations towards a more flexible approach. Therefore, to face the challenges of AI in the world of work, governments, companies, workers, and the Church need to take steps:

1. The government develops policies that support the transition to a digital economy. These policies include investments in education and skills training, as well as programs to help workers who have lost their jobs due to automation.
2. Companies investing in the development and implementation of AI also provide skills training to workers to help in adapt to AI technology.

3. Workers improve their skills to meet the needs of the labor market in the digital era through formal education, non-formal training, and independent learning.
4. The Catholic Church continues to call for the values of faith to be integrated into technological developments through the active involvement of the faithful, responsible research contributions, and dialogue between stakeholders for the common good.

References

Acemoglu, D., & Restrepo, P. (2022). Tasks, Automation, and the Rise in US Wage Inequality. Journal of Economic Perspectives, 36(1), 3-30.

Benedictus XVI. (2009). New Technologies, New Relationships. Promoting a Culture of Respect, Dialogue, and Friendship. World Communications Day. https://www.vatican.va/content/benedict-xvi/en/messages/communications/documents/hf_ben-xvi_mes_20090124_43rd-world-communications-day.html

Brynjolfsson, E., & Mitchell, T. (2017). What can machine learning do? Workforce implications. Science, 358(6370), 1530-1534.

Communication, P. C. for S. (2023). Compendium of the Social Doctrine of the Church. Retrieved from http://www.vatican.va/roman_curia/pontifical_councils/ justpeace/documents/rc_pc_justpeace_doc_20060526_compendio-dott-soc_en.html

Compend. Soc. Doctrin. Church. (2004). Compendium of the social doctrine of the Church. Libreria Editrice Vaticana.

Compendium of the Social Doctrine of the Church. (2004). Libreria Editrice Vaticana.

Corberán-Vallet, A., Bermúdez, J. D., & Vercher, E. (2021). Forecasting new technologies: A review and an application to self-driving vehicles. Technological Forecasting and Social Change, 166, 120629. https:// doi.org/ 10.1016/ j.techfore.2021.120629

Dewan Keadilan dan Perdamaian. (2004). Compendium of the Social Doctrine of the Church. Libreria Editrice Vaticana.

Díaz-Rodríguez, F., Ferrari, A., Scanziani, M., & Latini, G. (2023). Catholic Social Doctrine and Tech Ethics: Human Dignity and Common Good in the Age of Artificial Intelligence and Robots. Cultural Heritage in a Changing World, 233-253.

Díaz-Rodríguez, F., López-Ruiz, V. R., & Marchiori, D. M. (2023). Technological Innovation Between the Common Good and the Throwaway Culture: Insights from Catholic Social Teaching. Journal of Business Ethics, 1-15.

Fransiskus. (2019). Address of His Holiness Pope Francis to Participants at the Plenary Assembly of the Pontifical Academy for Life.

Fransiskus. (2023). Fratelli Tutti: Encyclical on Human Fraternity. Orbis Books.

Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerization? Technological forecasting and social change, 114, 254-280.

Hall, P. J. (2019). Human rights and emerging technologies: Catholic social thought and human rights in the age of artificial intelligence and automated warfare. Journal of Catholic Social Thought, 16(2), 277-300.

Ho, D. K., & Caals, J. W. (2021). Personalism in Catholic social teaching: Implications for the employer-employee relationship in Catholic healthcare. Christian Bioethics, 27(2), 138-158.

Ho, J., & Caals, J. (2021). Peter Maurin's Personalist Economics. American Catholic Studies, 132(4), 25–44.

Kaplan, A. (2021). Artificial intelligence and the future of work: Toward a new social contract. In Toward a New Social Contract: The Quest for Prosperity. Columbia University Press.

Kementerian Informasi Vatikan. (2022). Ethics in Digital Technology and Social Communication. https://www.pccs.va

Konferensi Para Uskup Katolik Indonesia. (2021). Pedoman Pelindungan Anak dalam Lingkup Gereja Katolik di Indonesia. http://dokpen.kawali.or.id

Kristiyanto, Y. J. (2012). Ajaran sosial Gereja tentang buruh pabrik: tinjauan etis terhadap enam prinsip dasar hak buruh menurut Rerum Novarum (1891) dan Quadragesimo Anno (1931).

Lee, J. (2021). Exploring Digital Spirituality. International Journal of Religion & Spirituality in Society, 5(2), 78-98

Liang, Y., & Yu, B. (2022). Artificial Intelligence and the Future of Work: Technological Displacement or Job Transformation? The Economic and Labour Relations Review, 33(1), 3-23.

Moore, J. W., Nolan, J., & Burke, E. J. (2014). The Producerist Discourse of Globalization. International Journal of Comparative Sociology, 55(1), 37–58.

Posner, E. A., & Weyl, E. G. (2018). Radical markets: Uprooting capitalism and democracy for a just society. Princeton University Press.

Rome, P. V. (2020). Fratelli Tutti: Encyclical on human fraternity. Orbis Books.

Sangiorgi, D., & Parisi, S. (2021). Designing AI for social good: A methodological framework to include excluded communities and mitigate negative consequences. Technologies, 9(2), 31.

Scherz, J. (2021). Working Bishops: A Framework for Interrogating Labor and Automation. Religions, 12(2), 102.

Sullivan, G. (2008). The American Catholic Church and Labor Unions. The Catholic Historical Review, 94(4), 747–764.

Vinichenko, M. V., Maloletko, A. N., Frolova, E. V., Rubtsova, M. V., & Bondaletov, V. V. (2020). The impact of the technological revolution on the transformation of the basics of forming human potential. Entrepreneurship and Sustainability Issues, 7(3), 2409-2425.

Vivit, D., Manion, J., Congiu, M. L., Commins, J., & Paré, D. (2021). Artificial Intelligence Ethics: The Next Frontier in Data and Catholic Social Teaching.

Yohanes Paulus II. (1983). Allocutio Ad Administrationis Consilium Conventus Internationalis Scientifici «De Necessitudine Enitendi Pro Vitae Humanae Integritate Tuenda». Acta Apostolicae Sedis, 76(2), 188.

Author's Profile



Rayner Pejunis, born in Ranau Sabah, Malaysia, 12 January 1992, email: raynerpejunis92@gmail.com. Education: Graduated from the Bachelor of Theology Program at STIKAS Santo Yohanes Salib, Bandol in 2023. The current functional position is a postgraduate student of the Master of Theology Program at STIKAS Santo Yohanes Salib, Bandol.



ANGELO LUCIANI MOA DOSI WODA, S.S., Lic.Th., born in Jakarta, Indonesia, 30 September 1978, email: serafim.cse@gmail.com. Education: Graduated from Licentiate in Sacred Theology at Pontifical University of Saint Thomas Aquinas (Angelicum) Rome, Italy in 2018. My current functional position is as a lecturer of dogmatic theology at STIKAS Santo Yohanes Salib, Bandol

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER II

Safeguarding the Digital Sanctuary: How the Catholic Church Helps to Secure the Digital World in the Age of AI

Steven Wijaya (johnpaul2.cse@gmail.com)
Dorothy Binti Aging (dorothyaging@gmail.com)

STIKAS St. Yohanes Salib – West Kalimantan

Abstract

In an era where the digital landscape is expanding unprecedentedly, the artificial intelligence (AI) and cybersecurity intersection has emerged as a focal point of ethical deliberation. The relentless growth of AI technologies brings myriad challenges, posing profound questions about privacy, human autonomy, and the responsible development and deployment of intelligent systems. In this context, the role of ethical frameworks becomes pivotal in shaping the trajectory of technological advancements and their impact on individuals and societies. This paper seeks to explore a unique and often under-explored dimension of the discourse on AI ethics – the significant contributions of the Catholic Church to the security of the digital world. As an institution with deep-rooted theological and ethical traditions, the Catholic Church brings a rich and nuanced perspective to the ethical considerations surrounding AI and cybersecurity. This exploration is timely and relevant, given the increasing reliance on AI in various sectors and the ethical implications of its widespread adoption.

Keywords: Cybersecurity, Catholic Church, Artificial Intelligence, Ethics

Introduction

Integrating artificial intelligence in various spheres of society has triggered profound ethical considerations (Tronnier et al., 2022). Addressing public safety, security, and privacy concerns becomes increasingly urgent as AI systems advance in complexity and pervasiveness. Furthermore, the inseparable link between AI and cybersecurity has been a subject of growing discourse (Tao et al., 2021). While AI offers enormous prospects for growth and innovation, it also has inherent concerns, notably in cybersecurity (Stahl, 2021)

The Catholic Church, with its longstanding commitment to promoting human dignity and social justice, has actively engaged in the dialogue surrounding AI ethics and cybersecurity. This commitment is further emphasized by the Rome Call for AI Ethics, a statement arguing for human-centric AI ethics principles, indicating a nuanced approach to AI's ethical considerations (Sinibaldi et al., 2020). By actively participating in discussions and initiatives related to AI ethics, the Catholic Church aims to safeguard the digital sanctuary and ensure that technological progress is aligned with human well-being and the common good.

Considering the Church's significant contributions to ethical reflections on AI and cybersecurity, this paper seeks to delve into the ethical considerations put forth by the Catholic Church, providing a comprehensive understanding of the intersection between AI and cybersecurity from a moral and ethical standpoint. This research is critical as it enhances theological conversations about AI and contributes to the broader discussion on addressing the ethical challenges posed by AI and cybersecurity today.

Literature Review

Cybersecurity in the Age of AI

Cybersecurity protects against theft, damage, and unauthorized access to computer systems, networks, and data (Tronnier et al., 2022) (Formosa et al., 2021). As AI technology continues to evolve, it has the potential to enhance cybersecurity measures by detecting, preventing, and responding to cyber threats more effectively than traditional methods (Ghafoor & Khan, 2023).

Adopting AI in cybersecurity, on the other hand, creates additional issues and threats that must be handled. These dangers stem from the possibility that adversaries would use AI technology to launch new assaults and generate new security problems (Batista et al., 2021). Adopting AI in cybersecurity, in particular, raises worries about possible weaknesses and exploiting AI technology for malevolent reasons (Tronnier et al., 2022). As a result, it is critical to comprehend the potential dangers and problems that AI poses to cybersecurity to handle them properly.

Today, there are multiple types of cyber threats in the AI age, which are diverse and ever-evolving, posing complex challenges to the security of computer systems and networks. One of the notable threats is the deployment of AI in cyber-attacks, which enables adversaries to leverage intelligent systems to conduct

automated and sophisticated attacks (King et al., 2019). AI-powered cyber-attacks can autonomously exploit vulnerabilities, adapt to changing defenses, and perpetrate large-scale, targeted intrusions. Adversaries, for example, can utilize AI to develop sophisticated phishing assaults that are difficult to detect or to launch AI-powered malware that can evolve and adapt to security measures.

The emergence of hostile AI attacks is another cybersecurity concern in the age of AI (King et al., 2019). This threat involves the manipulation of AI algorithms through carefully crafted inputs aimed at deceiving or causing erroneous outputs in machine learning models. These manipulations can lead to exploiting vulnerabilities in AI systems, compromising their integrity and reliability. One striking example of adversarial AI attacks is the tampering of autonomous vehicles' perception systems, where malicious actors can trick the AI algorithms into misinterpreting road signs and causing accidents (Park et al., 2019). Furthermore, the proliferation of AI-driven phishing attacks and social engineering poses an imminent threat to cybersecurity (Sayegh, 2023). AI algorithms can generate compelling phishing emails and deceptive content that can evade traditional detection methods. Such advanced phishing tactics can potentially deceive users and organizations, leading to unauthorized access or data breaches.

Moreover, the ethical implications of bias and unfairness in AI systems present a critical cybersecurity threat (Ferrara, 2023). Biased AI algorithms may inadvertently perpetuate discriminatory practices, leading to security vulnerabilities and privacy breaches. For example, narrow AI systems used in facial recognition technology can misidentify individuals, leading to potential security risks and privacy violations. Individually, using AI in healthcare and handling medical data raises concerns about privacy, confidentiality, and discrimination (Hall & Ellis, 2023). For example, AI algorithms employed in medical record systems may access sensitive patient information, raising worries about data privacy and the possibility of unwanted access. Furthermore, using AI in medical decision-making and diagnosis can inadvertently perpetuate biased or discriminatory outcomes, disproportionately impacting specific populations (Esmaeilzadeh, 2020).

Finally, the growing reliance on AI in security systems raises concerns about the possibility of sophisticated adversaries manipulating or deceiving AI. This could result in AI bypassing security measures, gaining unauthorized access, or launching targeted attacks. Hence, AI has become a double-edged sword in

cybersecurity (Mitchelson, 2023). In addition to these threats, according to (Lambert et al., 2021), the utilization of AI as a tool within cyber operations has posed three problems: 1. inadvertent escalation of conflicts due to autonomous decision-making and lack of human oversight, 2. proliferation of the number of cyber operators since AI significantly reduces the human personnel and therefore costs associated with cyber operations, and 3. multiplication of attribution problems by the increasing number of these actors. Cyberspace, thus, thanks to AI, has become a crowded room full of actors with less and less ethics.

With all these threats and obstacles, an ethical framework to govern AI's development, deployment, and usage in cybersecurity is critical. In the following part, we will examine these frameworks in more detail.

Ethical Frameworks in Cybersecurity and AI: A Survey of Existing Literature

Current ethical frameworks in cybersecurity and artificial intelligence (AI) are critical in guiding the proper development, implementation, and usage of AI systems in cybersecurity. These frameworks are intended to address various ethical problems raised by the increased use of AI, such as bias amplification, data privacy, a lack of transparency, human oversight, and accountability (Papagiannidis et al., 2022).

One crucial ethical paradigm in artificial intelligence and cybersecurity is the consideration of the influence on human well-being and the common good (Ebers et al., 2021). This framework suggests the need to ensure that technological advancement, particularly in artificial intelligence and cybersecurity, aligns with human well-being and society's benefit. Another crucial ethical value to be held is transparency and responsibility in designing and deploying AI systems, emphasizing the importance of clear and transparent decision-making procedures and methods to ensure accountability in the event of any ethical or security breaches. (Sonboli et al., 2021).

Many ethical frameworks also address the potential for bias and unfairness in AI systems, particularly in the context of cybersecurity (Ferrara, 2023). These frameworks emphasize the need to detect and correct biases in AI systems to avoid discriminatory practices and security flaws. These frameworks emphasize the need to detect and correct biases in AI systems to avoid discriminatory practices and security flaws. They hence would enhance the security and reliability of AI-driven cybersecurity measures.

Today, a well-received ethical framework for AI and cybersecurity is the Ethics Guidelines for Trustworthy AI by the European Commission (Cannarsa, 2021). This framework emphasizes the principles of transparency, accountability, and fairness, aligning closely with the ethical considerations mentioned above. It aims to ensure that AI systems prioritize human well-being and contribute positively to society. Another notable framework is the Principles for Responsible Stewardship of Trustworthy AI by the Organisation for Economic Co-operation and Development (OECD, 2019). This framework emphasizes the need for transparent and accountable decision-making processes and addresses the potential for bias and unfairness in AI systems. It aligns with concerns about mitigating biases in AI algorithms to prevent discriminatory practices and security vulnerabilities.

These and other frameworks seek to define rules and principles that businesses and governments can utilize to assure responsible and ethical research, implementation, and use of artificial intelligence (AI) in cybersecurity in their particular sectors or regions. However, implementing ethical frameworks for AI and cybersecurity globally poses significant challenges. One of the main difficulties is the varying ethical standards and cultural norms across different regions and countries. What may be considered righteous in one part of the world might not necessarily align with the values and principles of another (Tidjon, 2022).

This makes establishing a universally accepted ethical framework that can be uniformly applied globally is complex. Another challenge lies in the rapid pace of technological advancement and innovation, which often outpaces the development of ethical guidelines and frameworks. As AI and cybersecurity technologies evolve, ethical considerations must keep pace with these advancements, creating a continuous challenge to ensure these frameworks remain relevant and practical (Rudzicz & Saqur, 2020).

Furthermore, enforcement and compliance with ethical standards across borders and jurisdictions present significant obstacles (Cath, 2018). The lack of a unified governance structure for AI and cybersecurity makes it challenging to enforce ethical guidelines consistently, especially when dealing with transnational issues such as data privacy, security, and human rights. Moreover, global networks' sheer complexity and interconnection make properly addressing the ethical implications of AI and cybersecurity extremely difficult. The potential impact of AI and cybersecurity on society, the environment, and human well-being varies

across different regions and cultures, making it difficult to develop a one-size-fits-all ethical framework that can address these diverse challenges effectively (Cath, 2018).

Finally, the conflict between privacy and security hinders the global application of ethical frameworks (Agbese et al., 2023). Balancing the need for confidentiality with security measures often involves trade-offs subject to different interpretations and priorities across regions, making reconciling these conflicting interests in a single ethical framework difficult. Therefore, collaboration and cooperation among governments, organizations, and stakeholders become crucial in harmonizing standard ethical practices and enforcing cyber ethics compliance globally. After all, cyberspace is a global ecosystem that transcends borders and jurisdictions. This is the challenge that the Catholic Church, as a universal body with a worldwide reach, can play a significant role in addressing.

Discussion

Historical Perspectives on Technology and Ethics in the Catholic Church

The Catholic Church has a long history of addressing technology-related ethical concerns. Throughout history, the Catholic Church has acknowledged the significance of ethics in technology and its influence on society. Before the rise of artificial intelligence, the Church had wrestled with ethical issues regarding using numerous technologies, including the printing press, radio, television, and the internet. Recognizing the enormous influence of technical breakthroughs on human existence, the Catholic Church has highlighted the need for ethical contemplation and societal concerns in each century.

When the printing press was first introduced in the 15th century, the Church faced moral and ethical dilemmas regarding the potential consequences of mass-produced texts on religious knowledge and interpretation. The dissemination of information through printed materials raised questions about authority, understanding, and the potential for misinformation. In response, the Church emphasized the importance of ethical use of the printing press, advocating for responsible publication and dissemination of religious texts to ensure doctrinal integrity (Penner, 2017). The Church's engagement with ethical reflection during the printing press era demonstrates its commitment to upholding ethical standards while embracing technological advancements for the greater good of society.

Similarly, when radio and television were later introduced, the Catholic Church recognized the power of these technologies to reach and influence large audiences. The Church urged prudent and ethical use of radio and television programs, highlighting the role of these media channels in promoting moral principles and establishing cultural norms. The Church's involvement in ethical concerns about the use of radio and television reflected its to ensure that these technologies were used for the good of human society rather than the propagation of harmful or immoral content (Pontifical Council of Social Communication, 2000).

Subsequently, in the late 20th century, new ethical considerations emerged for the Catholic Church with the advent of the internet and digital technologies. Considering this, in February 2002, the Pontifical Council for Social Communications released a document titled Ethics in Internet, which addressed the ethical challenges posed by the Internet and highlighted the importance of protecting human dignity and promoting the common good in the digital realm (Pontifical Council of Social Communication, 2002a). The document emphasized that while the internet presented a remarkable opportunity for global communication and access to information, it also brought about ethical concerns, such as disseminating harmful content, privacy issues, and the potential for exploitation. The Church's involvement in ethical questions in the digital age demonstrates its dedication to fostering responsible and ethical use of technology for the benefit of society.

The Pontifical Council for Social Communications also produced a paper titled The Church and the Internet in the same year, emphasizing the need to eliminate the digital divide and give equitable access to technology to all people, particularly those in disadvantaged groups (Pontifical Council of Social Communication, 2002b). In the statement, the Church acknowledges the importance of technology in influencing society and argues for the equitable allocation of digital resources to promote social justice and inclusivity. The Church also addressed ethical concerns over the use of social media, highlighting the necessity of using technology to foster human connection and promote authentic dialogue.

Why did the Catholic Church take so much interest in actively and proactively engaging with the ethical considerations and challenges of the digital world? The reason behind the Catholic Church’s active and proactive engagement with the ethical considerations and challenges posed by the digital world can be

found in the document Gaudium et Spes from Vatican II. Here, the Church emphasizes the importance of its involvement in the contemporary world with its joys and hopes (Vatican II, 1965, Gaudium Et Spes [GS], 1). As technology advances at an unprecedented pace, the Church recognizes that it cannot remain indifferent or passive in the face of these developments.

The Church also recognizes in Gaudium et Spes the potential of technology to foster prosperity, peace, and mutual understanding among peoples while acknowledging the risks and ethical concerns associated with them (GS, 57). It emphasizes the need for honest reflection and consideration of the societal implications of technological advancements, aligning with the Church's long-standing tradition of engaging with ethical issues related to technology. Therefore, the Church's active engagement with the ethical considerations of the digital world is rooted in its mission to ensure that technological advancements serve the well-being of humanity and uphold fundamental moral principles. This same mission, which Pope Francis again emphasized in his Encyclic Laudato Si (Francis, 2015), also drives the Church's commitment to safeguarding the digital world in the age of artificial intelligence.

Catholic Church and AI Ethics

Just as the Church has historically been a proponent of ethical reflection in the face of technological advancements, it continues to actively contribute to the ongoing dialogue on the ethical implications of AI. Pope Francis stated in his presentation to the 25th Anniversary General Assembly of the Pontifical Academy for Life in 2019 that artificial intelligence, robotics, and other technological innovations must be so employed that they contribute to the service of humanity and the protection of our common home, rather than to the contrary, as some assessments unfortunately foresee. (Francis, 2019).

The Church stresses the importance of ensuring that AI is developed and implemented in a manner that serves humanity and maintains fundamental ethical principles, with an emphasis on solidarity, justice, and the common good, while also emphasizing the dignity of human beings, created in the image and likeness of God, distinct from any machine or artificial intelligence (Sinibaldi et al., 2020). In this regard, the Church underlines the significance of multidisciplinary collaboration and discourse in navigating the complex ethical terrain of AI and ensuring that its development and usage are consistent with human values and dignity (Sinibaldi et al., 2020).

Focusing on cybersecurity, the Church acknowledges AI's potential risks and challenges, including privacy, autonomy, and the concentration of power (Vatican News, 2021). For the church, ensuring privacy in the age of AI is a paramount concern that cannot be overlooked. The advancement of AI-driven technologies has raised numerous ethical and privacy issues, particularly about data collection, surveillance, and the potential for infringement on individual autonomy. Integrating AI into various aspects of society, including healthcare, finance, and law enforcement, has raised concerns about protecting personal data and the potential for discriminatory practices based on algorithmic decisions. The Church recognizes the importance of addressing these issues and advocates for robust ethical frameworks and legal safeguards to protect individuals' privacy rights and promote equitable access to and control over AI technologies.

Moreover, the concentration of power in the hands of AI systems, particularly in determining access to resources, opportunities, and information, raises questions about fairness, justice, and preserving human freedom. AI systems are not neutral. They run on algorithms and are trained to achieve specific goals set by their designers or operators, whether for maximizing profit, influencing opinions, or maintaining political control (Stinson, 2022). This underscores the need for ethical considerations in designing, deploying, and regulating AI, acknowledging the potential for abuses and unintended consequences.

In conclusion, the Church's active participation in the current discourse on the ethical implications of AI emphasizes the significance of ethical thought, interdisciplinary collaboration, and societal engagement in addressing the many issues of AI's ethical application. The Church recognizes the importance of a human-centered approach to AI ethics that values human dignity and supports the common good. Through initiatives such as the Rome Call for AI Ethics, the Church aims to foster a dialogue that integrates religious perspectives and values into developing and using AI technologies (Sinibaldi et al., 2020).

Rome Call for AI Ethics: The Church's Formal Contributions to Cybersecurity

In February 2020, the Catholic Church organized an event called Renaissance: A Human-Centric Artificial Intelligence at the Vatican (Sinibaldi et al., 2020). In this historic event, the Church brought together experts from diverse domains, fostering an inclusive dialogue emphasizing the centrality of human dignity, solidarity, and the common good in developing and deploying AI

technologies. The formal result of this event is the Rome Call for AI Ethics, signed by PAV's president (Archbishop et al.), Microsoft's president (Brad Smith), IBM's executive vice president (John Kelly III), the Food and Agriculture Administration's director general (Dongyu Qu), and the Minister of Italian Government for Technological Innovation and Digitalization (Paola Pisano).

Central to the Rome Call for AI Ethics is the recognition that new technology must be researched and produced by criteria that ensure it truly serves the entire human family, respecting the inherent dignity of each of its members and all-natural environments, and taking into account the needs of those who are most vulnerable. (RenAIssance Foundation, 2020). This recognition aligns with the Church's long-standing teachings and principles on human dignity and social justice, where the Church's ethical imperative prioritizes the value of the human being for whom technological advancements are intended to benefit. This emphasis on anthropocentrism places human beings at the forefront of moral consideration, promoting human flourishing and limiting harmful intervention.

The Rome Call for AI Ethics proposes six principles for establishing an algorithmic vision that stresses the ethical usage of AI and dramatically contributes to the enhancement of cybersecurity in the AI era. These six principles are:

1. **Transparency**: AI systems must be understood by everyone. This principle ensures that AI-based algorithmic agents' decision-making criteria, purpose, and objectives are transparent and accessible to users. In addition, each individual must be aware that he or she is engaging with a machine. This comprehension will keep people from being misled or influenced by AI systems, resulting in a more secure cyber environment.
2. **Inclusion**: AI technology and cyberspace must reflect the requirements of all individuals without discrimination. Individuals should be given the best possible opportunities to express themselves and develop, with particular emphasis on inclusive access to education and the use of AI to assist those with impairments. This dedication to inclusivity creates a more secure cyber landscape by ensuring all users are considered and safeguarded, lowering the danger of targeted discrimination and exploitation.
3. **Responsibility**: AI creators and deployers must be accountable and transparent in their acts, bearing responsibility for the AI systems' behaviors. All that AI accomplishes is ultimately governed by human accountability. AI inventors and operators are accountable for the outcomes of their work, both purposefully and unintentionally. This idea is strongly related to

cybersecurity since accountability and transparency are critical in ensuring that AI systems are built and implemented with integrity and resilience against evil intent, creating a sound foundation for law enforcement.

4. **Impartiality**: AI systems must not produce or behave based on bias to protect fairness and human dignity. The emphasis on impartiality emphasizes the significance of fairness and equitable treatment in ensuring that AI systems do not replicate or magnify existing social prejudices or discrimination. This is especially true for data used to train machine learning programs, which must be fair and accessible to biases to reduce the possibility of discriminatory behaviors and unethical exploitation of user data by AI systems.
5. **Reliability**: AI systems must be dependable. This approach directly contributes to cybersecurity by ensuring that AI systems fulfill their intended activities consistently and adequately. A reliable AI system lowers the danger of system vulnerabilities and malfunctions, resulting in a more secure digital environment.
6. **Security and privacy**: AI systems must be secure while respecting users' privacy. This principle increases overall cybersecurity by prioritizing user data protection, limiting illegal access to AI systems, and addressing privacy concerns in designing and deploying AI technology.

Incorporating these principles into the development, deployment, and regulation of AI systems will significantly contribute to a more secure cyber landscape, offering protection against potential vulnerabilities, discriminatory practices, and unauthorized access. As AI evolves, incorporating these ethical standards will be critical in protecting digital infrastructure and ensuring that AI technologies are used responsibly and ethically.

The Road Ahead

In the wake of the Rome Call for AI Ethics, the Church has proactively promoted the six algo-ethic principles by engaging with policymakers, industry leaders, and international organizations. The Rome Call has garnered significant support from diverse stakeholders and has become a leading global reference point for AI ethics. Several key initiatives and developments have emerged as a result, including The Abrahamic Commitment to the Rome Call in January 2023, where representatives of the Muslim and Jewish faiths joined the Vatican in signing a

commitment to the Rome Call, highlighting the importance of ethical AI development from a religious perspective (RenAIssance Foundation, 2023).

The Rome Call has also catalyzed international collaboration on AI ethics. Several countries and organizations have adopted or developed their AI ethics frameworks, drawing inspiration from the principles outlined in the document. Moreover, many private tech companies have implemented AI ethics principles and guidelines, demonstrating their commitment to responsible AI development. Despite its significant impact, the Rome Call has challenges. Some critics argue that the document is too vague and lacks concrete recommendations. While the Rome Call for AI Ethics puts forward a human-centric perspective that prioritizes the protection of human dignity and the common good, differing viewpoints emphasize AI's considerable potential to benefit society (Pflanzer et al., 2023).

Proponents of allowing AI to develop without stringent ethical oversight argue that AI technologies have the potential to revolutionize various sectors, including healthcare and finance, leading to significant advancements and improvements in the quality of life for individuals. They believe that overly restrictive ethical guidelines may hinder the full potential of AI, resulting in missed opportunities for innovative solutions to complex societal challenges. They highlight the need for flexibility in AI development, arguing that strict ethical frameworks may stifle creativity and exploration and asserting that AI technology should evolve and adapt without being overly constrained by ethical considerations (Agbese et al., 2023).

This tension between technology and ethics is not unique to AI development but has been a recurring theme throughout history. For instance, the development of nuclear energy raised similar debates about the balance between technological progress and ethical responsibility. The rapid progression of biotechnology also raises similar questions about the ethical boundaries of scientific advancement. In all of these cases, the Church always strives to balance the potential benefits of technology and the ethical implications that arise from its advancements (Congregation for the Doctrine of the Faith, 2008). The Church has always been guided by the eternal principle of human dignity and the common good. It will be vital in fostering dialogue and driving the responsible development and use of technology, including AI.

In conclusion, the Rome Call for AI Ethics has undoubtedly sparked crucial conversations and initiatives, laying the groundwork for a shared global understanding of ethical AI development. It has catalyzed international

collaboration, emphasizing the significance of ethical considerations in AI and inspiring various countries and organizations to adopt similar frameworks. Despite ongoing debates and differing viewpoints regarding the ethical implications of AI, the Rome Call has provided a human-centric perspective aimed at prioritizing the protection of human dignity and the common good. As AI technology continues to evolve, the ethical principles outlined in the Rome Call will remain instrumental in guiding responsible AI development and use, aligning with the enduring commitment to principles of human dignity and moral responsibility upheld by the Catholic Church.

Conclusion

The rise of artificial intelligence has undeniably brought about many benefits and advancements. However, it has also ushered in new cybersecurity risks and challenges, such as AI-powered cyber-attacks, biased AI algorithms, and the over-reliance on AI in security systems, which could pose a double-edged sword.

To face these challenges, ethical frameworks in AI development are essential to mitigate potential risks and ensure responsible utilization of AI technologies. Specific organizations have established several frameworks to address these concerns, including the Ethics Guidelines for Trustworthy AI by European Commission and Principles for Responsible Stewardship of Trustworthy AI by OECD. However, these guidelines tend to be bound to their respective fields and territories. Challenges remain to implement a global framework of AI ethics universally.

In this regard, the Catholic Church, a universal body with global reach, can play an important role. As it has been at the forefront of resolving ethical challenges in other technical developments throughout history, including the printing press, television, and internet, the Church continues to play an active role in shaping the ethical landscape of AI. The Rome Call for AI Ethics has undoubtedly been a significant formal contribution of the Catholic Church to cybersecurity. By emphasizing six algorithmic principles (transparency, inclusion, responsibility, impartiality, reliability, and security and privacy), the Rome Call provides a solid foundation for ethical AI development and use and contributes to creating a more secure digital world.

However, putting these ethical ideas into action is not without difficulties. The conflict between weighing the potential advantages of AI technology against

its possible dangers and ensuring that ethical issues are addressed in the development process persists. As the conversation continues, the Catholic Church, motivated by its commitment to defending human dignity and promoting the common good, will always be a vital advocate for safeguarding the digital sanctuary in the future.

References

Agbese, M., Mohanani, R., Khan, A. A., & Abrahamsson, P. (2023). *Implementing AI Ethics: Making Sense of the Ethical Requirements*. https://doi.org/ 10.1145/ 3593434.3593453

Batista, E., Moncusi, M. A., López-Aguilar, P., Martínez-Ballesté, A., & Solanas, A. (2021). *Sensors for Context-Aware Smart Healthcare: A Security Perspective*. https://scite.ai/reports/10.3390/s21206886

Cannarsa, M. (2021). Ethics guidelines for trustworthy AI. *of Lawyering in the Digital Age*.

Cath, C. (2018). Governing artificial intelligence: Ethical, legal and technical opportunities and challenges. In *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* (Vol. 376, Issue 2133). https://doi.org/10.1098/rsta.2018.0080

Congregation for the Doctrine of the Faith. (2008). *Instruction Dignitas Personae on Certain Bioethical Questions*. https://www.vatican.va/roman_curi a/ congregate-tions/cfaith/documents/rc_con_cfaith_doc_20081208_dignitas-personae_en.html

Ebers, M., Hoch, V. R. S., Rosenkranz, F., Ruschemeier, H., & Steinrötter, B. (2021). *The European Commission's Proposal for an Artificial Intelligence Act—A Critical Assessment by Members of the Robotics and AI Law Society (RAILS)*. https://doi.org/10.3390/j4040043

Esmaeilzadeh, P. (2020). *Use of AI-based tools for healthcare purposes: a consumer survey study*. https://doi.org/10.1186/s12911-020-01191-1

Ferrara, E. (2023). *Fairness and Bias in Artificial Intelligence: A Brief Survey of Sources, Impacts, and Mitigation Strategies (Preprint)*. https://doi.org/ 10.2196/preprints.48399

Formosa, P., Wilson, M., & Richards, D. (2021). *A principlist framework for cybersecurity ethics*. https://doi.org/10.1016/j.cose.2021.102382

Francis. (2019). *Letter of the Holy Father Francis to the President of the Pontifical ...*

https://press.vatican.va/content/salastampa/en/bollettino/pubblico/2019/01/15/190115a.html

Ghafoor, L., & Khan, M. (2023). *A Threat Detection Model of Cyber-security through Artificial Intelligence*. https://scite.ai/reports/10.31219/osf.io/fq5jy

Hall, P., & Ellis, D. J. (2023). *A systematic review of socio-technical gender bias in AI algorithms*. https://doi.org/10.1108/oir-08-2021-0452

King, T. C., Aggarwal, N., Taddeo, M., & Floridi, L. (2019). *Artificial Intelligence Crime: An Interdisciplinary Analysis of Foreseeable Threats and Solutions*. https://doi.org/10.1007/s11948-018-00081-0

Lambert, D., Thelisson, E., Reichberg, G. M., & Ghanem, A. A. (2021). Human Fraternity in the cyberspace: ethical challenges and opportunities. *Available at SSRN*.

Mitchelson, D. (2023). *The double-edged sword of artificial intelligence in cyber security*. World Economic Forum. https://www.weforum.org/agenda/2023/10/the-double-edged-sword-of-artificial-intelligence-in-cybersecurity/

OECD. (2019). *OECD Principles on Artificial Intelligence - Organisation for Economic Co-operation and Development*. OECD Web Page.

Papagiannidis, E., Enholm, I. M., Dremel, C., Mikalef, P., & Krogstie, J. (2022). *Toward AI Governance: Identifying Best Practices and Potential Barriers and Outcomes*. https://scite.ai/reports/10.1007/s10796-022-10251-y

Park, J., Wen, M., Sung, Y., & Cho, K. (2019). *Multiple Event-Based Simulation Scenario Generation Approach for Autonomous Vehicle Smart Sensors and Devices*. https://doi.org/10.3390/s19204456

Penner, J. (2017). The printing press and religion: A study in reciprocity. In *Ubc*. https://blogs.ubc.ca/etec540sept12/2012/10/27/the-printing-press-and-religion-a-study-in-reciprocity/

Pflanzer, M., Traylor, Z., Lyons, J. B., Dubljević, V., & Nam, C. S. (2023). Ethics in human–AI teaming: principles and perspectives. *AI and Ethics*. https://doi.org/10.1007/s43681-022-00214-z

Pontifical Council of Social Communication. (2000). *Ethics in Communications*. Vatican. https://www.vatican.va/roman_curia/pontifical_councils/pccs/documents/rc_pc_pccs_doc_20000530_ethics-communications_en.html

Pontifical Council of Social Communication. (2002a). *Ethics in Internet*. https://www.vatican.va/roman_curia/pontifical_councils/pccs/documents/rc_pc_pccs_doc_20020228_ethics-internet_en.html

Pontifical Council of Social Communication. (2002b). *The Church and Internet*. https://www.vatican.va/roman_curia/pontifical_councils/pccs/documents/rc_pc_pccs_doc_20020228_church-internet_en.html

Renaissance Foundation. (2020). *Rome Call for AI Ethics*. https:// www.romecall.org/wp-content/uploads/2022/03/RomeCall_Paper_web.pdf

Renaissance Foundation. (2023). *AI Ethics: An Abrahamic Commitment to the Rome Call*. https://www.romecall.org/wp-content/uploads/2023/01/AI-Joint-Decla-ration-5-Jan1-1.pdf

Rudzicz, F., & Saqur, R. (2020). *Ethics of Artificial Intelligence in Surgery*. https://scite.ai/reports/10.48550/arxiv.2007.14302

Sayegh, E. (2023). *Almost Human: The Threat Of AI-Powered Phishing Attacks - Forbes*. https://www.forbes.com/sites/emilsayegh/2023/04/11/almost-human-the-threat-of-ai-powered-phishing-attacks/

Sinibaldi, E., Gastmans, C., Yáñez, M., Lerner, R. M., Kovács, L., Casalone, C., Pegoraro, R., & Paglia, V. (2020). *Contributions from the Catholic Church to ethical reflections in the digital era*. https://doi.org/10.1038/s42256-020-0175-4

Sonboli, N., Smith, J. J., Berenfus, F. C., Burke, R., & Fiesler, C. (2021). *Fairness and Transparency in Recommendation: The Users' Perspective*. https://doi.org /10.1145/3450613.3456835

Stahl, B. C. (2021). *Ethical Issues of AI*. https://doi.org/10.1007/978-3-030-69978-9_4

Stinson, C. (2022). Algorithms are not neutral. *AI and Ethics*, *2*(4), 763–770. https://doi.org/10.1007/s43681-022-00136-w

Tao, F., Akhtar, M. S., & Zhang, J. (2021). *The future of Artificial Intelligence in Cybersecurity: A Comprehensive Survey*. https://doi.org/10.4108/eai.7-7-2021.170285

Tidjon, L. N. (2022). *The Different Faces of AI Ethics Across the World: A Principle-Implementation Gap Analysis*. https://doi.org/10.48550/arxiv.2206.03225

Tronnier, F., Pape, S., Löbner, S., & Rannenberg, K. (2022). *A Discussion on Ethical Cybersecurity Issues in Digital Service Chains*. https://doi.org/10.1007/978-3-031-04036-8_10

Vatican II. (1965). *Gaudium et Spes*. https://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_const_19651207_gaudium-et-spes_en.html

Vatican News. (2021). *Vatican meeting explores challenge of artificial intelligence*. https://www.vaticannews.va/en/vatican-city/news/2021-10/vatican-

symposium-challenge-artificial-intelligence-society.html

Author Profile:



STEVEN WIJAYA, born in Palembang, 29 December 1987, domiciled in Landak, West Kalimantan - Indonesia, email: johnpaul2.cse@gmail.com. Education: graduated from the Bachelor of Theology Program at STIKAS Santo Yohanes Salib, Bandol in 2022. The current functional position is a postgraduate student in the Master of Theology Program at STIKAS Santo Yohanes Salib, Bandol.

Author's Profile



Dorothy Binti Aging, born in Sabah, Malaysia on March 5, 1972, domiciled in Landak, West Kalimantan – Indonesia, email: dorothyaging@gmail.com Education. Graduated from the Bachelor of Theology Program at the STFT Widya Sasana Malang, Indonesia in 2008. Graduated from the Master's Program at the Pontifical University of Teresianum, Rome in 2012. Work experience: from 2013 until now working as a lecturer at STIKAS Santo Yohanes Salib

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER III

Artificial Intelligence (AI) Advances in Catholic Family Life: Opportunities and Challenges

Metodius Nasrani (Confortinasrani14@gmail.com)
Fransiskus Heryman Surya Gadur (albert.bky122@gmail.com)

STIKAS Santo Yohanes Salib - West Kalimantan

Abstract

Advances in artificial intelligence (AI) technology have brought fundamental changes to Catholic family interactions and dynamics. Research shows that adopting AI can improve family communication and spirituality but also raises ethical implications and challenges to traditional values. This study explores the impact of AI on family interaction patterns and language, identifying potential enhancements and disruptions to interpersonal relationships. In addition, the application of AI in Catholic religious education offers a more personalized and adaptive learning method but risks reducing the human interaction essential for spiritual growth. The views of Pope John Paul II and Pope Francis emphasize the wise use of technology to enrich family values and protect human dignity. This study aims to bridge the integration of AI by considering its challenges and opportunities for Catholic families in maintaining the legacy of traditional values amidst technological advancements.

Keywords: Advances in AI technology, Catholic Life, Challenges and opportunities, Catholic Religious Values

Introduction

Advances in artificial intelligence (AI) technology have become a milestone in the transformation of human life, creating significant developments in various fields, as described by (Russell & Norvig, 2010) that AI is at the center of global attention in formulating the future direction of technology and human interaction with AI. McCarthy et al., 2006 explained that AI plays a vital role in technological development. The use of AI, from digital assistants to predictive algorithms in everyday life, has opened up new opportunities and posed unique challenges, especially in families with Catholic religious values (Smith, 2020).

Smith (2020) posits that the infusion of Artificial Intelligence (AI) into the daily routines of Catholic families gives rise to pivotal inquiries concerning how these families can seamlessly integrate such technology in alignment with their religious values and doctrines. Ethical dilemmas inherent in AI, encompassing social and spiritual dynamics within familial settings, along with the repercussions of AI utilization on the educational sphere for children within a Catholic milieu (Yi et al., 2024), underscore a discernible disparity in comprehending and implementing this technology within the specific context of Catholic households (Brown, 2021).

Research (Green, 2018) found the impact of AI in business and social contexts but less attention to religious and spiritual aspects, particularly in the context of Catholic families. Thus, this study aims to bridge the gap by examining how Catholic families incorporate AI into their daily lives, investigating the obstacles encountered, and identifying the potential for alignment between AI technologies and Catholic principles (Johnson & Brown, 2021).

Furthermore, the study explores how Catholic religious education can adapt to these technological advancements and the ramifications of religious instruction and practice within families (Smith, 2020). In conjunction with these rapid advancements, the Catholic family as a moral and spiritual entity cannot evade the transformative impact of these technologies, and according to Vos, G. A. et al. (2020), the development of AI technologies not only affects individuals but also permeates the entire familial structure. Schneck and Döring (2016) contend that families bear a moral obligation to ensure that the utilization of technology aligns with Catholic spiritual and moral values.

In this context, the Church emphasizes the importance of using technology wisely so that family values are not compromised. This understanding is fundamental in the view of Pope John Paul II, who invited Catholics to digest technological developments within the framework of morality. In Familiaris Consortio (1981), Pope John Paul II emphasized how vital the role of the family is to educate children in moral and religious values (John Paul II, 1981).

Families must ensure that technology within the family environment supports character formation by Catholic teachings. In his encyclical Amoris Laetitia (2016), Pope Francis also underlined the role of the family in dealing with technological challenges, primarily through proper sexual education and digital ethics, being aware of inequalities in access to technology, and assisting family

members in dealing with moral issues and maintaining a balance between digital interaction and private life (Francis, 2016).

Catholic families need to address the complex challenges that come with these technological advancements. Such challenges touch on how technology affects family values, interpersonal relationships, and moral integrity. In responding to these challenges, the judicious utilization of AI technology can open doors to higher education and awareness, allowing families to stay connected and deepen faith values. In addition, Catholic families are expected to engage judiciously to guide their family members in the use of and response to AI technological advancements to align with moral teachings and Catholic values. In this regard, the Family becomes a place where each family member is honored and protected in dignity. Therefore, using AI in the family must respect individual human rights and freedoms and not be used to manipulate or exploit family members (Rome Call for AI Ethics, 2020).

Therefore, this research explores how Catholic families employ artificial intelligence (AI) technology in their everyday lives and how it impacts the social and spiritual interactions within the family. What are the primary obstacles encountered by Catholic families in attempting to reconcile AI with Catholic doctrines and religious values, and how might these obstacles be addressed? How can Catholic religious education adapt to the advancements in AI technology, and how does this influence the teaching of religion and spiritual practices within Catholic families? What are the perspectives and teachings of the Catholic Church, as represented by Pope John Paul II and Pope Francis, regarding the utilization of AI technology in Catholic family life, and how can these perspectives guide Catholic families in safeguarding their spiritual and moral values in an era of rapidly evolving technology? Literature Review

Impact of AI on Social and Spiritual Interaction of Catholic Families

Advances in AI have brought about a significant impact on the social and spiritual interactions of Catholic families. Research from Andriansyah (2023) comprehensively explains how AI affects the dynamics of social and spiritual relationships in the context of Catholic families. In detail, he describes how Catholic families adopt and implement specific AI applications and platforms. This analysis includes an in-depth understanding of the role of technology in facilitating social and spiritual activities, making it more than just a conventional communication tool. The research provides a rich understanding of how AI can

shape and enhance the quality of interactions between family members in the spiritual and social realms.

Meanwhile, Jahan et al. (2020) also specifically analyzed the role of AI in aiding communication and engagement within families. This study investigated designing and implementing an AI-based mobile application to help families stay connected. In this case, AI facilitated families' communication and participation, especially in geographically separated families. Adopting this technology is about ease of communication and strengthening family engagement and relationships in social and spiritual dimensions. By engaging geographically separated families, AI applications can act as a bridge to maintain and deepen the spiritual connection between family members.

Furthermore, Tran and Nguyen (2021) focused on the impact of AI on Catholic religious practices in terms of sacramental practices and pastoral care. AI can enrich the appreciation of sacraments in the Church, such as Eucharist and Reconciliation. For example, AI applications can provide deeper reading material, reflections, or historical context in preparation for Mass. Also, in the reception of the sacrament of Reconciliation, AI apps or devices can help in the process of personal reflection and guidance for conversion.

These AI apps can also greatly assist families in shaping spiritual discussions, deepening their understanding of Catholic teachings, and enhancing family worship (Hohenstein et al., 2023). Likewise, in pastoral care, the application of AI technology in religious guidance and counseling can provide additional support for individuals seeking spiritual guidance (Sinibaldi et al., 2020). AI systems can help analyze an individual's questions or needs and provide responses that align with Catholic religious teachings and values.

The Challenge of Integrating AI and Catholic Teaching in the Family

The use of AI Technology has presented severe challenges to the integrity of the Catholic family. While these technologies provide convenience in various aspects of life, their impact on the moral and ethical values of the family is a significant concern. In AI integration, ethical questions about privacy, security, and social impact arise that must be carefully considered. In this regard, the Catholic Church's teaching is, in principle, that AI technologies are used to support, not replace, authentic and deep human interaction (Pegoraro & Curzel, 2023).

Catholic families are faced with the critical task of ensuring that AI technologies do not compromise family intimacy, threaten privacy, or undermine Catholic moral principles. Pope John Paul II, in Familiaris Consortio, emphasized the importance of maintaining the integrity of the family as being in harmony with Catholic teaching (John Paul II, 1981). The challenge raises the question of how the Catholic family can maintain its values, especially in a digital age increasingly influenced by AI Technology.

To address this challenge, the first step is to raise awareness and understanding of the ethical implications of AI use. Families must design clear internal policies regarding time limits on technology use, division of technology-related household tasks, and norms that guide the ethical use of devices within the home, such as implementing filters or adequate parental controls (Green, 2022). This can help create a balanced environment between technology, social interaction, and spiritual life.

According to Sinibaldi, Parents need to provide a strong understanding of Catholic values and how technology can be used to support those values, not as a substitute (Sinibaldi et al., 2020a). Similarly, (Schneider et al., 2019) emphasized the importance of a comprehensive approach to clearly understanding Catholic values and, in this case, prioritizing human interaction within the family, such as talking, discussing, and sharing experiences in person, without reliance on technology. This can be done by setting a particular time to interact without technological distractions so that the value of communication and affection between family members is maintained (AI Ethics: An Abrahamic Commitment to the Rome Call, 2023).

Bishop Tighe also believes that one of the proposed solutions to address this challenge is an understanding approach and awareness of the possible impacts of AI technology. In this regard, solid moral education in Catholic families is essential to ensure that the use of AI technology does not contradict the teachings of the Church. Integrating AI and Catholic teachings in the family also requires a holistic and thoughtful approach (Green, 2022).

Opportunities for Catholic Religious Education Development through AI

Considering the positive aspects, research indicates that artificial intelligence (AI) technology can be a valuable tool in nurturing Catholic families' spiritual and academic development. Graves' study in 2022, which focuses on

education and religious traditions, investigated the impact of AI technology on the lives of Catholic families. The findings of Graves' research illustrate how the utilization of artificial intelligence (AI) can augment the effectiveness and efficiency of the educational system through various techniques, encompassing virtual reality applications, intelligent tutoring systems, adaptive learning, predictive analysis, and natural language processing interfaces. This analysis seeks to explore how AI can affect the lives of Catholic families in terms of education, especially in the context of adaptive learning, predictive analysis, intelligent tutor systems, and virtual reality applications (Graves, 2022).

In this case, Labrecque understood that AI technology could be essential in supporting Catholic families' learning and spiritual growth. Catholic families can facilitate more convenient and comprehensive access to spiritual information and resources through AI-powered applications and platforms. This advancement proves beneficial in fostering a more profound comprehension of Catholic religious teachings and elevating spiritual practices within the familial context (Labrecque, 2022).

Labrecque's study further underscores that the integration of AI technology in Catholic religious education has the potential to introduce more interactive and captivating learning methodologies for family members. The adaptability of AI allows for personalized Catholic spiritual learning experiences, contributing to heightened engagement and interest among family members in acquiring religious knowledge. In his research, Stahl also accentuates that AI technology can streamline access to spiritual resources, thereby supporting the spiritual growth of individuals (Stahl, 2021).

Discussion

The Effect of AI Technology on Catholic Family Dynamics

The empirical inquiry conducted by Xingwen Wu et al. (2021) explores the influence of AI devices on family dynamics and child development within a specified age cohort. The study explores how AI integration shapes familial interactions, educational encounters, and the cultivation of cognitive and social skills in children. Its primary objective is to discern the positive and negative implications of integrating AI into family education. Through examining family experiences involving Tmall Genie and Duer, the researchers aim to offer valuable insights applicable to educators, parents, and technology developers.

The outcomes of this literature review underscore the potential advantages of AI integration in family education, particularly concerning the utilization of AI tools like Tmall Genie and Duer. On a positive note, AI can enrich children's learning experiences by delivering personalized and interactive educational content. Furthermore, it can aid parents in managing household responsibilities more efficiently, facilitating increased quality time with their children. However, concerns have been raised regarding the potential adverse effects of AI on family relationships, as prolonged screen time and reliance on AI devices may reduce face-to-face interaction and communication within familial contexts (Wu et al., 2021).

Storch and Juarez-Paz (2018) analyzed the influence of mobile devices on familial communication. Their findings indicate a substantial positive effect of mobile devices on family communication, attributed to heightened accessibility and flexibility in maintaining connectivity. The study underscores the significance of establishing boundaries and regulating screen time to uphold a healthy equilibrium between virtual and face-to-face interactions within familial contexts.

While facilitating increased connectedness and frequent communication within families, the extensive utilization of mobile devices has prompted apprehensions regarding potential adverse repercussions, such as diminished quality time spent together and potential distractions during pivotal family moments. Families are urged to manage their mobile device usage conscientiously, delineating boundaries to safeguard face-to-face interactions and meaningful relationships (Storch & Ortiz Juarez-Paz, 2018).

Similarly, research by Hohenstein et al. (2023) underscores the influence of Artificial Intelligence (AI) on communication, positing its substantial impact on language and social relationships. The study reveals that integrating AI into family communication can alter language patterns and social interactions, influencing family dynamics (Hohenstein et al., 2023). In light of these advancements, families must remain cognizant of potential negative impacts and actively oversee their digital interactions to continue cultivating robust and meaningful relationships within the family unit.

Ethics and Morality in the Utilisation of AI Technology

Using AI technologies in Catholic family life has ethical and moral implications that must be considered. Quoting Bishop Paul Tighe (Green, 2022) states that the adoption of AI in the learning and spiritual growth of Catholic

families can create risks to data security and privacy issues. Bishop Paul Tighe, in this regard, highlights the importance of considering the ethical implications of using AI in Catholic family life. He emphasized that the use of AI technologies in education and spiritual growth has the potential to present several challenges, particularly regarding the security and privacy of Catholic family data (Green, 2022).

The research conducted by (Tran & Nguyen, 2021) also discusses in detail the risks to data security and privacy issues that may arise from the adoption of AI in the learning and spiritual growth of Catholic families. This touches on sensitive issues related to personal data protection and information security that need to be considered in utilizing AI technology in religious contexts. In addition to privacy concerns, Tran and Nguyen emphasize that using AI technologies in Catholic family life should be based on careful ethical considerations.

They raised critical questions on how AI technologies can be integrated in a balanced way with the ethical values that underpin the teachings of the Catholic Church. They also highlighted the importance of balancing technological progress and authentic human values in religious practice. Likewise, a study by (Sinibaldi et al., 2020) revealed the need for caution in integrating AI technology into sacraments and pastoral care for Catholic families. They discuss how the utilization of AI technologies can affect the experience of sacraments and human engagement in pastoral care and potentially trigger ethical consequences that need to be carefully considered.

Moreover, an investigation carried out by Jin (2019) regarding the impact of the artificial intelligence era on early childhood family education in China revealed the significant role parents play in influencing AI's ethical and moral utilization within the familial context. This research underscores the pivotal nature of parental guidance in assisting children in comprehending the ethical and moral dimensions associated with AI. It accentuates the necessity for parents to be cognizant of the potential repercussions of AI on their children's cognitive and social development. In this context, parents must establish limits and supervise the utilization of AI to ensure its alignment with familial values and principles.

AI in Religious Education in Modern Catholic Families: Challenges and Opportunities

In the era of technological advancement in artificial intelligence (AI), the role of Catholic religious education within Catholic families has become a

fundamental concern. The integration of AI brings about fundamental changes in the approach to Catholic religious education. This new paradigm creates a platform for exploring innovative concepts and learning methods that can be personally adapted to each family member. AI allows religious education to be more dynamic, responsive, and relevant to individual development within the family. An in-depth analysis of how AI can be a means to enrich Catholic religious teaching while maintaining the integrality of spiritual and moral values that are central to the teachings of the Catholic Church.

The possibility of utilizing AI to provide learning resources that are specific and appropriate to the spiritual development of family members is critical to creating a dynamic and effective religious education environment. However, amidst these advancements, ethical and moral challenges arise. The sustainability of human interaction with AI in religious education demands careful consideration of the ethical implications of using this technology in shaping moral and spiritual values within Catholic families.

One possible impact is the loss of the human dimension and personal interaction in the religious learning process (Amriani et al., 2023). While AI can provide a personalized and adaptive learning experience, it is essential to remember that the spiritual dimension is often better understood through in-depth human interactions, such as discussions, questions, and personal mentorship. This shortcoming can harm spiritual and moral development, which is best achieved through direct engagement with religious teachings and practices.

In addition, information privacy and security risks also need to be considered. Relying on AI to collect personal data and religious preferences could open up potential security and privacy risks affecting Catholic families' integrity and trust in using these technologies. Solutions to address these impacts may involve a holistic and balanced approach to religious education in families. While AI can be a valuable tool, families must ensure that these technologies are used as complements, not substitutes. Initiatives such as maintaining human engagement through family discussions, religious classes at church, or spiritual direction can strengthen spiritual bonds by engaging the critical human aspects in faith formation.

In exploring opportunities for the development of religious education through AI advances in the context of the Catholic family, Amoris Laetitia (2016) and Familiaris Consortio (1981) are the central guides. Amoris Laetitia emphasizes the crucial role of religious education in shaping the character and morals of family

members. It provides a solid ethical and moral foundation for exploring ways AI applications can be integrated into Catholic families' religious education.

The document also highlights the importance of educating children in the Catholic faith. In this regard, Amoris Laetitia continues to guide that Catholic religious education in the family remains the primary responsibility of parents. In this regard, AI technology can be a valuable tool, but moral and spiritual values should be emphasized in the education process. In addition, understanding digital ethics and instilling Catholic values in the use of technology is an integral part of Catholic religious education in the family. John Paul II, also in Familiaris Consortio, emphasized the same point that technology, in this context, the advancement of AI, should not replace the role of parents as the primary educators of their children in religion. The value of direct involvement and continuity of religious education from generation to generation remains paramount. Therefore, while AI technology can provide the necessary learning resources, it should not replace the active role of parents in guiding and shaping their children's character by Catholic values. Analysis Teologis:

Reflections on the Views of Pope John Paul II and Pope Francis on the Dynamic Use of AI Technology in Catholic Families

The Catholic Church has a careful and reflective view of advances in artificial intelligence (AI), viewing them from the perspective of ethics and moral values. In the Catholic Church's view, advances in AI are seen as a tool with great potential to contribute to humanity positively. The Church recognizes AI's ability to improve human life, overcome some challenges, and provide solutions to various problems.

However, the Catholic Church also expresses ethical concerns about the development of AI. In its ethical assessment, the Church emphasizes that any technological advancement, including AI, should be directed towards advancing human welfare and involve fundamental moral principles (AI Ethics: An Abrahamic Commitment to the Rome Call, 2023). About AI technological advancements in the context of the Catholic family, we draw on the views of Pope John Paul II and Pope Francis to analyze the integration of these AI technological advancements in the Catholic family. This theological analysis explores the dynamics and theological implications of integrating AI technology into the Catholic family environment.

First of all, we seek to understand the views of John Paul II as reflected in several documents issued during his pontificate. Pope John Paul II, while not explicitly addressing the advancement of AI technology, took center stage in the values of the Catholic family. In Familiaris Consortio, Pope John Paul II emphasized the importance of the family as the domestic Church, the first place for the formation of faith. In the context of AI technology, the role of the family as an agent of spiritual and moral formation must be preserved. The document highlights the responsibility of parents to educate their children in the faith, and the integration of AI technologies should be carefully assessed not to replace this primary role.

Pope John Paul II details that the family should be a place where technology is used wisely, supporting and enriching the spiritual formation of family members. Therefore, technology should be directed towards strengthening, not replacing, the spiritual and religious dimensions of the family. In addition, the document also highlights the importance of communication and personal engagement within the family. In an age of advanced technology, where digital interactions can dominate, families are reminded to maintain their presence and deep interpersonal relationships. This includes using technology to facilitate positive communication and promote religious values.

In his encyclical Redemptor Hominis, Pope John Paul II highlighted human dignity as central to Catholic theology. In integrating AI technologies, the main focus is protecting human dignity and developing the person (John Paul II, 1979). Technology should be geared towards enhancing dignity and assisting in forming children's moral character, not at the expense of humane values within the family. Subsequently, in the encyclical Evangelium Vitae, Pope John Paul II deepened his views on life ethics issues, which remain relevant in the discussion on integrating AI technologies (John Paul II, 1995). He emphasized the importance of ethics in the development of technology, viewing it as an instrument that can enrich and improve human life without violating the principles of Catholic morality.

Moreover, Pope Francis touched on these issues in various contexts, highlighting Catholic families' challenges and opportunities in the age of advanced technology. Although Pope Francis' views on technological advancement and AI are not focused in one specific document, his messages create the foundation for a wise and ethical pastoral approach to the use of technology in Catholic family life. He emphasized the importance of ethics and social responsibility in the face of

technological advancement, viewing it as a tool that can advance justice, solidarity, and human dignity.

In his encyclical Laudato Si (2015), Pope Francis exhaustively detailed his views on ecology and the impact of technology on the environment and humans. While not explicitly addressing AI, the encyclical discusses the concept of ecological integrality that encompasses human life and the influence of technology on the way we live (Francis, 2019). Pope Francis emphasized that technology must be within an ethical framework that considers sustainability and social justice. In Amoris Laetitia (2016), Pope Francis addressed the issues of the modern family.

Although not specifically about AI technology, he highlighted the challenges and opportunities that arise from using social media and communication technology in family life. Pope Francis called for maintaining interpersonal relationships within families and encouraged using technologies that support personal engagement and healthy communication. He emphasized that technology should not be detrimental to human dignity and family life but should be directed toward advancing justice and human wholeness.

In conclusion, this analysis of Pope John Paul II and Pope Francis creates a foundation for understanding the Catholic Church's views on using AI technologies in the family. AI advancements reflect a holistic approach that considers their positive and negative impact on human dignity and moral values. Regarding the teachings of Pope John Paul II and Pope Francis, technology integration should be geared towards enriching the spiritual and moral life of the Catholic family, maintaining the continuity of traditional values, and positively contributing to ecology and human dignity.

Conclusion

Advances in AI technology have significantly impacted Catholic family life's social and spiritual aspects. On the one hand, AI technology has facilitated increased family interaction and engagement and enriched religious experiences through various digital applications and platforms. On the other hand, serious challenges arise in maintaining a balance between the digital world and the moral values and Catholic teachings that underpin family unity.

In the face of these dynamics, Catholic families must use AI technologies wisely, considering their impact on human dignity and interpersonal relationships within the family. Raising awareness about ethical issues and setting clear

boundaries in the use of technology is critical to bridging this challenge. On the other hand, AI technology also opens up significant opportunities for educational development and spiritual growth for family members through various interactive and personalized digital learning resources.

In this regard, the views of Pope John Paul II and Pope Francis provide an essential theological foundation, emphasizing that technology should be directed to enrich and complement, not replace, the central role of the family and interpersonal interactions in shaping moral and spiritual values. Thus, integrating AI into the Catholic family requires balance and wisdom so that its benefits can be realized without compromising the essence and integrity of the family itself.

References

AI Ethics: An Abrahamic Commitment to the Rome Call. (2023). *AI Ethics_ An Abrahamic commitment to the Rome Call _ Rome Call*. Retrieved from https://romecall.org/ai-ethics-abrahamic-commitment-to-the-rome-call/

Amriani, A., Maftuh, B., Nurdin, E. S., & Safei, M. (2023). Ethics of Using Technology in Strengthening Students Religious Character. Al-Hayat: *Journal of Islamic Education*, 7(2), 488-505. https://doi.org/10.18860/hayat.v7i2.16763

Andriansyah, Y. (2023). The Current Rise of Artificial Intelligence and Religious Studies: Some Reflections Based on ChatGPT. *Millah: Journal of Religious Studies*, ix-xviii.

Browning, M. (2021). Human rights and algorithmic systems. *Journal of Business Ethics,* 172(4), 735–751. https://doi.org/10.1007/s10551-021-04919-w

Francis, P. (2016). *Amoris Laetitia*--the Joy of Love. Lulu.com.

Francis, P. (2019). Laudato Si: On care for our typical home. In Ideals and Ideologies (pp. 503–510). Routledge.

Graves, M. (2022). *Theological Foundations for Moral Artificial Intelligence*. University of Notre Dame Press.

Green, E. E. (2018). *Robots and AI: The Challenge to Interdisciplinary Theology*. Files/7885/Green - Robots and AI The Challenge to Interdisciplinary .pdf

Green, B. P. (2022). The Vatican and Artificial Intelligence: An Interview with Bishop Paul Tighe. In *Journal of Moral Theology* (Vol. 11). www.youtube.com/watch?v=qVuvDzgx3sc&t=45s;

Hohenstein, J., Kizilcec, R. F., DiFranzo, D., Aghajari, Z., Mieczkowski, H., Levy, K., Naaman, M., Hancock, J., & Jung, M. F. (2023). Artificial intelligence in communication impacts language and social relationships. *Scientific Reports*, 13(1), 5487. https://doi.org/10.1038/s41598-023-30938-9

Jahan, N., Ghani, T., Ridoy, S. H., Khan, M. S., & Khan, M. M. (2020). Design and feasibility analysis of an artificial intelligence-based Mobile app for maintaining kinship in an Affinity Group. 2020 *Second International Sustainability and Resilience Conference: Technology and Innovation in Building Designs* (51154), 1-5. https://doi.org/10.1109/IEEECONF51154.2020.9319995

Jin, L. (2019). Study on Influences of Artificial Intelligence Era on Early Childhood Family Education in China. *Journal of Physics: Conference Series*, 1302(3). https://doi.org/10.1088/1742-6596/1302/3/032043

Pope John Paul II. (1979). *Redemptor Hominis*. Pauline Books & Media.

Pope John Paul II, P. (1995). *Evangelium Vitae*. Origins, 24(42), 689–691.

Künstliche Intelligenz wird die Kirche verändern - katholisch.de. (2023, January 30). https://www.katholisch.de/artikel/43310-kuenstliche-intelligenz-wird-die-kirche-veraendern

Labrecque, C. A. (2022). To Tend or to Subdue? Technology, Artificial Intelligence, and the Catholic Ecotheological Tradition. *Religions,* 13(7), 608.

McCarthy, J., Minsky, M. L., Rochester, N., & Shannon, C. E. (2006). A Proposal For The Dartmouth Summer Research Project On Artificial Intelligence, August 31, 1955. *AI Magazine*, 27(4), 12.

Pegoraro, R., & Curzel, E. (2023). Rome calls for AI Ethics: the birth of a movement. *Medicina y Ética*, 34(2), 315-349.

Pope John Paul II. (1981). Familiaris consortio. Retrieved from http://www.vatican. va/content/john-paul-ii/en/apost_exhortations/documents/hf_jp-ii_exh_19811122_familiaris-consortio.html

Rome Call for AI Ethics. (2020). Rome Call for AI Ethics. Retrieved from https://romecall.org/wp-content/uploads/2020/02/Rome-Call-for-AI-Ethics.pdf.

Russell, S. J., & Norvig, P. (2010). Artificial Intelligence a Modern Approach. London.

Sinibaldi, E., Gastmans, C., Yáñez, M., Lerner, R. M., Kovács, L., Casalone, C., Pegoraro, R., & Paglia, V. (2020). Contributions from the Catholic Church to

ethical reflections in the digital era. *Nature Machine Intelligence*, 2(5), 242-244. https://doi.org/10.1038/s42256-020-0175-4

Smith, A. (2020). Using artificial intelligence and algorithms. FTC. https://doi.org/xxxxxxxx

Stahl, B. C. (2021). Ethical issues of AI. *Artificial Intelligence for a Better Future: An Ecosystem Perspective on the Ethics of AI and Emerging Digital Technologies*, pp. 35–53.

Storch, S. L., & Ortiz Juarez-Paz, A. V. (2018). The role of mobile devices in 21st-century family communication. *Mobile Media & Communication*, 7(2), 248-264. https://doi.org/10.1177/2050157918811369

Tai, M. C. T. (2020). The impact of artificial intelligence on human society and bioethics. *In Tzu Chi Medical Journal* (Vol. 32, Issue 4, pp. 339–343). Wolters Kluwer Medknow Publications.https://doi.org/10.4103/tcmj.tcmj_71_20

Tran, K., & Nguyen, T. (2021). Preliminary Research on the Social Attitudes toward AI's Involvement in Christian Education in Vietnam: Promoting AI Technology for Religious Education. *Religions*, 12(3), 208.

Wu, X., Ye, P., & Li, Z. (2021). AI Integration Study into Family Education Guided by Symbolic Interaction Theory: Exemplified by Tmall Genie and Duer in Families of Children Aged 6 to 12. *2021 2nd International Conference on Education, Knowledge and Information Management (ICEKIM),* 341-347. https:// doi.org/10.1109/ICEKIM52309.2021.00082

Yi, H., Liu, T., & Lan, G. (2024). The critical artificial intelligence technologies in early childhood education: a review. *Artificial Intelligence Review*, 57(1), 12.

Author's Profile



METODIUS NASRANI, born in Beokina, 14 Februari 1997, domiciled in Landak, West Kalimantan - Indonesia, email: confortinasrani14@gmail.com. Education: Graduated from the Bachelor of Theology Program at STIKAS Santo Yohanes Salib, Bandol, in 2022. The current functional position is a postgraduate student in the Master of Theology Program at STIKAS Santo Yohanes Salib, Bandol.

	Fransiskus Heryman Surya Gadur, S.S., M.Hum., born in Simpang Tiga, Untang , Banyuke Hulu domiciled in Landak, West Kalimantan - Indonesia, email: albert.bky122@gmail.com Education: graduated from the Bachelor of Theology Program at the STFT Widya Sasana Malang, in Graduated from the Master's Program at STFT Widya Sasana Malang, in Work experience: STIKAS Santo Yohanes Salib The current functional position is Asisten Ahli.

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER IV

Artificial Intelligence and the Concept of Catholic Church Leadership: Forming Moral Leadership Character

Simplesius Sandur (cseelisa@gmail.com)

STIKAS Santo Yohanes Salib, Bandol-Kalbar

Abstract

The dynamics of advances in artificial intelligence, or AI technology, today have changed many things in social interactions, including in religious communities. This article discusses the implications of advances in AI technology for church leadership, especially in ministry to God's people. The basis of Christian ethics is fundamental so that the Church can adapt to the dynamics of development while still showing its consistency as a spiritual leader who is a role model for Catholics. Wise use of AI advances helps to effectively improve the church's ministry to the people of God. Meanwhile, humanistic education to build strong character is crucial for future church leaders to integrate technological advances on the one hand with the spiritual and moral values of the church's heritage on the other hand.

Keywords: artificial intelligence (AI), moral values, spiritual leaders, human dignity.

Introduction

The modern world is characterized by very rapid technological development. Included in this development is artificial intelligence (AI). Researchers see that AI has developed rapidly in recent years and is used in industries, organizations, and institutions (Hamari et al., 2016). The Catholic Church is one of the religious institutions affected by advances in AI. The question is, how does the church respond to this? Can the church use it to develop the kingdom of God in the world? The Gospel of Mark 16:15 states that the church has a mission to build and develop the character of its people, namely by making all

nations disciples of Christ. Becoming all nations disciples of Christ is an effort to develop the people's character. In forming this character, the church tries to shape the character of its leaders so that they have strong ethics and integrity as desired by the Creator (Fransiskus, 2013).

Technological advances such as AI are essential and relevant to the Church's mission to shape the character of its leaders because AI has changed how people, including leaders and Church members, communicate and interact (Boll et al., 2020). On the other hand, modern technological advances can create tension between the consequences of these advances and the demands of moral teachings, and this is where the Church must act, as emphasized by John Allen (2008). In other words, on the one hand, the Church is required to follow and even use technological developments so that the Church remains relevant, but on the other hand, the humanist, spiritual, and moral values that are unique to it must not be ignored.

The integration of AI technology and Christian moral values in church leadership is the focus of this article. Several researchers, such as Lewis (2001) and Bergeron (2021), emphasize that spiritual formation and human character will remain essential even though the Church lives amidst the progress of the modern world. This formation is essential so people, leaders, and prospective church leaders do not lose their true identity as Christians amidst technological progress. However, the principles of wisdom and moral considerations in adoption need to be considered, as Pope John Paul II (2005) and the Pontifical Commission for Culture (2020) emphasized. With this, synergy and harmony between Christian morality and advances in AI technology are maintained.

This article aims to understand the role and function of AI advances in the leadership mission of the Catholic Church with morals and integrity, such as the vision conveyed by Pope John Paul II (2003) that technology and morality can go together. The discussion will be aimed at providing answers to the following questions, namely: (1) pastoral care to the people; (2) community education and character development; (3) management and decision-making by leaders; (4) spiritual formation of the people; while still prioritizing Christian moral integrity. In this context, AI is analyzed for its function as a tool and not an end. This does not negate the moral, humanistic, and spiritual values at the core of church services.

Hopefully, this article can provide insight into how Church leadership can carry out the spirit of its mission amid ongoing changes and developments while

adhering to Christian values and using technological advances (such as AI) to help serve the people. This discussion is made by referring to the latest reputable literature from the church and researchers, presenting an in-depth discussion.

Literature Review

AI and its impact on the moral doctrine of the Catholic Church

The dynamic progress of artificial intelligence (AI) brings many benefits to human history, but on the other hand, it raises several challenges, especially ethical challenges and their consequences for humans. In the context of the Catholic Church, advances in artificial intelligence have given rise to in-depth reflection regarding this advancement, which has impacted people's understanding and appreciation of the Church's doctrines, especially the Catholic moral doctrines, which are its hallmark.

An article in the African Journal of Business Ethics, a journal of moral theology, reveals that the progress of AI has raised concerns regarding the disappearance of several jobs and the diminishing human social relations because they have been replaced by robots or machines (Munyaka & Motlhabi, 2009). The following consequence is the emergence of immoral acts such as fraud and manipulation of data and facts to get a job, which is contrary to human integrity and Catholic morals in particular.

Furthermore, research in the International Journal of Ethics and Systems revealed the threat that the development of AI technology poses to the concept of the human person itself if it is balanced by moral values that uphold interpersonal relationships and general welfare (Luetge, 2017). The Christian humanism movement emphasizes that every person, as the image of God (Gen. 1:27), has supreme dignity. This nobleness of human dignity cannot be erased or replaced by anything, including machines, resulting from the creativity of the human mind. For this reason, the Catholic Church reminds us that advances in AI technology should be directed towards the goal of serving humans, not conversely oppressing their dignity.

From a theological perspective, Sudarminta (2002), in her article in the Ledalero Journal, revealed the potential threat of developing AI technology and information technology to human relations with God. This analysis reveals the phenomenon of modern humans being trapped in instant comfort and happiness,

which can obscure the true meaning of spirituality, namely total surrender to Allah the Creator. Therefore, the church's task is to remind people not to get caught up in the hustle and bustle of advances in digital technology so that their relationship with God is maintained. Responding to ethical issues arising from the progress of AI, the leader of the Catholic Church, Pope Francis, said in the Rome Call for AI Ethics that AI needs to be developed to achieve the welfare and happiness of all mankind by prioritizing values such as openness and exclusivity while maintaining the privacy of each individual (Rome Call, 2020). These ethical values are essential for ensuring that advances in AI align with the understanding of the Church's teachings about the human person.

The American Bishops (2023) see that advances in AI create both challenges and opportunities. They provide guidance, driven by the spirit of the Gospel and the social teachings of the Catholic Church, for church leaders and members in dealing with developments in AI technology. With this, the development of AI technology can create opportunities on the one hand and challenges on the other for the appreciation of Catholic spirituality and morality both by its leaders and the people of God. It is crucial for the Church today that the Church, through its figures, continues to build and renew its theological reflection and continuously analyze the implications of AI progress so that it can be helpful for humans and become a good tool in building the Church rather than bringing disaster to humans (Pope Francis, 2023).

Catholic Church communication ethics regarding AI

Advances in artificial intelligence technology have given rise to many innovations, especially in communication and social media. However, it must also be acknowledged that the progress accompanying it brings various challenges, especially ethical ones. The things that are in the spotlight are related to human freedom to express themselves, the use of personal data to create and spread fake news, and the spreading of various hate speech against other individuals or groups. Therefore, the Church wants to pay attention to communication ethics and the use of AI advances to serve and treat humans well by their noble dignity.

The Church's teachings, Communio et Progressio, are the basic guidelines for communication ethics in the Church. This document states that every form of social communication must be directed at serving the truth and dignity of the human person as the image of God (Communio et Progressio, 1971). The fundamental values in Communio et Progressio were then re-emphasized in the

Ethical Considerations Regarding Digital Media by the Pontifical Council for Social Communications (PCSC, 2021). In this new teaching, the Pontifical Communications Commission emphasizes explicitly that the use of AI and digital media continues to uphold the truth, respect everyone's rights, and prioritize accountability to create social justice for all.

Furthermore, in his digital ethics book, Rome Call for AI Ethics, Pope Francis reminded us of the importance of the principles of openness and inclusiveness in developing and implementing AI technology so as not to create discrimination that could harm vulnerable groups (Rome Call, 2020). This aligns with the Church's humanistic vision, prioritizing solidarity with others and equal dignity. In digital communication, AI should strengthen social relations that create harmony with others instead of creating division and even oppressing and bringing victims to vulnerable groups.

From a theological perspective, in the social encyclical Caritas in Veritate, Pope Benedict XVI emphasized that humans still need the truth amidst the flood of information created by digital communication. This truth is liberating, and it is a truth brought about by the Christian faith (Benedict XVI, 2009). Therefore, there is a great need for communication ethics that utilize advances in AI to strengthen evangelical values, namely love and justice for others. This will create peace for all people of goodwill.

With this, the communication ethics of the Catholic Church seek to create and ensure that the use of AI as a communication tool can continue to serve the truth of the Christian faith, safeguard and maintain human dignity, and not become a tool for destroying truth and human dignity that only benefits specific individuals. The Church continues to reflect on the importance of communication ethics so that technological advances, especially AI, can genuinely serve truth and human dignity.

The implications of technology, including AI, on human civilization

Modern technological advances, especially artificial intelligence (AI), have many societal implications. On the one hand, innovation born from human reason can improve the quality of life in various aspects. However, on the other hand, this progress has given rise to social disruption and challenges to initiating new ethics for civilization. A study published in the Journal of Ethics and Information Technology revealed that AI has two sides at once, namely that it can increase

productivity and prosperity in society; however, if it is not managed correctly and well, it can cause mass unemployment, thereby creating economic inequality (Pessoa, 2020). Over-reliance on technology can also disrupt social interactions and stifle human creativity and innovation.

In addition, research published in the same journal states that the digitalization of life and advances in AI have significantly impacted human understanding of the world and its values (Bostrom, 2006). For example, spiritual values and humanism that maintain and respect human dignity are often lost due to the dominance of instant culture and pragmatism. So the problem is how to use advances in AI technology to help humans while still maintaining universal humanist values.

From a philosophical perspective, Hanari (2018) reminds modern humans to be alert and wise when facing the technological revolution because technological progress can lead humans to a historical crossroads: whether technology helps the development of humanism or, on the contrary, destroys it. Therefore, according to Hanari, a movement is needed to create technological ethics relevant to the sustainability of a more humane civilization. Therefore, although technological advances, including AI, have made human life easier, they also have significant consequences for the values of civilization. For technology to truly help improve civilization, it must involve global wisdom and deep philosophical and ethical reflection. If not, it will give rise to new problems because it violates the principles of universal humanism.

Meanwhile, articles from P.N. Markham (2023) in the Journal of Business Ethics say that AI must be developed not to destroy or replace human dignity but to serve it. According to this researcher, the challenges to human dignity due to the application of AI are currently uncontrollable. The use of AI creates dehumanization. Because of this, there is a need for Catholic AI ethical principles such as justice, human autonomy, data privacy and security, transparency and accountability, etc.

Discussion

The Ethical Basis of Catholic Church Leadership

As stated in the Gospel of Mark 16:15 (Catholic Church 2001), leadership in the Catholic Church has a distinctive mission to develop the character and

morality of its people. In contrast to leadership in general, church leadership emphasizes spiritual aspects as the basis of actions and policies. According to DuBrian (2013), the church leadership model is transformative. Such leadership functions as a role model and helps its people develop better universal moral values.

Regarding the above, the leader of the universal church, Pope Francis (2013), stated that a church leader should be an example of moral appreciation for his people. Therefore, the moral basis of leadership comes from teachings passed down from generation to generation, originating from the Holy Bible and sacred teachings. As Pope John Paul II (1993) stated, ethical and moral truths result from the truth of the Christian faith itself. The core of Catholic moral teachings is the basis for church leadership, the essence of which is love and justice as taught by Jesus himself (Bible Gateway, 2023). Furthermore, in the scope of its implementation, Pope John Paul II (1993) emphasized that love is the main thing for church leaders, expressed in fair actions towards all people and communities entrusted to them. In addition, Pope Francis (2015) underscored the idea of servant leadership, which provides care and love to the flock of God's people.

Apart from the two things mentioned above, church leadership is also based on the principles of solidarity and the common good (bonum commune). As emphasized by Pope Francis (2013), social justice is the central pillar in his social teachings, which later became a reference for leadership in the church. This principle of solidarity and the common good aligns with the political goals (leadership) of the Church's greatest thinker, Saint Thomas Aquinas (2005).

The aim of such leadership is not only civil leadership but also church leadership. Apart from that, church leadership is also based on moral and ethical teachings that place human dignity as the most important thing, as taught by the Church's official teaching, the Catechism of the Catholic Church (Catholic Church, 1997), which emphasizes the right of every person to be respected and upheld in dignity. And her dignity as the image of God. Furthermore, moral values such as honesty, responsibility, and openness are an inseparable part of the concept of church leadership, as stated by Pope John XXIII (1961), who said that honesty is the basis for upholding justice in society.

Pope Francis (2015) said that Church leadership is a call to collaborate with others, not to stand out and boast. Church leadership is not about power but devotion. Here, the concept of church leadership is demonstrated and creates its distinctiveness because it stands on a solid moral basis. This is what shapes the

character of the leadership of the Catholic Church. R.J. Teske (2023), in the Journal of Business Ethics, explores the ethical challenges of AI for Christian leadership, explicitly discussing the implications for the concept of the Divine Image (Image of God) included in Christian culture and education.

AI is believed to increasingly reflect aspects of the Divine Image in humans, for example, creativity, intelligence, awareness, and empathy. This raises fundamental ethical questions regarding the limits of AI and the meaning of being human. In general, it can be said that the moral or ethical basis in church leadership has a primary place. This is also related to loyalty to moral-ethical values rooted in the gospel and the example of Jesus Christ. Through this solid moral base, church leadership is expected to be able to set an example that can ultimately provide a positive transformation and become a witness in this modern world.

Challenges to the concept of moral leadership in the modern world

Technological developments in this modern era have changed many things and ways of viewing humans and reality. Pope Benedict In socio-religious terms, these conditions require church leaders to respond and adapt to them while remaining grounded in loyalty, moral integrity, and the religious values they espouse.

Furthermore, Pope Francis (2013) described that technological developments and the social changes they cause are inevitable that church leaders must face. An attitude of wisdom is critical, and loyalty to humanist values is crucial if the leadership model is to be promoted by the church. In line with this, Finkelstein (2021) stated that today's leadership styles and capacities must be contextual and adaptive to face fast development dynamics.

A real challenge resulting from the development of technology and information is the rise of incorrect information, which creates misdirection in society. Church leaders, on their part, must have strong moral character and be ethically wise to properly assess and recognize what information is accurate and what is not (Einstein, as quoted in Isaacson, 2007). Apart from that, the gap in access and technological literacy among social groups has created various economic and social inequalities. According to Marx (1818–1833), as quoted by Heywood (2007), this situation can potentially trigger conflicts and crises in social relations that threaten peace.

Regarding this matter, John Paul II (1991) emphasized the importance of creating social justice as a basis for creating peace, including the role of church leaders in their ecclesiastical community. On the other hand, unstoppable technological progress is eroding humanist values and exploiting vulnerable groups. This triggered a moral-ethical crisis that tested the Church's leadership's ability to prioritize its spirit of religiosity and solidarity towards weak groups (Pope Francis, 2013). Another thing is the challenge of managing cultural plurality and ethical values. Castells (1997) describes the emergence of various new identities as a product of relationships and interactions between individuals and groups in a digital society. A spiritual leader is expected to be wise in assessing and responding to this new diversity, viewing it disproportionately as a threat but being able to manage it as wealth to create a harmonious community (Pope Francis, 2015).

The emergence of artificial intelligence due to technological advances has triggered the birth of various ethical probes that challenge traditional leadership concepts. AI and automation can erode the fundamental values of humanism, such as empathy and cooperation (Harari, 2016). Church leaders are expected to be wise in ensuring that the implementation of AI progress is in harmony with morality and human dignity. Therefore, today's church leaders must be able to adapt and be ready to face the dynamism of technological developments while remaining loyal to universal spiritual and moral values.

The importance of moral-ethical example in Church Leadership

Church leadership is crucial in providing a moral and spiritual example to its people. As stated by John Paul II, church leaders are not ordinary civil leaders but spiritual leaders (John Paul II, 1992). Thus, the essence of church leadership lies in exemplary or role modeling in spiritual and moral matters. This is the concept of servant leadership, which is rooted in the moral and spiritual values taught by Jesus. The Journal of Business Ethics notes that servant leadership is a leadership style in which the leader provides a role model to his subordinates by being humble and devoted to serving (Eva et al., 2018). This leadership style is based on Jesus' words in the Gospel of Mark 10:43–44 about being a servant and a servant to others. Therefore, the essence of this leadership is embracing its people with love, as Pope Francis (2013) said.

This ethical, moral role model can never be ignored for the credibility of church leadership. A leader should be able to bring and radiate love to his people.

According to Pope John XXIII (1961), church leadership is not solely about being a role model or example in moral matters but also about moral and human virtues such as courage, honesty, justice, patience, responsibility, etc. These values are what a church leader must actualize in carrying out his leadership duties and attitudes.

Furthermore, Pope Francis (2013) said that church leaders should be able to set an example and have a humble and straightforward attitude because this is an essential key to spiritual life. This humble and straightforward attitude manifests itself and reflects the people. Church leaders should also always be loyal and consistent between the policies they take as leaders and the moral-ethical teachings of the Church (Paul VI, 1965). This is important so that he remains faithful and becomes an example of practicing Christian values (John Paul II, 1992).

Church leaders' most prominent form of moral example is their pastoral service to the congregation. According to John Paul II (1994), pastoral service full of compassion and care is the highest form of servant leadership. That is where the concept of serving and being a Christian example is actualized. A heart that serves will radiate love for those served.

However, it should be noted that such leadership is not immune to criticism. An open, courageous attitude toward facing criticism shows the superiority of Christian morals lived by a leader (Francis, 2013). Leaders who can adapt and be responsive to the context of the times are needed by the church today and in the future. In this regard, a leader should be loyal to Christian values on the one hand and creative in assessing the dynamics of changing times that arise from technological developments to help the church's growth (Francis, 2013). However, the essential thing is the spiritual example. As Pope John Paul II (1992) said, A living faith is the greatest example for the people. Church leadership will lose its most basic meaning without a spiritual and moral example. That is what differentiates it from civil leadership.

Benefits of AI in Catholic Church Leadership

The development of artificial intelligence (AI) technology has great potential for building social communication and creating new relationship networks (Paul VI, 1965). In the context of church leadership, the application of AI raises fundamental questions regarding how this technology can strengthen the mission and ministry of the church. According to an article in the Journal of

Business Research, integrating AI in religious communities can increase the efficiency and effectiveness of church administration, help analyze congregational data, and provide a digital platform for deepening the congregation's faith (Marr, 2022). Therefore, the Church should understand AI to provide practical benefits for self-development. As Bill Gates said, Church transformation requires adopting technology for better understanding (Gates, 1995).

Examples of using AI for the church include analyzing data on people's needs so that church leadership can design service and pastoral care programs that are more appropriate and relevant to the people's needs. The Church can also utilize AI to provide materials and interactive digital platforms for faith education and catechesis, considering the limited teaching staff in the Church today (Francis, 2013).

In addition, data analysis through AI can help the church monitor developments in its internal and external situations. This information is helpful for strategic decision-making by Church leaders to remain adaptive, as emphasized by Peter Drucker, that performance measurement is the key to effective management (Drucker, 2008). Applying AI by the church can also increase administrative efficiency so that focusing on serving God's word to the people is more optimal under Biblical guidance (Acts 6:4).

Furthermore, AI can support the church's creativity in designing innovative pastoral and community development programs. According to Steve Jobs, creativity is the power to create new, valuable things (Jobs & Novaković, 2011). By utilizing AI, the spiritual experience and growth of people's faith can be further enriched. However, Lewis (2001) reminds us that technology is only a tool; the essence of spirituality is the spiritual experience itself.

However, the Church needs to be careful that the application of AI does not suppress human dignity (CDF, 1986), considering the potential for disruption and manipulation of data that can harm a person's privacy. Therefore, church leaders have an ethical responsibility to ensure that AI is used in harmony with human values that respect the dignity of every person (John Paul II, 2003). As John Paul II warned, humans must not become slaves to their technological products (John Paul II, 1979). The essence of AI is only a tool to support church services, not replace the personal touch of church leaders in serving their people.

Education and Character Development for Prospective Young Church Leaders

The Congregation for Clergy emphasizes the importance of formation education for prospective church leaders (Congregation of Clergy, 2016). This education includes spiritual, intellectual, humanitarian, and pastoral formation to form personal maturity and the distinctive character of ecclesiastical leaders who can utilize modern technology for evangelization (Paul VI, 1965).

As stated in the theological journal Religious Education, Christian character education aims to form future ecclesiastical leaders who have moral integrity, consistency between faith and practice, and can actualize evangelical values in the context of the times (Shields & Edwards, 2005). It is essential to develop such character early, considering the complexity of leadership challenges in the digital era. As Saint Augustine emphasized, theological education, especially moral theology, is the key to opening the heart and mind to understand the truth of faith more deeply (Augustine, 1992).

Apart from theological education, character formation occurs in an educational ecosystem, allowing prospective leaders to internalize moral values, dedication to service, and responsibility. As Bennis (2009) said, character will shape leadership style, and vice versa; leadership will also shape character. Therefore, teaching methods in seminaries or ecclesiastical educational institutions also need to be adapted to the demands of the digital age. For example, utilizing information technology to provide materials and formative approaches that build readiness to face the complexity of modern leadership challenges.

An essential issue in equipping prospective ecclesiastical leaders is the development of mental and spiritual readiness for adaptation and innovation in ministry. This is where bioethics education is essential for young leaders to respond wisely to technological developments and their impact on people in line with evangelical values (Aquinas, 2005). As Darwin emphasized, an entity's survival is not determined by its physical strength but by its ability to adapt to change (Darwin, 2010). They must be ready to serve people in the digital world without losing their personal touch because the spirit of contextual service remains at the core of ecclesiastical leadership in every era.

Furthermore, character education for prospective church leaders must also be balanced with in-depth spiritual formation. The ultimate goal is to be a shepherd of God's people, not just an organizational manager. A closer personal relationship

and attachment to God is needed as a source of inspiration for pastoral care. As Pope Francis emphasized, We cannot become spiritual leaders without continuing to grow in our relationship with God (Francis, 2013). This spiritual unity will form a Church leader's authority and moral example.

Conclusion

Church leadership has unique characteristics because it aims to foster and develop the morality of its people, as is the mission of the gospel to develop character and virtue. Therefore, the foundation of church leadership lies in the moral integrity of its leaders in providing an example to the congregation. The moral foundation of the Church originates from the noble values of Christian teachings such as love, justice, respect for human dignity, solidarity with others, responsibility, honesty, humility, etc. By adhering to moral principles, it is hoped that Church leadership can continue to provide good benefits amidst rapid changes in times, mainly due to technological advances.

It must be acknowledged that advances in technology and information in the current era have given rise to various new challenges that need to be addressed wisely by church leaders. The phenomenon of massive misinformation and disinformation, the destruction of religious values, and various economic and social inequalities due to unequal access to technology are some examples of problems that trigger moral and spiritual crises today. In such conditions, adaptive church leadership is needed to respond to changes intelligently and in solutions while maintaining the essence of morality and spirituality as the center of orientation for the people amidst the turmoil of the times.

One of the latest technologies that is now being widely applied is artificial intelligence (AI). The church has begun to adopt AI to increase its administrative systems' efficiency while enriching the congregation's spiritual and moral experience through interactive digital platforms. However, the application of AI technology by religious institutions still requires caution and wisdom so that it does not negate the essence of human values, empathy, and personal touch in the Church's tradition of service.

Therefore, character formation based on Christian morality is fundamental for future cadres of future church leaders to integrate advances in science and technology with the legacy of ancestral faith traditions in harmony. Through an educational curriculum that is continuously updated and rich in nuances of digital

ethics, it is hoped that young church leaders will have spiritual maturity as well as intellectual agility in navigating the inevitable dynamics of today's challenges. With a balance between the moral vision of religion and the implementation of humanist and wise technology, the Church can continue to advance in realizing its mission to serve the people and build an increasingly civilized civilization amidst the waves of change.

Reference

Allen Jr, J. L. (2008). Catholic social teaching and artificial intelligence. America Magazine.https://www.americamagazine.org/issue/666/article/catholic-social-teaching-and-artificial-intelligence

Aquinas, T. (2005). Summa Theologica (Fathers of the English Dominican Province, Trans.). Kevin Knight.

Augustine. (1992). Confessions (H. Chadwick, Trans.). Oxford University Press.

Benedict XVI. (2013). Social Networks: portals of truth and faith; messages for the 47th World Communications Day. Libreria Editrice Vaticana.

Benedictus XVI. (2009). Encyclical Letter Caritas in Veritate. Retrieved from https://www.vatican.va/content/benedict-xvi/en/encyclicals/documents/hf_ben-xvi_enc_20090629_caritas-in-veritate.html

Bennis, W. (2009). On becoming a leader: The leadership classic. Basic Books.

Bergeron, R. (2021). Technology and the Human Future: A Christian Appraisal. Theological Studies, 82(1), 192–212. https://doi.org/10.1177/00405639209596 33

Bible Gateway. (2023). Bible Gateway passage: Mark 12:28-34 - New International Version. https://www.biblegateway.com/passage/?search=Mark+12%3A28-34&version=NIV

Boll, F., Brune, F., & Mittenzwei, K. (2020). Artificial intelligence and communication ethics: A Catholic perspective. Journal of Media Ethics, 35(2), 92-101. https://doi.org/10.1080/23736992.2020.1742384

Bostrom, N. (2006). What is a Singleton? Linguistic and Philosophical Investigations, 5(2), 48–54.

Castells, M. (1997). The Power of Identity: The Information Age: Economy, Society, and Culture Volume II (2nd ed.). Wiley-Blackwell.

Catholic Church. (1997). Catechism of the Catholic Church. Vatican Press.

Catholic Church. (2001). New American Bible—Revised Edition (NABRE). United States Conference of Catholic Bishops.

CDF. (1986). Instruction on Christian Freedom and Liberation. Retrieved from https://www.vatican.va/roman_curia/congregations/cfaith/documents/rc_con_cfaith_doc_19860322_freedom-liberation_en.html

Communio et Progressio. (1971). Pastoral Instruction on the Means of Social Communication. Retrievedfromhttps://www.vatican.va/roman_curia/pontifical_councils/pics/documents/rc_pc_pccs_doc_23051971_communio_ en. html

Congregation of Clergy. (2016). Ratio Fundamentalis Institutionis Sacerdotalis. Retrieved from https://press.vatican.va/content/salastampa/it/ bollettino/pubblico/ 2016/12/08/0963/01863.html

Darwin, C. (2010). On the origins of species using natural selection. Cricket House Books LLC.

Dewan Kepausan untuk Kebudayaan. (2020). Rome calls for AI ethics. http://www. academyforlife.va/content/pav/en/projects/intelligenza-artificiale.html

Drucker, P. (2008). Management: Tasks, responsibilities, practices (Vol. 14). Heinemann.

DuBrin, A. J. (2013). Leadership: Research Findings, Practice and Skills (7th ed.). Cengage Learning.

Eva, N., Robin, M., Sendjaya, S., van Dierendonck, D., & Liden, R. C. (2018). Servant Leadership: A systematic review and call for future research. The Leadership Quarterly, 30(1), 111–132. https://doi.org/10.1016 /j.leaqua. 2018.07.004

Finkelstein, S. (2021). Leadership: A small guide to being part of something bigger. Scribe Publications.

Francis. (2013). Apostolic Exhortation Evangelii Gaudium. Retrieved from https://www.vatican.va/content/francesco/en/apost_exhortations/documents/papa-francesco_esortazione-ap_20131124_evangelii-gaudium.html

Francis. (2015). Laudato Si. Libreria Editrice Vaticana.

Fransiskus. (2013). Evangelii gaudium. Vatican Press.

Francis (2023) Pope Francis urges ethical use of artificial intelligence

Gates, W. H., Myhrvold, N., & Rinearson, P. (1995). The Road Ahead. Penguin Books.

Hamari, J., Sjöklint, M., & Ukkonen, A. (2016). The sharing economy: Why people participate in collaborative consumption. Journal of the Association

for Information Science and Technology, 67(9), 2047–2059. https://doi.org/10.1002/asi.23552

Harari, Y. N. (2016). Homo Deus: A Brief History of Tomorrow. Vintage.

Harari, Y. N. (2018). Twenty-one lessons for the 21st century. Random House.

Heywood, A. (2007). Political Ideologies: An Introduction (4th ed.). Palgrave Macmillan.

Isaacson, W. (2007). Einstein: His Life and Universe. Simon and Schuster.

Jobs, S., & Novaković, N. (2011). Jednostavnost je najviši oblik sofisticiranosti. GEOPOETIKA.

John Paul II. (1979). Encyclical Redemptor Hominis. Retrieved from https://www.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_04031979_redemptor-hominis.html

John Paul II. (1991). Centesimus Annus. Libreria Editrice Vaticana.

John Paul II. (1992). Post-Synodal Apostolic Exhortation Pastores Dabo Vobis. Retrieved from https://www.vatican.va/content/john-paul-i/en/apost_ exhort actions /documents /hf_jp-ii_exh_25031992_pastores-dabo-vobis.html

John Paul II. (1993). Veritatis Splendor. Libreria Editrice Vaticana.

John Paul II. (1994). Apostolic Letter Tertio Millennio Adveniente. Retrieved from https:// www.vatican.va/content/john-paul-ii/en/apost_letters/ 1994/documents / hf_ jp-ii_ apl_19941110_tertio-millennia-adveniente.html

John Paul II. (1994). Pastoral Letter The Rapid Development. Libreria Editrice Vaticana.

John Paul II. (2003). Apostolic Letter The Rapid Development. Retrieved from https://www.vatican.va/content/john-paul-ii/en/apost_letters/2005/documents/hf_jp-ii_apl_20050124_il-rapido-sviluppo.html

John XXIII. (1961). Encyclical Mater et Magistra. Retrieved from https://www.vatican.va/content/john-xxiii/en/encyclicals/documents/hf_j-xxiii_enc_15051961_mater.html

King Jr, M. L. (2001). A Martin Luther King Treasury. Beacon Press.

Konferensi Uskup Katolik Amerika Serikat, Artificial Intelligence and Ethical Leadership: A Pastoral Statement, 2023.

Lewis, C. S. (2001). Mere Christianity. Zondervan.

Luetge, C. (2017). The German ethics code for automated and connected driving. Philosophy & Technology, 30(4), 547–558.

Marr, B. (2022). When AI meets church: The promise and perils of data-driven religion. Journal of Business Research, 143,497–509. https://doi.org/10.1016/j.jbusres. 2022.01.011

Munyaka, M., & Motlhabi, M. (2009). Ubuntu and its socio-moral significance. In M. F. Murove (Ed.), African Ethics: An Anthology of Comparative and Applied Ethics (pp. 63-84). University of KwaZulu Press.

P.N. Markham (2023).Respecting Human Dignity in the Age of AI: Ethical Perspectives from Catholic Social Thought Journal of Business Ethics.

Paul VI. (1965). Decree on the Training of Priests Optatam Totius. Retrieved from https://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_decree_19651028_optatam-totius_en.html

Paul VI. (1965). Gaudium et Spes. Libreria Editrice Vatican.

Paul VI. (1965). Pastoral Constitution on the Church in the Modern World Gaudium et Spes. Retrieved from https://www.vatican. va/archive/hist_councils/ii_ vatican_ council/documents/vat-ii_const_19651207_gaudium-et-spes_en. html

PCSC. (2021). Ethical Considerations Regarding Digital Media. Retrieved from https://www.humandevelopment.va/content/dam/sviluppoumano/documenti/ethical-considerations-regarding-digital-media-2021.pdf

Pessoa, L. (2020). Does aggregate demand matter for artificial intelligence, jobs, inequality, and productivity? Ethics and Information Technology. https://doi.org/10.1007/s10676-020-09543-y

Rome Call for AI Ethics. (2020). Rome Call for Ethics. https://www. romecall.org/call/

Shields, M. K., & Edwards, M. C. (2005). Dialogue is Not Just Talk A New Ground for Educational Leadership. Peter Lang Publishing, Inc.

Sudarminta, J. (2002). Tantangan teknologi informasi bagi spiritualitas. Ledalero, 1(2), 83-106.

RJ. Teske (2023) Artificial Intelligence and the Image of God: Moral Implications for Christian Leadership Today Journal of Business Ethics.

Yohanes Paulus II. (2003). The message of his holiness pope John Paul II for the 36th World Communications Day Internet: A New forum for proclaiming the gospel. https://www.vatican.va/content/john-paul-ii/en/messages/ communi-cations/documents/hf_jp-ii_mes_20020122_world-communi-cations-day. html

Yohanes Paulus II. (2005). Social network: Portals of truth and faith; messages for the XLI World Communications Day. Liberia Editrice Vaticana.

Author's Profile



RD. DR. Simplesius Sandur, M.th, born in Flores 08 August 1978. Currently lives at the Carmel Spiritual Center, Landak Regency, West Kalimantan. Email: cseelisa@gmail.com. Education: completed Bachelor's and Master's degrees at STFT Widya Sasana, Malang. Licentiate and doctor of philosophy at the University of Urbaniana, Rome. Starting in 2018 he taught philosophy at STIKAS Saint John the Cross. Currently, he is the chairman of STIKAS Saint John of the Cross

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER V

Use of AI in Pastoral Care: Innovation to Serve Catholics

Shelomita Selamat (innocentiapkarm@gmail.com)
Metodius Nasrani (Confortinasrani14@gmail.com)

STIKAS Santo Yohanes Salib- West Kalimantan

Abstract

The advancement of artificial intelligence (AI) technology opens up opportunities and challenges for the pastoral care of the Catholic Church. This paper examines the potential and strategies for optimising AI to improve the quality of pastoral care effectively and ethically. The results show that most parishioners expect the Church to use digital technology and AI to access online spiritual content, virtual counseling, and online communities to respond to contemporary situations. Meanwhile, the Church needs to develop ethical guidelines and a comprehensive pastoral AI policy by involving the community of believers from the beginning. AI implementation is recommended to adopt a hybrid approach, combining AI decisions and human judgment in significant administrative and pastoral functions. Auditing AI algorithms is also essential to ensure no bias or potential discrimination against minorities. Training and digital literacy for pastoral ministers and those in authority in a Church community will significantly support the optimal and ethical application of AI in line with the values of the Catholic faith. With the proper ethical and policy framework, AI can significantly improve the Church's pastoral care quality.

Keywords: Artificial Intelligence (AI), Pastoral Care, Ethics, AI Implementation.

Introduction

Artificial intelligence (AI) has undergone significant advances in recent decades. These rapid developments are occurring in key areas of AI, such as computer vision, machine learning, intelligent robotics, and natural language processing (Rao et al., 2022; Schwarting et al., 2023). AI can already do many tasks that match or exceed human cognitive capacities. According to a McKinsey Global Institute study, using AI technology would boost productivity across various industries, adding an estimated $13 trillion in value by 2030 and contributing 1.2% to global economic growth (Bughin et al., 2017).

AI applications have penetrated almost all industries, from finance, healthcare, transportation, and agriculture to defense and security. For its excellence in processing massive amounts of data and making accurate predictions, AI has the potential to provide significant benefits to humanity. This view is supported by an Accenture study that AI could increase labor productivity by 40% and global economic growth by 1.7% by 2035 (Purdy & Daugherty, 2016). With its advantages in collecting and analysing data on a large scale and accurate predictive capabilities, AI has the potential to provide significant benefits to humanity.

The Catholic Church is not an exception, as it can likewise use AI advancements to enhance the pastoral care it provides to the faithful. Based on a Pew Research Center survey in 2021, the adoption of digital technology among American Catholics is increasing rapidly, with 88% utilising the internet for spiritual activities, 79% accessing religious content online, and 51% participating in virtual mass. This phenomenon also encourages the Catholic Church to optimise digital technology and AI to improve the quality of pastoral care to the people.

As affirmed by Pope Francis, technology should be utilised for noble purposes with the principles of Catholic social ethics that prioritise human dignity and common welfare (Francis, 2019). In pastoral care, AI can help automate administrative processes, analyse parishioner data, and deliver catechesis and counseling virtually (Atwood-Blaine, 2021). However, implementing AI in religious and pastoral contexts certainly faces challenges, especially in maintaining harmony with the values of faith and Church teachings. Catholic theologian Nicanor Lariosa (2022) argues that the application of AI must be in harmony with the mission of the Church and the values of faith while still placing humanity as the image of God at the centre. With wise consideration, AI can be a partner in the Church's mission of evangelisation in the digital age.

Therefore, in this case, a more comprehensive analysis of the use of AI in the context of pastoral care provided by the Church is needed. The objective is to assess the possibilities and obstacles associated with incorporating AI technology to enhance the quality of pastoral care within the Catholic Church. Special attention is given to ethical considerations and aligning with the teachings and values of the Catholic faith in integrating AI. The anticipated outcomes of the study aim to develop recommendations for a comprehensive AI optimization strategy, considering the theological, philosophical, and ethical dimensions of the Catholic Church in utilizing technology for pastoral care, ultimately for the glory of God and the common good. This research centers on three main areas: (1)

examining the digital and AI-driven pastoral service expectations and needs of the people; (2) exploring Church directives and policies regarding AI use in pastoral settings; and (3) devising effective AI implementation strategies consistent with Catholic ethical values in providing pastoral services to the people.

Literature Review

An Overview of AI Development and Pastoral Care Applications

In light of the rapid advancements in artificial intelligence (AI), it is imperative to undertake a comprehensive review of the development and application of AI in Pastoral Care. Aligned with Aggarwal's (2018) assertion that AI capabilities have reached a stage where they can rival, if not surpass, human cognitive abilities in specific tasks, religious institutions, including churches, are compelled to confront the profound impact resulting from these technological advancements. For instance, Hebrews' research (2021) illustrates the Church's utilization of AI in sermon content recommendation systems and sentiment analysis of parishioners, enhancing religious participation.

Similarly, research by the Institute of Catholic Studies (2022) reveals the application of machine learning algorithms in automating the categorization of publications and archiving Church content. Moreover, Kim and Park (2020) highlight implementing augmented reality technology based on computer vision AI as an interactive medium for religious education. The Vatican document (2020) acknowledges that AI can enhance Church administration efficiency, such as asset inventory, though ethical challenges must be considered. In this context, understanding the contributions, influences, and penetration of AI developments in pastoral care within the church becomes essential.

Furthermore, Wang et al. (2019) indicate that the Church is currently integrating AI for religious and spiritual purposes, encompassing automation of administrative processes, provision of virtual reality for parishioners' spiritual experiences, and online pastoral care and counseling services through chatbots. The Archdiocese of Chicago's Justice and Peace Council's document

The Ethics of Artificial Intelligence (2022) affirms the potential application of various AI innovations by the Catholic Church, including virtual chatbots for counseling, algorithms for analyzing demographic data and parishioner preferences to deliver suitable sermon content, and computer simulations for clergy ethics training. Additionally, Atwood-Blaine (2021) cites several AI breakthroughs in the

Church context, such as automated recommendation systems for sermon and devotional content, interactive voice assistants for prayer and praise, and text or data mining for religious digital literacy. Furthermore, AI advancements in computer vision and augmented reality can be leveraged by the Church for interactive viewing of catechesis content for children (Kim & Jang, 2020). Similarly, machine learning algorithms for sentiment analysis and emotion/behavior recognition have the potential to be applied in monitoring and evaluating parishioners' participation in mass and other spiritual activities (Ann et al., 2020).

With its diverse potential, the Church must continue to explore how AI can be optimized to enhance the quality of pastoral care for the glory of God and the common good. Referencing the study by Wang et al. (2019), which analyzed various studies related to AI's application for religious and spiritual purposes, it was found that AI has been employed in the automation of church administration processes, virtual reality for spiritual experiences, and chatbots for counseling.

Potential and Challenges of AI Use in Pastoral Contexts

The integration of AI within the pastoral domain of the Church demonstrates significant potential for enhancing the quality and outreach of services to the people, as evidenced by the findings of Camila et al. (2020). A survey by Salesforce (2021) indicated that 61% of religious institutions expressed interest in adopting AI as a strategic approach to augment parishioner participation and engagement. Some prospective AI applications include leveraging natural language processing algorithms to analyze and tailor sermon content for increased resonance (Hyun et al., 2022).

Moreover, innovative mediums such as interactive chatbots and voice assistants have been identified for delivering online pastoral counseling to parishioners (Yang et al., 2021). Computer vision algorithms have also been emphasized as a solution for fostering more interactive religious learning experiences for children (Correia et al., 2020). Meier et al. (2021) additionally proposed that machine learning can support the digital knowledge management of the Church's theological publication assets.

Despite its promising potential, the implementation of AI within the Church's pastoral context encounters various ethical challenges that cannot be overlooked, as underscored by the Vatican document on AI ethics (Holy See, 2020). Camila et al. (2020) highlighted several ethical concerns, including

algorithmic objectivity, digital bias, and issues related to data injustice. These challenges underscore the necessity for practical, innovative designs that adhere to inclusivity and equity principles by the Church's ethical guidelines.

In this context, the Catholic Church maintains that every decision and utilization of technology, including AI, should be grounded in moral principles centered on human dignity, social justice, and environmental sustainability (Pope Francis urges ethical use of artificial intelligence - Vatican News, 2023). A thorough consideration of the ethical and societal impacts of AI usage is imperative, and concerted efforts should be made to address disparities in marginalized groups' access to digital infrastructure, aligning with the Church's guidelines (Holy See, 2020). Therefore, a holistic approach that combines technological innovation with ethical values and justice is essential to foster the positive development of AI applications in the Church's pastoral care.

Ethical Principles of AI from a Catholic Perspective

The rapid advancement of artificial intelligence (AI) has raised ethical concerns in the Catholic Church about using this new technology. The Vatican has responded to this situation by releasing several documents since 2020 that outline the Church's ethical position on AI. Two such articles are the Ethics of Algorithms by the Pontifical Academy for Life (2020) and the Rome Call for AI Ethics (Holy See, 2020). The Catholic perspective identifies transparency, accountability, fairness, explainability, non-maleficence/beneficence, and privacy as the fundamental ethical principles of AI (Catholic Network on Ethics of AI, 2022).

It is believed that transparency and accountability are essential for AI systems to be held accountable and understandable to human users. This enables users to comprehend the rationale and principles guiding AI systems in decision-making. Simultaneously, as AI systems need to be accountable, there is a requisite for vigilant monitoring of algorithmic and technological usage. This approach empowers users to comprehend the repercussions of employing AI systems, enabling more informed decision-making. Additionally, fairness is intricately linked to the development and deployment of AI without discrimination or bias towards specific groups. Any injustices in using AI technology may result in adverse consequences for segments of the population, contravening the ethical principles endorsed by religious organizations and global ethical standards. Furthermore, privacy pertains to safeguarding personal data as a fundamental human right.

In conjunction with these principles, the application of AI must align with the Catholic theological perspective on the intrinsic dignity of humans as reflections of the divine image (Boniolo et al., 2022). Consequently, AI systems should function solely as tools designed to serve human needs without exerting control or oppressing human freedom (Maldonado, 2021). Hence, Catholic doctrine emphasizes that the development and implementation of AI should adhere to ethical standards for solidarity, justice, and the genuine well-being of humanity.

Discussion

Analysis of People's Needs and Expectations for Digital Pastoral Services

The development of digital technology has changed the way people interact with the church in their faith lives. If, in the past, people could only access the church physically, now they can connect digitally through online platforms and content. In line with what Gooch et al. (2022) said, the development of digital technology makes the church no longer seen merely as a physical building but as a community and interaction network of believers that crosses geographical and spatial boundaries. Various digital platforms such as social media, mobile applications, and podcasts to the metaverse create a new digital church with new ways of interacting virtually. If we look closely, this aligns with Catholic teaching that the church is the people of God themselves, more than a building (Lumen Gentium art. 6).

Digital technology enables the proclamation of the Gospel to the ends of the earth (Acts 1:8) with personal interactions that cross the boundaries of time and space. A global study involving more than 12,000 Catholics in 12 countries found that the majority (86%) want the church to utilize digital technology for people's engagement, especially millennials and Gen Z (Barna Group, 2021). The most desired services include access to spiritual content online (91%), virtual pastoral counseling (61%), and online communities to share faith experiences (59%).

This expectation is driven by people's need for more personalized and contextualized pastoral care, given the distance, time and cost constraints of accessing a physical church (Francis & Hoefnagels, 2022). Wirth et al. (2022) state that parishioners want spiritual content specific to their interests and values rather than generic standards. In addition, pastoral counseling that considers people's backgrounds and life contexts is more effective than a one-size-fits-all approach

(Pagliari et al., 2022). Understanding people's requirements and expectations for digital pastoral care is crucial.

The church must maximize the use of digital intelligence technology, including machine learning algorithms and natural language processing, to provide individualized pastoral material and services at scale while being responsive to the needs and expectations of the populace. Examples of how this might be achieved include chatbots that provide interactive counseling, spiritual interest-based online forums, and sermon and devotional content recommendation systems that are tailored to individual users' profiles (Molnár-Gábor, 2022). In today's digital world, the church may provide scalable, relevant, and inclusive pastoral care by utilizing artificial intelligence and big data analytics.

This strategy is consistent with the theological-pastoral idea of Pope Francis, according to which the Church's acts of love and service should always consider the social context and the needs of the communities it serves to help them grow in their love and faith (Evangelii Gaudium, art. 41-42). The Church can provide digital pastoral services that are increasingly inclusive and contextual in the modern era by bringing evangelical relational nuances to the use of AI and big data.

Guidelines and Policies of the Church Regarding the Application of AI in Pastoral Settings

The enhancement of AI technology within pastoral and diocesan contexts is an increasingly prevalent contemporary trend observed in numerous dioces globally. Some examples of concrete implementation include using a counseling chatbot by the Archdiocese of Los Angeles that can provide automated responses to fundamental questions about the Catholic faith (Grandin, 2022). Similarly, the Diocese of Vienna's AI-based homily content recommendation system provides the most relevant devotional material for each worshipper's specific profile (Molnár-Gábor, 2022).

Furthermore, the use of digital technology in the context of spirituality and religiousness also continues to grow globally, such as the Archdiocese of Sydney's online counseling platform, which has served more than 100,000 people in 80 countries since 2020 (CathNews, 2021). A survey by MIT also found that Catholics generally prefer online community engagement to complement rather than replace traditional interactions, so AI and digital technologies can strengthen solidarity (MIT Centre for Constructive Communication, 2022). However, the Church needs

comprehensive ethical and policy guidance to ensure that AI applications are always aligned with evangelical values and human dignity. Some fundamental principles that need to be considered include the protection of people's personal data and sensitive data. This includes regulating technology vendors' access, encryption, and data storage to prevent unauthorized misuse (Chukwuere & Hutchinson, 2022). Anonymization or identity blurring needs to be done before AI systems use data (Sarabia-Panol & Yartey, 2022).

In addition, transparency and interpretation of AI algorithms are required so that the decision-making process can be understood and audited (Wang, 2021). Periodic testing is also essential to ensure AI systems are free from bias or discrimination against a particular gender, race, sexual orientation, or background. Periodic redesign of AI models can help maintain their inclusiveness (Sarabia-Panol & Yartey, 2022). Finally, human oversight is still required for AI decisions on clinical, legal or administrative matters to avoid fatal errors (Wang et al., 2021). With these comprehensive guidelines, it is hoped that AI can be implemented within the corridor of human values in line with the evangelical spirit for the common good.

AI Implementation Strategies for Effective and Ethical Pastoral Care

The integration of AI technologies into the Church's various pastoral services has the potential to improve their efficiency and accessibility significantly. The development of digital technology has changed the way people interact with the church. Churches must now be responsive in digitally meeting people's needs for pastoral and spiritual services. Therefore, integrating AI into church services is necessary, although not without challenges. Some examples of successful AI implementation include spiritual counseling chatbots in the Dioceses of Los Angeles and Cincinnati that can respond to thousands of parishioners' queries every month (Rose, 2022). This shows the real potential of improving the efficiency and accessibility of church services through AI.

However, ethical challenges and the risk of dehumanization remain serious concerns (Suen, 2022). Therefore, AI implementation strategies require a gradual and ethical approach to ensure maximum benefits without compromising the core values of pastoral care. In its implementation, the involvement of the community of believers from the planning stage to the evaluation of the pastoral AI system is essential to ensure that the value brought is in line with the expectations and values of the people (Sarabia-Panol & Yartey, 2022). In implementation, a hybrid

approach involving human and machine collaboration is ideal (Wang et al., 2021). The importance of cross-functional church training to understand the ethics and limitations of AI is also highlighted so that all stakeholders can contribute with a good understanding of the implementation of this technology.

Algorithm reviews and parishioner feedback must be periodically reviewed to refine AI systems to remain fair, safe and aligned with human values and social justice. Thus, applying AI in various aspects, such as online liturgy, counseling, and church financial administration, can benefit all people ethically and humanely.

Conclusion

The development of digital technology and AI has changed how people interact with the church. Churches must be more responsive to meet the needs of the people for digital pastoral and spiritual services. Most parishioners expect churches to leverage digital technology and AI to enhance parishioner engagement through online spiritual content, virtual counseling, and online communities. Integrating AI into pastoral care shows significant potential for increased efficiency, accessibility, and personalization.

However, ethical challenges and the risk of dehumanization are serious concerns. Therefore, AI implementation strategies require a gradual and ethical approach involving the community of believers from the planning stage. Crucial principles to be considered include safeguarding personal data, transparency, and the elucidation of AI algorithms, along with human supervision over AI-generated decisions. With a comprehensive ethical and policy framework, the integration of AI into various pastoral services has the potential to significantly enhance the quality of church services and imbue them with a human touch. Several strategic recommendations can be devised to optimize AI for effective and ethical pastoral services within the Church:

1. The Church should establish a thorough ethical framework and a pastoral AI policy, engaging the participation of the community and all stakeholders from the initial planning stages. This is imperative to ensure that the implementation of AI aligns with the tenets of faith and meets the community's expectations. Fundamental principles to be regulated include the transparency of AI algorithms, protection of individuals' data, assessment of fairness and minority inclusivity, and establishing mechanisms for system accountability.
2. adopting a hybrid approach that combines AI-driven decisions with prudent human judgment in critical administrative and pastoral functions is advised in

implementing AI. This approach is essential to uphold accountability and ethical adherence as primary considerations in church services.

3. Periodic audits of AI algorithms should be conducted to verify the absence of bias or potential discrimination that could disadvantage specific gender, race, sexual orientation, or background groups. This practice aims to maintain the inclusivity and equity of AI implementation.
4. Providing sufficient training and fostering digital literacy among clergy and church staff will facilitate the seamless integration of AI. A profound understanding of the ethics and limitations of AI is essential to ensure that Catholic values utilize this technology for the greater glory of God and the common good.

References

Aggarwal, C. C. (2018). Neural networks and deep learning. Springer.

Ann, J., Kurniawan, D. A., Adrian, F. A., & Oh, S. L. (2020). Application of computer vision and machine learning for automated worship service monitoring. IEEE Access, 8, 228143-228154. https://doi.org /10.1109/ ACCESS.2020.3043443

Atwood-Blaine, D. (2021). Artificial intelligence in ministry. Theology and Science, 19(2), 170–185. https://doi.org/10.1080/14746700.2021.1912233

Barna Group. (2021). Gen Z and morality: What teens believe (so far). Barna Group.

Boniolo, G., Ilic, S., Budin-Ljøsne, I., & Gainotti, S. (2022). An ethical framework for AI applications in health care. Lancet Digital Health, 4(1), e15–e21. https://doi.org/10.1016/S2589-7500(21)00231-X

Bughin, J., Hazan, E., Ramaswamy, S., Chui, M., Allas, T., Dahlström, P., Henke, N., & Trench, M. (2017). Artificial intelligence: The next digital frontier? McKinsey Global Institute.

Camila, S. M., Daiana, R., Gustavo, Q., Viviane, T., & Noelio, O. (2020). The AI moving the church: A preliminary study about chatbot Daniel used by Canção Nova Community. Technology in Society, 63, 101414. https://doi.org/ 10.1016/j.techsoc.2020.101414

CathNews. (2021). Online counseling expands to meet demand. https://cathnews.com /cashews/37956-online-counselling-expands-to-meet-demand

Catholic Network on Ethics of AI. (2022). From principles to practice in AI ethics: A guide for Catholics. https://ethicsofair.org/guide/

Chukwuere, J. E., & Hutchinson, A. (2022). Ensuring confidentiality and anonymity using blockchain and artificial intelligence for effective data storage and sharing. Information Technology & People. https://doi.org/10.1108/ITP-04-2021-0251

Correia, J. B., Barbosa, B. I., Silva, F. G., & Santos, M. Y. (2020, April). Intelligent multimedia application with augmented reality technology for religious education. In International Conference on Technological Ecosystems for Enhancing Multiculturality (pp. 14-17). Springer, Cham.

Francis, L. J., & Hoefnagels, N. (2022). Church buildings matter The relationship between attitudes toward modern church architecture and church attendance among Anglo-Catholics in the Church of England. Review of Religious Research, 64(4), 663-690. https://doi.org/10.1007/s13644-021-00505-2

Fransiskus. (2019). Christus vivit: Seruan apostolik pascasinode kepada para pemuda dan seluruh umat beriman. Dokpen KWI.

Gooch, R., Goulding, C., & Jones, S. (2022). Mediated religion: Digital technologies and the changing contours of religious communication. New Media & Society. https://doi.org/10.1177/14614448221103896

Grandin, C. (2022). Tech leaders' journey from atheism to Catholicism and finding innovative ways to share faith. Angelus News. https://angelusnews.com/voices/tech-leader-journeys-from-atheism-to-catholicism-and-finds-innovative-ways-to-share-faith/

Hyun, D., Kwak, J., Ko, D., & Lee, S. (2022). Toward generating situation-relevant preaching content with machine learning. Religions, 13(11), 1182. https://doi.org/10.3390/rel13111182

Ibrani. (2021). Pemanfaatan AI (Artificial Intelligence) di gereja masa kini. Laboratorium Digital. https://labdigital.ibrani.id/pemanfaatan-ai-artificial-intelligence-di-gereja-masa-kini/

Kim, H. K., & Jang, Y. (2020). The adoption of augmented reality technology in religious education: focusing on the factors influencing perceived usefulness. Asia Life Sciences, 29(2), 421-435.

Kim, T. K., & Park, H. W. (2020). The current status and prospects of the edutech industry in Korea based on patent analysis. Journal of Open Innovation: Technology, Market, and Complexity, 6(4), 176. https://doi.org/10.3390/joitmc6040176

Lariosa, N. (2022). AI must promote unity and boost the civilization of love – moral theologians. Vatican News. https://www.vaticannews.va/ en/church/ news/2022-05/artificial-intelligence-ai-ethics-machinery-of-freedom-book.html

Maldonado, C. (Ed.). (2021). The interconnective perspective: Re-envisioning science and technology evaluation through the lens of care ethics (1st ed.). Routledge. https://doi.org/10.4324/9780429323901

Meier, C., Schweizer, G., Rueppel, P., & Bizer, C. (2021). Detecting potential knowledge organization systems matches with machine learning. Journal of Documentation. https://doi.org/10.1108/JD-07-2021-0139

MIT Center for Constructive Communication. (2022). Study: Most choose digital over in-person worship but value both. MIT News. https://news.mit.edu/ 2022/online-church-worship-0304

Molnár-Gábor, F. (2022). The eternal word goes digital: Challenges and opportunities of digital media and AI for religious communities. Religions, 13(3), 200. https://doi.org/10.3390/rel13030200

Pagliari, C., Cunningham, J. A., Keaveney, J., & Minahan, J. C. (2022). Empathy not algorithms: A human-centered approach to digital mental health and pastoral care. Journal of Medical Internet Research, 24(6), e38579. https://doi.org/ 10.2196/38579

Pontifical Academy for Life. (2020). The ethics of algorithms: Opportunities and risks. Pontificia Accademia per la Vita.

Pope Francis urges ethical use of artificial intelligence - Vatican News. (2023). Retrieved February 1, 2023, from https://www.vaticannews.va/en/pope/ news/2023-01/pope-francis-artificial-intelligence-ethical-use-human-good.html.

Purdy, M., & Daugherty, P. (2016). How AI boosts industry profits and innovation. Accenture.

Rao, K. R., Kim, D., & Hwang, J. N. (2022). Deep learning and deep neural networks: An overview. In Deep Learning and Neural Networks (pp. 1-42). Springer, Cham. https://doi.org/10.1007/978-3-030-74369-6_1

Rose, A. (2022). AI spiritual director? Developer demos new hyper-personalized faith tool in the works. Angelus News. https://angelusnews.com /news/nation /ai-spiritual-director-developer-demos-new-hyper-personalized-faith-tool-in-the-works/

Salesforce. (2021). State of faith communities. The connected church report 2021. Salesforce.

Sarabia-Panol, Z., & Yartey, K. (2022). AI in counseling: Ethical issues and implications. Counseling and Psychotherapy Research, 22(3), 592-605. https://doi.org/10.1002/capr.12441

Schwarting, W., Alonso-Mora, J., & Rus, D. (2023). Planning and decision-making for autonomous vehicles. Annual Review of Control, Robotics, and Autonomous Systems, 6. https://doi.org/10.1146/annurev-control-100121-013004

Suen, C. Y. (2022). Ethics of artificial intelligence, the human person, and human dignity. Theological Studies, 83(1), 163–181. https://doi.org/10.1177/0040563921994525

The Vatican. (2020). Rome calls for AI ethics. Pontifical Academy for Life. http://www.academyforlife.va/content/pav/en/events/intelligenza-artificiale.html

Wang, H., Zhang, F., Xie, X., & Guo, M. (2019). Mining key information for religious studies from selected publications on artificial intelligence applications. Religions, 10(1), 54. https://doi.org/10.3390/rel10010054

Wang, Y. (2021). On explainability in AI ethics: Beyond the individualistic perspective. Minds and Machines, 31(3), 485–507. https://doi.org/10.1007/s11023-021-09560-

Wirth, W., Hofer, M., & Schramm, H. (2022). Beyond one-size-fits-all: Toward personalized sermons. Journal of Communication, 72(1), 145-168. https://doi.org/10.1093/joc/jqab041

Yang, Y., Cervantes, C., Choi, J., & Datta, A. (2021). Voice: A chat-based interactive virtual counselor empowering at-risk youth. In Proceedings of the AAAI Conference on Human Computation and Crowdsourcing (Vol. 9, No. 01, pp. 113-122).

Author's Profile



METODIUS NASRANI, born in Beokina (Manggarai), 14 February 1997, domiciled in Landak, West Kalimantan - Indonesia, email: confortinasrani14@gmail.com. Education: Graduated from the Bachelor of Theology Program at STIKAS Santo Yohanes Salib, Bandol, in 2022. The current functional position is a postgraduate student in the Master of Theology Program at STIKAS Santo Yohanes Salib, Bandol.



SHELOMITA SELAMAT, born in Pusat Kerohanian Karmel, Untang , Banyuke Hulu domiciled in Landak, West Kalimantan - Indonesia, email: innocentiapkarm@gmail.com Education: graduated from the Bachelor of Theology Program at the STFT Widya Sasana Malang, in Graduated from the Master's Program at Faculty of Philosophy, in Work experience: STIKAS Santo Yohanes Salib The current functional position is Lektor 200.

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER VI

AI and Medical Development: A Review of the Morals of the Catholic Church

Charles Endruw Kebing (charlz6041@gmail.com)
Irwan Irwan (2013irwan@gmail.com)

STIKAS St. Yohanes Salib – West Kalimantan

Abstrak

Over the past few decades, artificial intelligence (AI) has grown significantly and affected every aspect of life, including medicine. Artificial intelligence has been used to generate several innovative technologies that can enhance the standard of healthcare, including medical research, diagnosis, and therapy. But the advancement of AI also brings up some ethical issues, particularly in light of the Catholic Church. The magazine covers the ethical examination of medical advancements and artificial intelligence by the Catholic Church. First, a summary of the advancements in healthcare and artificial intelligence is given. After that, the moral doctrine of the Catholic Church regarding artificial intelligence is examined. This includes fundamental moral principles, bioethical principles, and ethical principles about medicine. The final section of the journal discusses how the moral teachings of the Catholic Church can be applied to the advancement of artificial intelligence and medicine.

Keywords: Artificial Intelligence (AI), Medical Development, Moral Of The Catholic Church.

Introduction

The intersection of artificial intelligence (AI) and medical development presents profound ethical challenges, especially when viewed from the moral perspective of the Catholic Church. The Catholic Church, as a religious institution with strong moral and ethical guidelines, has historically been instrumental in guiding its people through various moral and ethical issues. Rapid developments in AI and medical technology open the door to the possibility of tremendous transformation in healthcare but also raise complex questions related to human rights, human dignity, and the ethical values held by the Catholic Church.

Advances like automated algorithm-based diagnostics, the creation of genetic medicines, and the use of robots in surgery have been made possible by the expansion of medical technology and artificial intelligence. The use of these technologies raises serious ethical issues including those about morality, autonomy, and society's long-term effects, even while they have the potential to save lives and improve quality of life.

The Catholic Church frequently emphasizes fundamental moral principles, such as respect for human dignity, moral duty for others, and the use of technology in life's values, in the context of medical advancements driven by artificial intelligence. Therefore, it is vital to comprehend how the Catholic Church's moral teachings

Literatur Review

Ethics of Artificial Intelligence

In the medical context, the implementation of Artificial Intelligence (AI) should be subject to widely recognized ethical principles. (Cowls et al., 2019) presents a significant concept in his research, namely. Good AI Society, where the main focus of Artificial Intelligence is to generate a positive impact that is ethically and socially sustainable. present a significant concept in their research, the Good AI Society, where the main focus of AI is to generate ethically and socially sustainable positive impact. They emphasize the importance of strengthening values such as transparency, accountability, and fairness at every stage of AI development.

This thinking underscores the urgency of adopting moral values as a key foothold in guiding the development of medical technology. (Jobin et al., 2019) also adds an ethical dimension by discussing the role of ethics in overcoming biases that are often inherent in AI algorithms, reflecting human prejudices. They encourage the integration of ethics from the design and development stages of AI to ensure fairness in every decision made by the system. Thus, attention to moral values is essential in preventing the reproduction of biases and ensuring equitable implementation of technology in the medical environment (Sinibaldi et al., 2020).

Further studies by (Mittelstadt et al., 2019) explored the concept of explainability as a key element in maintaining transparency and accountability of AI (Cowls et al., 2019; Mittelstadt et al., 2019). To maintain transparency and accountability in AI development, there needs to be a deep understanding of the

moral and ethical values in the use of this technology. The argument highlights that the ethics of AI are not limited to machine-generated decisions, but also to the ability of humans to understand and discuss these decisions (Combi et al., 2022). In other words, ethical integrity in AI applications involves the ability of users and stakeholders to develop a substantial understanding of the decisions made by the technology.

By involving the concepts of Good AI Society, ethical management in design and development, and the importance of explainability, this set of concepts forms a comprehensive foundation to ensure that the application of AI in the medical field complies with high moral and ethical standards (Siau & Wang, 2020). According to experts' views, Good AI Society refers to the principles of law enforcement and regulation that can ensure the security and privacy of patient data. Ethical management in design focuses on the decision-making process behind the technology so that it does not conflict with human values (Kiseleva et al., 2022).

In addition, explainability is needed to explain how AI systems achieve certain results so that they can be understood by medical practitioners and patients more transparently (Haibe-Kains et al., 2020). Thus, the implementation of AI in the medical field will be in line with the demands of a high level of morality and professionalism as a means of improving the welfare of society as a whole. The implementation of AI technology in the medical field has great potential to improve the quality of healthcare, but it also raises several ethical challenges that need to be taken seriously. One of the things that need to be emphasized is the importance of ensuring that AI algorithms do not reinforce or reproduce biases that already exist in the healthcare system (Green, 2018). In addition, there needs to be a mechanism that ensures that decisions generated by AI technology can be explained and accounted for transparently.

The Catholic Church's Moral Perspective

In exploring the moral perspective of the Catholic Church, the literature on ethics and the Church's moral teachings play a key role in shaping views on contemporary issues. In this case, the Church sees the need to emphasize the dignity of life, human rights, and moral principles that the Catholic Church holds dear (Sugiarto et al., 2022). In Veritatis Splendor (1993), Pope John Paul II affirmed the importance of moral truth and emphasized that humans have a moral responsibility to understand and follow natural law (John Paul II, 1993). This reference became the basis for many studies that considered the ethical

implications of modern technology, including Artificial Intelligence in the medical field. Catholic theologians and ethicists such as Charles E. Curran and Lisa Sowle Cahill have made significant contributions to this literature. Curran emphasizes the relevance of Catholic moral teaching in the context of modern moral pluralism, while Cahill highlights the role of Catholic social teaching in guiding responses to social and technological change (Sinibaldi et al., 2020); McCarthy et al., 2020).

In the context of medical technology, Gilbert Meilaender, a theological ethicist, raises critical questions about the use of Artificial Intelligence in human life. He highlights the importance of ensuring that medical technology does not replace the dignity of life and human freedom (Meilaender, 2020). In addition, according to Paul Scherz as found in the Catechism of the Catholic Church, it emphasizes the need to protect the dignity of life, human rights, and principles of social justice in the face of technological progress (Davis & Scherz, 2021). The Church also highlights the moral responsibility to use Artificial Intelligence ethically and ensure that humans remain at the center of attention in the development of medical technology.

This view is reinforced by Paul Scherz, who emphasizes the need to protect the dignity of life, human rights, and principles of social justice in the face of technological advances (Davis & Scherz, 2021). The Church also highlights the moral responsibility to use AI ethically, to ensure that humans remain at the center of attention in the development of medical technology. Experts emphasize the need to maintain human values in the use of medical technology for the good of all.

Medical Development and Bioethics

Rapid medical developments, especially those involving advanced technologies such as Artificial Intelligence (AI), pose new complexities in the realm of bioethics (Sanhaji & Hizbullah, 2023). Several studies underline the involvement of ethics in every stage of medical development using AI technology. According to (Mercer et al., 2021), bioethics is the study of moral principles relating to human life and life sciences. In the context of medical development, bioethics provides a theoretical basis for assessing the ethical implications of the application of advanced medical technologies. Scholarly views, such as (Harris, 2019), highlight that bioethics in medical development needs to consider the impact on human dignity, justice, and universal moral principles. In this literature, the need for balance between medical progress and underlying ethical values is emphasized.

The Catholic Church's view is reflected in the work of the Josephinum Journal of Theology. The Catholic Church affirms that medical developments must be in line with the moral principles upheld by Catholic teaching, including the right to life and human dignity (Garrigou-Lagrange & Rini, 2011). The reference work (Pope Pius XII, 1957) on Catholic bioethics states that the protection of life and humanity should be the top priority in modern medical developments. Systematically, this literature illustrates how important the involvement of bioethics is in the views of experts and the Catholic Church towards medical developments. Bioethics becomes an important moral guide in navigating the challenges and decisions that arise along with the advancement of medical technology, especially in the use of Artificial Intelligence in the health domain.

Medical technology, particularly the use of AI, is becoming an increasingly relevant subject in medical ethics discussions. The importance of ensuring that the use of medical technology does not supersede human dignity and freedom has become a focus of attention for experts and the Catholic Church (Hazel Markwell, 2005). Scholars such as Gilbert Meilaender and Paul Scherz highlight the need to protect the dignity of life, human rights, and principles of social justice in the face of advances in medical technology.

This view is also reflected in the work of the Josephinum Journal of Theology which emphasizes that medical developments must be in line with the moral principles held dear by Catholic teaching, including the right to life and human dignity. Thus, experts and the Catholic Church systematically emphasize how important the involvement of bioethics is in their views on the development of medical technology. The existence of bioethics is crucial in formulating moral guidance in facing the challenges and decisions that arise along with advances in medical technology, especially in the context of the use of Artificial Intelligence in the health domain.

Discussion

The Catholic Church's View on the Use of AI in Medical Diagnosis

The Catholic Church's view on the use of AI in medical diagnosis is reflected in the holistic Catholic moral and ethical teachings (Hagendorff, 2020). In its view, technology should be used to improve human welfare without compromising fundamental moral values. Pope John Paul II, in his encyclical Evangelium Vitae, emphasized that human life is a sacred gift, and every action,

including the development of medical technology, must respect and protect the dignity of life (Pope John Paul II, 1995).

In the context of the use of AI in medical diagnosis, the Church highlights the importance of paying special attention to the moral aspects that arise. The concept of dignity of life and health ethics in the encyclical Donum Vitae emphasizes that medical diagnosis should be carried out in good faith, respecting the rights of patients, and considering the ethical consequences of each decision (Kurniati, 2017). Theological scholars such as (Richard M. Gula, 1987) point out that Catholic medical ethics places special attention on the welfare of patients and the decisions taken by medical practitioners. In the context of Artificial Intelligence, it is recognized that technology-enhanced medical diagnosis must be applied carefully, maintaining a balance between speed of diagnosis and moral prudence.

Therefore, the Catholic Church's view on the use of AI in medical diagnosis highlights the balance between technological advancement and moral values. Emphasis on human rights, patient welfare, and the ethical responsibilities of medical practitioners are key points in this view. Therefore, the implementation of AI in medical diagnosis should be carried out with good faith, transparency, and high ethical awareness by the teachings of the Catholic Church, which is rich in moral values.

Regarding the experts' views on the use of Artificial Intelligence in the context of medical technology, it can be studied from the perspective of medical ethics. According to the experts, as expressed by Meilaender and Scherz, the importance of ensuring that medical technology, including the use of Artificial Intelligence, does not replace the dignity of life and human freedom is one of the critical points. They highlight the need to protect the dignity of life, human rights, and principles of social justice in the face of advances in medical technology (Davis & Scherz, 2021).

This view is in line with the opinion of the Catholic Church, which emphasizes the need to be in line with the moral principles upheld by Catholic teaching, especially in the aspects of the right to life and human dignity (Garrigou-Lagrange & Rini, 2011; Pope Pius XII, 1957). The involvement of bioethics is important in the views of experts and the Catholic Church towards medical developments, especially in the context of the use of Artificial Intelligence in the health domain.

Systematically, the views of experts and the Catholic Church emphasize how important the involvement of bioethics is in formulating moral guidance in facing the challenges and decisions that arise along with advances in medical technology. In this case, the implementation of AI in medical diagnosis must pay attention to the balance between technological progress and moral values, and adjust to the ethical principles held by the Catholic Church for the welfare of patients and the continuity of the ethical responsibilities of medical practitioners.

Ethical Use of AI in Medical Therapy

The Catholic Church's view on the use of AI in medical therapy is reflected in the ethical foundation embedded in Catholic moral teaching. In addressing this, the Church focuses on the moral principles that govern medical interventions, viewing them as extensions of a broader moral responsibility to the well-being of humanity.

In the encyclical Evangelium Vitae, Pope John Paul II emphasized that every medical action, including therapy, should be directed towards respect for human life and dignity (Pope John Paul II, 1995). In the context of the use of AI in medical therapy, the Church demands that these principles be upheld, and any therapeutic action must take into account moral values involving the physical and spiritual well-being of the patient. This is also important in the view of Jean Porter, highlighting the importance of ethical principles in guiding medical action (Gardiner, 2003). From the perspective of the Catholic Church, medical therapies involving Artificial Intelligence should ensure that every decision and action is in line with moral principles, including the right to life, justice, and social solidarity.

Furthermore, the Encyclical Dignitas Personae emphasizes that medical actions, including therapies, must respect the integrity of the patient's person (Gonzalo Miranda, 2009). In using AI technologies for medical therapy, the Church emphasizes the need to understand and pay attention to the individual needs of each patient, distancing itself from approaches that are too mechanistic and do not consider moral and personal dimensions.

The Charter for Health Care Workers as cited by (Yarney et al., 2016), affirms that medical practitioners, including in the use of AI, have a moral responsibility to ensure that the therapy provided is by Catholic moral principles and ethical norms. This includes aspects such as fairness in the distribution of therapy, the obligation to provide quality care, and respect for the integrity of the patient's body.

Therefore, the Catholic Church's view on the use of AI in medical therapy emphasizes the importance of following the moral principles outlined in Catholic moral teaching. In this perspective, medical therapies involving AI should be aligned with ethical values, respect human rights, and prioritize the well-being of patients in both physical and spiritual dimensions.

Ethical Challenges in Medical Research Involving AI

The development and application of AI in medical research bring with it complex ethical challenges. In this context, the Catholic Church as the moral guardian of its people is engaged in responding to these challenges by detailing its views that are powered by ethical and moral principles. In this regard, the Instruction on Certain Bioethical Questions serves as a critical guide in discussing and addressing the ethical challenges that arise (Personae, 2008). Church teaching also emphasizes fundamental moral values, especially regarding the dignity of life and human rights. In involving AI in medical research, the Church considers the need for caution and respect for the integrity of human life. Pope John Paul II's encyclical Evangelium Vitae states that every life has inestimable value and cannot be compromised. Therefore, medical research involving AI must ensure that human rights and the dignity of life are respected (Pope John Paul II, 1995).

From a philosophical perspective, scholars such as (Beauchamp & Childress, 2001) propose bioethical principles, among which are the principles of justice, autonomy, and harmlessness. In the context of medical research with AI, the principles of justice encourage the fair distribution of the benefits and burdens of research among all participants and groups. The principle of autonomy emphasizes the right of participants to provide informed consent and control the use of their data. Meanwhile, the principle of no harm requires research to yield maximum benefit and avoid disproportionate risk.

Other bioethicists, such as (Benjamin, 2016), highlight the potential for reproduction and reinforcement of bias in AI algorithms. This view reflects the Church's concerns regarding the need to address the social and ethical impacts of inequalities that could arise in AI-based medical research. The Catholic Church encourages that any research and implementation of medical technology prioritizes justice and avoids inequalities that may disadvantage certain groups.

In terms of theology, the Church's moral principles include special attention to God's role in creation and salvation. The Church emphasizes that medical research with AI should be conducted with an awareness of religious and moral principles. The encyclical Dignitas Personae emphasizes that any action involving human life must be carried out with respect for the divine plan and God's role as Creator (Gonzalo Miranda, 2009).

Scholarly studies, as outlined by (Cowls et al., 2019), highlight the concept of Good AI Society. They emphasize the need for values such as transparency, accountability, and fairness in AI research. This view is in line with that of the Church, which supports the application of medical technology by reinforcing moral values and ensuring that the impact is ethically and socially positive.

Through a systematic and holistic approach, the Catholic Church makes a valuable moral contribution to addressing the ethical challenges in AI-based medical research. By guiding its people and providing value-rich moral guidance, the Church plays a role in shaping the development of medical technology so that it is always in line with high ethical principles.

Moral Responsibility of the Catholic Church in Medical Technology Development

The moral responsibility of the Catholic Church in the development of medical technologies, particularly those involving AI, reflects a deep concern for ethical principles and moral values. The Church faces the critical task of ensuring that the development of medical technology remains in line with the moral principles espoused in Catholic teaching. In his encyclical Laudato Si, Pope Francis voiced concerns about the ecological and social impacts of technological development, emphasizing the importance of ecological justice and sustainability (McGrail, 2019). In this context, the Catholic Church has a moral responsibility to evaluate the environmental, social, and ethical impacts of the development of medical technologies, including AI.

Theological scholars, such as Philip Sheldrake cited (Peat, 2005), highlight also the importance of the Church's involvement in guiding technological development in line with moral and ethical values. They emphasize that the Church should serve as a moral guide for its people and provide ethical direction in every phase of medical technology development involving Artificial Intelligence.

The views of experts and the Catholic Church on the development of medical technology, especially the use of Artificial Intelligence in the realm of health, are reflected in efforts to maintain human values. The involvement of bioethics is crucial in formulating moral guidelines in facing the challenges and decisions that arise along with the advancement of medical technology. Bioethics becomes an important moral guide in navigating the implementation of Artificial Intelligence in medical diagnosis, to ensure that the use of medical technology remains in line with the moral principles upheld by Catholic teachings, including the right to life and human dignity.

The protection of life and humanity must be a top priority in modern medical developments. In this context, experts and the Catholic Church have systematically emphasized how important the involvement of bioethics is in their views on the development of medical technology. Thus, the ethical and moral views of these experts and the Catholic Church provide a deep and systematic view in ensuring that the use of medical technology, including Artificial Intelligence, does not replace human dignity and freedom ((Meilaender, 2020); (Davis & Scherz, 2021)).

Conclusion

The Catholic Church's view on the use of AI in medical diagnosis focuses on holistic Catholic moral and ethical teachings. These teachings demand that technology should be used to improve human welfare without compromising fundamental moral values. Pope John Paul II, in his encyclical Evangelium Vitae, emphasized that every action, including the development of medical technology, must respect and protect the dignity of life. In the context of the use of AI in medical diagnosis, the Church emphasizes the importance of attention to moral aspects. The concept of dignity of life and health ethics in the encyclical Donum Vitae demands that medical diagnosis be carried out in good faith, respect the rights of the patient, and consider the ethical consequences of each decision. Theologians such as Richard M. Gula emphasize the need for a balance between speed of diagnosis and moral prudence.

Church sources, such as the Charter for Health Care Workers, affirm the ethical responsibilities of health professionals, including in the use of diagnostic technologies. In the Church's view, health practitioners must be defenders of the dignity of life and ensure that AI is used by Catholic moral principles. In conclusion, the Catholic Church's view highlights the balance between

technological advancement and moral values. Human rights, patient welfare, and the ethical responsibilities of medical practitioners are the main focus. Therefore, the implementation of Artificial Intelligence in medical diagnosis should be done in good faith, with transparency, and high ethical awareness by the teachings of the Catholic Church, which is rich in moral values.

References

Beauchamp, T. L., & Childress, J. F. (2001). Principles of biomedical ethics. Oxford University Press, USA.

Benjamin, R. (2016). Informed refusal: Toward justice-based bioethics. Science, Technology, & Human Values, 41(6), 967–990.

Combi, C., Amico, B., Bellazzi, R., Holzinger, A., Moore, J. H., Zitnik, M., & Holmes, J. H. (2022). A manifesto on explainability for artificial intelligence in medicine. Artificial Intelligence in Medicine, 133, 102423. https://doi.org/https: //doi.org/10.1016/j.artmed.2022.102423

Cowls, J., King, T., Taddeo, M., & Floridi, L. (2019). Designing AI for social good: Seven essential factors. Available at SSRN 3388669.

Davis, J. E., & Scherz, P. (2021). Recovering Old Age. The New Atlantis, 63, 52–62.

Gardiner, P. (2003). A virtue ethics approach to moral dilemmas in medicine. Journal of Medical Ethics, 29(5), 297.

Garrigou-Lagrange, R., & Rini, S. M. (2011). Where is the new theology leading us? Josephinum Journal of Theology, 18(1), 63.

Gonzalo Miranda, L. C. (2009). Dignitas personae: accogliere, leggere, interpretare. Studia Bioethica, 2(1).

Green, E. E. (2018). Robots and AI: The Challenge to Interdisciplinary Theology.

Hagendorff, T. (2020). The ethics of AI ethics: An evaluation of guidelines. Minds and Machines, 30(1), 99–120.

Haibe-Kains, B., Adam, G. A., Hosny, A., Khodakarami, F., Shraddha, T., Kusko, R., Sansone, S.-A., Tong, W., Wolfinger, R. D., Mason, C. E., Jones, W., Dopazo, J., Furlanello, C., Waldron, L., Wang, B., McIntosh, C., Goldenberg, A., Kundaje, A., Greene, C. S., Directors, M. A. Q. C. (MAQC) S. B. of. (2020). Transparency and reproducibility in artificial intelligence. Nature, 586(7829), E14–E16. https://doi.org/10.1038/s41586-020-2766-y

Harris, R. (2019). ACT made simple: An easy-to-read primer on acceptance and commitment therapy. New Harbinger Publications.

Hazel Markwell. (2005). The notion of covenant. www.thelancet.com

Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. Nature Machine Intelligence, 1(9), 389–399.

John Paul II. (1993). Veritatis splendor. Catholic News Service.

Kiseleva, A., Kotzinos, D., & De Hert, P. (2022). Transparency of AI in Healthcare as a Multilayered System of Accountabilities: Between Legal Requirements and Technical Limitations. In Frontiers in Artificial Intelligence (Vol. 5). Frontiers Media S.A. https://doi.org/10.3389/frai.2022.879603

Kurniati. (2017). 14.C2.0021 Maria Regina Titiek Kurniati COVER.

McCarthy, M., Homan, M., & Rozier, M. (2020). There's No Harm in Talking: Re-Establishing the Relationship Between Theological and Secular Bioethics. The American Journal of Bioethics, 20(12), 5–13. https://doi.org/10.1080/15265161.2020.1832611

McGrail, P. (2019). Laudato Si'. Integral Ecology for a More Sustainable World: Dialogues with Laudato Si', 317.

Meilaender, G. (2020). Bioethics: A primer for Christians. Wm. B. Eerdmans Publishing.

Mercer, C., Trothen, T. J., & Cole-Turner, R. (2021). Religion and the technological future. Springer.

Mittelstadt, B., Russell, C., & Wachter, S. (2019). Explaining explanations in AI. Proceedings of the Conference on Fairness, Accountability, and Transparency, 279–288.

Peat, M. (2005). Cutting-edge bioethics: a Christian exploration of technologies and trends. Institute of Medical Ethics.

Personae, I. D. (2008). On Certain Bioethical Questions. Congregation for the Doctrine of the Faith (CDF).

Pope John Paul II. (1995). Evangelium vitae. Origins, 24(42), 689–691.

Pope Pius XII. (1957). Pope Pius XII and Foreign Missions. The Furrow, 150–155.

Richard M. Gula. (1987). Euthanasia: a Catholic perspective. Health Progress (Saint Louis, Mo.), 68(10), 28–34.

Sanhaji, G., & Hizbullah, A. I. (2023). Pemanfaatan Artificial Intelligence Dalam Bidang Kesehatan. Edusaintek: Jurnal Pendidikan, Sains Dan Teknologi, 11(1), 234–242. https://doi.org/10.47668/edusaintek.v11i1.999

Siau, K., & Wang, W. (2020). Artificial intelligence (AI) Ethics: Ethics of AI and ethical AI. In Journal of Database Management (Vol. 31, Issue 2, pp. 74–87). IGI Global. https://doi.org/10.4018/JDM.2020040105

Sinibaldi, E., Gastmans, C., Yáñez, M., Lerner, R. M., Kovács, L., Casalone, C., Pegoraro, R., & Paglia, V. (2020). Contributions from the Catholic Church to

ethical reflections in the digital era. Nature Machine Intelligence, 2(5), 242–244. https://doi.org/10.1038/s42256-020-0175-4

Yarney, L., Buabeng, T., Baidoo, D., & Bawole, J. N. (2016). Operationalization of the Ghanaian patients' charter in a peri-urban public hospital: voices of healthcare workers and patients. Internat*i*

Author's Profile



CHARLES ENDRUW KEBING, Born in Miri, Sarawak, Malaysia, 16 January 1992. Domiciled in Landak, West Kalimantan, Indonesia. Email: charlz6041@gmail.com. Education: Completed First Bachelor of Theology at STIKAS Santo Yohanes Salib, Landak in 2023. Now in the process of studying for second Bachelor of Theology in 2024.



IRWAN S.S., Lic.Th., born in Jakarta, Indonesia, domiciled in Landak, West Kalimantan - Indonesia, email: 2013irwan@gmail.com. Education: graduated from the Bachelor of Theology Program at the STFT Widya Sasana, Malang in 2004. Graduated from the Master's Program at Accademia Alfonsiana, Rome in 2013. Work experience: lecturer. My current functional position is lecturer.

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER VII

Morality and Ethics in AI: The Catholic Church's Perspective for Facing Technological Dilemmas

Ronnie Bin Jenis (ron87nie29@gmail.com)
Herwindo Chandra (herwindo.chandra@stikassantoyohanessalib.ac.id)
STIKAS St. Yohanes Salib – West Kalimantan

Abstract

Today, the Catholic Church faces moral and ethical dilemmas due to the rapid development of AI. As a result, it is impacting new issues related to social justice, human dignity, and more. The Catholic Church recognizes that to resolve these issues and ensure that human values and morality are applied to artificial intelligence (AI) technologies, it needs to provide ethical direction and frameworks. The important moral and ethical issues raised by this rapid development of artificial intelligence include algorithmic bias, privacy, autonomy, and human accountability. By emphasizing human dignity and promoting social justice, the church seeks to protect people from the dangers of using artificial intelligence. The church recognizes that education is necessary to understand artificial intelligence and its impact on human life. The Church encourages discussion and collaboration between science and faith to ensure that artificial intelligence (AI) is used in a way that is properly aligned with the value of the dignity of human life. Through these actions, the Church seeks to protect human dignity and justice from uses of artificial intelligence that are incompatible with human dignity.

Keywords: Artificial intelligence (AI), morality, ethics, technology dilemma, principles

Introduction

In this journal, we will consider the teachings of the Catholic Church as moral and ethical principles to guide individuals and organizations in using AI for the common good. By emphasizing human dignity, the Church explores the

implications of AI for decision-making, human autonomy, and potential harm; and considers the morality and ethics approaching its use in health, war, and work. It is important to seek from the ongoing discourse on the responsible use of AI with a moral and ethical perspective.

In the rapidly evolving landscape of AI, the line between technology and ethics must be drawn. The Catholic Church strongly hopes that a deep understanding of human values and norms combined with ethical principles will provide the right framework for the future development of AI without losing sight of the dignity of human life, justice, and the well-being of all. In this regard, the Church has always emphasized the importance of protecting human rights without the exploitation of irresponsible use of AI by a few. This fundamental stance recognizes not only the importance of enhancing the potential of human life but also the ethical complexities and risks associated with its widespread use that also affects the lives of the environment.

Therefore, to realize the vision of AI in harmony with human dignity and ethics, the Catholic Church has advocated a multidisciplinary approach by holding open dialogue and collaboration between scientists, ethicists, theologians, policymakers, and various stakeholders to jointly use AI in harmony with existing ethics. Through the teachings of the Church, both individuals and organizations can ensure that technological advancement adheres to ethical standards that also safeguard social justice and human values. This is done by grounding the development and use of AI in the ethical teachings of the Catholic Church to encourage society towards the common good and the common good directed towards good and ethical use (*Artificial Intelligence*, 2020). This includes an ethical framework that guides the use of AI with an emphasis on the dignity and protection of human rights in all areas related to AI.

Moreover, in the field of healthcare, the Catholic Church emphasizes the importance of patient welfare, respect for individual autonomy, and adherence to ethical principles governing medical practice such as; revolutionizing diagnosis, treatment, and patient care. Likewise, the use of AI in warfare to provide new weapons is not to be encouraged or realized if it is for its own sake without regard to the common good. However, it may still be considered with AI innovation if it is for the sake of strengthening the country's strategy and defense against all enemy attacks (Song, 2020)

In the field of labor, the influence of AI is expanding, which can contribute to the improvement of employment and the economy. Many refinery industry

sectors are using AI technology in the form of robots that ease the human workload. Likewise, in terms of earning materials that can be done more quickly, thus adding to the country's source of income. However, it should be noted that there should not be dehumanization from uncontrolled automation that neglects the human work system. Through Catholic ethics, the well-practiced integration of AI with labor will promote a better and more advanced work system as well as a more humane work system.

In conclusion, in addition to providing a moral foundation for the development and use of AI, the ethics of the Catholic Church also provide a comprehensive way to preserve human dignity, protect human rights, and a multidisciplinary approach to regulating the use of AI, as well as in the field of employment that emphasizes justice in employment without neglecting human labor itself (Burdett, 2023).

Literature Review

Theological Foundations of Morality in AI

In the Catholic Church's efforts to advise on the development and use of AI in line with moral and ethical principles, some scholars criticize and hold the opposing view that the principles of the traditional teachings of the Catholic Church are incompatible with today's advances in AI technology (Brittain, 2020). The Church is too rigid in its strict adherence to doctrine to adapt to today's modern technological developments (*Pope Francis Urges Ethical Use of Artificial Intelligence - Vatican News*, 2023). They also criticized the Church's view that the use of AI in autonomous decision-making and AI-robot interactions is inappropriate for human social life (*Pope Francis Urges Ethical Use of Artificial Intelligence - Vatican News*, 2023). In this regard, the Church's teachings still believe that providing moral and ethical standards for the use of AI will help a lot in preserving and respecting the dignity of human life and the common good and well-being (Graves, 2022)

The area of labor is also a concern in the ethics of the Catholic Church. This includes the protection of key principles of human value, human rights, and in ethical decision-making with a multidisciplinary approach. By recognizing human value or dignity, the use of AI technology is no more than a means to serve human needs without compromising the well-being of all people. Ethics in the use of AI is also important in protecting human rights by ensuring that individual autonomy,

privacy, and freedom are guaranteed. In addition, through an ethical framework, collaboration between scientists, theologians, and those involved can be realized to clarify what is permissible and resolve any problems caused by AI (*Catholic Church, Tech Firms Join Call for Transparency in AI - UPI.Com*, 2020).

In addition, AI decision-making becomes a source of concern when it seems to replace humans as agents of free will who are supposed to determine decisions and actions. This raises the philosophical and ethical conundrum of AI decision-making that also impacts human autonomy and responsibility. It is important to ensure that AI is only a tool for assisting humans and not the arbiter of human decisions and actions (Hallamaa & Kalliokoski, 2022).

The rapid development of AI is increasingly coloring our daily lives with not only positive but also negative impacts. In the face of this dilemma, the Church continues to encourage all people and fields to continue to be open to dialogue together by focusing on the development and use of AI from a disciplinary perspective that cannot be separated from religion and ethics (*To Participants in the "Minerva Dialogues", Meeting Organized by the Dicastery for Culture and Education (27 March 2023) | Francis*, 2023).

Human Dignity and AI

The teachings of the Catholic Church have always placed the value or dignity of the human person first in all aspects of life. Therefore, the use of AI should always be a means only to help human beings but not to be designed or used in a way that is degrading or contrary to human dignity, such as promoting discrimination, division, inequality, or harming individuals or communities(*To Participants in the Plenary Assembly of the Pontifical Academy for Life (28 February 2020) | Francis*, 2020). The Church has never rejected AI as long as it is used to enhance human dignity in terms of capabilities and quality of life both individually and in society. In addition, it is important to emphasize solidarity in the ethics of AI which involves individual cooperation and responsibility towards others to promote justice and honesty, which in turn helps to reduce negative impacts on those who are marginalized or vulnerable (*To Participants in the Plenary Assembly of the Pontifical Academy for Life (28 February 2020) | Francis*, 2020).

A holistic approach to AI ethics also needs to be adopted. This involves collaborating technological advancements with ethical considerations rooted in the

values of human dignity, solidarity, and the common good to mitigate the negative ethical implications of wrongful and irresponsible use by certain parties. Without this approach, various problems will arise such as loss of human control, infringement of individual privacy, and problems with work and human relations (*Artificial Intelligence Must Not Hurt the Most Vulnerable, Pope Says - TheCatholicSpirit.Com*, 2023).

The Catholic Church has always emphasized that in the development and use of AI, human value and dignity must be prioritized as the standard. With this, AI systems will always be a tool in helping human beings for the sake of justice, equality, and solidarity without neglecting the human value of each individual. Therefore, the Church always hopes that both users and experts, as well as those involved in the development of AI, always balance it with moral and ethical principles that serve as benchmarks in ensuring that the use of AI is justly and well accounted for (Florida & Cowls, 2019).

Ethical Decision-Making in AI Development

In the development and use of AI, one of the concerns is ethical decision-making. Increasingly advanced AI has been programmed to be able to upgrade itself to become more efficient and effective (Bengio et al., 2023). Therefore, it is very dangerous for humans if unchecked that AI systems might affect existing data systems (Hendricks et al., 2023). Therefore, there is a need for strict supervision of the AI datasystem base so as not to cause any problems and harm to humans.

In the view of the Catholic Church, the Church advocates that AI developers and researchers need to be programmed with an eye to the well-being and autonomy of individuals and demonstrate values that maintain human dignity to live in justice and the common good (Tomašev et al., 2020). Therefore, to overcome this problem, it is necessary to increase trust in AI through practical means of transparency and accountability, consistent auditing of data, and cooperation between industry, experts, and the producers of AI products (Díaz-Rodríguez et al., 2023). Likewise, organizations associated with the use of AI need to prioritize the equitable distribution of economic and material benefits by considering the principles of distributive justice and solidarity.

AI systems also need to be closely supervised and carefully monitored so as not to threaten humans due to the imbalance of data processing systems between humans and AI (Allen & Weyl, 2024). For example, algorithms in machines

without ethical supervision may be biased and misaligned with what is expected by humans thus reinforcing that bias in making decisions (Gurstein, 1985). Therefore, auditing of bias-free training and algorithms should be done regularly and consistently so that decisions made by AI are fair and not biased or discriminatory.

In the context of ethical work, it is necessary to comprehensively oversee the creation of robots associated with AI system technology so that the presence of these robots does not threaten humans or seize human job opportunities freely and unfairly. Therefore, there is a need for ethical guidelines in AI specifically for the development of AI-intelligent machines or robots so that human rights are guaranteed and preserved.

Discussion Integration of Catholic Morality in AI

The development of AI should be integrated within Catholic morality to ensure that its use is moral and ethical. This integration involves an approach that will prioritize the fundamental principles of the dignity of human life with attention to the welfare and human rights guaranteed and provide for a just and inclusive society (*Paolo Benanti - Wikipedia*, 2022). Through these endeavors, AI can become a means for the common good and promote love, justice, and solidarity (Gillath et al., 2021).

In addition, the ethical implications of AI also require collaboration and collective efforts from various parties including developers, policymakers, and the public. It is important to establish ethical guidelines and regular frameworks that prioritize human rights fairly and create awareness among the public so that they know and are aware of the potential good and bad that AI can bring so that it can be ethically justified (Luccioni & Bengio, 2020).

Therefore, integrating Catholic morality in the development and use of AI can ensure that AI systems are aligned with human dignity so that the use of AI is not wrongly and irresponsibly utilized by a few (Ferrara, 2023). With moral and ethical principles in the use of AI, all parties will become aware of the limitations of AI that should not exceed the value and dignity of human life in general.

Not only that, the approach of Catholic moral values also needs to be applied and publicized regarding AI. This can be done specifically in a team that is embodied by members of the Church in providing a view of the Catholic Church's teachings on AI technology (*Rome Call for AI Ethics*, 2020). For example, priests

in giving their homilies try to address the implications of AI that is increasingly developing in human life today.

Catholic theologians and philosophers also play an important role in formulating views in the realm of theology and philosophy in response to the development of AI so that people are increasingly aware of the implications of AI and have ethical guidance in developing and using it without threatening human dignity and the environment under the influence of this technology. Therefore, the integration of morality and ethics towards AI is necessary so that the advancement of AI technology is truly useful for humanity (Artificial Intelligence Must Not Hurt the Most Vulnerable, Pope Says - TheCatholicSpirit.Com, 2023).

Addressing Ethical Dilemmas in AI Through a Catholic Ethical Framework

It is undeniable that the development of AI has not only had a positive impact on human beings but has also created new ethical dilemmas such as bias and discrimination, misuse of data, loss of privacy, technological unemployment, and so on. In the use of AI, a Catholic ethical framework needs to be applied to prevent misuse of this technology. Among other things, the development of AI should be in line with the principles of justice, solidarity, and human dignity (Ferrara, 2023). This alignment can reduce the problems caused by AI while benefiting humanity by promoting the quality of human life in certain areas and avoiding the alienation of the marginalized (Berberich et al., 2020).

In addition, Church ethics also suggests that governments and industry players need to monitor data updates on AI systems so that they can develop in the right direction and be useful for all parties (*This Is a Preprint of the Article Forthcoming in Minds and Machines, December 2018 An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles, and Recommendations*, n.d.). This can reduce bias in AI systems so as not to harm individuals or irresponsible parties who only take advantage of the misuse of AI.

Therefore, by incorporating a Catholic ethical framework in AI, a holistic approach can be applied to address complex social, moral, and legal challenges so that there is oversight of the development and use of AI involving all parties and fields as well as the relationship between science, science, and religion so that human dignity is guaranteed as well as the environment (*LVII World Day of Peace 2024 - Artificial Intelligence and Peace | Francis*, 2023).

Global Implications and a Collaborative Approach

The influence of AI not only impacts individuals and humans but also has global implications that can affect the environment and its surroundings. Therefore, AI systems should be well-designed, upholding human rights and taking care of the environment carefully and wisely (Wu et al., 2021). This requires cooperation between governments, involved organizations, researchers, and developers of AI-specific technologies from different countries to settle on common guidelines to control this use(Zhang et al., 2023).

This partnership is an international cooperation by establishing dialogue and collaboration between various parties and fields between countries and across sectors to jointly address the problems posed by AI so that there is mutual agreement in the development of policies and fields (*Global Partnership on Artificial Intelligence* - *GPAI*, 2010). In addition, civil society, both non-profit organizations and advocacy groups, are involved so that they are more attentive to public needs and the common good. By creating a culture of cooperation and collaboration, the responsible use of AI can be realized across the world, and ensure that AI systems provide great benefits for enhancing the development of human life with dignity and freedom (Al, 2018).

In addition, it should also be noted that the collaborative approach also applies at the local and community level. Therefore, the community is also encouraged to be involved in the correct application of AI technology, for example, for the sake of increasing income resources, farmers are encouraged to use AI technology to increase their agricultural yields. Likewise, vertical collaboration from the grassroots to policies is needed in the use of AI which from the lower level of socialization policies are important to ensure consistent use (Gasser & Almeida, 2017).

Education Initiatives and Ethical Awareness

The rapidly growing technology of AI systems affecting various aspects of human life requires exposure to knowledge or education about this technology. The government by involving various sectors such as education, industry, media, and so on is trying to provide specialized education on the implications of the use of AI (Tai, 2020). Through this approach, all parties can ethically raise awareness and be willing to address the problems that AI may cause in the immediate or future. For example, in education, materials on AI are incorporated into science and

technology education courses; collaboration between all stakeholders to realize general guidelines for the use of AI; industry sectors are given exposure and training to become more responsible in the use of AI and so on (Han et al., 2018).

In addition, it is also important to approach the public about AI. This is so that people are not ignorant of the development of this technology and make them aware of the new implications that they will face both now and in the future. With the help of mass media, this information is channeled into various forms so that the public is increasingly sensitized to AI and can use it ethically with knowledge and awareness (Gurstein, 1985).

In addition, cooperation with religious leaders and organizations is also very important in supporting the development of AI technology. The use of AI not only involves moral and ethical issues but also religious principles and values are also standard so that human dignity as a creature of God can be upheld without becoming a slave to AI (Graves, 2022). Every religion has its religious values and overall, religions always pay attention to and prioritize the value and dignity of human life to uphold virtues such as love, justice, and social responsibility, and to maintain the dignity of human life.

Concerns About Autonomy and Dehumanization

Rapidly evolving artificial intelligence (AI) has led to serious ethical discussions about maintaining and preserving human autonomy and the possibility of dehumanization (Federspiel et al., 2023). Concerns about the threat to human autonomy by AI include human labor being replaced by AI technologies such as robots and other machine tools so that what has been human labor is all controlled by AI. This can directly reduce human labor resources and result in a lot of unemployment occurring because it no longer requires the services of human labor in existing jobs(Manyika et al., 2017). In this regard, the Catholic Church emphasizes the importance of putting the value of human dignity first so that it is not mistaken that AI technology is just a tool that can never replace the position of humans as well as in the field of work (*LVII World Day of Peace 2024 - Artificial Intelligence and Peace | Francis*, 2023).

In addition, the widespread surveillance conducted by AI systems reaches out en masse which may limit the freedom and privacy of individual people. This is very much against the right to human freedom and can also manipulate existing data systems. In this regard, Pope Francis has voiced that "mass surveillance is a very dangerous attack on human freedom", so he advocates that regulations and ethics for the use of AI be established to control and supervise it so that it does not

cause conflict with the dignity of human life (*To the Participants in the Seminar "The Common Good in the Digital Age", Organized by the Dicastery for Promoting Integral Human Development (DPIHD) and the Pontifical Council for Culture (PCC) (27 September 2019) | Francis*, 2019). Another problem that arises is the manipulation or propaganda caused by AI due to irresponsible parties to gain their benefits and benefits without considering the interests of others. Information, data, or news can be manipulated through a system called micro-targeting by conducting massive analysis of user data to influence the views or behavior of users. In response to this, the Church calls for users to always be vigilant and critical in responding to all information presented by AI so that they are not easily influenced and deceived and can be more careful in storing their data (*Ethics in Internet*, 2002).

Another form of AI problem that arises is dehumanization specifically in decision making without ethical values. Keep in mind, an AI system is just a programmed machine that does not have a heart and soul which is very different from humans or it can be said that AI does not have a conscience. Therefore, it is dangerous to put AI in decision-making because they are only conditioned with strict programmers that may cause various problems if not supervised by humans (Smit et al., 2006). For example, if AI is authorized to run an employee recruitment system, it may discriminate against certain candidates based on pre-programmed data systems that are strictly followed by the AI system.

Conclusion

The rapid development of artificial intelligence (AI) technology requires the application of Catholic moral and ethical values that always place the dignity of human life first and emphasize solidarity, justice, welfare, and the common good. Through this endeavor, the development and use of AI can be accounted for and reduce the risk of new ethical problems arising from the uncontrolled use of AI with the guidelines for the ethical use of AI technology, it will be more helpful in increasing the value of human life.

Reference

Al, Y. Z. H. C. E. L. E. (2018). *Linking Artificial Intelligence Principles (LAIP)*. https://www.linking-ai-principles.org/about

Allen, D., & Weyl, E. G. (2024). The Real Dangers of Generative AI. *Journal of Democracy*, *35*(1), 147–162. https://doi.org/10.1353/jod.2024.a915355

Artificial Intelligence. (2020). https://www.academyforlife.va/content /pav/en/

projects/artificial-intelligence.html

Artificial intelligence must not hurt the most vulnerable, pope says - TheCatholicSpirit.com. (2023). https://thecatholicspirit.com/news/nation-and-world/from-the-pope/artificial-intelligence-must-not-hurt-the-most-vulnerable-pope-says/

Bengio, Y., Hinton, G. E., Yao, A. C.-C., Song, D., Abbeel, P., Harari, Y. N., Zhang, Y., Xue, L., Shalev-Shwartz, S., Hadfield, G. K., Clune, J., Maharaj, T., Hutter, F., Baydin, A. G., McIlraith, S. A., Gao, Q., Acharya, A., Krueger, D. A., Dragan, A. D., … Mindermann, S. (2023). Managing AI Risks in an Era of Rapid Progress. *ArXiv (Cornell University)*. https://doi.org/ 10.48550 /arxiv.2310.17688

Berberich, N., Nishida, T., & Suzuki, S. (2020). Harmonizing Artificial Intelligence for Social Good. *Philosophy & Technology*, *33*(4), 613–638. https://doi.org/10.1007/s13347-020-00421-8

Brittain, C. C. (2020). Artificial Intelligence: Three Challenges to Theology. *Toronto Journal of Theology*, *36*(1), 84–86. https://doi.org/10.3138/tjt-2020-0033

Burdett, M. (2023). *Proximate and Ultimate Concerns in Christian Ethical Responses to Artificial Intelligence*. https://journals.sagepub.com/doi/ pdf/ 10.1177/ 09539468231180135

Catholic church, tech firms join call for transparency in AI - UPI.com. (2020). https://www.upi.com/Top_News/Voices/2020/03/31/Catholic-church-tech-firms-join-call-for-transparency-in-AI/2661585655627

Díaz-Rodríguez, N., Ser, J. Del, Coeckelbergh, M., de Prado, M. L., Herrera–Viedma, E., & Herrera, F. (2023). Connecting the Dots in Trustworthy Artificial Intelligence: From AI Principles, Ethics, and Key Requirements to Responsible AI Systems and Regulation. *ArXiv (Cornell University)*. https://doi.org/10.48550/arxiv.2305.02231

Ethics in Internet. (2002). https://www.vatican.va/roman_ curia/pontifical councils /pics/ documents/rc_pc_pccs_doc_20020228_ethics-internet_ en.html

Federspiel, F., Mitchell, R., Asokan, A., Umana, C., & McCoy, D. (2023). Threats by artificial intelligence to human health and human existence. *BMJ Global Health*, *8*(5), e010435–e010435. https://doi.org/10.1136/bmjgh-2022-010435

Ferrara, E. (2023). *Fairness and Bias in Artificial Intelligence: A Brief Survey of Sources, Impacts, and Mitigation Strategies (Preprint)*. https://scite.ai/reports/ 10.2196/preprints.48399

Floridi, L., & Cowls, J. (2019). A Unified Framework of Five Principles for AI in Society. *Harvard Data Science Review*. https://doi.org/10.1162/99608f92.8cd550d1

Gasser, U., & Almeida, V. A. F. (2017). A Layered Model for AI Governance. *IEEE Internet Computing*, *21*(6), 58–62. https://doi.org/10.1109/mic.2017.4180835

Gillath, O., Ai, T., Branicky, M. S., Keshmiri, S., Davison, R. B., & Spaulding, R. (2021). *Attachment and trust in artificial intelligence*. https://doi.org/10.1016/j.chb.2020.106607

Global Partnership on Artificial Intelligence - GPAI. (2010). https://gpai.ai/

Graves, M. (2022). Theological Foundations for Moral Artificial Intelligence. *Journal of Moral Theology*, *11*(Special Issue 1). https://doi.org/10.55476/001c.34130

Gurstein, M. (1985). Social impacts of selected artificial intelligence applications. *Futures*, *17*(6), 652–671. https://doi.org/10.1016/0016-3287(85)90018-7

Hallamaa, J., & Kalliokoski, T. (2022). *AI Ethics as Applied Ethics*. https://scite.ai/reports/10.3389/fcomp.2022.776837

Han, X., Hu, F., Xiong, G., Liu, X., Gong, X., Niu, X., Shi, W., & Wang, X. (2018). *Design of AI + Curriculum for Primary and Secondary Schools in Qingdao*. https://doi.org/10.1109/cac.2018.8623310

Hendrycks, D., Mazeika, M., & Woodside, T. (2023). An Overview of Catastrophic AI Risks. *ArXiv (Cornell University)*. https://doi.org/ 10.48550/arxiv.2306.12001

Luccioni, A. S., & Bengio, Y. (2020). On the Morality of Artificial Intelligence [Commentary]. *IEEE Technology and Society Magazine*, *39*(1), 16–25. https://doi.org/10.1109/mts.2020.2967486

LVII World Day of Peace 2024 - Artificial Intelligence and Peace | Francis. (2023). https://www.vatican.va/content/francesco/en/messages/peace/documents/20231208-messaggio-57giornatamondiale-pace2024.html

Manyika, J., Lund, S., Chui, M., Bughin, J., Woetzel, J., Batra, P., Ko, R. K. L., & Sanghvi, S. (2017). *Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages*. https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages

Paolo Benanti - Wikipedia. (2022). https://en.wikipedia.org/wiki/Paolo_Benanti

Pope Francis urges ethical use of artificial intelligence - Vatican News. (2023). https://www.vaticannews.va/en/pope/news/2023-03/pope-francis-minerva-dialogues-technology-artificial-intelligenc.html

Rome Call for AI Ethics. (2020).

Smit, A., Kempen, M., Wijngaards, N. J. E., & Meyer, A. (2006). *The hidden dangers of experimenting in distributed AI*. https://doi.org/ 10.1145 /1160633.1160877

Song, Y. S. (2020). Religious AI as an Option to the Risks of Superintelligence: A Protestant Theological Perspective. *Theology and Science*, *19*(1), 65–78. https://doi.org/10.1080/14746700.2020.1825196

Tai, M. C. (2020). The impact of artificial intelligence on human society and bioethics. *Tzu Chi Medical Journal*, *32*(4), 339. https://doi.org/ 10.4103/tcmj.tcmj_71_20

This is a preprint of the article forthcoming in Minds and Machines, December 2018 An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles, and Recommendations. (n.d.). https://people.cs.umu.se /Virginia/docs /AI4people.pdf

To Participants in the "Minerva Dialogues", meeting organized by the Dicastery for Culture and Education (27 March 2023) | Francis. (2023). https://www.vatican.va/content/francesco/en/speeches/2023/march/documents/20230327-minerva-dialogues.html

To Participants in the Plenary Assembly of the Pontifical Academy for Life (28 February 2020) | Francis. (2020). https://www.vatican.va/content /francesco/ en/speeches/2020/February/documents/papa-francesco 20200228_ academia-perlavita.html

To the participants in the Seminar "The Common Good in the Digital Age", organized by the Dicastery for Promoting Integral Human Development (DPIHD) and the Pontifical Council for Culture (PCC) (27 September 2019) | Francis. (2019). https://www.vatican.va/content/francesco/en/speeches/ 2019/september/documents/papa-francesco_20190927_eradigitale.html

Tomašev, N., Cornebise, J., Hutter, F., Mohamed, S., Picciariello, A., Connelly, B., Belgrave, D., Ezer, D., van der Haert, F. C., Mugisha, F., Abila, G., Arai, H., Almiraat, H., Proskurnia, J., Snyder, K., Otake-Matsuura, M., Othman, M. N. F., Glasmachers, T., Wever, W. De, … Clopath, C. (2020). AI for social good: unlocking the opportunity for positive impact. *Nature Communications*, *11*(1). https://doi.org/10.1038/s41467-020-15871-z

Wu, C.-J., Raghavendra, R., Gupta, U., Acun, B., Ardalani, N., Maeng, K., Chang,

G., Behram, F. A., Huang, J., Bai, C., Gschwind, M., Gupta, A., Ott, M., Мельников, A. C., Candido, S., Brooks, D. J., Chauhan, G. S., Lee, B., Lee, H.-H. S., Hazelwood, K. (2021). Sustainable AI: Environmental Implications, Challenges and Opportunities. *ArXiv (Cornell University)*. https:/ /doi.org/10.48550/arxiv.2111.00364

Zhang, W., Zhu, L., Zhuang, Q., Dong, C., & Sun, T. (2023). *Mapping Cropland Soil Nutrients Contents Based on Multi-Spectral Remote Sensing and Machine Learning*. https://doi.org/10.3390/agriculture13081592

Author's Profile



Ronnie Bin Jenis was born in Sabah, Malaysia, on 29 August 1987. Currently stay at CSE Monastery, Bandol, West Kalimantan. Email: ron87nie29@gmail.com. Education: graduated the Bachelor of Theology Program at STIKAS Santo Yohanes dari Salib, Bandol, in 2021. The current functional position is a postgraduate student in the Master of Theology Program at STIKAS Santo Yohanes dari Salib, Bandol



RD. DR. HERWINDO CHANDRA, **M.Th.,** born in Jakarta, on 28 April 1976, domiciled in Landak, West Kalimantan Indonesia, email: herwindo.chandra@stikassantoyohanessalib.ac.id.
Education: Graduated from the Bachelor of Theology Program at the Widya Sasana School of Philosophy and Theology, Malang, 2009. Graduated from the Master of Humaniora Program at the Widya Sasana School of Philosophy and Theology, Malang 2012. I graduated from the Doctor of Theology Program at the Widya Sasana School of Philosophy and Theology, Malang, in 2023.
Work experience: from 2016 until now working as a lecturer at STIKAS Santo Yohanes Salib. The current functional position is Lector 300.

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER VIII

The Catholic Church and Digital Ethics: Building a Bridge Between Faith and Advanced Technology

Madalena Marseli (madalena.marseli@gmail.com)

STIKAS St. Yohanes Salib – West Kalimantan

Abstract.

The Catholic Church responds to rapidly developing technology by providing digital ethics principles aligned with Catholic teachings to ensure human dignity is respected. This paper analyses the Church's implementation of digital ethics values, its approach to protecting the faithful's privacy, and opportunities for interfaith collaboration on data protection regulations consistent with Catholic ethics. Key findings are: the Church views technology wisely, aware of risks but open to potential benefits; the Church's digital ethics principles fulfill human dignity and the common good; digital literacy and data privacy protection are critical focus areas; implementing digital ethics values is vital to realizing the Church's digital era vision; global cooperation across religions is needed to formulate technological regulations aligning with Catholic ethics. Theoretical and practical implications regarding using the Church's digital ethics as a helpful guide, enriching academic discourse on the Church's technological modernization role, and testing policy options to translate principles into human dignity-protecting regulations. Further research should examine real-world implementation, effectiveness, and societal impact.

Keywords: Digital Ethics, Catholic Church, Faith and Technology, Artificial Intelligence, Digital Literacy

Introduction

The Catholic Church has a vital role in guiding its people to face the ethical challenges that arise with advanced technology. From the beginning, the Church has recognized the potential of technology and its responsibility to enhance communication and faith service through various media and technologies. For instance, the *Inter Mirifica* Decree of the Second Vatican Council (Paul VI, 1963) highlights the efforts of social communication to proclaim faith, education, and truth through the technological media of the day. The Church is aware of the possible risks associated with modern technologies. The consequences of the

revolution in terms of psychology, social and individual morals, the structure and functioning of society, and its effect on values and beliefs are revealed in the Pastoral Instruction *Aetatis Novae* (Pontificium et al., 1992) and *Ethics in the Internet* (Pontifical Council for Social Communication, 2002a), written by J.P. Foley, Chairman of the Pontifical Council for Social Communications. On the other hand, a new understanding emerges by using theological concepts about God and others applied to the functional and relational aspects of robots and artificial intelligence (Green, 2018).

Unprecedented ethical and theological issues have arisen due to the quick development of digital technologies like the Internet, social media, and artificial intelligence. This technology affects practical aspects of everyday life and can upset the foundations of moral and spiritual values in society. This phenomenon provides further in-depth impetus on how faith and the values of truth can synergize with the dynamics of modern technology.

In this context, the Catholic Church, as a spiritual leader, faces the critical task of formulating relevant ethical views and guiding its people in the face of this change. The Church's approach to digital ethics can be found in the popes' encyclicals and official statements. The encyclical Laudato Si' (Francis, 2015) represents a significant turning point due to its focus on moral duty. This duty encompasses not only ecological obligations but also the ethical responsibilities of mankind in overseeing the advancements of technology.

Therefore, the study aims to strengthen the bond between the Catholic Church and digital ethics by emphasizing initiatives to create a strong link between faith and technology. The Church seeks to assist its members in interacting with contemporary technology consistent with religious principles by using a methodology grounded in moral and ethical teachings. Examining the Church's doctrine and particular practices is expected to yield fresh perspectives and practical solutions, supporting the Catholic journey in resolving moral difficulties in the digital age.

Literature Review

Digital Ethics in a Global Context

In a global context, the concept of digital ethics has become crucial in understanding the impact of digital technology on moral values. According to Luciano Floridi, a philosopher and expert in information ethics, digital ethics

involves deep thinking about the values relevant to information life (Floridi, 1999). Floridi explains that digital ethics is an integral part of modern life, where digital technology is a central element in the interaction and exchange of information (Floridi, 2021). It is also said that digital ethics addresses values relevant to informative life. It recognizes that information has fundamental moral value (Floridi, 1999).

Digital ethics evolved in line with the need to deal with global issues such as privacy, digital security, and the social impact of digital technology. The development of digital ethics is not limited to geographical boundaries. On a global scale, society faces increasingly complex digital ethics challenges as technology advances. The international community is experiencing increasing concerns about its misuse. The social and cultural development of society is also increasingly dependent on the use of artificial intelligence.

This rapid advancement of information reduces the protection of spiritual, social, economic, and other values (Vinichenko et al., 2020). The challenges of digital ethics are increasingly evident in modern society. Digital technologies, including social interactions and moral decision-making, affect daily life. Floridi states that it is crucial to understand technology's impact on individuals and society thoroughly. One of the critical issues of digital ethics in modern society is thoroughly understanding how digital technologies affect the daily lives of people and society (Floridi, 1999).

Some individuals are unaware of this issue and see digital technology as positive (Scherz, 2021). However, there is no doubt that technology will exist and continue to evolve, even having human-like feelings and understanding. While this will have many advantages, it will also have negative consequences that humanity needs to anticipate (Bostrom, 2020). Therefore, digital ethics includes understanding informative values, i.e., the moral values attached to information. Floridi emphasized the importance of incorporating ethical principles into technology, linking information ethics to the basis of digital ethics, and recognizing that ethical principles should be incorporated into digital technologies (Floridi, 1999).

Understanding and addressing the ethical issues that arise as digital technologies develop is imperative. Everyone, including religious institutions such as the Church, should be involved. The Catholic Church has endeavored to create an appropriate perspective and pastoral stance in this digital era full of opportunities and challenges, among other things, by drawing on teachings from

Scripture and the Church's tradition. The following section will discuss the role of the Catholic Church in responding to the digitalization sweeping almost every aspect of human life.

The Catholic Church's Place in the Digital Era

Including the Catholic Church's viewpoint in creating digital ethics that align with universal human values is essential. The Catholic Church has provided sound ethical guidance to its people throughout history. With their philosophical underpinnings, the moral teachings of the Catholic Church—particularly as articulated by St. Thomas Aquinas in his writings *Summa Theologica* and *Summa Contra Gentiles*—offer a solid foundation for comprehending ethics within the framework of the church.

St. Thomas Aquinas linked ethics with natural law and the concept of virtue. For him, natural law is an expression of the divine will that creates the basis of morality (*Summa Theologica* I-II.Q.91). Aquinas argued that the moral principles in the natural law reflect how God directs human beings to achieve their ultimate goals. Next, St. Thomas Aquinas detailed the concept of virtue, which plays a central role in Catholic ethics. He identified four cardinal virtues, namely wisdom (prudential), courage (fortitude), justice (Justitia), and self-control (temperance). These virtues are considered guiding principles in achieving a good moral life (Thomas Aquinas, 1927).

Apart from imparting knowledge, the Catholic Church promotes moral consciousness among its adherents. The Catholic Church's role in offering moral guidance is growing significantly in a contemporary world of difficulties. Since the Second Vatican Council, the church has provided encyclicals and social teaching that offer a solid moral basis for addressing complex concerns in the digital age, including through apostolic letters, appeals, and messages from the Popes. The church demonstrates commitment and guidance for appropriate technological advancement.

Several church documents address moral and ethical matters, as was previously indicated. These include the encyclical *Rerum Novarum* (Leo XIII, 1891), whose principles are still applicable for addressing the issues of social and economic ethics in the contemporary period. Rerum Novarum addressed the social and economic concerns of the Industrial Revolution. Comparably, the encyclical *Caritas in Veritate* (Benedict XVI, 2009) on the growth of the whole person in love and truth offers crucial direction regarding international concerns like globalization

and sustainable development. The guidelines above can be used for ethical practice in online interactions, technology advancement, and digital information modification as data interconnection and transfer become more commonplace.

The Second Vatican Council's directive *Inter Mirifica* (Paul VI, 1963) is reiterated in the terminology of the Pontifical Council for Social Communication's papers *The Church and the Internet* (Pontifical Council for Social Communication, 2002b) and *The Rapid Development* (John Paul II, 2005). These documents are addressed to all those responsible for communication and reaffirm the opportunities, challenges, hopes, and concerns, as well as the mission of the people amid rapid technological development.

The church's involvement in formulating digital ethical perspectives and guidelines represents an attempt to integrate religious and moral values with the rapid development of technology. Although the challenges are complex, the church still adheres to the principle of not rejecting technology but directing it for salvation and full human development. The church's response and attitude towards technological advances, especially those that have the potential to change human life fundamentally, is an exciting study because it involves interpreting the teachings of the Christian faith in a digital context. The following section will discuss how the Catholic Church responds to the latest technological advances.

The Church's Response to Technological Advancement

The Catholic Church views modern technology as a means to improve the well-being of humanity. However, the Church also warns about the dangers if technology is misused and dominates humans (Francis, 2019b). As a spiritual leader, the Church seeks to provide ethical guidance so that technology is used responsibly for the common good by the values of the Christian faith. This is reflected in various appeals, encyclicals, and social doctrines of the Church that address issues of modern technology. In responding to advances in advanced technology, the Catholic Church seeks to combine technological developments such as artificial intelligence, big data, and cybersecurity with moral and human values so that technology truly serves human dignity and not vice versa.

In response to the question of artificial intelligence (AI), *Rome's Call for AI Ethics* (Pontifical Academy for Life, Microsoft, IBM, 2020) states that AI development must preserve human dignity and not transgress universal human values. The Church is concerned that AI can be used to manipulate personal data, and profiling without permission distorts the truth. As a result, the development

and utilization of AI must be ethically grounded, with due regard for individual privacy and freedom. The Church calls for enforcing fair and transparent data protection and cyber policies that protect digital privacy, human values, and the environment so that technology can truly benefit people (Pontifical Council for Social Communication, 2002a).

The Church's perspective on technology includes the understanding that technology can enhance communication and promote dialogue, evangelization, catechesis, and service of the Word of God, as the Pope stated on World Communications Day (Benedict XVI, 2010). Furthermore, Pope Francis exhorts everyone to actively participate in utilizing technology as a tool to disseminate the teachings of Christ, promote religious education, and fortify faith communities, particularly among youth, in his Post-Synod Apostolic Exhortation *Christus Vivit* (Francis, 2019c). Thus, the Catholic Church encourages its faithful to adopt technology for positive purposes, building a better and more moral digital world.

As technology advances, the Catholic Church also recognizes the importance of engaging in constant dialogue with experts in technology and science. This establishes a platform for discussing moral and ethical principles in light of how technology develops (Pontifical Council for Social Communication, 2002b). By having this conversation, the church learns from and adjusts to technological advancements, imparting doctrines and giving its people more timely and helpful assistance.

In this regard, the Encyclical *Laudato Si'* (Francis, 2015) shows how technology affects ecological sustainability and social life, so each individual's moral responsibility is needed in its utilization. Every action of people using advanced technology must represent moral values and Catholic teachings to preserve nature and humanity. As a result, the Church actively shapes digital ethics and provides moral guidance in addressing the intricate problems posed by technological advancement. Put another way, the Church aims to react sensibly to contemporary technology, acknowledging its risks while being receptive to its possible benefits.

Discussion

Implementation of Digital Ethics Values by Catholics

The role of the faithful is very central in implementing the digital ethical values developed by the Church to ensure that the use of digital technology has a

positive impact and is based on human values. As moral agents, Catholics are mainly responsible for realizing digital virtue and upholding morality in the digital era. Following the conclusion of the global training program The 'Good' Algorithm? Artificial Intelligence, Ethics, Law, and Health, which was coordinated by the Pontifical Academy for Life (PAL), participants from Microsoft, IBM, FAO, and the Italian Government signed the *Rome Call for AI Ethics* (Pontifical Academy for Life, Microsoft, IBM, 2020). The paperback AI methodologies call on businesses, governments, and other establishments to take accountability for future technological developments and discoveries that will enhance rather than replace human intellect and creativity. The six general principles agreed upon are transparency, inclusiveness, responsibility, impartiality, reliability, security, and privacy.

Digital technology, therefore, must avoid exploitation and respect the dignity of every member and all of the natural environment, as well as take care of the weakest people. This document encourages human rights to be prioritized. Moreover, the impact of transformation brings AI to society, work, and education (Vicini, 2022). The implementation of digital ethics in Catholics can be seen from the four concepts of virtue as proposed by St. Thomas Aquinas: wisdom (prudential), courage (fortitude), justice (iustitia), and self-control (temperance) (Thomas Aquinas, 1927). These four virtues become the principles of digital virtue: digital wisdom, digital justice, digital fortitude, and digital temperance.

The ability of an individual or organization to use technology and information for the advancement of truth and the public good while having a thorough awareness of the implications of their actions is known as digital wisdom (Prensky, 2012). Digital justice refers to providing equal access to technology and overcoming the digital divide. At the same time, digital courage refers to the ability and determination to face challenges or risks that arise to select and disseminate digital information ethically. Digital self-mastery relates to online behavior in a healthy and balanced way when consuming digital content and services.

The Church also states that in the era of contemporary technology, the right to privacy is a human right that ought to be protected. The Church also affirms that the right to privacy is a human right that must be safeguarded in the age of modern technology (Pontifical Council for Social Communication, 2002a).

Cooperation across disciplines and religions is also essential to support social movements that promote the responsible use of information technology. Practically, parishioners are encouraged to actively guide others in digital literacy

and avoid negative traps in cyberspace (Dicastery for Communication, 2023). Thus, people individually and collectively work together to realize the ideals of digital ethics and virtues emphasized in church doctrine.

Church Approach to Protect the Digital Privacy of the People

The Church believes that respecting one's privacy is essential to upholding one's dignity, particularly in light of the swift advancement of digital technology (Pontifical Council for Social Communication, 2002a). Privacy and protection concerns arise when personal information is utilized to identify associations and behavioral trends subsequently employed to sway individuals in their decision-making (Paterson & McDonagh, 2018). Several hurdles and concerns in security and privacy encompass the handling of secure data storage, unauthorized access and data theft, the dissemination of false information, the proliferation of animosity or instigation, and similar matters (Bharati, 2020).

Therefore, in light of the current globalization of personal data, the Church is adopting several actions to safeguard the faithful's digital privacy. The first strategy is educating people about the value of protecting personal information and online activity. Digital literacy initiatives in dioceses and parishes, clergy training in digital security, and youth and lay education in digital ethics are a few ways this is accomplished (Hutahaean, 2023). Everything from the ethical ramifications of excessive data exposure in the digital age to the technical issues of data protection is covered in the curriculum.

In addition, the second approach is to actively cooperate with various groups to support personal data protection policies, for example, by participating in dialogue forums between managers (Gallagher, 2023). This is also achieved by issuing official statements and digital ethics manuals (Tim Komisi Komsos KWI, 2018). In addition, by requesting that government legislation include regulations that require technology companies to respect user privacy (Mulligan et al., 2019).

Another approach is to empower and support Catholic individuals and organizations working in digital security and privacy. For example, supporting initiatives that promote alternative technology business models that are secure for the public good (Molleví Bortoló et al., 2023). It is hoped that these approaches and initiatives can gradually establish fair standards of personal data protection that uphold human dignity amid global technological developments. Therefore, the church proactively develops and implements various plans to protect people's digital data.

The Role of the Church in Digital Literacy Education for the People

The Catholic Church emphasizes the need for digital ethics education. Catholics are encouraged to develop a deep understanding of ethics in the use of technology and to participate responsibly in the digital world (Francis, 2023a). Digital literacy is an urgent need for people in the current era of technological disruption. The Church considers it essential to take an active role in educating and assisting people in improving their digital literacy skills (Francis, 2023b). The goal is for people to be able to not only utilize various new technologies critically and effectively but also to be able to distinguish and sort out wisely and productively the use of technology that further reduces the gap between humans and robots while avoiding the negative impacts of excessive technology adoption (Dicastery for Communication, 2023).

The Church's role in the digital literacy of the people includes digital literacy training for clergy and parishioners, educational campaigns through social media, and the preparation of digital curricula for Catholic educational institutions. Digital skills, digital safety, digital culture, and digital ethics are all covered in the resources for digital literacy (Nurcahyadi, 2023). These four pillars cover technical competence to operate digital devices and applications, skills to search for and assess the validity of online information, and understanding the ethical implications of the latest technology.

On September 14, 2023, in Surabaya, Indonesia, the Indonesian Conference of Church Guardians and the Ministry of Communication and Information, among others, organized several digital literacy programs for the young (Nurcahyadi, 2023). The promotion of wisdom in the use of social media is also advocated through educational endeavors in various cities (Susanto, 2017). In terms of practical implementation, individuals within the parish are strongly encouraged to actively participate in guiding others in developing digital literacy skills and avoiding the potential pitfalls present in the virtual realm (Paroki St. Vincentius a Paulo Gunung Putri, 2023). Consequently, individuals and communities collaborate to actualize the principles of digital ethics and virtues accentuated in Church doctrine.

Furthermore, the Australian Bishops' Conference in *Genuine Human Encounter in our Digital World* encourages individuals to consider how technology has transformed interactions, jobs, education, and economic dealings. Every community is invited to promote digital literacy and care for those who do not have access to technology services (Australian Catholic Bishops Conference,

2019). Meanwhile, in the United States, the Bishop of Jefferson City laid the foundation for a faith formation program for young people, documented in *Digital, Online, and Social Media Communication with Youth* (Office of Youth Ministry and Religious Education and the Office of Child and Youth Protection, 2018).

Institutionally, the Vatican has issued a comprehensive Digital Communication Guide for the Church and its people, covering digital literacy strategies in artificial intelligence and big data. The documents *The Church and the Internet* (2002), *Ethics in the Internet* (2002), and *Rome Call for AI Ethics* (2020) are expected to become global guidelines for church stakeholders in developing contextualized digital literacy curricula and practices according to the conditions of the people in various regions. With the Church's active and planned efforts in digital literacy, it is hoped that Catholics will become more literate and wiser in utilizing digital technology for humanitarian purposes without losing the values of faith.

A Novel Approach to the Intersection of Faith and Technology in the Digital Era

The way the Catholic Church engages with the digital world has evolved due to the quick development of digital technologies. Whereas technology was often viewed ambivalently, the Church now proactively seeks to understand and integrate technology to evangelize and serve the people (Benedict XVI, 2010). This marks a new paradigm in the relationship between the church and technology in the digital age.

The Church now views digital technology as not merely a tool but an integral part of contemporary human culture. So, the Church seeks to enter and evangelize in the digital world so that the values of faith remain relevant to people already familiar with technology (Francis, 2019c). Concrete examples include synergizing online preaching and catechesis through social media, blessing communities in the virtual world (Meta), and considering ethics in the digital era in the teachings delivered.

Internally, digital modernization is also taking place within the church. Many dioceses and parishes are now actively utilizing big data and digital platforms for administration, finance, and inventory of assets such as land and buildings (Francis, 2022). Best practices in ecclesiastical management are also being shared through digital portals to increase transparency and accountability (Christanti et al., 2023).

Moreover, many Catholic activists and technopreneurs are now working to develop environmentally friendly and inclusive technologies for the disabled to reflect Christian love, such as mobile applications with text-to-speech features for the visually impaired (Mbugua et al., 2022). Thus, the spirit of faith is realized through technological innovations that benefit others. It is anticipated that the Church can continue to respond wisely to the challenges of the times in the digital world while staying true to its transcendental mission of spirituality and morals through a dialogical and collaborative approach with technological professionals. This new paradigm is the Church's effort to balance the values of faith and the progress of civilization in this digital era

Interreligious Collaboration for Ethics and Digital Regulation

The rapid development of digital technology today has a broad impact on all mankind, without exception on the followers of the world's major religions. Therefore, interreligious collaboration and dialogue have become essential in formulating ethical guidelines and technological regulations that protect universal human values (Team of the Indonesian Ministry of Religious Affairs, 2021).

The Catholic Church is actively engaged in cross-faith forums to discuss digital issues, such as the Church's participation in the International Interfaith Congress on *Child Dignity in the Digital World*, where one of its ethical guidelines is the principles of technology for the common good (Francis, 2019a). In this forum, Muslim and Christian figures agreed that technology regulations should respect users' privacy and religious freedom.

In Indonesia, inter-religious collaboration has also begun to be encouraged for digital literacy (Ibnu, 2023). For example, through cooperation with the Ministry of Religion, training, digital teaching, and healthy internet training for religious activists will further strengthen the congregation of religious people (Chomsah, 2023). It is hoped that the digital ethical awareness of religious believers will increase as technology advances. It is envisaged that by fostering a humanistic and conversational atmosphere, the ethical standards of technology, developed in collaboration with religious followers, will serve as the cornerstone for just governance and uphold human dignity.

Several religious organizations, including the Interfaith Center on Corporate Responsibility, have jointly signed a letter in which they put forward a set of guidelines delineating the appropriate utilization of artificial intelligence within governmental entities (Center for American Progress et al.. Inter-religious

collaboration in the digital sphere and the spirit strengthens the spirit of solidarity and mutual understanding for the common good.

The Catholic Church responds to rapidly developing technology by providing digital ethics principles aligned with Catholic teachings to ensure human dignity is respected. This paper analyses the Church's implementation of digital ethics values, its approach to protecting the faithful's privacy, and opportunities for interfaith collaboration on data protection regulations consistent with Catholic ethics. Key findings are: the Church views technology wisely, aware of risks but open to potential benefits; the Church's digital ethics principles fulfill human dignity and the common good; digital literacy and data privacy protection are critical focus areas; implementing digital ethics values is vital to realizing the Church's digital era vision; global cooperation across religions is needed to formulate technological regulations aligning with Catholic ethics.

Theoretical and practical implications regarding using the Church's digital ethics as a helpful guide, enriching academic discourse on the Church's technological modernization role, and testing policy options to translate principles into human dignity-protecting regulations. Further research should examine real-world implementation, effectiveness, and societal impact.

Conclusion

The Catholic Church responds to the challenges of rapidly developing technology by providing principles of digital ethics and perspectives that align with the teachings of the Catholic faith and morals so that the values of truth, justice, love, and human dignity are respected. People can interact with modern technology wisely and according to the Catholic faith. Analyses of the implementation of digital ethical values by the faithful, the Church's approach to protecting the privacy of the faithful, and opportunities for interfaith collaboration in formulating data protection regulations in line with Catholic ethics were discussed.

The main findings that can be concluded include the following: First, the Church views modern technology wisely, is aware of its risks, but is open to its positive potential. Second, the Church's digital ethics principles rest on fulfilling human dignity and the common good. Third, digital literacy education and data privacy protection are critical issues that receive the church's attention. Fourth, implementing digital ethics values by the people is the key to the success of the church's vision in the digital era. Fifth, there is a need for global synergy across

religions and stakeholders to dialogue, cooperate, and formulate technological regulations that align with Catholic ethics.

Church members and stakeholders can use the study's findings as a practical guide for putting the digital ethics the church has created into practice to address diverse issues in the age of technological disruption. Theoretically, this study has enriched the academic discourse on the Church's response and role in the pace of technological modernization and offers ethics as a guideline. Further research is needed regarding the practical implementation of this digital ethics pedagogy, its effectiveness, and its impact on society. Empirical studies are also essential to test the effectiveness of the policy options formulated so that they can be translated into concrete regulations that protect human dignity.

Reference

Australian Catholic Bishops Conference. (2019). Making it Real. Genuine Human Encounter in our Digital World. In *Social Justice Statement* (pp. 1–20). www.socialjustice.catholic.org.au

Benedict XVI, P. (2009). *Encyclical Letter Caritas in Veritate on Integral Human Development in Charity and Truth* (Issue 29 June 2009).

Benedict XVI, P. (2010). *Message of His Holiness Pope Benedict XVI for the 44th World Communications Day. The Priest and Pastoral Ministry in a Digital World: New Media at the Service of the Word* (Issue 24 January 2010). Libreria Editrice Vaticana. https://www.vatican.va/content/benedict-xvi/en/messages/ communications/documents/hf_ben-xvi_mes_20100124_ 44th-world-communications-day.html

Bharati, T. S. (2020). Challenges, issues, security, and privacy of big data. *International Journal of Scientific and Technology Research*, *9*(2), 1482–1486. http://www.ijstr.org/final-print/feb2020/Challenges-Issues-Security-And-Privacy-Of-Big-Data.pdf

Bostrom, N. (2020). Ethical Issues in Advanced Artificial Intelligence. In *Machine Ethics and Robot Ethics* (pp. 69–75). Routledge. https://doi.org/ 10.4324/9781003074991-7

Center for American Progress et. alii. (2023). *Letter to US Federal Chief Information Officer* (Issue 5 December 2023). https://www.americanprogress.org/wp-content/ uploads/sites/2/2023/12/Big-Tent-Letter-on-OMB-Comments-12.05. 2023.pdf

Chomsah, A. (2023). Merawat Kerukunan dalam Ruang Digital. *Kementrian*

Agama, Kantor Wilayah Provinsi Nusa Tenggara Timur. https://ntt. kemenag.go.id /opini/707/merawat-kerukunan-dalam-ruang-digital

Christanti, R., Wibowo, W. S., & Wijaya, Y. (2023). Perceptions of Church Financial Transparency: Ethical-Theological Analysis and Financial Accountability. *Evangelikal: Jurnal Teologi Injili Dan Pembinaan Warga Jemaat*, *7*(1), 35. https://doi.org/10.46445/ejti.v7i1.616

Dicastery for Communication. (2023). *Toward Full Presence. A Pastoral Reflection on Engagement with Social Media* (Issue 28 May 2023). https://www. Vatican.va /roman_curia/dpc/documents/20230528_dpc-verso-piena-presenza _en.html

Floridi, L. (1999). Information ethics: On the philosophical foundation of computer ethics. *Ethics and Information Technology*, *1*, 37–56. https://doi.org /10.1023/A

Floridi, L. (2021). Digital Ethics Online and Off. *American Scientist*, *109*(4), 1–18. https://doi.org/10.1511/2021.109.4.218

Francis, P. (2015). Encyclical Letter Laudato Si of the Holy Father Francis on Care for Our Common Home. In *Libreria Editrice Vaticana* (Issue 24 May 2015). https://doi.org/10.1002/9780470751343.ch29

Francis, P. (2019a). *Address of His Holiness Pope Francis to Participants in the Congress on Child Dignity in the Digital World* (Issue 14 November 2019). Libreria Editrice Vaticana. https://www.vatican.va/content/ francesco/en/ speeches/2019/November/documents/papa-francesco_20191114_convegno-child dignity.html

Francis, P. (2019b). *Address of His Holiness Pope Francis to the Participants in the Seminar The Common Good in the Digital Age* (Issue 27 September 2019). Libreria Editrice Vaticana.

Francis, P. (2019c). *Christus Vivit. Post-Synodal Apostolic Exhortation to Young People and to the Entire People of God* (Issue 25 March 2019). Libreria Editrice Vaticana. https://www.vatican.va/content/francesco/en/apost_ exhortations/documents/papa-francesco_esortazione-ap_20190325_christus-vivit.html

Francis, P. (2022). *The message of His Holiness Pope Francis to Participants in the Conference Charism and Creativity, Catalogues, Management and Innovation Regarding the Cultural Heritage of Institutes of Consecrated Life* (Issue 4 May 2022). Libreria Editrice Vaticana. https://www.vatican.va/ content/francesco /en/messages/pont-messages/2022/documents/20220504-messaggio-carisma-creativita.pdf

Francis, P. (2023a). *Artificial Intelligence and Peace* (Issue 8 December 2023). Libreria Editrice Vaticana. https://www.vatican.va/content/ francesco/en/ messages/peace/ documents/20231208-messaggio-57giornatamondiale-pace 2024.pdf

Francis, P. (2023b). *Message of His Holiness Pope Francis on the Occasion of International Literacy Day 2023* (Issue 8 September 2023). Libreria Editrice Vaticana. https://www.vatican.va/content/francesco/en/messages/pont-messages/2023/documents/20230908-messaggio-alfabetizzazione-unesco .html

Gallagher, P. R. (2023). *Statement by His Excellency Archbishop Paul Richard Gallagher Secretary for the Relations with States and International Organizations Head of the Delegation of the Holy See at the General Debate of the High-Level Week at the Opening of the 78* (Issue 26 September 2023).

Green, E. E. (2018). *Robots and AI: The Challenge to Interdisciplinary Theology*. files/7885/Green - Robots and AI The Challenge to Interdisciplinary .pdf

Hutahaean, B. (2023). Kominfo-Keuskupan Agung Gelar Literasi Digital Bahas Manfaat Teknologi Digital untuk Kaum Milenial. *JPNN (Jaringan Pemberitaan Nusantara Negeriku)*, *11 Oktober 2023*. https://www.jpnn.com/news/kominfo-keuskupan-agung-gelar-literasi-digital-bahas-manfaat-teknologi-digital-untuk-kaum-milenial

Ibnu, M. (2023). Urgensi Literasi Digital Tengku dalam Membangun Kerukunan Umat Beragama. *Al-Hikmah Media Dakwah, Komunikasi, Sosial Dan Kebudayaan*, *14*(1), 1–10. https://doi.org/10.32505/hikmah.v14i1.5956

John Paul II, P. (2005). Apostolic Letter The Rapid Development of the Holy Father John Paul II to Those Responsible for Communications. In *Vatican Press* (Issue 24 January). https://www.vatican.va/content/john-paul-ii/en/apost_ letters/2005/ documents/hf_jp-ii_apl_20050124_il-rapido-sviluppo.pdf

Leo XIII, P. (1891). *Encyclical of Pope Leo XIII Rerum Novarum on Capital and Labor* (Issue 15 May 1891).

Mbugua, A. W., Ngari, S. M., & Ndung'u, E. M. (2022). Perceptions Towards Ability to Use Assistive Technology Among Learners with Visual Impairments: Michael Diamond's Model Approach. *East African Journal of Arts and Social Sciences*, *5*(1), 103–116. https://doi.org/ 10.37284 /eajass.5.1.616

Molleví Bortoló, G., Álvarez Valdés, J., & Nicolas-Sans, R. (2023). Sustainable, technological, and innovative challenges post-COVID-19 in health, economy,

and education sectors. *Technological Forecasting and Social Change*, *190*(December 2022). https://doi.org/10.1016/j.techfore.2023.122424

Mulligan, P. S., Freeman, C. W., & Linebaugh, D. C. (2019). Data Protection Law: An Overview. In *Congressional Research Service (R45631)*. https://uk .practicallaw.Thomson Reuters.com/4-583-2387?transition Type=Default& contextData= (sc.Default)&firstPage=true&bhcp=1

Nurcahyadi, G. (2023). Kemenkominfo dan KWI Gelar Literasi Digital untuk Pemuda Katolik di Surabaya. *Media Indonesia*. https://mediaindonesia .com/ nusantara /613574 /kemenkominfo-dan-kwi-gelar-literasi-digital-pemuda-katolik-di-surabaya

Office of Youth Ministry and Religious Education and the Office of Child and Youth Protection. (2018). *Digital, Online, and Social Media Communication with Youth* (Issue 9 August 2018). https://diojeffcity.org/wp-content/ uploads/ 2020/10/ Digital-Online- Social-Media-Communication-With-Youth-Policy.pdf

Paroki St. Vincentius a Paulo Gunung Putri. (2023). *Literasi Digital: Kecakapan Digital untuk Indonesia yang Damai dan Inklusif*. *23 Agustus 2023*. https://stvincentiusgp.org/2023/08/29/literasi-digital-kecakapan-digital-untuk-indonesia-yang-damai-dan-inklusif/

Paterson, M., & McDonagh, M. (2018). Data Protection in an Era of Big Data: The Challenges Posed by Big Personal Data. *Monash University Law Review*, *44*(1), 1–31. https://www.monash.edu/__data/assets/pdf_file/0009/ 1593630/ Paterson-and-McDonagh.pdf

Paul VI, P. (1963). Decree on the Media of Social Communication Inter Mirifica. In *Vatican Press* (Issue 4 December 1963). Libreria Editrice Vaticana. https://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_decree_19631204_inter-mirifica_en.html

Pontifical Academy for Life, Microsoft, IBM, F. and the M. of I. (2020). *Rome Call for AI Ethics* (Issue 28 February 2020). https://www.academyforlife.va /content/dam/pav/documenti pdf/2020/CALL 28 febbraio/AI Rome Call x firma_DEF_DEF_con firme_.pdf

Pontifical Council for Social Communication. (2002a). *Ethics in Internet* (Issue 22 February 2002). https://www.vatican.va/roman_curia /pontifical_councils/ pccs/documents/rc_pc_pccs_doc_20020228_ethics-internet_en.html

Pontifical Council for Social Communication. (2002b). *The Church and Internet* (Issue 22 February 2002). https://www.vatican.va/roman_curia/pontifical_ councils/pccs/documents/rc_pc_pccs_doc_20020228_church-

internet_en.html

Pontificium Consilium de Communicationibus Socialibus. (1992). *Pastoral Instruction Aetatis Novae on Social Communications on the Twentieth Anniversary of Communio et Progressio* (Issue 22 February 1992). https:/ /www.vatican.va /roman_curia/pontifical_councils/pccs/documents/rc_pc_pccs_doc_22021992 _aetatis_en.html

Prensky, M. (2012). *From Digital Natives to Digital Wisdom: Hopeful Essays for 21st Century Learning*. Corwin Press. https://doi.org/https://doi.org /10.4135/ 9781483387765

Scherz, P. (2021). The Challenge of Technology to Moral Theology. *Journal of Moral Theology*, *10*(2), 239–268. https://search.ebscohost.com/login.aspx? direct= true&db =rfh&AN=ATLAiGU0210809000385&site=ehost-live

Susanto, G. A. (2017). KWI dan Kominfo Keliling 7 Kota Ajari Anak Muda Bijak Bermedsos. *Liputan6*, *8 September 2017*. https://www.liputan6.com /citizen6/ read/3087349/kwi-dan-kominfo-keliling-7-kota-ajari-anak-muda-bijak- bermed sos?page=2

Team of the Indonesian Ministry of Religious Affairs. (2021). *Religious Moderation*. The Ministry of Religious Affairs Republic of Indonesia. https:// pendis press.kemenag.go.id/index.php/press/catalog/download/10/7/32-1?inline=1

Thomas Aquinas. (1927). Summa Theologica. In *New Scholasticism: Vols. I–II* (Issue 1). https://doi.org/10.5840/newscholas19271164

Tim Komisi Komsos KWI. (2018). *Pedoman Penggunaan Media Sosial* (Issue 1 July 2018). https://www.mirifica.net/wp-content/uploads/2018/07/Naskah-Pedoman -Penggunaan-Mensos.pdf

Vicini, A. (2022). Artificial Intelligence and Social Control: Ethical Issues and Theological Resources. *Journal of Moral Theology*, *11*(Special Issue 1), 41–69. https://doi.org/10.55476/001c.34123

Vinichenko, M. V., Chulanova, O. L., Vinogradova, M. V., & Amozova, L. N. (2020). The impact of artificial intelligence on society's views of Islamic religious leaders. *European Journal of Science and Theology*, *16*(3), 67–77. http://www. ejst. tuiasi.ro/Files/82/6_Vinichenko et al.pdf

Author's Profile



MADALENA MARSELI, born in Palembang, 7 November 1978, domiciled in Landak, West Kalimantan-Indonesia, email: madalena.marseli@gmail.com Education: graduated from the Bachelor of Theology Program at the Pontifical University of Urbaniana, Rome in 2009. I graduated from the Master's Program at the Pontifical University of St. Thomas Aquinas, Rome, in 2014. I graduated from the Doctoral Program at the Pontifical University of St. Thomas Aquinas, Rome, in 2018. Work experience: from 2019 until now working as a lecturer at STIKAS St Yohanes Salib.

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER IX

Communicating with God in the AI Era: Spirituality and Technological Transformation

Tantani Binti Longkiad (rosemarypkarm@gmail.com)
STIKAS St. Yohanes Salib – West Kalimantan

Abstract

This article explores the correlation between advances in digital technology and artificial intelligence and changes in spirituality and religion. Its primary focus is how contemporary technological advances, particularly AI, have revolutionized how individuals articulate, engage in, and assert their religious beliefs. The article explores new prospects, such as the accessibility of religious practices through digital platforms, alongside emerging challenges related to ethical dilemmas and the authenticity of spiritual encounters in cyberspace. It is imperative to establish a multidisciplinary discourse and ethical framework for AI to ensure that technology flourishes and enhances the spiritual aspect of human existence rather than eroding it. The deduction drawn is that, with the right vision and intelligence, technological advancement can serve as a conduit to more profound significance, provided human values are upheld.

Keywords: Digital Spirituality, Religion and Technology, AI Ethics, Artificial Intelligence and Religion, Technology and Spiritual Values

Introduction

Advances in artificial intelligence, a branch of human engineering technology, have ushered in many changes in how humans communicate and interact with their environment. A significant domain of human existence that is greatly affected by the influence of AI relates to spirituality and attempts to establish a connection with the divine. To what extent do AI technologies affect the bond between humans and God? Is AI able to help or hinder communication with the divine? These questions have assumed a high degree of relevance in the current age. According to Schwarz (Schwarz, 2019), theologians in the Catholic tradition affirm that technology can revolutionize the way humans establish a relationship with God. Schwarz further underlines that, throughout history, every significant

advance in communication technology, from the advent of written language to the introduction of printing and the internet, has fundamentally reconfigured humanity's spiritual habits.

However, according to Herzfeld (Herzfeld, 2022), there is an optimistic view that AI has the potential to enhance communication with God. The utilization of AI extends to the analysis of religious texts, assistance in contemplative prayer, and creation divinely inspired music. Herzfeld asserts that despite not having a soul, AI can be a conversational partner in pursuing spiritual significance. On the contrary, (Havens, 2021) warns against over-reliance on technology, as it can blur the boundary between man and machine, consequently reducing the human capacity to connect with the Divine.

Havens points out that features such as AI-generated voices can give rise to the illusion of living beings where there are none, leading to potential deception and spiritual harm. This predicament places humanity in a paradoxical position, torn between their sophisticated creations and the search for spiritual meaning in an ever-narrowing sphere of technological progress. The advent of AI has brought about a revolution that spans both spiritual and technological fields. Hence, an important question arises: To what extent can technological advancements contribute to exploring spirituality, especially in a relationship with God?

The Catholic Church's perspective on the correlation between technology and faith has gradually transformed throughout history. In his encyclical Laudato Si, Pope Francis emphasized the importance of technological progress in harmony with the remaking of humanity and nature. (Francis, 2015). He warns that the absence of ethics and spirituality in technology can create a disconnect between the individual and fundamental truth and meaning. In Laudato Si, Pope Francis subtly references the influence of digital technology on introspection and seclusion, both of which play an essential role in building a relationship with the Divine. He further encouraged the devout to utilize technology wisely to facilitate encounters with the Divine. (Francis, 2015).

From a technical standpoint, researchers in the field of artificial intelligence are currently investigating the potential application of AI to provide support in matters related to spirituality and religion. In a comprehensive analysis conducted by Molina et al., the utilization of AI chatbots to facilitate discussions of a religious or spiritual nature was explored, resulting in a combination of favorable and unfavorable outcomes (Molina, 2022). In a similar vein, Chung et al. direct their focus to using AI to scrutinize biblical texts, thereby demonstrating the inherent

possibilities as well as the obstacles encountered when using AI to garner theological insights (Chung, H. et al., 2021)

The ethical confusion surrounding the development and utilization of AI has been a topic of concern within religious institutions. Archbishop Vincenzo Paglia, the venerable leader of the Pontifical Academy for Life, has expressed the belief that AI should be developed and utilized to actively promote human dignity and the overall well-being of individuals rather than being used for manipulation or exploitation. (Pontifical Academy for Life, 2020) To ensure that advances in AI are aligned with evangelical and humanistic values, it advocates open dialog and collaboration between scientists, philosophers, and theologians.

Conflicting perspectives do not simply characterize the interaction between faith and technological progress. Instead, this interconnection presents the possibility of establishing mutually beneficial connections. This scholarly article examines the intersection of humanity and the divine in the age of artificial intelligence, delving into the potential influence and assistance that technological progress can provide in pursuing spiritual significance. Reflecting on the spiritual principles underlying every technological breakthrough allows us to restore connection with the divine.

Literature Review

Spiritual Dimension In The Digital Age

Miller and Baker (2019) state that the advent of digital technology has facilitated many opportunities for individuals to express and engage in spiritual practices. One such avenue is using digital technology to express spiritual self-expression, allowing individuals to convey their deepest spiritual sentiments. In addition, digital technology has created spiritual communities, fostering connections and interactions among like-minded individuals. Furthermore, digital platforms and resources have become easily accessible, providing individuals with a wealth of spirituality-related information.

In their work titled Spirituality in the Digital Age: Navigating the Intersection of Technology and the Sacred, Miller and Baker delve into an analysis of paradigm shifts in the search for spiritual significance in the context of the contemporary technological age. The book explains the profound influence of social media, digital platforms, and technological advancements on spiritual encounters.

However, The Religion in the Digital Age (2019) report from the Pew Research Center shows a trend that participation in traditional religious practices has declined while interest in seeking spiritual meaning through online media has increased, providing an empirical database to understand this change. (Pew Research Center, 2019). The survey by Pew Research Center (2019) found that in recent years, the use of digital technologies for spiritual purposes has increased. 72% of American adults have used digital technology for purposes such as searching for spiritual information, praying or meditating online, or accessing online religious services. (Pew Research Center, 2019).

According to research by Heidi Campbell in 2018, the rise of digital technology has brought about various religious practices and expressions in the spiritual dimension. For example, there is now a presence of spiritual and religious communities on social media platforms, the utilization of digital applications for meditation and prayer, and new rituals and traditions involving technology. (Campbell, 2018). Campbell (2018) explains that while there are concerns regarding the potential negative impact of technology on spirituality, such as distraction and alienation, digital technologies also facilitate new avenues for connectivity and participation in the sacred. This research examines how individuals from the millennial and Z generations manifest their spiritual identity and commitment through digital media. (Campbell, 2018).

Digital Spirituality: AI Challenges And Hopes For The Church

The rise of artificial intelligence (AI) and digital technology has revolutionized various aspects of human existence, including the way individuals engage with matters of religious significance. Schwarz (2019) asserts that AI presents new opportunities and obstacles to expressing the Christian faith. On the one hand, AI has been used for tasks such as analyzing congregation-related data, automating sermons, and creating digital religious music and artwork. (Schwarz, 2019). On the other hand, increased reliance on technology can blur the distinction between the sacred and the profane (Havens, 2021).

According to theologian and philosopher of technology Noreen Herzfeld (2022), AI has the potential to enhance spirituality in unprecedented ways (Herzfeld, 2022). For example, interactive chatbots and voice assistants can serve as partners for dialog during contemplation and the search for significance. Nevertheless, Herzfeld (2022) also warns against the risk of reductionism and manipulation that may arise from excessive AI personification (Herzfeld, 2022).

Research by Hernandez (2021) in Human-Computer Interaction (HCI) and Artificial Intelligence suggests that careful user interface design can foster a profoundly contemplative experience in conjunction with AI. (Hernández, 2021). However, the challenge lies in designing AI systems that adhere to ethical boundaries and do not replace the role of human spiritual leaders.

According to Christopher Ben Simpson (2020), a theologian of the Lutheran faith, the tendency to regard AI as human, and even go so far as to worship it, carries the danger of hiding a theological understanding of true humanity. He warns that AI should continue to be regarded as a tool created by humans, not as an equal conversation partner in matters of faith and divinity. (Simpson, 2020). In a similar vein, Pope Francis, in his Catholic perspective on the moral principles of AI, asserted that technological progress must be accompanied by the recovery of human essence rather than alienating humans from evangelical principles. (Pontifical Academy for Life, 2020). According to the Pope, technology should be directed at the service of human dignity rather than being driven solely by the pursuit of profit.

From a pragmatic perspective, there are several examples of utilizing Artificial Intelligence for spiritual benefit. These include applying machine learning techniques to research sacred texts (Chung et al., 2021), generating hymns and reflective melodies based on AI, and developing prayer and meditation apps that adapt to user preferences.

Nevertheless, detractors such as Mangis (2020) warn against the potential entrapment of younger generations in a shallow spirituality dictated solely by algorithms and the logic of the digital marketplace. The wisdom and discernment of leaders and theologians must be exercised to ensure that the advancement of AI is harmoniously aligned with the strengthening of genuine and deep Christian principles (Mangis, 2020). In light of digital technology, individuals have many new ways to manifest and implement their beliefs. These include:

1. Accessibility to spiritual information and resources: Digital technology has made spiritual information and resources more accessible than ever. Today, individuals not only can obtain information about different religions and spiritualities, but they can also avail of resources that facilitate the application of their beliefs in their daily lives.
2. Formation of spiritual communities: With the help of digital technology, individuals can build fresh spiritual communities or connect with like-minded individuals within their existing spiritual communities. This can lead

to increased connectedness among individuals with the same spiritual values.

3. Although digital technology presents many prospects for humanity to articulate and engage in its spirituality, it also entails certain obstacles worth considering. These challenges include, but are not limited to:
4. Technology Addiction: Overutilization of digital technology has the potential to adversely affect the mental and spiritual well-being of individuals, resulting in technology addiction.
5. Disinformation: The spread of false information, which includes misleading content relating to religion and spirituality, can be facilitated through digital technology. Such dissemination can lead to confusion and misunderstanding of religion and spirituality.
6. Social isolation: Over-reliance on digital technology can trigger social isolation, where individuals may experience a profound separation from others, including their spiritual community.

Technology And Its Impact on Human Existence

The impact of modern technological advancements on the human world is profound. A thorough understanding of the changes in human behavior, culture, and daily life can be gained by examining literature that explores the relationship between technology and humanity. In her work, Reclaiming Conversation: The Power of Talk in a Digital Age (2015), Sherry Turkle explores how the evolution of technology has changed communication and interpersonal connections. In particular, the book explores the influence of digital technologies, especially mobile devices, on human conversation and interaction dynamics. This prompts significant questions about the quality and depth of social engagement in this digital age. (Turkle, 2015).

In his book The Shallows: What the Internet Is Doing to Our Brains (2010), Nicholas Carr explores the neurological implications of digital technology and its impact on cognitive processes and information processing. Carr explains how the internet has changed reading habits, response patterns to information, and cognitive concentration. The book outlines the potential of technological advancements to shape the structure of the human mind. Consequently, it raises concerns about the lasting consequences of this transformation on human existence and intelligence (Carr, 2010).

These two literary compositions offer profound insights into the ubiquity of technology in our daily lives and the essence of human existence. By examining changes in social dynamics and investigating their impact on neurological aspects, this body of literature raises significant questions regarding how we, as individuals, engage with technology and how it shapes and defines the purpose of our existence in an ever-interconnected global setting.

Ethical Considerations in AI and Spirituality

Examining the literature allows for a deeper understanding of the complicated relationship between artificial intelligence and human spiritual values when discussing ethical factors relating to integrating AI and spirituality. In her work Artificial Intelligence: A Guide to Human Thought, Melanie Mitchell (2020) delves into the ethical dilemmas that arise due to the advances made in artificial intelligence. The book explores the philosophical and ethical implications of advances in AI, prompting contemplation of how the utilization of AI may affect human morality (Mitchell, 2020).

In their article, A Unified Framework of Five Principles for AI in Society, Floridi and Cowls (2019) extensively explore the ethical hurdles in applying AI technologies in spirituality and religion. The article presents a set of five principles that summarize ethical guidelines to ensure that advances in AI uphold ethical values and human spirituality. (Floridi & Cowls, 2019). These two sources offer a comprehensive perspective on the ethical considerations surrounding merging AI and spirituality. Spanning from philosophical viewpoints to practical guidance, this literature guides readers in contemplating the ethical impacts and obligations given the accelerated development of AI technologies regarding spiritual and moral values in contemporary society.

Discussion

A New Paradigm of Spiritual Communication

We are witnessing new advances in how humans communicate with elements of spirituality, including their interactions with the divine, during a time characterized by technological advances, especially in artificial intelligence. This new framework exemplifies a profound metamorphosis in the dynamics of spiritual communication and illustrates how technology is taking on an intermediary role between individuals and their spiritual source. (Hutchings, 2011).

The rise of digital platforms and social media has played an essential role in shaping this new framework. Today, people feel more comfortable exchanging and seeking spiritual encounters through cyberspace. Research conducted by Alarcon (2021) revealed that social media provides a space for spiritual communities where individuals can engage in conversations, share experiences, and seek inspiration from each other. (Alarcon et al., 2021).. As a result, spiritual communication facilitates connections between individuals seeking purpose and fulfillment from different corners of the world.

In addition, virtual assistants and artificial intelligence technologies are changing how individuals engage in spiritual communication. These technological innovations have the potential to assist individuals in their meditation practices, recite prayers, and even provide customized spiritual content that meets their specific needs. (Hutchings, 2011). Despite being a subject of controversy, the utilization of artificial intelligence technologies in a spiritual context signifies the ability of individuals to adapt and embrace technological advancements to augment their spiritual encounters (Hutchings, 2019).

However, this paradigm shift raises significant ethical concerns. How can we ensure that the fundamental values of spiritual experience are not replaced by technology when using it for spiritual communication? The study by Floridi and Cowls (2019) addresses the ethical dilemmas when combining AI technology with spiritual principles. (Floridi & Cowls, 2019). It is important to remember that technology should not replace spiritual communication. Instead, technology should enhance and facilitate greater access to the sacred element (Hutchings, 2011). In this context, it is suggested that the emerging paradigm of spiritual communication not only presents new possibilities but also challenges established conventions. Spiritual communication now extends to the interconnected digital realm and is no longer limited to rituals or physical places of worship (Campbell & La Pastina, 2010). Consequently, this article helps us understand how technological advancements, especially artificial intelligence, infiltrate and change how humans engage with their spiritual dimension.

The Challenge of Searching For Meaning In The Digital Age

In the age of contemporary technology, the quest for significance faces several challenges, signaling a significant change in how individuals embark on their spiritual journey. This age, driven by technological advancements, especially artificial intelligence (AI), has complicated human efforts to establish spiritual

connections and find meaning in their lives. The ubiquitous presence of information poses formidable difficulties. Due to the ease with which information can be accessed today, individuals often contend with large amounts of complicated and diverse data. The search for personal meaning can be difficult as online information is often heterogeneous and contradictory. As a result, determining the clarity and accuracy of the digital information vortex is a real challenge.

In their publication titled Spirituality in the Digital Age: Navigating the Intersection of Technology and the Sacred (2019), Miller and Baker underscore the transformation in how humans pursue spiritual significance. They emphasize how social media and digital platforms have spawned an environment where spiritual experiences are often distorted by irrelevant or overly profitable content. This difficulty exemplifies how technology can hinder the search for authentic meaning.

In addition, essential concerns arise from the relationship between dependence on technology and the decline of direct experience. In pursuing meaning, one may be entangled in a virtual world without directly engaging with physical reality. As a result, an imbalance arises that inhibits the search for meaning through direct experiences, such as interacting with others in the real world or contemplating nature. The impact of digital social pressure is an additional hurdle. If one frequently compares their life to the lives of others on social media, it can lead to unrealistic expectations or uncertainty regarding one's principles. Adhering to digital social standards can obscure the pursuit of pure meaning.

Developing digital literacy and ethics in technology utilization is essential to address these issues. Extensive education on using technology in spirituality can facilitate individuals in organizing information, evaluating truth, and maintaining a balance between the digital world and reality. Notably, the difficulties faced in pursuing significance in the contemporary era are technical, philosophical, and ethical. This shift in the meaning-seeking paradigm allows us to investigate how humans can use technology to enhance, rather than hinder, their pursuit of meaning and spiritual connection.

The Influence of Technological Transformation On Religious Experience

In the age of artificial intelligence and the transformative nature of technology, the focal point of discourse revolves around spirituality and the advancement of religious life. This discussion aims to shed light on the impact of technological change on religious experience, delving deeply into the changes it brings to religious practice and the spiritual connections people forge. A comprehensive examination of this subject matter can be found in this subsection.

Technology has played an essential role in increasing accessibility to religious activities. Through online platforms and religious apps, individuals can engage with spiritual resources, participate in prayers, and listen to sermons regardless of location or time constraints. This newfound convenience allows for a more adaptable religious experience, which can be customized to meet the needs of each individual.

However, religious encounters in the digital realm present certain obstacles. As Miller and Baker (2019) explain in their publication Spirituality in the Digital Age: Navigating the Intersection of Technology and the Sacred, religious experiences through screens often lack the physical presence and visceral intensity experienced during conventional religious gatherings. As a result, they raise questions regarding the extent to which technology can facilitate religious engagement. The advent of virtual reality further contributes to this transformation. Through virtual reality experiences, one can participate in religious ceremonies, embark on virtual pilgrimages, or engage in meditation practices while simulating a sense of physical presence. Nevertheless, ethical concerns regarding the authenticity of these experiences remain.

Another part of this transformation is religious chatbots and virtual assistants that help people in their daily religious practices. While they can offer help and guidance, some concerns using these technologies can replace religion's intimate and personal aspects. However, technological advances also provide opportunities to build religious communities worldwide. Discussion forums, online religious classes, and cross-cultural exchange of thoughts can help one better understand their faith. Let us talk about how technological change can affect one's religious life. Considering how much technology can help people on their spiritual journey without compromising their religious values and meanings is essential.

While digital technologies have expanded the accessibility of religious practices, there is concern among some researchers that an over-reliance on technology in spiritual contexts may lead to reducing religion to a commodity rather than a fully realized way of life. It is said that a consumeristic approach to religion may undermine deep meaning and authentic dedication. In addition, Campbell (2018) examined how digital technology is reshaping the religious mindset of millennials. His research revealed that online participatory culture promotes the importance of values such as personal autonomy, creativity, and openness in digital spirituality, which may conflict with the teachings of traditional religious institutions. (Campbell, 2018)

From an ethical standpoint, Floridi and Cowls (2019) warn about the potential for manipulation through interface design that deliberately fosters addiction. They propose that ethical principles of artificial intelligence should be applied to protect the spiritual dimension of individuals. AI deployment in a religious context should prioritize the dignity and well-being of users. Overall, while the transformation of technology in religious experiences brings new possibilities, it is not without challenges. It requires deep reflection from religious leaders and theologians to ensure that essential spiritual values are not compromised in favor of digital efficiency and convenience. (Floridi & Cowls, 2019).

Ethical Use of Technology In The Context Of Spirituality

The topic The Ethical Use of Technology in the Context of Spirituality explores the profound implications of how technology, particularly artificial intelligence, can affect one's religious experiences and practices. The ethical dimension of this debate is significant because of the potential for technology to enhance spiritual experiences or have a negative impact. To begin with, using technology in religious contexts raises moral concerns regarding data security and privacy. How can we ensure that information shared by individuals is not misused or accessed without consent when they disclose their spiritual experiences or personal religious information? Establishing rules and transparency in managing religious data to protect individuals' privacy is crucial. In addition, the moral aspects of the capacity of artificial intelligence technologies to understand and respond to human emotions must be considered.

If AI is used to support religious practices or offer spiritual guidance, the extent to which technology can replace the role of human spiritual counsel or

mentors should be considered. Floridi and Cowls (2019) outline moral principles in their work A Five-Principle Integrated Framework for AI in Society that can guide the use of AI technologies, including their application in spirituality. (Floridi & Cowls, 2019)

Utilizing technology for virtual religious ceremonies or online worship also raises ethical issues in religious practice. How can technology maintain the sacred aspect and spiritual presence in online experiences while upholding religious meaning and values? In addition, creating or replicating spiritual entities through technology raises ethical dilemmas. This includes the development of religious chatbots or artificial intelligence entities that function as religious teachers. The question of how far we can trust technology-mediated spiritual interactions arises due to the inherent ambiguity between technology and spiritual presence.

To address these ethical issues, it is imperative for religious communities and authorities to actively participate in the establishment of clear moral standards for the use of technology in the context of spirituality. By profoundly understanding ethical principles and spiritual values, individuals will have a solid foundation to guide technological advancements aligned with humanity's spiritual goals. It has been emphatically asserted that ethical utilization of technology is essential. By adopting an ethical approach, technology can enhance human spiritual experiences without compromising the fundamental values of religious practice.

Conclusion

Advances in digital technology and artificial intelligence have triggered significant transformations in many aspects of human existence. Spirituality and religion are some of the most affected areas. The rise of digital technologies has revolutionized the way individuals express and engage in religious practices. Social media platforms and digital forums have facilitated the formation of virtual faith communities that transcend geographical boundaries. Through these online platforms, individuals from diverse backgrounds can connect, exchange spiritual experiences, engage in discussions related to religious beliefs, and support each other in their respective spiritual journeys. In addition, digital applications have expanded the accessibility of religious resources, including scriptures, sermons, educational materials, and more.

In addition, sensory technologies and wearables have enabled the monitoring and quantifying various aspects of spiritual practices, including meditation, contemplation, and worship. This data can enhance self-understanding and guide an individual's spiritual development. Adopting virtual reality and related technologies has also introduced new experiences, such as virtual visits to sacred sites and participation in religious rituals. However, integrating technology in religion and spirituality has its challenges. Excessive use of technology can disrupt the balance of one's spiritual life. Moreover, designing digital interfaces that optimize attachment and prolonged use risks reducing religion to a mere consumable product rather than a way of life.

Privacy and security issues of religious data also require serious consideration, given the sensitive nature of information shared on digital spiritual platforms. In the absence of a comprehensive ethical and legal framework, the personal data of religious believers becomes vulnerable to abuse. It is imperative to remain vigilant regarding the potential for manipulation or exploitation through the irresponsible use of technology. From a theological standpoint, integrating artificial intelligence and digital technology raises profound questions regarding the relationship between humanity and the Divine. Can artificial intelligence and virtual reality indeed provide genuine divine experiences, or do they blur the boundaries of the sacred? How can we ensure that technology remains a tool, not a substitute for essential elements of human spirituality?

To address these challenges, fostering dialog and cooperation among various stakeholders, including technologists, scientists, religious leaders, philosophers, and spiritual practitioners is imperative. Ethical principles, such as transparency, privacy, fairness, and humanity, must be upheld in developing and applying religion-related technologies. In addition, spiritual discernment is essential to ensure that individuals are not ensnared in pursuing superficial and pseudo-meanings determined solely by algorithmic logic.

Looking to the future, digital technology and artificial intelligence are expected to merge with the diverse dimensions of human existence increasingly. Churches and religious institutions should carefully anticipate these changes by maintaining a cautious yet open-minded approach. When used responsibly and in a way that upholds human dignity, technological advancements in religious life can yield real benefits rather than being driven solely by narrow interests or exploitative profit motives. Instead of approaching technology with suspicion, it should be regarded as a tool to support humanity's spiritual progress, provided

ethical values and religious principles are upheld. Technological advancement should be accompanied by the simultaneous strengthening of profound human values to prevent humanity from becoming detached from the divine. With such vision and wisdom, humanity's spiritual trajectory in the age of digital technology and artificial intelligence can be directed toward humanity's collective well-being and proper development.

In conclusion, the contemporary era faces an inevitable and rapidly advancing technological transformation that requires a sensible and thoughtful approach from all parties, including religious stakeholders. It is imperative to assess challenges and opportunities in a balanced manner. By fostering open dialogue and building a solid ethical framework, the essence of human nature can continue to evolve and flourish in the new socio-technical context. The basic principles of spirituality, such as compassion, justice, truth, and humanity, must always be protected, even amidst the rapid pace of technological change. As a result, the progress of human civilization in the digital age does not want to lead to spiritual alienation. Instead, technology can be a conduit to more profound significance, accompanied by intelligence and wisdom.

Reference

Alarcon, G. M., Baker, A. L., Barnes, M. J., Berman, S., Bliss, J. P., Bradshaw, J. M., Brill, J. C., Capiola, A., Chen, J. Y. C., Chiou, E. K., Choi, H., Choo, S., Coin, A., Cooke, N. J., Cruit, J., Cummings, M. L., Demir, M., Dubljević, V., Eskander, E., Zhang, W. (2021). Contributors. *Trust in Human-Robot Interaction*, xiii–xvi. https://doi.org/10.1016/b978-0-12-819472-0.09992-5

Campbell, H. A. (2018). *Digital religion: Understanding Religious Practice In New Media Worlds* (Campbell; 1st ed.). Routledge. https://doi.org/https://doi.org/10.4324/9780203084861

Campbell, H. A., & La Pastina, A. C. (2010). How the iPhone became divine: new media, religion, and the intertextual circulation of meaning. *New Media & Society*, *xx*(x), 17. https://doi.org/10.1177/1461444810362204

Carr, N. (2010). *The Shallows: What the Internet Is Doing to Our Brains* (June 6, 20). W. W. NORTON & COMPANY.

Chung, H., Kuzmin, K., Lundberg, S., Richardson, A., Disney, A., & Lo, C. (2021). Advancing Worship with AI: A Uses and Gratifications Study. *Journal of Media and Religion*, *20*(4), 154–172. https://doi.org/https://doi.org/10.1080/ 15348423.2021.2019266

Floridi, L., & Cowls, J. (2019). A Unified Framework of Five Principles for AI in Society. *Harvard Data Science Review*, *1*(1). https://doi.org/https:// doi.org/ 10.1162/99608f92.8cd550d1

Francis, P. (2015). Encyclical Letter Laudato Si of the Holy Father Francis on Care for Our Common Home. In *Libreria Editrice Vaticana*. https://doi.org/ 10.1002/9780470751343.ch29

Havens, J. C. (2021). Approaches to Spiritual Care for Artificially Intelligent Robots. *Pastoral Psychology*, *70*(5), 615–632. https://doi.org/https:// doi.org/10.1007 /s11089-021-00957-y

Hernández, J. F. C. (2021). Artificial Intelligence and Spirituality. *International Journal of Interactive Multimedia and Artificial Intelligence*, *7*(1), 34–43. https://doi.org/10.9781/ijimai.2021.07.001

Herzfeld, N. (2022). Artificial Intelligence and Theology. *Theology Today*, *79*(2), 103–115. https://doi.org/https://doi.org/10.1177/00405736211018604

Hutchings, T. (2011). Contemporary religious community and the online church. *Information*, *Communicat*, 1118–1135. https://doi.org/10.1080/ 1369118X. 2011.591410

Mangis, M. W. (2020). Digital spaces, material traces: How media technology shapes youth spirituality and religious identity. *Material Religion*, *16*(2), 233–234.

Mitchell, M. (2020). *Artificial Intelligence: A Guide for Thinking Humans*. Picador.

Molina, M. et al. (2022). Artificial Intelligent Religious and Spiritual Chatbots: A Narrative Review. Psychology of Religion and Spirituality. *Psychology of Religion and Spirituality*, *14*(2), 180–192. https://doi.org/https://doi.org/ 10.1037/rel0000486

Pew Research Center. (2019). *The Digital Pulpit: A Nationwide Analysis of Online Sermons.* https://www.pewresearch.org/religion/2019/12/16/the-digital-pulpit-a-nationwide-analysis-of-online-sermons/

Pontifical Academy for Life, Microsoft, IBM, F. and the M. of I. (2020). *Rome Call for AI Ethics Rome, February*. *28 February*, 16.

Pontifical Academy for Life IBM, FAO and the Ministry of Innovation, M. (2020). *Rome Call for AI Ethics* (Issue 28 February). https://www.academyforlife.va /content/dam/pav/documenti pdf/2020/CALL 28 febbraio/AI Rome Call x firma_DEF_DEF_con firme_.pdf

Schwarz, H. (2019). Theology in the Age of Artificial Intelligence: Embedding Grace in a Godlike Technology. *Theology Today*, *76*(2), 107–120.

https://doi.org/ 10.1177/0040573619847219

Simpson, C. Ben. (2020). *Modern Christian Theology* (2nd ed.). Bloomsbury Publishing. https://www.perlego.com/book/1181635/modern-christian-theology-pdf

Turkle, S. (2015). *Reclaiming conversation : the power of talk in a digital age*. Penguin Press.

Author's Profile



TANTANI BINTI LONGKIAD, born in Sabah, Malaysia on March 5, 1971, domiciled in Landak, West Kalimantan – Indonesia, email: rosemarypkarm@gmail.com Education. Graduated from the Bachelor of Theology Program at the STFT Widya Sasana Malang, Indonesia in 2012. Graduated from the Master's Program at the Pontifical University of St. Thomas Aquinas, Rome in 2017. Work experience: From 2018 until now, I have been working as a lecturer at STIKAS Santo Yohanes Salib.

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER X

Catholic Education Strategy in the Age of Technology: Addressing the Cultural Challenges of AI to Strengthen the Faith of the New Generation

Marianus Dinata Alnija (eugenecse@gmail.com)

STIKAS Santo Yohanes Salib – West Kalimantan

Abstract

This article elaborates on the relationship between artificial intelligence (AI) technology and Catholic education strategies in strengthening the faith of the newest generation. The birth of artificial intelligence aims to make computers capable of thinking, learning, and acting like humans in a certain sense. At the same time, the basic spirit of Catholic education is the combination of Faith in Christ and knowledge, thereby providing a moral and ethical foundation for thought and action. This research aims to outline specific strategies that can be used in Catholic Education to face the challenges of AI culture. This article provides insight into the extent to which the spirit of Catholic education in strengthening human faith remains relevant for the newest generation. Through interdisciplinary literature analysis, this study outlines the question of what the strategy for Catholic education is amidst today's advances in artificial intelligence (AI).

Keywords: AI, Catholic Education, Faith and the Newest Generation

Introduction

In Church tradition, Catholic education has long been an important milestone in the formation of human faith and character. However, today, Catholic education is facing a new cultural challenge with the rapid emergence of artificial intelligence (AI). Controversy regarding the use of AI in Catholic Education has emerged. There is debate about how this technology can be integrated with the principles or values of the Catholic Faith in Education. There may be some people who think that artificial intelligence can disrupt the Catholic education system, which has been firmly established for a long time; some people also think that

artificial intelligence is the right means of rooting or strengthening the faith of the newest generation. (Andriansyah, 2022).

Advances in artificial intelligence technology have fundamentally changed the paradigm of Catholic education. In recent years, we have witnessed changes in the way course material is taught, curriculum development, and the way students interact with educational content. AI-based learning platforms can offer more efficient and customized learning experiences, which can help enhance faith formation in new and innovative ways. (Zaman, 2023). This paradigm shift invites us to ask, can Catholic Education adapt to AI? What is the Catholic Education strategy for strengthening the faith of the newest generation amidst the flow of AI? By considering these questions, this article tries to provide solutions to Catholic education. The role of Catholic education in strengthening the faith of the newest generation is important in today's AI culture.

Creating ethical and moral guidelines in the use of AI, developing a curriculum to include digital literacy so that the newest generation can use AI wisely and responsibly, utilizing AI to develop more interesting and effective faith and catechesis learning models, training teachers to be able to utilize AI in effective learning constructively in line with the values of the Catholic faith, using AI to develop content and learning methods that are innovative but still in line with the values of the Catholic faith, these are solutions that can be implemented by Catholic education to strengthen the faith of the newest generation.

Literature Review

Challenges and Opportunities for Catholic Education in Strengthening the Faith of the Digital Generation in the Era of Artificial Intelligence

This research is rooted in the understanding that AI, as an increasingly sophisticated interactive entity, has significant potential to influence the next generation. This includes how the newest generation interprets, responds to, and internalizes encounters with AI into the appreciation of everyday life. In terms of faith, AI raises various questions regarding the values of faith, morals, ethics, and how to sustain Catholic education, which has a spirit of faith in Christ as a foundation of knowledge in producing a new generation that is moral, faithful, and ethical by Catholic values.

Greek philosophers said that human nature is not only rational but also relational. This relation is our human nature. Martin Heidegger, an existentialist

philosopher, provides his philosophical arguments about humans in his great work Being and Time. This is the result of the analysis that I, who is the subject, have an awareness of the 'intentional subject.' This means that I, who is the subject, is not a subject that stands alone without other subjects. This will explain that my consciousness, which is the subject, has direction.

Jordan Joseph Wales, in his article entitled Metaphysics, Meaning, and Morality: A Theological Reflection on AI, also emphasized that although AI can improve human understanding of existing reality, it cannot completely replace the experience of faith and religion for the newest generation. He emphasized that although AI can enrich human life, we must be aware of its limitations and not let AI blind us. Wales demands a more ethical and moral approach to the development of artificial intelligence, which considers the impact of this technology on society and human life as a whole (Wales, 2022). Here, he suggests that it is not enough for us to think about what artificial intelligence does; we also need to think about what we do, specifically in Catholic education, to strengthen the faith of the newest generation so that they can use AI by the values of faith, Catholic morals. (Sobon, 2018).

This philosophical statement does not refer to human particularity. Heidegger stated that human existence is Dasein, which enters everyday life. The existence of Dasein, which enters everyday life, means that it Exists not without others; on the contrary, Dasein is part of them. The existence of subjects in the world, along with other realities, is accepted as a human existential ontological reality. The world of subjectivity is togetherness. (Riyanto, 2017). It is the same as Socrates' that humans are creatures that have souls, while Plato said that humans consist of soul and body (Sunggu, 2023). The human concept of these philosophers wants to emphasize that humans are individuals who exist in the world and are always connected with others.

In the article Humans and the Tempest of the Digital Revolution, written by Hardiman, Heidegger mentions the concept of humans as humans living in in-der-welt sein (being in the world). However, with the birth of artificial intelligence (AI), there has been a shift that humans do not just exist in the real world but also in the world of AI. The concept of humans as homo sapiens is now moving to become homo digitalis (Hardiman, 2018).

Humans no longer build relationships with each other, but they relate to screens with artificial intelligence (AI). All things related to humans are in artificial intelligence. We can see the impact of this shift in various aspects; AI

allows humans or the newest generation to interact, discuss, or get advice. This reduces the need for humans to interact with each other. In addition, human-AI relations raise new ethical questions: To what extent do we rely on decisions made by AI? To what extent is what AI says ethically correct, Catholic faith, and unbiased?

Human Relations and Technology: A Philosophical Review of the Impact of AI Developments.

An interesting thing when discussing humans and technology is the relationship between existentialism and artificial intelligence. It is said to be interesting because both focus on fundamental questions about the existence, meaning, and choices of humans as subject actors. In the philosophy of Existentialism, as stated by Soren Kierkegaard, human existence as an individual or persona is a person who exists concretely in the world. He saw that the most basic thing for humans is their condition or their existence. According to Kierkegaard, existence can only be applied to humans as concrete individuals because these concrete individuals exist, truly exist, and are present in actual reality (Insany & Robandi, 2023).

. Kierkegaard further emphasized that existence does not mean living in abstract and mechanical patterns but constantly making new choices personally and subjectively. In other words, human existence is an existence chosen in freedom. To exist means to exist in an action that each person must do for himself. The choice is not a conceptual matter but a matter of total commitment of the entire individual.

Departing from freedom as a mode of existence, Kierkegaard thus does not place the individual into an abstract reality but sees the individual as a person who is truly present and concrete. Therefore, in making decisions, only the concrete can make decisions for myself and not other people (Silentio & Kierkegaard, 1941). In contrast, artificial intelligence is a field of computer science that focuses on creating machines that can imitate certain parts of human intelligence. Artificial intelligence seeks to imitate human cognitive processes such as problem-solving, reasoning, and learning. However, current artificial intelligence does not have consciousness or subjective experience. Yes, it only depends on data and algorithms, not inner experience or free choice.

Apart from that, in Kierkegaard's concept of existentialism, he emphasized that human existence is seen from the point of view of the subject who exists, so the emphasis is on the subject who has consciousness, whereas artificial intelligence is an objective phenomenon operating only based on logic and algorithms that can be understood objectively, so artificial intelligence is not making a decision; instead, it uses an algorithm its programs. Can a highly advanced artificial intelligence be considered conscious? This question focuses on how we understand life and thinking. It is becoming clear that artificial intelligence can make humans lose autonomy and subjective experiences that are rich in value and meaning.

By referring to Kierkegaard's theory of existentialism, the development of artificial intelligence can raise questions about freedom and determinism. Suppose artificial intelligence can predict human decisions in determining their free choices. In that case, artificial intelligence becomes a tool and agent that has the potential to influence human will and choices so that humans are no different from machines that work mechanically. As artificial intelligence increasingly plays a role in decisions that impact human lives, who is responsible for the actions humans take? How do we ensure that artificial intelligence acts by the principles of morals, ethics, and the Catholic faith?

Ethical Principles and Values of the Catholic Faith in the Development and Utilization of AI Technology

In the article Epilogue on AI and Moral Theology: Weaving Threads and Entangling Them Further, Brian Patrick Green outlines the complex relationship between artificial intelligence (AI), theology, and morality. Green emphasized that the emergence of artificial intelligence needs to be approached from a theological, ethical, and moral perspective. Why is that? Because artificial intelligence has a broad and religious influence.

Artificial intelligence has changed our understanding of humanity while also challenging us to rethink our role and identity as humans in the technological era. (Green, 2022). Green astutely sees that there are concerns that the presence of artificial intelligence has implications that blur the distinction between humans and machines and affect human understanding of morality and ethics. The implication of this blurring is that artificial intelligence can lower human values and change human paradigms regarding morality and life**.**

From a faith perspective, artificial intelligence raises significant theological problems. There are concerns that acceptance of the concept of mind uploading could threaten our traditional understanding of theological doctrines such as life after death. Green offers that our relationship with artificial intelligence is to help us understand creativity and creation better and still take a responsible ethical and moral approach and not make artificial intelligence an idol or replace human relationships with God. (Green, 2022). Artificial intelligence develops in a way that respects and protects human dignity as God's creation and adheres to moral, theological, and ethical principles.

What Green said is in line with what was conveyed by the Vatican in a document entitled Rome Call for AI Ethics. In this document, the Vatican stated that it is important to have a comprehensive and reflective ethical approach to the development and use of artificial intelligence (AI). The Vatican acknowledged that Artificial intelligence can improve the quality of human life and overcome complex challenges. However, the Vatican also realizes that artificial intelligence cannot be guaranteed to be beneficial for humans without a moral and ethical approach (Rome, 2020).

The Vatican stressed that artificial intelligence must serve the entire human family, respecting each member and the natural environment and considering the most vulnerable of those members. Algorithms do not discriminate against individual rights and freedoms. Artificial intelligence systems must be designed, developed, and used to serve and protect humans and the environments in which they live, which means creating social and personal conditions that allow humans and the environment to thrive. So, the Vatican advocates an algorithmic approach, meaning ethics incorporated into the design and planning of trustworthy AI systems. These algorithms consist of things like transparency, inclusion, responsibility, neutrality, reliability, security, and privacy.

The Vatican is committed to developing human-centered and responsible technology. To integrate ethics into these technologies, policymakers, UN agencies, intergovernmental organizations, researchers, academics, and non-governmental organizations must work together. Rome's Call for AI Ethics emphasizes the idea that while technological progress increases the greatness of the human race, ethical integrity and faith in God is maintained (Rome, 2020).

Discussion

Catholic Education Strategy in Strengthening the Faith of the Digital Generation through Forming a Culture of Relationships in the Era of Artificial Intelligence

From the results of the literature review above, the author explains several central ideas in Catholic education amidst AI culture to strengthen the faith of the newest generation. Miller explains five components necessary for Catholic schools to maintain and strengthen their identity, which is their primary goal and mission. First and foremost, Miller emphasized that the Supernatural vision must inspire Catholic educational institutions.

Education should not be merely an instrument for obtaining information that will increase the chances of worldly success. Second, Catholic schools must be founded based on Christian anthropology and must be founded based on Jesus Christ; the central mission of the school and the Gospel of Jesus Christ must inspire and guide Catholic schools in every dimension of their life and activities. Third, Catholic educational institutions must be imbued with communion, which emphasizes the concept of school as a community.

A Catholic school must physically and visibly express the external signs of Catholic culture and maintain its identity. In addition, religious acts should be carried out in all schools, and prayer should be part of the school routine. Fourth, a Catholic world perspective must underlie Catholic schools, and a Catholic spirit must permeate the entire curriculum. Catholic schools aim to educate the whole person, so all teaching, not just religion, must be truly Catholic in content and method. Fifth, Catholic schools must be supported by the Bible. Thus, Catholic educators are expected to be role models for their students by providing transparent testimony about Christ and the beauty of the Gospel (Miller, 2005). To maintain a Catholic identity in AI culture, Cook and Simond offer a new, coherent framework for instilling faith values and Catholic teachings in the new generation in the 21st century. The new framework is referred to as building a culture of relationships (Johnson, 2009).

Building a culture of relationships, as stated above, has the potential to help students understand the modern complexities between AI culture and faith. Furthermore, Cook and Simonds propose that implementing this framework could help Catholic schools clarify what differentiates them from other schools, recruit

students more effectively, and enable their graduates to change the world by building relationships, not fences.

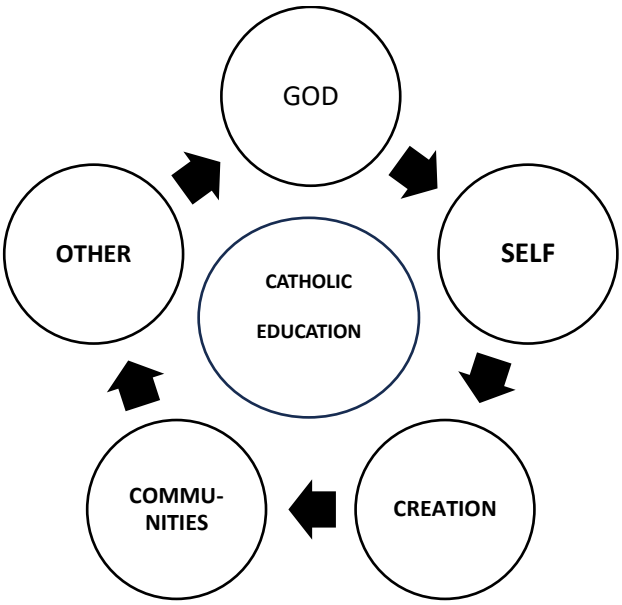


Figure 1: Building a culture of relationships

Maintaining Human Values and Direct Encounters in Catholic Education in the Digital Era

Lelo J. Ngumba, Author of the America Magazine article Catholic Education in the Digital Age, discusses the difficulty of Catholic education in balancing the use of technology with maintaining the values of the faith. The idea that technology is better education is better has been criticized for ignoring the importance of personal meetings in the Catholic community. The authors argue that human relationships in education can be damaged because technology often diverts attention from teacher-student interactions to the screen (Ngumba et al., 2019).

Additionally, this article emphasizes that following the example of Jesus Christ as a teacher, presence, and direct interaction are essential in Catholic education. In his teachings, Christ prioritized presence and in-person encounters over a technology-centric approach. To maintain their identity, Catholic schools must prioritize in-person meetings over technology.

This view was reinforced by Pope Francis' message on the Vatican's World Communications Day, where he emphasized that meetings and discussions are more important than producing and consuming information. This message also shows different ways to use technology, with human interaction more important than the technology itself. The Pope further stated that keeping humans at the center of the educational process is the goal of Catholic education. In the current digital era, human-centered values, meetings, and discussions must remain the main guidance of Catholic schools (Liturgi-KWI, 2023).

Pope Francis further emphasized that with the birth of artificial intelligence, online communities are created based on the interests of networked individuals. They are addressed based on the characteristics, origins, tastes, and preferences of each individual, behind which online platforms and search engines tend to bring together the same people, group them, and attract their attention to keep their interests in mind.

As a result, social media platforms risk preventing their users from truly meeting different others. (Communications, 2023). Pope Francis emphasized that the result of the birth of online communities' risks creating individualistic spaces and sometimes encouraging extreme behavior. Aggressive and negative speech spreads easily and quickly, creating fertile ground for violence, harassment, and misinformation. Interactions built-in digital spaces are very different from interactions in physical spaces, where our actions are influenced by verbal and nonverbal input from other people (Communication, 2023).

Strategies for Integrating Artificial Intelligence into Catholic Education: Ethical Opportunities and Challenges

Educational institutions must develop strategies to leverage AI. These strategies should teach teachers how to use them, create ethics and privacy policies, and ensure that all students have equal access to technology. It is expected that the use of AI in education will continue to grow, resulting in more innovation in teaching and learning. However, this progress must be balanced with careful moral consideration and a commitment to holistic and inclusive education. With a wise approach, AI can become a powerful tool in supporting the mission of education and the mission of Catholic schools to develop future generations who are informed, faithful, moral, and insightful. (Gleeson, 2019)

According to Meredith J. C. Swallow, Technology plays an important role in changing the way teaching is taught in Catholic schools. According to Swallow (2017), the incorporation of technology into classrooms not only alters the dynamics of the learning environment but also enhances teaching methods, ultimately fostering the acquisition of 21st-century skills. Kyoungwon Seo et al, see that there is a connection between adopting AI into a learning system while still paying attention to the uniqueness of each individual, which can have an impact on a more relevant learning experience and also create attraction for students.

However, ethical dilemmas arise regarding the use of artificial intelligence in the educational realm. Important aspects include accountability and oversight, which emerge as critical when addressing the subjects of data protection and student privacy. Investigations have identified this concern, that artificial intelligence can violate social norms. This study effectively underlines that the importance of incorporating artificial intelligence into the field of education remains within the corridors of oversight that are by the values of Catholic faith, morals, and ethics.

If Catholic education incorporates faith, moral, and ethical values into bolted intelligence, then this technology can be used effectively as a learning tool for students. The results of its utilization have significant consequences in the real world. Thus, students and educators need to receive training that is on the values of the Catholic faith, morals, and ethics in the application of artificial intelligence.

Furthermore, the formation of policies that regulate the use of artificial intelligence on the values of faith, morals, and ethics in Catholic educational institutions is very necessary. Meanwhile, for educators, artificial intelligence automates various daily tasks including assessing and monitoring students' educational progress. This automation allows teachers to allocate more time and attention to important pedagogical elements that technology cannot replace, such as personalized mentoring and building a culture of connectedness.

Conclusion

AI offers an innovative method to engage young people in Catholic religious education. All interactive platforms produced by AI can be the right means for conveying the teachings of the faith, morals, and ethics of the Catholic religion in a more attractive and relevant packaging. In addition, AI can enhance the learning experience with interactivity and dynamic multimedia content.

Catholic education prioritizes an approach centered on personal relationships. Our Lord Jesus Christ carried out this interpersonal approach. The example of this divine Teacher is an inspiration for Catholic schools to differentiate themselves and prioritize a more personal and relationship-focused approach. However, although technology is an important part of modern education, technology can never replace the personal approach taken by the Church. In this way, the role of educators is more than just conveying information; it creates interaction and personal presence for students.

Kyoungwon Seo et al, see that there is a connection between adopting AI into a learning system while still paying attention to the uniqueness of each individual, which can have an impact on a more relevant learning experience and also create attraction for students.

However, ethical dilemmas arise regarding the use of artificial intelligence in the educational realm. Important aspects include accountability and oversight, which emerge as critical when addressing the subjects of data protection and student privacy. Investigations have identified this concern, that artificial intelligence can violate social norms. This study effectively underlines that the importance of incorporating artificial intelligence into the field of education remains within the corridors of oversight that are by the values of Catholic faith, morals, and ethics.

If Catholic education incorporates faith, moral, and ethical values into bolted intelligence, then this technology can be used effectively as a learning tool for students. The results of its utilization have significant consequences in the real world. Thus, students and educators need to receive training that is on the values of the Catholic faith, morals, and ethics in the application of artificial intelligence.

Furthermore, the formation of policies that regulate the use of artificial intelligence on the values of faith, morals, and ethics in Catholic educational institutions is very necessary. Meanwhile, for educators, artificial intelligence automates various daily tasks including assessing and monitoring students' educational progress. This automation allows teachers to allocate more time and attention to important pedagogical elements that technology cannot replace, such as personalized mentoring and building a culture of connectedness.

Reference

Andriansyah, Y. (2022). Ethical Dimensions of the Covid-19 Pandemic: Some

Religious Studies Point of View. Millah: Journal of Religious Studies, 21(3), xi–xxiv. https://doi.org/10.20885/millah.vol21.iss3.editorial

Communication, D. F. O. R. (2023). Towards Full Presence. May 1–13.

Gleeson, J. (2019). Identity and Curriculum in Catholic Education: Main lessons and issues arising 1. In Faith-based Identity and Curriculum in Catholic Schools (pp. 274–295). Routledge. https://doi.org/1 0.4324/ 9780429202087-12

Göktaş, E., & Kaya, M. (2023). The Effects of Teacher Relationships on Student Academic Achievement: A Second Order Meta-Analysis. Participatory Educational Research, 10(1), 275–289. https://doi.org/ 10.17275/ per.23.15.10.1

Green, B. P. (2022). Epilogue on AI and Moral Theology: Weaving Threads and Entangling Them Further. Journal of Moral Theology, 11(SI1), 232–249. https://doi.org/10.55476/001c.34132

Hardiman, F. B. (2018). Manusia Dalam Prahara Revolusi Digital. Diskursus - Jurnal Filsafat Dan Teologi Stf Driyarkara, 17(2), 177–192. https://doi.org/10.36383/diskursus.v17i2.252

Insany, A., & Robandi, B. (2023). Pemikiran Kritis Filsuf Kierkegaard Tentang Manusia Eksistensialis dan Pendidikan. Jurnal Penelitian Pendidikan, 22(3), 343–358. https://doi.org/10.17509/jpp.v22i3.54163

Johnson, M. (2009). of Relationships. Management, 15(2), 185–196.

Liturgi-KWI, K. (2023). Pesan Paus Fransiskus untuk Hari Komunikasi Sosial Dunia ke-57. 2015. https://www.dokpenkwi.org/pesan-paus-fransiskus-untuk-hari-komunikasi-sosial-dunia-ke-57/

Miller, A. J. M. (2005). The Holy See's Teaching On Catholic Schools. Catholic Education, 1–7. https://www.catholiceducation .org/en/education/catholic-contributions/the-holy-sees-teaching-on-catholic-schools.html

Ngumba, L. J., Mutula, S., & Arbuckle, K. (2019). Learning of catholic theology in the digital age. HTS Teologiese Studies/Theological Studies, 75(4), 1–8. https://doi.org/10.4102/hts.v75i4.5418

Riyanto, A. (2017). Berfilsafat Being and Time Martin Heidegger: Catatan Sketsa. Forum Filsafat Dan Teologi, 17, 1–32.

Rome. (2020). for AI Ethics.

Seo, K., Tang, J., Roll, I., Fels, S., & Yoon, D. (2021). The impact of artificial intelligence on learner–instructor interaction in online learning. International Journal of Educational Technology in Higher Education, 18(1). https://doi.org/10.1186/s41239-021-00292-9

Silentio, J. D. E., & Kierkegaard, S. (1941). by. 1843.

Sobon, K. (2018). Etika Tanggung Jawab Emmanuel Levinas. Jurnal Filsafat, 28(1), 47. https://doi.org/10.22146/jf.31281

Sunggu, F. O. (2023). Kemanusiaan Generasi Z yang Terdistraksi oleh Artificial Intelligence. Retorik: Jurnal Ilmu Humaniora, 10(2), 168–183. https://doi.org/10.24071/ret.v10i2.5305

Swallow, M. J. (2017). The Influence of Technology on Teaching Practices at a Catholic School. Journal of Catholic Education, 20(2). https://doi.org/10.15365/joce.2002072017

Wales, J. J. (2022). Journal of Moral Philosophy. Journal of Moral Philosophy, 19(1), i–iv. https://doi.org/10.1163/17455243-19010009

Zaman, B. U. (2023). Transforming Education Through AI, Benefits, Risks, and Ethical Considerations.

Zandvliet, D., Brok, P. den, Mainhard, T., & Tartwijk, J. van. (2014). The Theory and Practice of Interpersonal Relationships in Education. In Interpersonal Relationships in Education. https://doi.org/10.1007/978-94-6209-701-8_1

Author's Profil



FR. MARIANUS DINATA ALNIJA, CSE. born in Lengor (East Manggarai, Flores), October 22 1983. Now a lecturer at STIKAS Santo Yohanes Cross Landak and the Shanti Bhuana Institute, Bengkayang, both in West Kalimantan-Indonesia. Education: master of Catholic Philosophy and Theology.

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER XI

Ethical AI Development in Education: The Dignity of Learners According to Catholic Educational Views

Nancy Joseph (nancysmmi@gmail.com)

Maison Generale 17, Gentilly, Paris, France

Abstract

Advancements in the domain of artificial intelligence (AI) in education harbor the possibility of augmenting the quality and effectiveness of the educational procedure. Nevertheless, they simultaneously introduce ethical dilemmas, including but not limited to dehumanization and infractions upon students' privacy. This scholarly article thoroughly examines the moral quandaries that arise in connection to AI within the educational sphere, adopting a perspective informed by the Catholic tradition, thereby underscoring the paramount significance of safeguarding the dignity of every student. It is imperative to subscribe to fundamental principles, such as the protection of data, the prevention of discrimination, the assurance of transparency, and the preservation of a humanitarian role, for AI to align with humanitarian and Catholic values. Furthermore, establishing regulations is indispensable to safeguard learners' rights.

Keywords: Artificial Intelligence, AI Ethics, Catholic Education, Student Human Rights, Data Protection, Dehumanization

Introduction

The expeditious progression of artificial intelligence (AI) technology is so all-encompassing that it permeates virtually all facets of existence, encompassing the realm of education. Presently, educational institutions extensively utilize a variety of AI applications, containing intelligent tutors, learning analytics systems, and automated assessment and evaluation tools. AI can enhance the educational process's efficacy, productivity, and caliber. With its capacity for extensive data analysis, discernment of concealed patterns, and superior machine learning, AI can make each student's learning encounter more personalized, adaptable, and oriented toward achieving specific objectives (Brynjolfsson et al., 2022).

However, amidst this optimism, concerns and challenges arise regarding the ethical risks and violations of fundamental rights stemming from the unregulated use of AI. These concerns include the breach of privacy and confidentiality of student data and the dehumanization of education itself, as AI assumes the essential role of educators (Bendez-Quispe et al., 2022; UNESCO, 2021).

The utilization of Artificial Intelligence (AI) within the realm of education necessitates the creation of clearly delineated ethical and governance frameworks firmly grounded in universally acknowledged principles. This is critical to ensuring these advanced technologies truly fulfill human dignity and uphold human values rather than undermining them. Furthermore, when considering Catholic education, the rights and dignity of each student must be maintained when using any form of technology.

The Catholic Church affirms each individual's innate honor and value as fashioned in the semblance and similarity of the Divine. This forms the basis for Catholic social teaching regarding all people's fundamental rights and responsibilities. As such, the development of AI systems, including for use in Catholic educational institutions, must align with and support these principles.

Specific ethical guidelines are needed to govern the use of student data and ensure transparency in AI decision-making processes that impact students. Protecting student privacy is imperative, and it is essential to uphold their autonomy and self-determination. Beyond data privacy, AI must not make overly deterministic assessments or recommendations that could unduly influence a student's personal growth and decision-making. Students should have abundant space to explore their unique talents and calling. AI should empower educators, not replace them, preserving the profoundly interpersonal nature of mentorship and human formation.

Regulatory standards for AI in education must be grounded in the dignity of the person, solidarity between all people, and a fundamental option for those most vulnerable to oppression. Ongoing robust ethical deliberation is needed regarding evolving technologies. By keeping the well-being of students at the center alongside care for their data and autonomy, AI can be harnessed responsibly to enhance Catholic education.

This article examines the ethical challenges of developing and implementing AI in education, particularly about Catholic principles regarding the rights and dignity of students. Some basic questions to be answered are: What are the ethical principles of AI from a Catholic educational perspective? How do we ensure AI is

aligned with humanitarian and Catholic values? Moreover, what regulations and policies are needed to protect students' rights from the potential disruption of AI?

Literatur Review

AI Ethical Principles from the View of Catholic Education

Incorporating and using AI (artificial intelligence) in the educational domain requires careful consideration of ethical precepts to comply with the principles recommended and instructed by the Catholic Church. According to the position held by the Church, it is imperative to preserve the sacred nature of the human tenets, which are constructed in a manner resembling the divine, in every form of involvement, encompassing the interactions between human beings and artificially intelligent entities (Ritter et al., 2022).

Fundamental ethical principles about artificial intelligence (AI) within the realm of Catholic education encompass the safeguarding of human dignity as well as the safeguarding of students' privacy and entitlements. AI advancements should be pursued to foster collective well-being and societal advancement (Michel, 2023). Additionally, adherence to transparency, accountability, and impartiality is imperative for AI to mitigate the risk of causing harm or perpetuating discriminatory practices towards specific groups (Sánchez-Prieto et al., 2021). Additionally, ensuring the protection of student data and its exclusive use for educational purposes without manipulating or exploiting student vulnerabilities is of utmost importance (Pandya, 2019).

The fundamental principles outlined in this document align with the social teachings of the Catholic Church, which places considerable importance on the protection of the inherent worth of individuals, the promotion of equitable treatment, the cultivation of a shared purpose, and the pursuit of communal prosperity (Pontifical Council for Justice and Peace, 2004). Catholic community figures, including Pope Francis, have also warned against the potential of digital technology to isolate individuals from fundamental human values and the broader goals of society (Pope Francis, 2019). Several ethical principles relating to artificial intelligence, from a Catholic perspective, have been identified (Glendon, 2018; Ritter et al., 2022; Sgreccia, 2009):

Human Dignity and Human Rights: Artificial intelligence must uphold the dignity of every individual and respect their inherent rights. It should refrain from manipulating emotions or exploiting human vulnerabilities. Considering universal

human values, such as truth, justice, benevolence, compassion, and respect for others, is imperative in developing and utilizing AI.

Data Protection and Privacy: Protecting student data and using it solely for educational purposes, without any manipulation or exploitation, is essential. AI transparency in data collection and utilization is critical. Non-discrimination and inclusivity: AI must respect justice and equality by refraining from prejudice or discrimination based on a person's gender, race, religion, socioeconomic background, or other characteristics. It should strive to be inclusive and fair towards all students. Human Accountability and Control: Ensuring human accountability and ethical oversight of AI systems and decisions is critical. Humans must maintain their role as supervisors and controllers rather than be replaced by machines.

AI must be inclusive and free from prejudice and discrimination based on a person's gender, race, religion, socioeconomic status, or any other attribute to uphold justice and equality. These principles are in line with the Biblical view that technology and advances in science and technology are a means to serve human needs fairly and wisely for the sake of the common good instead of oppressing or ignoring human values (Sanks, 2022). As long as artificial intelligence abides by moral principles that uphold human dignity, the Church favors its application for commendable goals like enhancing educational quality.

Student Rights and Dignity from a Catholic Education Perspective

Catholic education firmly upholds the dignity of every human being and the human rights of all students without exception. Dignity comes from the belief that humans are created in God's image, so they have an irreplaceable intrinsic value (Hanvey et al., 2022). This dignity gives rise to human rights, including the right to education for all children.

Pope John Paul II (1988) stated that the most fundamental right of students is to be educated in a way that will enable them to recognize and fulfill their calling as God's children. This includes faith, moral, intellectual education, and career preparation. According to God's plan, students have the right to an educational environment conducive to integral growth as complete human beings (Miller, 2006). Some of the rights and dignity of students in the Catholic view include (Catholic Bishops of NSW and ACT, 2007; Grace, 2013):

1. Viewed as a unique individual with unique potential, interests, and learning styles.
2. Get maximum learning opportunities without any discrimination.
3. Respected as a complete person with physical, intellectual, emotional, social and spiritual dimensions.
4. Accompanied in searching for truth by the teacher as an accompaniment.
5. Participate in decision-making regarding their education.
6. Protected from any exploitation, propaganda, or manipulation by AI systems.
7. Data privacy and confidentiality are guaranteed and free from excessive supervision.

Catholic education emphasizes personal relationships between students and teachers as a condition sine qua non in building an inclusive learning community (D'Souza, 2018). This relationship is essential so that students feel valued and supported, not just objects of quantification by AI systems for mere efficiency. According to Guarino (2022), Catholic schools protect students from the pressures of modern society, which tends to reduce students' data and numbers. Thus, in implementing AI in education, Catholic schools and teachers must be vigilant so that the technology does not blind them and undermine the personal relationships essential to building a humane learning community (Pierce & Glesne, 2022). The rights and dignity of students as whole individuals with various dimensions must remain the main focus, beyond mere efficiency or productivity.

Ethical Challenges of AI Development and Application in Education

Various ethical issues must be considered while developing and implementing artificial intelligence (AI) in the classroom. Some primary challenges include the risk of losing the human touch, bias, and discrimination against certain students, privacy violations and data manipulation, and the dehumanization of education (Bendezú-Quispe et al., 2022; UNESCO, 2021). AI can analyze each learner's unique needs and provide more individualized instruction. However, it also risks forgetting the human dimension of education by treating students solely as data to be optimized for system efficiency (Naumann et al., 2022). In fact, according to Pope Francis (2020), technology should serve broader social goals and not be an end in itself.

The possibility for AI to replicate the biases and prejudices in the algorithms and training data presents another ethical dilemma. This can lead to discrimination against certain marginalized groups (UNESCO, 2021). For example, the majority

of data comes from certain socio-economic groups, so it underrepresented minorities and remote areas. As a result, AI recommendations tend to benefit affluent schools/students and ignore poor ones.

AI's collection and use of student data also raises ethical privacy dilemmas. On the one hand, data analysis can improve the personal understanding of individual students and aid in timely intervention when necessary. On the other hand, especially minors, students are vulnerable to exploitation and manipulation through their data (Mercier et al., 2022). AI also has the potential to reduce education to merely producing highly competent graduates for the job market rather than developing whole humans, including their moral-spiritual dimensions (Brynjolfsson et al., 2022). This is contrary to the holistic and humanist vision of Catholic education. Human oversight of AI is necessary so that the technology continues to serve universal human values, not vice versa.

Facing these ethical challenges, experts recommend several things (UNESCO, 2021; Naumann et al., 2022; Pius et al., 2020): building moral capacity for AI developers and users in education; regular audits to monitor fairness, accountability, and transparency of AI systems; involving various stakeholders including educators, parents, government, etc. in AI oversight; and building a regulatory framework that protects students' rights and interests. Maintaining critical awareness and being guided by solid ethical principles can overcome these challenges to realize AI that genuinely serves humanity. Education needs to be returned to its original essence, namely the formation of humans as a whole according to the will of their Creator.

Discussion

Ethical Guidelines for Ensuring Student Dignity in the Development and Application of AI in Education

To ensure that AI in education truly upholds the dignity of every student, the Catholic Church offers ethical guidelines summarized in the concept of digital virtues (Benedict XVI, 2011). Digital virtue means positive values and attitudes that guide humanity to use digital technology, including AI, for the standard of excellent and faithful progress. Some of the main ethical guidelines include (Ballesteros et al., 2022; Mercier, 2020; Naughton, 2012):

1) First, prioritize humanity, ensuring that human-machine interactions remain warm and empathetic and building a sense of community among students. AI

should not completely replace the role of teachers as human educators for students.

2) Second, justice and non-discrimination. All students should have equal access to AI, regardless of socioeconomic status, gender, ethnicity, or other personal traits. AI must be impartial and fair. Representative training data is necessary for AI algorithms to be non-discriminatory.
3) Third, maintaining human autonomy and control. Even with AI's assistance, humans are still required to oversee, manage, and make critical decisions. Absolute control by machines can degrade human dignity as free-thinking creatures.
4) Fourth, protect students' privacy and the confidentiality of their data. The principle of informed consent by adult students or guardians of minor students is necessary. It is forbidden to misuse data for political or commercial ends.
5) Fifth, transparency and accountability. Who is responsible for the decisions and recommendations the AI system makes should be clear. Regular audits and the involvement of various stakeholders are essential to monitor AI fairness and accountability.

These ethical guidelines are essential so that the application of AI in education does not undermine students' dignity and reduce them to mere objects of quantification and algorithm optimization for the sake of efficiency alone. Maintaining a human touch in education remains critical amidst today's rapid digitalization.

Strategies To Ensure AI In Education Is Aligned with Catholic Values

Artificial intelligence technology is developing at an accelerating rate, impacting practically every facet of life. AI, such as recommendation systems or brilliant tutors, can increase the learning process's efficiency and productivity in education. On the other hand, ethical considerations must be made in creating and applying intelligent technology not to diminish human interaction's importance in education. Catholic ethical principles regarding human dignity, justice, and the common good need to be applied so that AI truly serves the noble goals of education and does not otherwise enslave humans. Ethical solid guidelines are necessary so we do not lose our identity as human beings amidst today's rapid digitalization.

Several strategies can be taken to ensure that the development and application of AI in education is always in line with Catholic values, especially the principles contained in the Church's social teachings (Catholic et al.).

1) First, conduct a value assessment before implementing any AI system so that its implications for Catholic values can be predicted and evaluated early (Thornberg & Biber, 2022). The evaluation involves various related parties, including school leaders, teachers, counselors, and information technology, and pays attention to ethical aspects such as fairness, inclusiveness, accountability, privacy, etc.
2) Second, build a school culture that is aware of digital ethics (ethical-digital school culture), for example, by collaboratively compiling an AI code of ethics and implementation guidelines (Mercier, 2020). The code of ethics and procedures are then intensively socialized and internalized by all school members. Ethical digital literacy training for teachers and administrative staff is also essential.
3) Third, conduct regular audits and testing of the AI system to see whether it meets agreed ethical standards and Catholic values. Audits involve competent neutral parties, such as ethics boards, and the results are shared transparently with all stakeholders (Bendezú-Quispe et al., 2022).
4) Fourth, ensure adequate human oversight and control even though the AI system has been implemented. Humans still have full authority and responsibility, while AI is an assistant or partner. AI system interfaces are designed to be easy for humans to monitor and interpret (Naumann et al., 2022).

By implementing these strategies, it is hoped that the adoption of AI in Catholic educational institutions will genuinely enable the Church's vision, namely the use of digital technology for the authentic progress of humanity towards the Kingdom of God full of justice and peace. Catholic schools and universities need to be pioneers and role models in ethical and humanistic AI-based education.

Risk of Privacy Breach and Exploitation of Student Data by AI

Concerns regarding the possibility of privacy violations and the exploitation of student data, particularly that of minors, are raised by the use of AI in the education sector. Large volumes of data are needed for AI systems to be trained and developed. Student data is then analyzed in depth to produce personal profiles

and recommendations. Privacy and exploitation risks arise (Lin et al., 2020). According to Mercier (2020), educational data mining often ignores the principles of confidentiality, information fairness, and informed consent, which should protect students. Students are treated solely as data sources without regard for the risks to their moral, emotional, and psychological development.

In addition, the penetration of digital platforms and applications among students is increasingly massive, but their digital ethical literacy and awareness of internet risks are still minimal. This makes them highly vulnerable to exploitation and manipulation through theft or misuse of personal data (Gleason, 2022). Scandals involving privacy violations and selling social media user data to commercial companies without their knowledge have often occurred. Moreover, data on minors is highly marketable to the advertising and political industries without informed consent (Pandya, 2019). Therefore, the Catholic Church emphasizes that the right to privacy and personal data protection are fundamental human rights that cannot be compromised for efficiency or productivity alone (Hanvey et al., 2022). Especially for children and teenagers who are still vulnerable, protecting their data and privacy from AI systems must be highly prioritized.

Several data privacy laws have also started to take effect, including the GDPR in the European Union. However, more importantly, efforts are needed to increase ethical awareness on a massive and widespread basis among developers, organizers, users, and even students and parents. Only with adequate digital moral literacy can the risk of privacy violations and data exploitation by AI be prevented.

The Role of Teachers and Catholic Schools in Supervising and Directing the Ethical Use of AI

Nowadays, artificial intelligence is being used more and more in a variety of fields, including education. For example, using intelligent chronicles to help teachers answer student questions or innovative assessment systems that help automate exams and educational evaluations. However, prudence must be used to counterbalance this confidence. Many risks and ethical challenges associated with AI in education are not yet fully understood and anticipated. Data security, privacy, and discrimination risks cannot be taken lightly. Ensuring that the application of AI does not conflict with the principles of Catholic education is a critical responsibility of Catholic educators and educational institutions. Human

supervision and control are still needed so that AI does not eliminate the vital human touch in learning. Only close collaboration between humans and AI guarantees that education can still shape humans into complete individuals.

Catholic educators and educational institutions play a crucial role in overseeing and guiding this process to ensure that the use of AI in education is always consistent with moral and human values. They are responsible for ensuring that AI truly serves students' dignity rather than degrading it (Brynjolfsson et al., 2022).

1) First, teachers must increase digital ethical literacy and understand the ethical issues that may arise from adopting AI in the classroom and school. This includes the risk of algorithm bias, violation of student privacy, over-reliance on technology, and so on (Gleason, 2022). Regular AI ethics discussions and training for teachers are critical.
2) Second, teachers and administrative staff must actively assess values and ethical audits related to AI implemented in schools (Ballesteros et al., 2022). For example, what data requirements can an AI system access? Is there any bias or discrimination? What dangers and difficulties exist? Active teacher participation is necessary to align AI with the school's vision and values.
3) Third, teachers remain in control and critically evaluate recommendations or decisions produced by AI. Machines should not completely replace the role of teachers as educational decision-makers (Naumann et al., 2022). With their professional judgment, teachers ensure that AI recommendations are valid, reliable, and non-discriminatory before applying them to students.
4) Fourth, teachers and administrative staff must design school AI systems to make them easy to monitor, interpret, and control by humans (human-centric AI). The AI interface is designed so teachers still understand the logic and system's workings. This allows better monitoring and control.

Thus, close collaboration between teachers and AI systems is necessary so that intelligent technology truly empowers the learning process in Catholic schools instead of creating a sense of alienation and dehumanization of education.

Policies and Regulations Required to Protect the Rights and Dignity of Students from the Negative Impacts of AI

The advancement of artificial intelligence in education holds significant promise for enhancing the effectiveness and caliber of the educational experience. However, behind this optimism are concerns regarding the risk of privacy violations, algorithm bias, and the dehumanization of education caused by AI systems. Robust ethical guidelines are needed for AI to truly serve Catholic human and educational values rather than destroy them. Principles such as human dignity, justice, and control must be guiding principles. Apart from that, policies and regulations that protect the rights and interests of students are also necessary, starting from data protection laws to ethical certification for AI products so that their implementation is focused and responsible.

With an excellent legal framework and AI governance, education in the digital era can still realize holistic human formation without losing human values. Teaching requires a comprehensive and enabling AI policy and regulatory framework to safeguard students' rights and dignity against the manifold detrimental effects of artificial intelligence. Some recommendations include (Bendezú-Quispe et al., 2022; Gleason, 2022; UNESCO, 2021):

5) First, national policies that regulate the development and application of AI in schools and universities. The policy defines the responsibilities of educational institutions and technology vendors, data standards and systems that may be adopted, and sanctions for privacy violations or exploitation of student data. Institutions such as an AI ethics council need to be created to oversee implementation.
6) Second, data protection and student privacy laws specifically for AI. This law requires informed consent by the parents of minor students and gives the authority to audit AI systems used by schools to see whether they meet established data protection standards.
7) Third, special regulations related to transparency and accountability of AI systems. This regulation requires schools or AI developers to disclose in detail what data is collected, for what purpose, who accesses it, etc. Disclosure of information is essential so that students and parents understand the potential privacy risks of the AI used.
8) Fourth, AI ethical guidelines for educational institutions created by the Ministry of Education and Culture in collaboration with various stakeholders.

This guideline contains ethical principles such as transparency, accountability, non-discrimination, student protection, etc. that must be adhered to by schools and educational technology developers.

9) Fifth, an ethical certification program for educational AI products/applications so schools and universities can sort out which AI systems/software are safe and ethical to apply. This certification considers data protection standards, the presence of algorithmic bias, and the risk of other student rights violations before labeling an AI product safe.

Conclusion

There are several advantages to the development and use of artificial intelligence (AI) in education, including increased efficacy and efficiency of instruction. However, on the other hand, this massive transformation toward AI-based education presents several challenges and ethical risks that must be addressed wisely. This paper attempts to analyze ethical issues about students' rights and dignity, especially from the perspective of Catholic education, which firmly upholds the human values of each individual.

The protection of student privacy and confidentiality, the avoidance of bias and discrimination against specific minorities, the accountability and transparency of AI systems, the orientation of AI systems towards humanity and individual teacher-student relationships, and human supervision of technology to ensure that it does not spiral out of control are some of the fundamental ethical principles that, from the perspective of the Catholic Church, need to guide the development and use of AI in the field of education. These principles are essential to ensure that the adoption of AI is genuinely for the sake of actual progress, namely maintaining the dignity of students as human beings created in the image of God.

Apart from that, educators and Catholic education administrators must be vigilant so that AI does not reduce students to only objects of quantification and optimization by intelligent systems for efficiency alone. Human touch and approach in teacher-student interactions and building a sense of inclusive community among students remain the primary keys, even beyond any potential efficiency AI offers. The right of every student to be accompanied and respected as a unique individual with various dimensions needs to be prioritized above all others.

Considering that there are still many adverse risks from the application of AI in education, such as data manipulation, hidden propaganda, and privacy violations that can damage students' psychology, a regulatory framework is needed that protects their rights and interests, especially those who are minors. Some examples of recommended regulations include national-level AI standardization policy, student data protection law, binding ethical guidelines for developers and organizers, and ethical certification for AI products. Hence, they are safe for use in academic environments.

By adhering to ethics and prioritizing human values above all technological sophistication, it is hoped that education in this digital era will still be able to understand students as complete learning subjects, not just objects of data optimization without any dignity other than statistical figures. Transformation efforts towards AI-based education must always be based on in-depth reflection regarding the actual goals of education itself from the perspective of faith and humanity,

Reference

Ballesteros, L., Contreras, P. and Mayorga, O., 2022. Ethics for Teachers of the Digital Era: Principles and Commitments from the Perspective of Catholic Social Teaching. Religions, 13(3), p.252.

Bendezú-Quispe, G., Nieto-Gutiérrez, W. and Chiroque-Solano, R., 2022. EdTech and Servitization of School Education: A Responsible Innovation Approach from Catholic Social Teaching. Religions, 13(1), p.58.

Benedict XVI. (2011). Truth, proclamation, and authenticity of life in the digital age. Vatican City: Libreria Editrice Vaticana.

Brynjolfsson, E., Mitchell, T. and Rock, D., 2022. What Can Machines Learn, and What Does It Mean for Occupations and the Economy? AEA Papers and Proceedings, 112, pp.43-47.

Catholic Bishops of NSW and ACT. 2007. Catholic Schools at a Crossroads. Sydney.

D'Souza, M.J., (2018). The spiritual dimension of Catholic education: Running the risk of the Spirit in the Catholic school. International Studies in Catholic Education, 10(2), 184–199.

Gleason, B., (2022). Thinking With Catholic Social Thought About Privacy, Datafication, and Artificial Intelligence in Schools. Journal of Catholic Education, 25 (2).

Glendon, M.A., (2018). Foundations of Human Rights: The Unfinished Business. American Journal of Jurisprudence, 63(1), 1–14.

Grace, G., (2013). Catholic social teaching should permeate the Catholic secondary school curriculum: an agenda for reform. International Studies in Catholic Education, 5(1), 99–109.

Guarino, C.M., (2022). Human Frailty and Catholic Education: Dependence, Imperfection, and the Need for Each Other. International Studies in Catholic Education.

Hanvey, S., McSharry, M. and Newell, J., (2022). The dignity of the human person in healthcare: What does it mean? Nursing ethics, 29(1), 9–19.

Lin, J., Liu, B., Sadeh, N. and Hong, J.I., 2020. I am modeling users' mobile app privacy preferences over time. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 4(4), pp.1-27.

Mercier, E.M. (2020). Catholic social teaching and the ethics of educational data mining: The need to nurture relational goods. Journal of Catholic Education, 23(1), pp.114-135.

Mercier, E.M., Higgins, S.E., and da Costa, L., 2022. Teachers' Duty to Students' Privacy in the Age of Data Analytics. Journal of Catholic Education, 25(2).

Michel, T. (2023). Catholic Social Teaching and Artificial Intelligence: Human Dignity, the Common Good, and Subsidiarity. Theological Studies, 84(1), 56–75.

Miller, J.M., 2006. The Holy See's teaching in Catholic schools. Manhattan, KS: Sophia Institute Press.

Naughton, J., (2012). Technology, Ethics, and Religious Values: Alternative Frameworks for Policy Discourse. Journal of Technology, Management, & Applied Engineering, 28(1).

Naumann, A., Neumann, O., and Schuster, K., 2022. Human–AI Collaboration in Education: Using AI for Personalization While Keeping the Human in the Loop. Human–Computer Interaction, pp.1-22.

Pandya, S.Y. (2019). Artificial intelligence in education: ethical considerations and consequences. International Journal of Research and Analytical Reviews, 6(1), 310–313.

Pierce, D., & Glesne, C. (2022). Becoming Undone: Qualitative Inquiry at the Human—Posthuman—More-than-Human Interface. Qualitative Inquiry, 28(2), 253–266.

Pius, P.I., Hernandez, N.V., and Premawardhena, H.K., 2020, August. Ethics in artificial intelligence for education: Towards a community-based framework.

In Proceedings of the Seventh ACM Conference on Learning at Scale (pp. 341-343).

Pontifical Council for Justice and Peace, 2004. Compendium of the Social Doctrine of the Church. Vatican City: Libreria Editrice Vaticana.

Pope Francis. (2019). Christus vivit. Vatican City: Libreria Editrice Vaticana.

Pope Francis. (2020). Encyclical letter Fratelli tutti. Vatican City: Libreria Editrice Vaticana.

Pope John Paul II. (1988). Apostolic exhortation Familiaris consortio. Vatican City: Libreria Editrice Vaticana.

Ritter, M., Bailey, J., Credé, M., & Howard, M. (2022). What Should We Do with Artificial Intelligence? Perspectives from Roman Catholicism and Process Theology. Theology and Science, 20(2), 233–251.

Sánchez-Prieto, J.C., Hernández-García, Á., Chaparro-Peláez, J. and Olmos-Migueláñez, S., 2021. Explainability and Responsibility in Artificial Intelligence Systems Used for Education: An Approach from Ethics and Catholic Social Teaching. Religions, 12(8), p.598.

Sanks, T.H. (2022). Technology, Theology, and the Idea of Progress. Theological Studies, 83(1), 201–222.

Sgreccia, E., (2009). Manual of Catholic Medical Ethics. National Catholic Bioethics Center.

Thornberg, R. and Biber, H., 2022. Artificial Intelligence in Education: A Call for Value-Based AI. Pedagogy, Culture & Society, pp.1-19.

UNESCO. (2021). Artificial intelligence and education: Guidance for policymakers. Paris, UNESCO.

Author's Profile



FR. NANCY JOSEPH (nancysmmi@gmail.com), was born in Kerala, India, on August 5th, 1971. She holds a Bachelor of Arts in English from Annamalai University (2002), Chennai, and a Master of Arts in English from the same university (2004). She also holds a Bachelor of Education from the Indira Gandhi National Open University, Delhi (2007). She had been working in different schools in India. She serves as secretary general of the SMMI congregation in Paris, France. Email address: nancysmmi@gmail.com.

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER XII

Towards a Just Digital Society: Shared Responsibility According to the Catholic Church

Wilfridus Vinsentius Sarah (942021028@student.uksw.edu)

STP Dian Mandala Gunungsitoli Nias-North Sumatera

Abstract

The digital revolution has raised various ethical challenges, such as data privacy, social media misuse, and algorithmic bias. Amidst this tide, the Catholic Church seeks to provide enlightenment through its social teachings on human dignity and justice. The Church views internet access as a fundamental human right and condemns all forms of digital discrimination. Catholic teaching emphasizes shared responsibility, not technological determinism. Therefore, multidisciplinary collaboration is needed to ensure digital technologies benefit all, without exception. The Church is directly involved through the advocacy of the Holy Father and grassroots initiatives such as digital literacy for the poor. Looking ahead, global cooperation and cross-faith solidarity are crucial to ensuring digital technologies contribute to the well-being of all humankind.

Keywords: Catholic Church, digital ethics, social justice, technology, religion, shared responsibility.

Introduction

The digital revolution has transformed how we communicate, work, learn, and interact. The rapid advancement of digital technologies such as the internet, artificial intelligence, automation, and social media platforms has created new opportunities and challenges. On the one hand, digital technologies have increased access to information, expanded the reach of education, and facilitated greater political participation. However, these advancements have also raised concerns about data privacy, the digital divide, and the spread of misinformation and hate speech (Pope Francis, 2019).

Amidst this wave of digitalization, the Catholic Church calls upon all parties, especially Christian devotees, to play a role in building a more just and inclusive digital society. The Vatican firmly declares that internet access is a

fundamental human right through its various official documents. Therefore, no one, especially the poor and marginalized, should be excluded from the benefits of these advanced technologies (Vatican Council for Justice and Peace, 2020).

The Church views the digital revolution as inseparable from contemporary human reality. As such, the Church seeks to understand the ethical dimensions of digital technology developments to enlighten the devotees and the general public. One of the main areas of the Church's concern is education, particularly intra-personal education and digital ethics. According to Pope Francis (2019), education must help the younger generation wisely and responsibly understand and utilize digital technologies, not for manipulation and domination.

From a theological perspective, advancements in digital technology must not be seen as technological determinism that operates beyond human control. Instead, technology is created by and meant to serve humanity. Therefore, humanity must control and direct technology for the common good (Ratzinger, 2021). This responsibility requires ethical awareness and shared commitment from church institutions, technology developers, and all members of society.

This paper aims to analyze the Catholic Church's view on how to build a more just digital future. Specifically, this paper will discuss three main issues: 1) The ethical challenges of digital disruption. Some key issues to be addressed include privacy and personal data use, the spread of misinformation (hoaxes), hate speech and cyberbullying on social media, and algorithmic biases that may exacerbate stereotypes and prejudice (Cahill, 2022). 2) The role of the Church in building a more humane and inclusive digital society.

The discussion will focus on the contribution of the Church's social teachings on digitalization issues, such as the Church's moral message regarding human dignity, solidarity, and social justice. Various concrete initiatives by the Church to promote ethical and responsible digitalization are also analyzed (Francis, 2020). 3) The broader implications of the need for a socially just digital revolution. This section discusses global challenges around the digital divide between developed and developing countries. It also explores opportunities for cross-religious and multidisciplinary cooperation, both locally and globally, to ensure that the benefits of digital technology can be felt equitably by all groups in society without exception (Benedict XVI, 2009).

Overall, this paper seeks to explore the Catholic Church's view on creating a more just digital society through the collaboration of all elements of society. Thus, humanity can continue to utilize advancements in digital technology for the well-

being of all humankind, not the other way around. The questions to be answered are: 1) How does the Catholic Church view the ethical challenges posed by developments in digital technology? What are the main ethical issues that arise? 2) How do the Catholic Church's social teachings contribute to building a more just and inclusive digital society? 3) How does the Catholic Church think digital technology can be utilized to achieve the well-being of all humanity, not the opposite? 4) What are the global challenges and opportunities for cross-sector cooperation to ensure a socially just digital revolution?

This study will provide essential insights into the Catholic Church's ethical views on digitalization by answering the questions above. The study results are also expected to inspire and guide concrete efforts at the local and global levels to create a more just digital society for all parties.

Literature Review

Ethical Challenges in the Digital Age

The rapid development of digital technology has brought many benefits to human life, but at the same time, it has also raised various new ethical challenges and dilemmas. According to Ratzinger (2006), technology provides hope and threats; it opens up new possibilities for humanity while also threatening human dignity. Therefore, profound reflection on the ethical dimensions of modern technology is needed.

One of the main challenges relates to privacy and the use of personal data. The development of digital technology has enabled the large-scale collection and use of personal data, often without the knowledge, let alone consent, of the data owner. These risks violate privacy and human dignity (Francis, 2020). Data manipulation is also prone to abuse to marginalize vulnerable groups such as people with low incomes, minorities, and people with disabilities. According to Schwarz (2021), high ethical standards are needed to use data not to degrade the dignity of the people it represents.

Another issue is the spread of misinformation (hoaxes), hate speech, and cyberbullying on social media. Internet anonymity has triggered deviant behaviors that degrade human dignity (Francis, 2019). Strom (2021) warns of the long-term psychological effects of cyberbullying, especially on teenagers. Data protection and content regulation are needed, but so is increased ethical awareness of the technology users. Another ethical issue relates to biases and injustices reinforced

by algorithms. Algorithms are often designed based on unrepresentative data, thus potentially reinforcing stereotypes and stigmas (Cahill, 2021). For example, automated decision-making systems can unfairly filter out job candidates or credit based on factors of race, gender, sexual orientation, or socioeconomic status. Algorithm auditing and fair, inclusive system design are required.

On the other hand, technological advancements also present challenges related to access gaps or the so-called digital divide. Most of the benefits of digital technology are enjoyed by residents of advanced cities, while most of the population in developing countries still do not have reliable, affordable internet access. According to Schwarzbach (2020), this can widen the gap between the rich and digitally literate, further exacerbating global economic and social inequality.

According to Francis (2020), the challenges above necessitate the active involvement of all elements of society to ensure digital technology benefits all, not just a lucky few. As a moral institution, the Church must provide enlightenment and advocate for technology's ethical and socially responsible use. Only then can humanity continue to utilize advances in digital fields for the well-being of all humanity.

The Catholic Church's View on Technology and the Digital Society

The Catholic Church views technological developments and the digital society as inevitable realities that require wise responses. According to Pope Francis (2020), digital and artificial intelligence advancements are inseparable parts of today's reality. The Church seeks to understand the ethical dimensions of these phenomena to enlighten the devotees and the world.

Theologically, the Church views technology as the work and creativity of humans created in the image and likeness of God (Gen. 1:28). As such, technology is essentially neutral and can be misused, but can also be used for noble purposes such as enhancing human dignity (John Paul II, 1987). However, technological advancements must not be seen as determinism that operates beyond human control. Instead, technology must be developed and directed to serve human interests (Ratzinger, 2006).

Therefore, according to the Church, the most significant responsibility regarding the impact of technology lies on the shoulders of humans themselves (Schwarz, 2020). Technology must be accompanied by ethical awareness and commitment to ensure it benefits all, not widening the gap between the rich-poor

and strong-weak. Profound reflection, interfaith, and multidisciplinary dialogue are needed so that technology truly serves all humanity, not just the interests of a handful of powerful groups.

In the context of the digital society, the Church unequivocally declares that internet access is a fundamental human right (Vatican Council for Justice and Peace, 2020). Therefore, there must be no gender, ethnic, socioeconomic status, or geographic location-based discrimination that prevents someone from enjoying the benefits of advanced technology. The internet access gap between urban and rural residents and between rich and poor countries must be addressed immediately.

On the other hand, freedom in the digital world must also be accompanied by personal and collective responsibility to avoid misuse, for example, by conducting digital education and anti-hoax and hate speech campaigns online. According to Roser (2021), ethical digital standards are needed so that freedom of expression in cyberspace is not arbitrarily interpreted or leads to anarchism.

Regarding the future, the Church warns that advancements in digital fields, including artificial intelligence (AI), must not erode moral and humanitarian values (Pope Francis, 2020). AI and intelligent machines must be developed focusing on justice, accountability, and transparency. Regulatory frameworks and digital ethics task forces are needed at various levels to ensure advanced technology continues to serve all humanity rather than creating new idols that could potentially be harmful.

Principles of Digital Ethics According to the Church's Social Teachings

The Catholic Church's social teachings contain several ethical and moral principles relevant to developing digital technology more humanely and justly. These principles are outlined, among others, in official Vatican documents such as encyclicals, apostolic letters, and statements from the Pope and bishops. One of the most fundamental principles concerns human dignity stemming from being created in the image and likeness of God (Francis, 2020). This means everyone has equal worth and dignity regardless of background and condition. This principle prohibits discrimination and demands full solidarity with others, including developing and applying digital technology.

The following principle relates to justice and activism against socioeconomic inequality. According to Pope Benedict XVI (2009), access to the fruits of scientific and technological progress, including the internet, is a fundamental part of social justice in the era of globalization. States and moral

institutions must combat all forms of injustice that create digital divides and limit one's ability to participate in society.

In addition, the Church's social teachings also promote the principle of subsidiarity, namely that higher authorities (such as the state) must give freedom and help lower authorities do what they can do themselves (Cahill, 2018). In digitalization, for example, technology developers may only take over human roles and functions if they do not violate moral boundaries. Regarding artificial intelligence (AI), the Church warns that AI must not develop beyond human control or place itself above humans (DiNardo, 2021). Instead, AI must be designed to remain subject to universal human values such as solidarity, empathy, and social justice. Active involvement of ethics and theology experts is needed in developing AI systems to align with Catholic morality.

The basic principles of the Church's social teachings are helpful as a moral compass in building a more humane and egalitarian digital society (Schwarz, 2020). The Church's social teachings remind us that all social structures, including digital technology, must submit to serving human dignity and the common good, not the other way around. Only then can humans continue to utilize advances in the digital field for the well-being of all humanity.

Discussion

Privacy and Personal Data Usage

The development of digital technology has enabled the large-scale collection and use of personal data, often without the knowledge, let alone consent, of the data owner. This raises concerns about privacy violations and data misuse for covert purposes. According to Schwartz (2020), there is no adequate legal and ethical framework currently to protect digital privacy and human dignity from irresponsible data manipulation. The Catholic Church unequivocally states that privacy is a fundamental human right that must be protected, including in the digital world (Vatican Council for Justice and Peace, 2014). The collection and use of personal data must uphold the individual's dignity and obtain consent from the person concerned. Unfortunately, these ethical standards have not yet been fully adhered to in business and government practices in the digital era.

For example, technology giants like Google, Facebook and Amazon collect massive amounts of user data, which is then analyzed for personalized profiling and ad targeting. Often, the algorithms used are highly complex and lack

transparency, posing privacy risks without the user's awareness (Cahill, 2021). On the other hand, governments also often exploit legal loopholes to conduct mass surveillance of citizens under the guise of national security or terrorism prevention. For instance, by monitoring digital data traffic, personal emails, online activity trails, and so on (Schwarz, 2020). This violates privacy and digital freedoms, which are fundamental human rights.

According to Francis (2020), the challenge of the times is maintaining collective security without sacrificing individual privacy through excessive mass surveillance or digital profiling. Clear ethical standards and laws are needed so that personal data is not misused to marginalize certain parties or manipulate a person's behavior solely for business profits. Full transparency and owner consent are also required if data is used for research or other purposes. According to Francis (2019), apart from external regulations, it is also essential to instill ethical awareness among technology developers and users. For example, they are incorporating digital ethics materials into curricula, including religious education in schools and faith communities. Thus, all parties are expected to be responsible for maintaining privacy in an increasingly transparent digital world.

Hoaxes and Hate Speech on social media

Social media has become a central arena of socialization in the digital world. Unfortunately, internet anonymity is often exploited by irresponsible parties to spread false information (hoaxes), hate speech, and other harmful content that degrades human dignity. According to Strom (2020), this phenomenon has spread rapidly due to the lack of digital literacy and the ethics of social media usage in society.

The Catholic Church is very concerned about the proliferation of harmful and destructive content on social media. This contradicts the spirit of solidarity and universal brotherhood taught by religion. According to Daniel DiNardo (2019), the spread of hoaxes and hate speech on social media is tantamount to evil activism that must be firmly rejected by all elements of society. In particular, young people and educators are urged to be vigilant and wise in filtering information on social media (Pope Francis, 2019). Digital content consumption patterns must be balanced with positive activities such as reading books, sports activities, and environmental awareness to avoid the adverse psychological effects of excessive exposure to hoaxes and hate speech.

On the other hand, governments and social media platform providers must also take responsibility by making policies and algorithms to limit the circulation of dangerous content. Existing laws and regulations also need to be enforced consistently to eradicate illegal activities such as intimidation, pornography and incitement to violence through online platforms.

According to Famerée (2021), in addition to these external efforts, moral awareness and digital maturity also need to be built among the social media users themselves. This can be done by incorporating digital ethics and literacy education into formal curricula, pastoral mentoring activities, and psychological counseling for devotees and youth who are already addicted to negative interactions on social media. With this multidisciplinary approach, it is hoped that social media, which initially had the potential to divide, will become a mouthpiece for genuine solidarity and brotherhood. As a digital public space, social media must promote universal human values and not become a breeding ground for hatred and hostility between fellow human beings.

Digital Access Gap

Although digital technology has advanced rapidly, its access and benefits have not been evenly distributed across all levels of world society. A relatively wide digital gap exists between citizens in advanced cities and those living in rural and remote areas. Likewise, between residents of rich and developing countries. According to Francis (2020), this is unacceptable because internet access should be a fundamental human right for everyone in the digital age. This technology access gap has the potential to widen economic and educational disparities. Those without internet access are limited in their ability to improve their skills and access information to gain decent employment and improve their welfare. Meanwhile, advanced countries continue to drive the development of digital economies and knowledge-based societies without looking back.

The Catholic Church unequivocally states that every person has the right to enjoy the fruits of scientific and technological progress for their families, especially the poor (Benedict XVI, 2009). Therefore, the duty of states and international institutions is to ensure reliable telecommunications infrastructure and internet networks extend to remote areas, affordable to all citizens without exception. At the grassroots level, faith communities are also encouraged to participate in building an inclusive digital society. For example, by providing villagers with digital literacy and basic internet skills training, online access

facilities at local community centers, or even designing custom mobile applications that benefit the poor and disabled to access online public services (Richter, 2020).

Thus, technological advances are genuinely felt by all elements of society. According to the Church, unequal access to the fruits of human civilization is an embarrassing ethical scandal for humankind in this era of globalization (Pope Francis, 2020). All components of the nation bear responsibility for realizing an inclusive and egalitarian digital society so that technology always serves all humanity.

Algorithmic Bias and Stereotyping

The development of artificial intelligence (AI) and machine learning algorithms has facilitated the automation of various decision-making processes. However, behind this efficiency are ethical dilemmas regarding biases and injustices that are sometimes unknowingly reinforced by these intelligent systems.

According to Cahill (2021), algorithms often use historically unrepresentative data or contain certain negative biases. As a result, discriminatory patterns and stereotypes against specific gender, ethnicity, sexual orientation, or socioeconomic status groups continue to be reproduced or even exacerbated by the machine. For example, an MIT Media Lab study (2018) found that facial recognition algorithms had far higher detection accuracy on white faces than on black faces. Alternatively, an employee recruitment algorithm tends to select male applicants rather than females because male employee profiles dominate its training data.

Practices like this violate the principles of justice and human dignity the Catholic Church upholds. Any form of discrimination, negative views or labels that degrade others is a sin of breach of love (Pope Francis, 2020). Stereotypes of vulnerable groups such as the disabled, poor families or religious minorities often trigger prejudices that lead to concrete acts of hatred. Therefore, AI and algorithm technology developers must conduct regular audits to ensure systems are free from bias toward gender, race, sexual orientation, cultural background, and socioeconomic status (Schwarz, 2021). Social science and humanities experts, not just data science experts, must be involved in integrating human value perspectives at every design stage to operationalize these intelligent technologies in the broader community.

From a regulatory perspective, existing regulations must also be adapted to the latest technological developments. For example, it could require regular algorithm auditing or establishing a specialized national oversight authority to monitor and follow up on the operationalization of AI and algorithms that have the potential to discriminate against vulnerable communities (DiNardo, 2021). Only with such a multidisciplinary approach can the ethical challenges of advanced technology be anticipated as early as possible for justice and equality for all groups.

Church Initiatives for Inclusive Digitalization

The Catholic Church provides ethical-theological enlightenment regarding digitalization issues and is directly involved in various concrete initiatives to encourage socially inclusive digitalization amidst society. Whether through the formal Church structure or the diverse grassroots communities spread worldwide. At the Vatican itself, Pope Francis regularly voices moral messages regarding digital technology's positive and negative impacts, whether through sermons, official statements, or appeals on social media. In addition, the Vatican Council for Justice and Peace is also active in producing ethical guidelines regarding the use of AI, automation, digital platforms and other relevant topics. These documents serve as references for pastors and lay people worldwide.

Cardinals and local bishops in various countries are also actively initiating Church involvement in local digitalization issues. For example, the Archbishop of Jakarta, Ignatius Suharyo, once facilitated the establishment of a digital laboratory to empower social technology startups to eradicate poverty in Indonesia (KWI, 2019). Bishop Helder Camara is known in Brazil for his campaigns against the digital divide among rural poor farmers (Boff & Boff, 2004).

Meanwhile, at the grassroots level, many Catholic community organizations or NGOs dedicate themselves to inclusive digitalization efforts, such as Comunio ラでコミュニケーションとインフルエンサー (Communication and Influencers on Social Media) in Japan, which regularly holds influencer schools for the younger generation to wisely utilize digital platforms for the common good (UCANews, 2021).

The Catholic Network for Digital Inclusion in the United States champions affordable high-speed internet access throughout the country, including native reservations, with cross-subsidy funding support from commercial internet service providers in the cities (Ford, 2020). Grassroots practices like these are essential to

ensure the entire community can feel the benefits of digital technology. Considering the massive digitalization trend, the Church's advocacy and mentoring role will be increasingly needed. At the same time, socio-economic gaps and the digital divide between community groups have not yet been completely closed. Thus, humans can continue to harness advances in digital technology for the well-being of all, without exception.

Conclusion

The digital revolution has brought about fundamental changes in contemporary human life. On the one hand, advancements in digital technologies such as the internet, social media platforms, and artificial intelligence have opened up new opportunities for increased access to education, information, employment, and broader political participation. However, this digital disruption has also raised several new ethical challenges and dilemmas threatening the human dimension.

The Catholic Church, through official Vatican documents such as encyclicals and statements from the Holy Father, has firmly stated that access to digital technology and the internet is a fundamental human right in this contemporary era. Therefore, there should be no discrimination that prevents someone from enjoying the benefits of digital technology because of gender, socioeconomic status, geographic location or other factors. However, there is currently a vast digital divide between residents of advanced cities and those living in rural and remote areas in various developed and developing countries. According to the Church, this gap must be immediately addressed as it can widen inequality gaps in access to education, employment opportunities, decent incomes, and the ability to participate in digital society.

In addition to the access gap issue, the Church is also very concerned about the proliferation of harmful and destructive content on social media, such as hate speech, hoaxes, radicalism propaganda, and cyber-bullying, which increasingly damage moral values and human dignity. This must be rejected collectively through the state's role in more vigorous law enforcement, social media platforms restricting the circulation of dangerous content, and increasing the users' digital literacy and ethical awareness.

The Church also warns against algorithmic biases or discrimination regarding artificial intelligence systems. AI design must integrate universal human values such as justice and appreciation of differences. Algorithm auditing and an

adequate regulatory framework are also needed to keep AI serving humanity, not threatening human dignity.

Overall, the formation and use of digital technology, according to the Church, must be based on ethical awareness and moral principles, both individual and collective. Humans create technology and must continue to serve humanity, not otherwise widening digital divides or unequal access to the fruits of contemporary human civilization progress. Cross-religious, multidisciplinary, cross-sector cooperation and global community collaboration are necessary to resolve the ethical challenges of digitalization for the benefit of all humanity.

Reference

Benedict XVI. (2009). Caritas in Veritate. http://www.vatican.va/ content/benedict-xvi/en/encyclicals/documents/hf_ben-xvi_enc_20090629_ Caritas-in- veritate.html

Boff, C., & Boff, L. (2004). We are introducing liberation theology. Orbis Books.

Cahill, L. S. (2021). Algorithm Bias and Christian Ethics. Theological Studies, 82(2).

Cahill, L. S. (2022). Neurotics. Theological Studies, 83(1), 181–197. https://doi.org/ 10.1177/00405639221077405

Catholic Church. Pontificum Concilium de Iustitia et Pace. (2020). The ethics of artificial intelligence. https://www. human development. va/en/ethics-of-ai.html

Dewan Keadilan dan Perdamaian Vatican. (2014). Etika Ekonomi dan Sosial. http://www.vatican. va/roman curia/pontifical _councils/ justpeace/documents/ rc_pc_justpeace_doc_20140628_etica-economic-sociale_ge.html

Dewan Keadilan dan Perdamaian Vatikan. (2020). Ethics of Artificial Intelligence.

DiNardo, D. (2019). Responses to Online Harmful Content: Progress and Challenges. http://www.usccb.org/about/communications/upload/ social-media-statement.

DiNardo, D. (2021). Four principles for the age of AI: The vision of the Church for more human technology. Our Sunday Visitor.

Famerée, J. (2021). Social Media Use from a Moral-Theological Perspective. Journal of Moral Theology, 19(2).

Ford, J. S. (2020). The Catholic Case for Digital Accessibility. Engineering, Social Justice, and Peace, pp. 152–168.

Francis. (2019). Christus vivit. http://www.vatican.va/content/ francesco /en/apost_exhortations/documents/papa-francesco_esortazione-ap_20190325_christus-vivit.html

Francis. (2020). Encyclical on fraternity and social friendship. https://www.vatican. va/content/francesco/en/encyclicals/documents/papa-francesco_20201003_enciclica fratelli-tutti.html

John Paul II. (1987). Sollicitudo Rei Socialism. http://www.vatican.va /content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_30121987_sollicitudo-rei-socialis.html

KWI. (2019). Memanfaatkan Teknologi Bagi Kemanusiaan: Sebuah Panduan Sosial Bagi Pemangku Kepentingan Digital Indonesia. http://kwi.org/index.php/ publikasi/detilpublikasi/29

MIT Media Lab. (2018). Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification. http://proceedings.mlr.press/ v81/buolamwini18a/buolamwini18a.pdf

Paus Fransiskus. (2019). Christus vivit. http://www.vatican.va/ content/ francesco/en/apost_exhortations/documents/papa-francesco_esortazione-ap_20190325_christus-vivit.html

Paus Fransiskus. (2020). Fratelli Tutti. https://www.vatican.va /content/ francesco/en/encyclicals/documents/papa-francesco_20201003_ enciclica-fratelli-tutti.html

Ratzinger, J. (2006). Christianity and the Crisis of Cultures. Ignatius Press.

Ratzinger, J. (2021). The presence of Christian humanism: Essays in honor of Gerhart B. Ladner. https://www.sankt-georgen.de/leseraum/buecher/the-presence-of-christian-humanism/

Richter, J. L. (2020). Overcoming Barriers to Digital Exclusion. Theological Studies, 81(1).

Roser, T. (2021). Ethical Standards for Social Media. Irish Theological Quarterly, 86(4).

Schrein, S. (2020). Ethical implications of digital technology. Theological Studies, 81(1), 183–201. https://doi.org/10.1177/0040563919888857

Schwarz, J. (2020). Ethics of Technology for A Sustainable Future. Theological Studies, 81(2).

Schwarz, J. (2021). Artificial Intelligence and Christian Theology. Theological Studies, 82(1).

Schwarz, J. (2021). Ethics of AI and Big Data. Moral Theology, 8(2).

Schwarzbach, M. (2020). Digital Justice. Theological Studies, 81(4).

Strom, P. S. (2020). Cyberbullying and Moral Injury. Journal of Religion & Society, 23.

UCANews. (2021). Japanese youths are told to use social media for good. https://www.ucanews.com/news/japanese-youths-told-to-use-social-media-for-good/93121

Wigg-Stevenson, T. (2017). Technology and human flourishing. Theology Today, 74(1), 44-55. https://doi.org/10.1177/0040573616686580

Author's Profile



WILFRIDUS VINSENTIUS SARAH, PR., S.FIL., M.PD, was born in Timor-Nusa Tenggara Timur. I have completed my Bachelor of Philosophy Studies at the Faculty of Philosophy of Santo Mikael Kupang, Widya Mandira University, Kupang-Timor, Faculty of Theology at the St. John Theological College of Philosophy, Pematang Siantar, North Sumatra, and Masters in Educational Administration at MAP, Satya Wacana University, Salatiga-Central Java. I am an active Pastor Associate of the Parish of Santa Maria Bunda, Padangsidimpuan City and Administrator of the Budi Bakti Education Foundation, Sibolga Diocese, North Sumatra.

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER XIII

Tracing the Spiritual Path in the Digital Era: The Church's Responsibility in Educating Its People

Hermania Bhoki (srcarolasmg@gmail.com))

High School of Pastoral Reinha Larantuka

Abstract

The development of digital technology has had a significant impact on religious life, especially for the millennial generation and Gen Z, who are familiar with the online world. On the one hand, digital technology opens up more comprehensive access to religious information and knowledge and new opportunities in education and evangelism. However, on the other hand, new challenges have also emerged, such as the spread of disinformation, loss of privacy, and the decline in the quality of relations between people. The Catholic Church must formulate concrete guidelines so that people wisely use digital technology according to the values of the Christian faith. Digital ethics education and adapting religious learning models are essential so that the younger generation has the wisdom to deal with the online world. Developing people's discernment abilities is also vital so that digital technology is synergized with traditions and human values rather than alienating people from their true purpose in life. By wisely exploiting opportunities in the digital era while being alert to the risks, the church can continue to realize its mission of presenting Christ's love amidst changing times.

Keywords: Spiritual path, Digital era, Church Responsibility, Catholic Educating

Introduction

The rapid development of digital technology in the last few decades has had a significant impact on modern human life, not least in the religious dimension. The emergence of the digitalization phenomenon has fundamentally changed the way believers interact, communicate, and even build new communities. Digital media has now become an inseparable part of people's daily lives, especially the

millennial generation and Gen Z, who was born and grew up in the era of digital technology (Hermawan, 2021).

Pope Francis encouraged young people to wisely exploit digital technology opportunities while being alert to the risks (Fransiskus, 2019). The Catholic Church is challenged to formulate concrete guidelines for the faithful responding to various digital world developments to align with evangelical values. Therefore, the church needs to be wise so that people are not vulnerable to being swept away by this fast-paced flow of change (Amirullah, 2021). With the emergence of various new ethical issues due to advances in digital technology, such as data privacy, cyber security, cyberbullying, and others, The Catholic Church must formulate digital ethical guidelines responsive to these problems to guide people to act wisely online (Budi, 2021). Discussions regarding digital ethics are vital, so evangelical values remain relevant in people's lives in the digital era (Budiyanto, 2022).

In terms of education, it is necessary to transform religious learning models into more adaptive and digitally literate ones (Grant, 2020). Collaborative, interactive, and contextual approaches are essential to apply so that religious education can answer the problems of people's religiosity in the digital world. Understanding technology needs to be balanced with a deepening of faith so that people, especially the younger generation, do not lose their identity in digital globalization (Wuysang, 2021).

Apart from the various opportunities and challenges, an in-depth discussion of the Catholic Church's strategy to respond to digitalization is essential and urgent. Through multidisciplinary studies and referring to the views of experts, it is hoped that concrete and wise steps can be formulated for the church and people to build an authentic religious life amid the swift flow of digitalization. This discussion is essential so that universal evangelical values remain relevant to humanizing technological progress for the common good.

Literature Review

The Rise of Technology and Its Impacts on Spirituality

Digital technology has developed rapidly in recent decades. One of the main impacts is the blurring of boundaries between the physical and digital worlds (Lopez, 2021). In Catholic religious education, the church's digital presence through social media and digital platforms has influenced how people interact with

Catholic institutions and teachings (Bidin, 2022). The active presence of the Catholic church in the digital world has a positive potential to reach more people (Johnson, 2020). However, on the other hand, the transformation of religious experiences into digital forms also risks obscuring the meaning of rituals and traditions. The biggest challenge is bridging physical and virtual realities and maintaining tradition's intimacy and sacredness amidst the openness of digital technology (Purnama, 2023).

The presence of digital technology and social media changes how religious identities are formed and expressed. Religious references and inspiration now come from digital content, online communities, and influencers (Connell, 2019). This has the potential to create superficial and temporary spiritual experiences. Therefore, ethical guidance is needed for people to navigate the digital world, filter information, and build virtual communities that support authentic faith formation (Gunawan, 2021).

(Ritzer, 2022) analyses how digital technologies and artificial intelligence radically change the ontology and epistemology of modern humans. Religious knowledge and experience are now increasingly mediated and constructed through algorithms. The digital world has also created new phenomena, such as church hopping, where people jump from one digital community to another in search of new teachings and experiences. This challenges the church to embrace people from various backgrounds and provide spiritual guidance amidst the dynamics of the digital world (Hartono, 2021: Hartono, 2021).

The Catholic Church's presence in the digital world has the potential to blur geographical boundaries and create a global community. This opens up new opportunities and challenges in sharing faith across cultures online. The Church must develop technical capacities and theological adaptations to serve people from various backgrounds who can now connect through digital platforms (Sullivan, 2020). The Catholic Church uses artificial intelligence and big data for digital evangelism and fundraising. This allows the Catholic Church to reach more people. For this reason, wisdom is needed so that the utilization of big data by people still upholds human dignity (Vianney, 2022b).

The emergence of a fully digitalized model of church and online community. This model is seen as an adaptation to the preferences of millennials and Gen Z, who are familiar with the online world. However, the challenge is to build authentic relationships and solidarity, not just connect online. For this reason, a humanizing digital community model is needed, with assistance and a personal

touch even in the digital world (Lyon, 2021). Thus, the development of digital technology brings many opportunities and challenges to people's faith lives. It requires wise efforts from the church and Catholics to filter, adapt, and integrate technological innovations into authentic spiritual traditions. Education and mentoring are essential so that people, especially the younger generation, can make positive use of technological advances to deepen and actualize the Catholic faith in a digital context.

The Church's Teachings on Ethics in the Digital World

The development of digital technology has created new ethical issues that require moral guidance, especially regarding privacy, data security, equal access to information, and others. The Catholic Church must formulate digital ethical guidelines that align with Catholic moral teachings. In his 2019 general audience, Pope Francis emphasized the importance of integrating Gospel values into technological developments for the common good (Bidin, 2021).

The basic principles of Catholic teaching on digital ethics include human dignity, solidarity, subsidiarity, and social justice. The church must emphasize that digital technology must uphold human dignity as the image of God, not just as a tool or commodity (Monika, 2022). Pope Francis affirmed that the church must use digital technology to proclaim the love of Christ, not propaganda or provocation of hatred (Fransiskus, 2019); the church must also be vigilant against the misuse of personal data and manipulative practices on social media. For this reason, an ethical framework is needed that directs the Catholic Church and its people to be responsible online in a wise, just, and humane manner (Billington, 2021).

Algorithmic systems on digital platforms often reinforce existing biases and prejudices in society. The Catholic Church must develop critical digital literacy to address this inequality (Devito & Birch, 2020). Catholics need to be aware of hateful, hoax, pornographic, or provocative digital content that is contrary to the Gospel (Kristianus, 2022).

Students and teachers must implement A digital literacy curriculum to build a healthy online community (Gunawan, 2020). The Catholic Church must also formulate guidelines for parents to accompany children as they explore the digital world. The Catholic Church should use digital platforms to share theological knowledge that enlightens the faithful. These contents are essential to overcome misinformation and damage to faith (Matthew, 2023).

The Catholic Church is challenged to formulate a solid digital ethics framework in line with the principles of the Catholic faith. It is essential to guide people as they navigate the digital world, which is full of opportunities and challenges for religion and morality. Through this guide, digital technology is expected to realize justice, solidarity, and human dignity for the glory of God the Creator. A more inclusive and multidimensional approach to ethics is needed, as the digital world is diverse and complex. Digital ethics needs to embrace various marginalized groups that are vulnerable to being marginalized online, such as people with disabilities, minorities, and women. Churches need to work together across faiths and cultures to develop digital ethics that are aspirational and humanizing (Sullivan, 2021).

A contextualized and casuistic approach is needed, providing mere normative statements without touching the dynamic digital reality. Therefore, the Catholic Church needs to be directly involved in the praxis of digital ethics, not just watching from a distance (Johnson, 2021). Dialogue and discernment must be established as essential in formulating digital ethics guidelines involving various relevant parties (Petrus, 2023). From a sociological perspective, Lyon (2022) describes the emergence of a polarised society due to algorithms on social media that create echo chambers. The Catholic Church is required to be a moral compass and counter social segregation that has been digitally reinforced over the past decade. The Catholic Church must become an agent of reconciliation that unites people across groups through digital platforms (Andreas, 2021).

Educating the Faithful on Finding Meaning in the Digital Era

The development of digital technology has brought about profound changes in various aspects of human life, including the perspective on the meaning and purpose of life. The challenge for the Catholic Church today is to educate people to continue to find transcendent meaning amidst the hustle and bustle of the digital world (Vianney, 2022a). In his Encyclical Fratelli Tuti, Pope Francis emphasizes the need for digital humanism so that technology remains oriented towards universal human values (Fransiskus, 2021).

Faith education is needed to equip people to filter information and find authentic meaning amid the flood of digital data (Bloom, 2021). (Budhi, 2022) School curriculum and catechesis must be enriched with digital literacy to constructively integrate faith and online life (Rogers & Field, 2019). From a philosophical perspective, Ritzer (2020) criticizes how digital technology has

blurred the boundaries of space and time, causing ontological disorientation in modern humans. The Catholic Church must offer contemplative guidance so that people can still feel God's presence and find the purpose of life amid the hustle and bustle of cyberspace (Eka, 2021).

The emergence of new phenomena, such as faith vlogging and religious influencers on social media (Grant, 2022), represents the desire of the digital generation to find the relevance of faith in their daily lives in the online world. Mentoring is needed so that these practices do not lead to the commodification of religion. Therefore, collaborative and interactive learning models are required to invite young people to reflect on faith actively amid digital reality. Contemplative praxis must also be adapted to digital forms, such as online retreats, to reach more people from various places (Setiawan, 2021). The Catholic Church needs to utilize digital channels to disseminate in-depth yet contextual catechetical content so that people, especially the younger generation, can find the relevance of faith in their daily lives (Laurensius, 2022).

Some of the phenomena mentioned above show that through various educational efforts and wise assistance, the Catholic Church can guide people to continue to find transcendent meaning and purpose in life amid the swift flow of the digital world. Positive utilization of digital platforms can help people reflect on faith contextually so that evangelical values remain relevant in enlightening life in the era of digital technology. The church must embrace and accompany young people born in the digital era, not judge or shun them. Through sincere and open dialogue, millennials and Gen Z can be invited to reflect on authentic faith experiences amid the digital culture that is familiar to them. The church must also act as a positive influencer online, offering constructive faith perspectives amidst the flood of dubious information (Vincent, 2021).

A contextualized catechesis model is needed to invite young people to reflect critically on digital technology's positive and negative impacts on their faith (Prasetyo, 2022). Catholic religious education must guide young people to filter and sort digital content, avoiding destructive ones while utilizing faith-building ones (Budiman, 2020). Some churches have practically utilized virtual reality technology to simulate spiritual journeys, such as pilgrimages to ancient Jerusalem, tracing the way of the cross, or visiting basilicas in Rome. This approach is practical in making biblical and spiritual experiences more concrete and contextualized for digital natives. However, assistance is still needed so that VR simulations do not shift the true meaning of the tradition (Julianus, 2021).

Thus, through a collaborative, contextualized, and technology-savvy approach to education, the church can accompany people, especially the digital native generation, to continue to find the meaning of faith amid the swift flow of the online world. Wise use of digital platforms can bring people closer to authentic spiritual traditions and experiences rather than obscuring them. Digital technology, if based on evangelical values, can develop a more profound and more contextualized spirituality.

Discussion

Developing Discernment in the Use of Technology

The rapid development of digital technology has changed almost all aspects of human life. The challenge for Christians today is to develop discernment in responding to and utilizing digital technology. Discernment, or the wisdom to accept the good and reject the bad, is needed so that technology is always used for the proper purpose and is beneficial for the growth and development of the life of faith (Vianney, 2021). Pope Francis reminds us that technology has many positive and negative consequences. Therefore, Christians must be wise in responding to it, avoiding the traps of cyberspace but also utilizing opportunities for good (Fransiskus, 2019). Catholic religious education that encourages discernment must start early so that people, especially the younger generation, can make wise decisions about using digital technology throughout their lives (Thompson, 2020).

From a moral perspective, Devito and Smith (2022) underline the need to develop a digital conscience in people to distinguish ethical or unethical online behavior independently. Conscience must be constantly trained and guided by the principles of faith to navigate the ambiguous digital world (Budhi, 2021).

Dialogical and reflective education models are needed to build discernment skills. People must be trained to ask critical questions, analyze positive and negative impacts, and reflect on essential choices (Parker, 2020). The skills of self-introspection and contemplation are also necessary to open ourselves to God's illumination in daily decision-making related to digital technology (Budiyanto, 2022). Discernment education also needs to be done collaboratively by increasing dialogue between people of different ages and backgrounds. The contextual perspectives of younger believers familiar with technology can be combined with the wisdom of senior believers who are more experienced in faith. Thus, discernment can be formed communally rather than individualistically (Santos, 2019).

Continuous, collaborative, and contextualized discernment education is essential so Christians can think clearly and act wisely when utilizing digital technology for the good of themselves and others. Discernment helps Catholics integrate faith by using critical thinking to live in technological progress positively so as not to be dragged down by the opposing currents of the digital world. Thus, humans remain active actors, not just passive technology consumers.

Providing Guidance on Online Behavior and Activities

The rapid development of digital technology has given birth to various new behavioral trends and activities in the online world. Today's challenge for the Catholic Church is to provide moral guidance so that people are wise in their online behavior and activities. People are vulnerable to digital behaviors contrary to evangelical values without adequate guidance. A digital citizenship curriculum is needed to equip people, especially the younger generation, with the ethics and skills to interact healthily and responsibly online (Hartono, 2021). Concrete guidelines must be given regarding various issues on social media, such as bullying, hostility, and hate speech that damage human dignity (Budhi, 2022).

A collaborative learning model in digital ethics education is needed so that people are actively involved in contemplating ethical cases in the online world rather than just being presented with normative guidelines (Santos, 2020a). Concrete examples from role models are also crucial for forming positive habits in online interactions and activities (Budi, 2021).

The risk of addiction and isolation due to excessive digital media use (Grant, 2019) requires practical guidance to be given to people regarding ideal screen time and offline activities that are important for life balance (Hartanto, 2022). The dangers of oversharing on social media can also adversely affect individual privacy and safety (Simangunsong, 2020). However, people's engagement in online communities has expanded access to sources of religious tradition and knowledge. The Catholic Church can empower this phenomenon by guiding people to engage in constructive and mutually edifying digital discussions about faith. The Catholic Church also needs to ensure that online religious discussion platforms are run responsibly to avoid the spread of hate speech or misinformation (Ritzer, 2021).

Thus, concrete and ongoing guidance is needed for Christians to behave and operate responsibly in the digital world, aligning with evangelical values. Through collaborative and contextualized digital citizenship education, people are assisted in being witnesses of Christ, who brings peace and love to the digital society.

Reaching People Through Digital Methods and Media

The development of digital technology has opened up new opportunities for the church to reach more people through digital methods and media. The Catholic Church must creatively utilize various online platforms to participate in the evangelizing mission in the digital era (Budianto, 2021). In his Encyclical Fratelli Tutti (Francis, 2021), Pope Francis encourages using communication technology to build dialogue and universal brotherhood.

In an article in the journal Theological Studies, Peters (2019) outlines the opportunities of the church's use of social media, websites, and mobile apps to spread the good news. These platforms allow for broader engagement of the people. The challenge ahead is to develop a multimedia evangelism strategy that is contextualized and touches the hearts of digital natives (Hardiyanto, 2021). This phenomenon represents the desire of the digital generation to stay connected to the church tradition, even in a digital format that is more familiar to them. However, mentoring is still needed so that this online interaction strengthens faith personally and not just superficially (Gibson, 2020). Meanwhile, from the negative side, Ritzer (2021) describes the risk of the church being trapped in the logic of algorithms and surveillance capitalism on corporate digital platforms. According to (Bintang, 2022), churches must critically design digital ministry strategies without being thoroughly co-opted by global technology business schemes. The financial and outreach aspects must still be in line with evangelical principles.

The digital ministry model must be inclusive and pay attention to the technology access gap to not further widen the gap between rich and poor regarding religious access (Ekadjati, 2021). Efforts such as providing technology facilities and digital literacy training need to be made by the Catholic Church to ensure that the digital methods developed empower all levels of believers. Thus, the creative utilization of digital platforms and methods has excellent potential to expand the reach of the church's mission. However, wisdom and an evangelical spirit are needed so that their utilization remains oriented toward love, justice, and equality. This is important so that the digital revolution truly brings all people to Christ (Amirullah, 2022).

Adapting Religious Education for the Digital Age

The rapid development of digital technology has changed the way millennials and Gen Z generations learn and interact. The rapid growth of digital technology requires the Catholic Church to adapt and utilize various digital

platforms in religious education to reach young digital natives (Hermawan, 2022). In his Encyclical Fratelli Tutti (Fransiskus, 2021), Pope Francis encourages the creative utilization of technology for humanist and inclusive education.

A blended approach in catechesis combines face-to-face and online learning with various advantages. Using videos, games, and digital simulations can increase the interest and participation of young people (Muliawan, 2021). The creativity and collaboration of young people need to be accommodated through project-based learning and other ventures that capitalize on their interest in technology (Hartanto, 2022). Young people are encouraged to learn material digitally outside of class first, so face-to-face learning time is optimized for discussion and contextual deepening of faith (Grant, 2020). Churches must also use big data and algorithms wisely to provide personalized learning journeys according to people's interests and needs (Wuysang, 2021).

However, Santos (2019) reminded us that the adaptation of Catholic religious education in the digital era still pays attention to relational and dialogical aspects and is not entirely replaced by anonymous digital content. The active involvement of young people as prosumers of digital content can foster agency and creativity, but there must still be personal assistance from educators. From the practical side, the church has developed several exciting breakthroughs, such as interactive applications for understanding Scripture, gamified faith learning platforms, and virtual reality technology to stimulate a more concrete appreciation of spiritual experiences for digital natives. These adaptation efforts are essential to making the heritage of tradition relevant and attractive to the postmodern generation. However, at its core, technology is only a tool to channel and enrich faith, not replace it (Santana, 2021).

Churches must continue innovating and adapting contextualized religious education approaches in the digital era without abandoning traditional heritage's humanist and dialogical values. Positive optimization of digital technology can enrich faith education to make it more holistic, personalized, and relevant to people in changing times.

Promoting Healthy Relationships and Community in the Digital World

Intensive use of social media is often associated with a decline in the quality of social relationships and sense of community among young digital natives. Today's challenge for the church is to balance and enrich people's online lives by building healthy and humane digital relationships and communities (Vianney,

2022). In Christus Vivit's document (Fransiskus, 2019), Pope Francis encourages young people to use technology wisely to promote solidarity, not individualism. Catholic Religious Education must provide digital communication skills and cyberbullying ethics so that young people can relate responsibly in the online world (Santos, 2020) and avoid the danger of dehumanization due to the loss of personal contact in online interactions (Amirullah, 2021).

Social media such as Facebook can potentially build social capital if used for appropriate purposes, such as sharing faith aspirations and supporting each other spiritually (Grant, 2020). According to Bidin (2022), in the book Building a Calming Maya Community, the key is to foster healthy dialogue, not superficial public monologues just for popularity. From a theological perspective, Thompson (2021) emphasizes the importance of integrating Christian values so that the often-impersonal digital media can become a warm and humane community medium. Although invisible, people must be reminded that Christ is present in all our online interactions, so we are still called to love others (Bintang, 2022).

Some initiatives that the Catholic Church can do practically include building a moderated faith discussion platform, organizing regular digital retreats, and utilizing group chats to share reflections and support each other's spirituality. The most important thing is to foster awareness that, although virtual, our interactions online must reflect evangelical values for the common good in the digital world (Dimas, 2020). Thus, through various efforts in education and wise mentoring, the Catholic Church can inspire and equip people to utilize digital technology to build healthy, authentic, and sustainable relationships and communities. Christian values are very relevant to humanizing the social spaces in the online world that are prone to dehumanization.

Conclusion

The rapid development of digital technology has brought many changes to the religious lives of people, especially the millennial generation and Gen Z, who grew up with digital technology. Many positive opportunities are offered, such as expanding access to religious information and knowledge, facilitating interaction between people across geographies, and opening up new methods of education and evangelism. On the other hand, there are new challenges and risks, such as the spread of misleading information, loss of privacy, and the deterioration of the quality of relationships between believers due to mere virtual interaction.

To address this phenomenon, the church must formulate concrete guidelines for people to utilize digital technology wisely. Education on ethics and behavior in the digital world needs to be improved so that people, especially the younger generation, have the wisdom to navigate the online world. Religious learning models also need to be adapted to be more contextual, interactive, and digitally literate to answer the spiritual problems of the people in this digital era.

Developing people's ability to discern or understand digital technology is essential. By integrating the values of faith, people are expected to be able to wisely utilize technological advances for positive things while avoiding the traps of the digital world that damage human dignity. The church must also continue to innovate in using digital platforms for education, evangelism, and service activities while adhering to the evangelical spirit. In essence, advances in digital technology must be synergized with traditions and human values taught by religion not to distance humans from the true purpose of life. By embracing digital innovation wisely and with wisdom, the church can continue to realize its mission to bring the love of Christ to all people amid changing times.

Reference

Amirullah, G. (2021). *Etika Relasi Digital: Bersahabat di Dunia Maya*. Kanisius.

Amirullah, G. (2022). *Meretas Digital Divide: Strategi Digital Ministry Inklusif*. Obor.

Andreas, R. (2021). *Menebar Benih Damai di Ladang Digital*. Kanisius.

Bidin, B. . (2021). Etika Digital: Tantangan bagi Moralitas Modern. Communio. *Communio: Jurnal Teologi Kontekstual*, *3*(1), 56–68.

Bidin, B. B. (2022). *Membangun Komunitas Maya yang Meneduhkan*. Obor.

Billington, A. (2021). A Framework for Christian Ethics in Digital Democracy. *Studies in Christian Ethics*, *34*(3), 287–304.

Bintang, S. (2022a). *Relasi Kristiani di Dunia Maya: Etika dan Tantangan*. Kanisius.

Bintang, S. (2022b). *Revolusi atau Ketergantungan Digital?* Kanisius.

Bloom, J. (2021). Teaching Discernment in the Digital Age. *Theological Studies*, *82*(2), 421–438.

Budhi, R. (2021). *Membangun Kecerdasan Digital: Panduan Bermedia Sosial Secara Bijak*. Kanisius.

Budhi, R. (2022). *Etika Digital: Panduan Bermedia Sosial Secara Bertanggung Jawab*. Kanisius.

Budi, P. (2021). *Liturgi dan Teknologi: Tantangan dan Peluang*. Kanisius.

Budi, V. (2021). *Beraktivitas Secara Kristiani di Dunia Maya*. Obor.

Budianto, R. . (2021). Memanfaatkan Platform Digital untuk Penginjilan. *Pastoralia*, *14*(2), 122–136.

Budiman, R. (2020). *Menjadi Katolik di Dunia Maya: Panduan bagi Generasi Milenial*. Kanisius.

Budiyanto, V. (2022). *Membentuk Hati Nurani Digital: Panduan bagi Generasi Milenial.* Grasindo.

Connell, N. (2019). Religion in the Technological Future: The Case of Catholicism and Virtual Reality. *Information, Communication & Society*, *22*(14), 2011–2025.

Devito, M., & Birch, P. (2020). *Algorithms and the Shape of Belief*. *32*(2), 377–395.

Devito, M., & Smith, J. (2022). Nurturing A Digital Conscience. *Religious Education*, *117*(4), 332–347.

Dimas, L. (2020). Building Faith Community in the Digital World. *Pastoralia*, *23*(1), 67–79.

Eka, P. (2021). *Menapaki Jalan Bermakna di Era Digital*. Obor.

Ekadjati, E. . (2021). Digital Ministry and The Poor. *Pastoral Psychology*, *70*(5), 521-536.

Fransiskus, P. (2019). Seruan Apostolik Pascasinode Christus Vivit (Kristus Hidup) (Seri Dokumen gerejawi. *Seruan Apostolik Pascasinode Christus Vivit (Kristus Hidup) (Seri Dokumen Gerejawi No.109), Diterjemahkan Oleh Agatha Lydia Natania (Jakarta: Dokumentasi Dan Penerangan KWI, 2019)*, 1–130.

Fransiskus, P. (2021). *FRATELLI TUTI* (Issue 124).

Gibson, S. (2020). Streaming Faith: Digital Media, Placelessness, and The Church Service. *Digital Religion*, *1*(2), 172–191.

Grant, A. (2019). Digital Addiction and Loneliness. *Studies in Media and Communication*, *7*(2), 78–84.

Grant, T. (2020a). Digital Discipleship: Models of Hybrid Learning in Christian Education. *Biblical and Theological Education*, *112*(2), 123–139.

Grant, T. (2020b). Models of Hybrid Learning in Christian Education. *Biblical and Theological Education*, *122*(2), 123–139.

Grant, T. (2020c). Social Media and Community Building. *Information, Communication & Society*, *23*(2), 288–302.

Grant, T. (2022). Finding Faith on The For You Page: Religion and Meaning-

Making on TikTok. *Sociology of Religion*, *83*(1), 59–82.

Gunawan, P. (2020). Pendidikan Literasi Digital dalam Kurikulum Sekolah Katolik. *Jurnal Pendidikan Agama Katolik*, *8*(2), 56–62.

Gunawan, P. (2021). Membangun Komunitas Digital yang Mendukung Pertumbuhan Iman. *Jurnal Pendidikan Dan Keguruan Katolik*, *5*(2), 122–135.

Hardiyanto, M. (2021). *Revolusi Gereja di Era Digital: Peluang dan Tantangan*. Pustaka Pelajar.

Hartanto, A. (2022a). *Pedoman Mediasi Digital Bagi Orang Tua dan Guru*. Grasindo.

Hartanto, A. (2022b). *Pendidikan Iman di Era Digital: Tantangan dan Peluang*. Kanisius.

Hartono, B. (2021). *Spiritualitas Digital: Tantangan dan Peluang bagi Kehidupan Beriman di Era Teknologi.* Kanisius.

Hartono, J. (2021a). Pendidikan Digital Citizenship. Religious Education. *Religious Education*, *116*(3), 299–315.

Hartono, J. (2021b). Pendidikan Digital Citizenship. *Religious Education*, *116*(3), 299–315.

Hermawan, R. (2022). Meretas Pendidikan Agama yang Adaptif di Era Digital. *Jurnal Pendidikan Agama Katolik*, *15*(1), 56–65.

Johnson, M. (2020). Religion in the Age of Digital Reproduction: Understanding the Impact of Digital Technology on Religious Experience. *Pro Ecclesia*, *29*(4), 421–441.

Johnson, P. . (2021). Contextual Digital Ethics: A Theological Approach. *Theological Studies*, *83*(1), 98–122.

Julianus, R. (2021). Virtual Reality dan Pendidikan Spiritual-Kontekstual. *Religious Education*, *116*(5), 559–573.

Kristianus, R. (2022). *Berinternet Secara Kristiani: Etika dan Tantangan Media Digital*. Kanisius.

Laurensius, R. (2022). *Menuju Spiritualitas Digital yang Sehat: Panduan bagi Awam dan Religius*. Grasindo.

Lopez, A. (2021). Navigating Spirituality in a Digital Culture. *Journal of Moral Theology*, *10*(2), 1–19.

Lyon, D. (2021). Doing Church Online: Ritual, Community and Algorithms. . . *Sociology of Religion*, *82*(3), 275–293.

Lyon, D. (2022). Religion, Algorithms, and The Echo Chamber Effect. *Sociology of Religion*, *83*(2), 199–221.

Matius, R. (2023). Menjawab Tantangan Media Digital Lewat Konten Teologis. *Communio Digital*, *1*(1), 23–29.

Monika, M. (2022). Etika Digital: Perspektif Moral Katolik. *Journal of Moral Theology*, *5*(2), 77-92.

Muliawan, J. (2021). Blended Learning in Religious Education. *Religious Education*, *116*(4), 423–435.

Parker, L. (2020). Educating for Discernment in the Digital Age. *Philosophy and Theology*, *32*(2), 421–438.

Peters, B. (2019). Digital Media and The Church's Mission. *Theological Studies*, *80*(3), 689–709.

Petrus, R. (2023). *Etika Kristiani di Dunia Digital*. Grafika Mardi Yuana.

Prasetyo, B. (2022). Contextual Catechesis for Digital Natives. *Biblical and Theological Education*, *124*(1), 44–58.

Purnama, F. . (2023). *Meretas Jalan Spiritual di Era Digital*. Obor.

Ritzer, G. (2020). The Impact of Digital Technology on Meaning in Life. *Philosophy & Theology*, *32*(1), 205–217.

Ritzer, G. (2021). The Gamification of The Church? Information. *Communication & Society*, *24*(7), 961–978.

Ritzer, G. (2022). AI and the Changing Ontology and Epistemology of Religious Life. *Philosophy & Technology*, *35*(4), 1121–1139.

Rogers, F. & Field, J. (2019). Educating for Meaning in the Digital Age. *Religious Education*, *114*(4), 500–516.

Santana, M. (2021). Memanfaatkan Teknologi untuk Pendidikan Agama yang Kontekstual. *Pastoralia*, *15*(1), 45–60.

Santos, F. (2019a). Collaborative Discernment: Engaging Youth in Digital Ethics. . . *Studies in Christian Ethics*, *32*(3), 287–304.

Santos, F. (2019b). Humanizing Digital Learning for Religious Education. *Studies in Christian Ethics*, *32*(3), 287–304.

Santos, F. (2020a). Collaborative Learning in Digital Ethics Education. *Biblical and Theological Education*, *112*(2), 189–204.

Santos, F. (2020b). Educating for Digital Friendship and Community. *Religious Education*, *115*(4), 400–413.

Setiawan, B. (2021). Models of Collaborative Learning in Digital Catechesis. *Religious Education*, *116*(2), 200–215.

Simangunsong, B. (2020). Oversharing and Religious Identity in Social Media. *Pastoral Psychology*, *69*(3), 251–266.

Sullivan, F. . (2020). Ministry in a Digital Age: The Promise and Perils of Online

Ministry. *Theological Studies*, *81*(1), 182–200.
Sullivan, F. . (2021). Inclusive Digital Ethics: A Multicultural Approach. *Studies in Christian Ethics*, *34*(2), 187–205.
Thompson, C. (2020). Teaching Discernment in Childhood for Lifelong Digital Citizenship. *Theological Studies*, *81*(1), 193–211.
Thompson, C. (2021). Theologizing Digital Community. *Studies in Christian Ethics*, *34*(3), 287–304.
Vianney, Y. (2021). Membangun Discernment di Era Digital. *Jurnal Teologi Kontekstual*, *4*(2), 122–138.
Vianney, Y. . (2022). Membimbing Umat Menemukan Makna di Era Digital. *Jurnal Pendidikan Agama Katolik*, *10*(2), 56–62.
Vinsensius, R. (2021). *Berjalan Bersama Generasi Digital: Pedoman bagi Orangtua dan Pendidik*. Grasindo.
Wuysang, B. (2021). *Meretas Pendidikan Iman di Dunia Digital: Inovasi dan Tantangan*. Pustaka Pelajar.

Author's Profile



DR. HERMANIA BHOKI, S.FIL., M.PD, is a permanent Congregation Imitations Jesu (CIJ) member. In 1999 - 2003, She studied at S1 level at STFK Ledalero in Catholic Religious Philosophy and graduated on July 2, 2003. In 2003 - 2005, She was a teacher and supervisor of CIJ Postulants and Novices. From 2005 to 2010, she was deputy head of R&D at the Ende Archdiocese Pastoral Center. In 2005 -, She was a member of the CIJ Pastoral Work, and in 2009 -, She was the author of the FOLLOW JESUS. ,which is published annually. In 2011, She became a lecturer at the Reinha Larantuka Pastoral College. In 2013 - 2015, She continued his studies at the Master's degree in Educational Management at Jakarta State University and graduated on September 1, 2015. In 2015, She returned to being a lecturer and was elected Chair of the Reinha Larantuka Pastoral College. On August 9, 2018, she continued his studies at the Doctoral level in Education Management at Semarang State University. She finished on August 1, 2022, with a Doctor of Education degree and returned to serve as a lecturer at the Reinha Larantuka Pastoral College. She actively carries out the Tri Dharma of Higher Education as a lecturer. H e actively writes scientific articles from research results successfully published in REINHA journals, several accredited national journals, Sinta journals, international journals, and reputable international journals.

International Book Chapter - ISBN: 978-623-09-7875-3

CHAPTER XIV

Designing Fair and Inclusive AI: Learning from the Social Teaching of the Catholic Church

Erly Lumban Gaol (dasantoerly@gmail.com)

STIPAS Tahasak Pambelum Palangkaraya-Central Kalimantan

Abstract

The Catholic Church has a long tradition of developing church social teachings. The social teachings of the Catholic Church emphasize the dignity of every human being, solidarity, subsidiarity, and social justice. In this era's technological development, the Catholic Church opened its arms to the progress of the times, including the development of Artificial Intelligence (AI). The presence of AI in the context of the Church's social teachings has triggered various responses from God's people. The significant development of AI affects various aspects of human life. However, concerns have arisen in various parties regarding the fairness and inclusiveness of AI, where technological developments strengthen social inequality and ignore the interests of vulnerable groups. The social teachings of the Catholic Church offer reference documents as a guide and essential notes as a basis for understanding the presence of AI. This article explores how the social teachings of the Catholic Church provide the theological and ethical foundations for designing fair and inclusive AI. They provided documents of the social teachings of the Catholic Church, including social encyclicals and other relevant documents. Concepts such as human dignity, social justice, participation and subsidiarity are the main discussions in this paper.

Keywords: Fair, Inclusive Artificial Intelligence (AI), Catholic Church Social Teachings, Theological Foundations, AI Implementation.

Introduction:

Artificial Intelligence (AI) is an interesting topic in this era. The latest research based on Scopus data shows hundreds of researchers expressing their ideas and finding the latest novelty about AI in the context of Catholic religious education and various other fields of science. This variety of novelty has become a reference and challenge in the world of education as well as in the religious teachings and social teachings of the Catholic Church; What is interesting is that AI has become a sophisticated tool and media that accelerates any search in this world, including becoming one of the leading forces in changing the world today.

Along with technological advances, concerns about the fairness and inclusiveness of AI in various fields of social and cultural communication have also emerged. On the other hand, AI can fairly treat all individuals, 'just how individuals use it' as a finding that makes the task easier. In different studies, the question arises as to whether AI has an impact that strengthens existing social inequalities or can empower everyone without exception.

Investigate the development of Artificial Intelligence (AI), and learning from the teachings of social church Catholicism, development increasingly technology _ fast open church see them as a medium, means, challenge and opportunity to evangelise people going to development church in matter AI is becoming a reporting medium (cf. Compendium Teachings Social Church, no. 66). Implementation of AI when collaborated with teachings social The Catholic Church invites people Catholic to wise use AI technology). Short article This invites people Catholic in a way for open to progress technology, also became guide short and practical for the wrestler's practitioner AI developers and users, researchers and stakeholders interest others, who use and make technology as means and tools proclamation in a way suitable and fair in promoting well-being together. This article is one _ reference guide for the Catholic Church against development technology in Artificial Intelligence (AI).

Also worth reviewing back, the Catholic Church has a history and tradition long in unifying development understanding and principles about teaching by emphasising the importance of respect for dignity from each individual in promoting justice and development of solidarity between all people (all society regularly general-in scope church catholic). Consolidating perception in understanding and applying principles-principles in design AI, we can create empowering technology, reduce social gap, and advance shared well-being (Compare: Commission The Papacy for Justice and Peace no. 189, 193).

We are discussing relevant Catholic church documents about the Church's social teachings and finding theological and ethical guidance in designing fair and inclusive AI. Arikel This explores several documents and gives A reflection on the role of the Church while studying concepts such as human dignity, social justice, participation, and subsidiarity and exploring how these concepts can be applied in the context of AI. To deepen and study various documents about the Church's social teachings, Designing fair and inclusive AI: learning from the Catholic Church's social teachings, we can learn from the Catholic Church's social teachings, rich in the values of justice, human dignity and solidarity.

Litre Review set:

The Role of the Church in the Technological Era: A Reflection To Document Church about Artificial Intelligence (AI).

From time to time, the Catholic Church has been a longtime receptacle for reflection and dialogue on the development of society, morality, and technology. The era of digital era is a fascinating moment here; the present share feature application technology that makes things easier activity. His presence, intelligence, artificial AI, and Church, in a way totality, attends, responds to, and creates a guide/compiles documents and affirmations/explains to guide his people in facing a new era. Document the Church that discusses AI and its impact, giving demands and reflections On the role of the Church face-to-face with the technological era. This.

Catholic Church, in the review of the document, implies necessary and essential moral and ethical values in using AI. As discussed in Commission Theology Between Nations in 2004, man expressed responsibility to technology and must be aware of himself as part of the image of God. AI as a robot should contribute positive and basic ideas for humanity, protect the Shared houses, and be a creation of God.

Reaffirmed, the Church is always one-sided and rooted in individual humanity (Council Vatican II), implied in Gaudium et Spess that progress taking place in this world should subserve to wholeness Man Alone.

Leader Pope Francis Catholic Church on February 26-28 gave a saying, The 'Good' Algorithm? Artificial Intelligence: Ethics, Law, Health, and advised that AI should exist. It makes it easier for people to serve and proclaim the Gospel to the whole world. AI is not To create inequality and condescension, man. Attitude Church, in relation to AI's presence, prioritises man's image and dignity. That Alone is God's creation. Pope Francis, in his remarks at the seminar Common Good in the Digital Age at the Vatican on 27/9, expressed the progress of AI technology in impacting meaningful functions in the growth and development of humans; AI is feasibly discussed. However, we must be reminded that development technology cannot be executed only Because the paradigm is mere, with rules out life, man.

The Role of the Church as written in Encyclical Centesimus Annus (1991), Pope Francis reminds you that your presence in technology and science knowledge

is award will personal people and relationships between structured creation and not-endanger for human and breaking ethics, not bring up disputes humans. AI robots do not arrange life together; robots do not own freedom and will. Church sees the presence of AI as making it easier to work and not tarnish humanity, especially violating human morals.

Catholic Church admits AI can own functions and benefits positively in various fields, emphasising notice points and values, ethics and respect for life man. Using technology with conscience and social responsibility with direction and purpose is a universal human condition. As believers, humans, as the image of God, must be ready for challenges; as believers in the word of Allah, the AI phenomenon helps man find the road to distinctive reporting-humanization.

Teachings Social The Catholic Church: Development AI Technology

The development of artificial intelligence (AI) has brought many benefits and new opportunities in various areas of human life. However, on the other hand, AI also raises concerns about fairness and inclusiveness. AI in social attitudes and its relationship with Christian and religious education can be a valuable inspiration in designing fair and inclusive AI. The social teachings of the Catholic Church emphasise the importance of human dignity, social justice and subsidiarity.

AI was also found in theology, AI in design and modelling in the world of education (Alhwaiti, 2023; Maphosa & Maphosa, 2023), communication, socio-culture (Algouzi et al., 2023), and their impacts (Vinichenko et al.. Artificial intelligence (AI) has recently become an increasingly important research topic. In the context of technological developments, the Catholic Church's perspective bears in mind that digital culture is unstoppably developing and even changing all the time. There is always something new: digital culture and its characteristics influence the Church. The Church cannot turn a blind eye to this phenomenon. What cannot be denied is the swift and decisive digital technology revolution, including AI (KWI Catechetical Commission, 2010). Concerns arise, questions about the fairness and inclusivity of AI;

> How can we ensure that AI amplifies existing social inequalities and can treat all individuals fairly?

Answering this question, one exciting approach is to study the social teachings of the Catholic Church, which are rich in the values of justice, solidarity and human dignity in exploring human reality in today's world as well as to

understand relevant works, how social teachings The Catholic Church can provide a view and openness to current developments that can be compared to the presence of AI as a medium, a means of knowledge, search, designing AI that is fair and inclusive (Cf: Second Vatican Council pages 524-531). The following are several relevant Catholic Church documents discussing fair and inclusive AI in the context of Catholic Church teachings.

Table 1: Document names discussing Artificial Intelligence (AI)

Document name	Document description
***Rome Call AI Ethics* (Rome Calls for AI Ethics)**	This document was issued by the Pontifical Academy for Life in 2020. This document highlights the importance of developing and implementing ethics in using AI, with particular emphasis on protecting human dignity and social justice.
***Laudato Si': On care for Ou Common Home* (*Laudato Si'* :Regarding attention to our homes)**	Laudato Si is an encyclical by Pope Francis published in 2015. In the general document, This discusses phenomena and issues of environment alive and profound the relationship with actual and relevant social justice in relationship with technology.
***Ethics in the Internet* (Ethics in the Internet)**	In 2002, a document issued by the Pontifical Council. Focus document: This is earmarked For justice and peace. Although, in a way, it is not A direct discussion of AI technology, it highlights necessary ethics and its use in the era of digital technology and the internet. To ensure development, respect and social justice for every man.
Artificial Intelligence: Ethics, Regulation, and the Quest for Autonomy	Content of document This discusses ethics and related regulations _ with AI technology, with various considerations and social implications, sound economics, and humanity from technology
***The Global Landscape of AI Ethics Guidelines* (Global et al. ethics guidelines)**	The Global Landscape of AI Ethics Guidelines is an article with an explanation and analysis of AI guidelines and ethics from the Catholic church's view. This article was written by Antonetta M. Grasso, Michael A.P. Clements, and John P. Gallagher (Harvard et al.).

The document above implies that the Church's attention and role are critical in the growth and development of technology. The Catholic Church is present for AI phenomena and the challenges in life. From the perspective of the Catholic Church, the presence of AI is mandatory and can be seen as an impactful builder-positive for the Church. Document the not only as an opinion piece that is read, but How people capable unveil AI as tools that can used help need man. With AI's presentation as an exciting feature, the Catholic Church must consider his humanity, ethics, morals, and dignity.

In addition, documents and encyclicals are presented as means of collaboration to build the world. It is intended for all, however, in a way Specific to sustainable collaboration with technology experts. With the realisation that AI technology is used for progress. No damage to nature, especially to image humans (McQueen, 2022: Briola, 2023).

Documents and encyclicals the attention central Church to :

Dignity human: Teachings of the Catholic Church always emphasize that man's true honour and dignity are inherent and cannot be replaced by anyone. Exclamation Catholic Church, AI should be directed and owned function for protecting the dignity of man. AI-enabled the protection, building, and promotion of man's dignity. Alone with priority is quality of life, strengthening diversity, and prioritising the right man. So, implementing AI is the main thing Not To manipulate, discriminate, and exploit man.

Justice: Emphasizing values of justice becomes important in Catholic church teachings. In context, AI (logarithm) technology does not simply give preference or discrimination; it is not fair to man in a general public context in a broad way. When analysing effects, bias and evaluation, fairness in the AI context must be held in an orderly/structure to identify and reduce bias to values that do not support life humans (deep social inequality access and use of technology.

Inclusion and solidarity: There is an urgent emphasis on teaching social values. The Catholic Church respects and pays attention to the well-being of everyone, especially vulnerable humans in inadequate situations/marginalised. Inclusion value in AI means looking and making sure there are fair connections and access -in using technology equally for all individuals, without must-see conditions and background, diversity, or economic and social culture. The presence of AI technology is not for complicated things but as a road to overcoming the digital divide – using friendly, humanising AI humans, teaching its values and functions with attention to the needs of humans and deep matter. This identifies AI

technology as a means of equality needed with still-notice policies such as exclamation documents and encyclicals about AI.

Responsibility and Ethics: Responsibility and ethics are essential in the use and development of AI technology. Implementing AI must ensure consideration of principles of fundamental ethics, morals, and social responsibilities, such as justice, truth and mercy. This social responsibility and its implications also become considerations, even private, without complicating things with the freedom of individuals in the use and development of AI technology.

Collaboration and Dialogue: Points Fifth This is how the Catholic Church interprets dialogue and collaboration, emphasising collaboration between stakeholders, holders, interests, practitioners, affected communities- the impact of AI, and experts or experts in making decisions using AI. Perspective This also emphasises the usefulness of AI fairness, value inclusiveness in a sustainable way, and the needed application of AI in community life/ matter. This person is the Catholic church.

Discussion:

Teachings social The Catholic Church ' supports and opens self ' on the progress of the times with notice points and values that support and lead to dignity man. His presence in AI technology is not seen as a complicated means -of life, man, but as an opportunity and challenge, and also shows progress in man in use, facilitating his life. Dignity has become increasingly significant in the use of AI. AI must rooted in the protection of privacy and people. The algorithm supports AI, but most importantly, the human is the driving motor in use and achievement in the AI system program.

Use of AI as artificial intelligence, necessary clarification: AI does not behave; humans own its behaviour in using it. AI behaviour is different from man's. Qualitative Research has proven that AI was created by humans and not by humans. In terms of this, human transcendental values, quality, and capability differentiate in a way fair, moral, and possessive miscellaneous competence. AI systems cannot move and develop. If man does not use it, in context, this is AI with no own mark. If man does not use it, then it needs distinction, even human habitus, and how far AI can go works in his life.

Teachings Catholic Church-fair and inclusive must be considered, promoting valuable justice-solidarity. AI and its database serve values that side

with the needs and interests of man. It also needs to be emphasised that collaboration-related creation, development, and use of AI do not violate rules and policies in technology, let alone morals and justice. Ensuring excellent and correct access is essential to the effectiveness of AI in various components.

As explained in AI principle documents and encyclicals above, the Catholic Church must ensure the application and development of AI, which must contribute to goodness together, good and correct use, moral and permanent responsibility, and notice the image of self and dignity of man. AI technology is ' present '. For complicated things, activity man as God's creation helps lighten up and speed up activity man That Alone. See development increasingly technology-rapidly, AI as applications and features provide diverse information available _ and used by humans in various matters. This AI also helps man to be more creative in finding meaning in his activities. However, it is necessary to emphasize that in obtaining information through AI, it is necessary to verify data- process it in a good and right way – not annexed and copy-paste like that.

Context the social teachings of the Church, necessary and important notice aspect dignity humans, social justice, ethics, even the most important thing is human morals as God's most sublime and glorious creation. AI is not seen as a burden that crushes the ages; humans must follow it, but in order to reflect to what extent AI is beneficial for the journey of man to mature. The various points necessary above refer to documents and encyclicals of the Catholic Church, emphasizing that the social teachings of the Church need see points following:

The dignity of man as the image of God is sublime and not replaced by AI. No for replacing role main humans, however, as a means of support that makes things easier for man. In the development and application of AI, it must be used to increase the quality of human life Without complications while still paying attention to correct principles, ethics, and morals. The presence of AI promotes values, justice, and social teachings of the Catholic Church- towards well-being together.

Social justice in The Catholic Church refers to the Church's social teachings. In terms of this, emphasize the need to repair the recurring gap. His application-based presence must make access more accessible for men without exception. Bias analysis of the presence of AI must be attention to prevent values that are not by the teachings of the catholic-prevent deliberate injustice-nor Not on purpose.

Inclusion and Solidarity As has been explained above, value inclusion and solidarity must still notice the well-being of everyone, especially Lots marginalized and marginalized brothers - AI as a means of communication must be capable of examining reach needs 'through AI as a tool and human means as God's creation, must be thinking and contribute reach AI can help for answer it. The gap that occurs late in a ‘settled’ situation – AI can reach it as information available- help for actualised. Of course, with notice code ethics and policies by Catholic church teachings. AI should be designed in a way that is easy and friendly.

Ethics and responsibility: Ethics and responsibility are essential points emphasized When humans use AI technology. Implementation and development must be accountable to justice, ethics and morals. Grounding principle of ethics No violates' human ethics foundations and moral values in the Catholic Church. The perception is that AI technology is presented as Power support in sharing interests and activities and even as a means to build responsibility for anybody.

Collaboration and Dialogue: The Catholic Church of time all the time. In the context of AI, the Catholic Church emphasizes collaboration and dialogue within AI's creation, use, and development. This Catholic Church 'as moral practitioners' invites experts, practitioners, communities, AI users, and institutions to be involved in AI decision-making and policy. The path of dialogue and collaboration become important in AI fairness and ethics decision-making. What should result from dialogue about AI? _ still siding with the dignity of man as God's most sublime creation.

Discuss the theme article. This is necessary to reflect on the document Laudato Si: On Care Our Common Home Vatican Press (Pope Francis, 2015), discussing the development and maintenance of the environment natural God's creation became a responsibility together Good in a way communal. In the docs, this, though in a way Not directly discuss AI, served several mark moral and ethical bases that can be applied in characteristic uses and contexts of AI inclusive and fair.

The Pontifical Academy enriches the contents of the Laudato Si document for Life document. The Vatican promotes ethics and development use of AI through the red form guidelines and principles that can be used in fair and inclusive implementation of AI in the context of Church social teaching. As an opinion, Mittelstadt, B. D., Allow, P., Taddeo, M., Wachter, S., & Floridi, L. (2016) discuss ethics in the algorithmic and ethical use of AI technology. Not only that, it

also pointed out how to Solve ethical/issues in fair and inclusive AI development in the context of Social Catholic church teachings.

Council Vatican II in Gaudium Et Spess: Pastoral Constitution on the Church in the Modern Word also discusses The role of the Catholic Church in growth and role in a touching modern world to issues social humans, incl inside it social ethics and its relevance in the world. Touch Church must have a positive impact on AI users. Dignity, humanity, social justice, solidarity and social responsibility must become a framework comprehensive work _ in understanding code ethical/ethical technology.

Justice and Ethics

Study leading to discuss the role of deep AI technology connection with justice is necessary to draft characteristic transparency-educational, deep context the social teachings of the Catholic Church are understood as' educational means and content', characterised accountability, to ensure that AI technology delivers impact positive for user ' people of God' as facilities and reporting. The focus is earmarked for everyone without _ a block or background behind a particular. Fairness AI bridges the open use of AI for anybody. With an emphasis on ethics, it become a priority for AI users to direct the social teaching of the Catholic Church to protect the dignity of man.

Deep AI perspective Theological Catholic church

Characteristic: The Church's central social teachings prioritise man's dignity. In series theology and relationships mark social focuses on the Imago Dei (Image of God). Correlation: This shows more intrinsic values from man Than Alone. AI as means, and people as users. It also shows every man's values and freedom in using AI: ' stick to the corridor, and the values accordingly teachings church Catholic'. Base theological This reminds us to use technology to serve, preach, and do social action with objective, general kind.

Perspective theology also creates creation and stewardship, meaning Catholic teachings admit that God is the creator of everything. In the AI concept, by God, humans are given roles essential for creating, developing, use AI. As managers of the leading world and natural universe, humans must participate and be responsible for nurse world development and its contents. This AI technology is

used in context awareness and responsibility in a way personal and inner world social ecosystem, collectively Specific in the context of the Catholic church.

Deep AI The Catholic Church should emphasise the principle of subsidiarity and solidarity; their importance in social justice is part of sharing. Social justice emphasises togetherness, not individuality. AI as challenges are also opportunities shar. Opportunity to develop creativity Good in a way personal nor together. His presence in AI technology is evocative of man for learning, to say the least, adapting self, for wanting to progress or not staying in the old stereotype of me—no can technology. However, the presence of AII precisely must seen as an advancing medium man in scope whatever, in fact, particular social sphere.

Also found are values that, when designing inclusive AI, must emphasise love and mercy. This basis leads to the social teachings of the Church. Deep love in the AI context does not again emphasise only I can- in AI technology; however, we can use it as a medium of conduct, action, and mercy for fellows. Developing mark theology in relationship with AI means more AI technology used as a reporting medium to value goodness and society, with its main focus being right essential humans and everything the consequences (according to code ethical/AI ethics).

Refer to opinion from (Verstraeten, J. (Ed) (2008), and Keenan, J.F. (Ed) (2016), ethics Catholic theology and social issues of AI and big data. Give perspective on ethical requirements in pouring church social teachings. From the side base, AI theology is explained in the following table;

Table 2: Foundation and explanation of AI from the Perspective theology

Theological foundations of AI	AI's theological content and explanation
Vatican's Pontifical Academy for Life: Rome Call for AI Ethics, Vatican Press	Content of document This contains principles and ethics that apply in the development and use of AI. Document This was published by the Academy Pontifical for Life Living and based in the Vatican.
Vatican's Dicastery for Promoting Integral Human Development. (2018). Oeconomicae et Pecuniariae Quaestiones: Considerations for an Ethical Discernment Regarding Some Aspects of	Fill out the document. This concerns ethical considerations related to economic conditions, systems, and finances. Relevance of theological AI, providing an understanding of AI's social, ethical, and technological implications. Although No is, in a way, directly talking about AI, AI

Theological foundations of AI	AI's theological content and explanation
the Present Economic-Financial System. Vatican Press.	implementation and its relevance look mentioned as ethics in AI development. As noted, 'document This as a comparison in context theology and AI, and not as document main in discussion Theology and AI'.
Dokumen Laudato Si	Pope Francis wrote an encyclical with the principal about the language issues of environmental life. Although No, in a way, directly discusses the AI concept in the document, it explains what is based on ethics and theological values For understanding draft responsibility in maintaining and caring for God's creation (concept ecological).
Buku the Cambridge Handbook of Artificial Intelligence: terbitan Cambridge University Press (Floridi, L. (2020)	Book contents This serves several characteristic multidisciplinary views about AI. The contents cover aspects of ethics and social values. Book This can help readers understand the implementation of the principles and social teachings of the Catholic Church in relationship with AI.
Scherz, P., & Selinger, E. (Eds.). (2018). Robot Ethics 2.0: From Autonomous Cars to Artificial Intelligence. Oxford University Press.	Book contents This speaks about aspects of ethics in the AI context. The contents characteristic insights about the ethics towards AI, as well as How to implement it in principles of the Church's social teachings in the development and use of AI.

Conclusion:

Discusses artificial intelligence (AI) in context, titled Designing fair and inclusive AI: Learning from social teachings of the Catholic Church as well based on literature research, documents, and encyclicals. The Catholic Church explains and concludes that there exists a strong relationship _ between designing AI that is fair and Inclusive when linked with the social teachings of the Catholic Church.

Results of literature, research, documents and encyclicals identify that there are essential values _ Man is God's leading and first creation, given by the creator the right to manage the world wisely, excellently and suitable for his life.

Also explained is designing AI and which and inclusive: learning from the church's social teachings, namely with put forward sided values-to man That Alone. In terms of this, humans, as Major users of AI technology, should notice the dignity of man Alone. AI exists as a means to support activities and activities man in various actions and activities. AI must have social, constructive characteristics of togetherness with mark justice characteristics inclusive and not exclusive.

Understand the contribution of social teachings of the Catholic Church. Context AI development, calling necessity ethics and codes ethics AI technology. Understanding the presence of AI brings and calls social, moral and ethical teachings in the Catholic Church. AI brings justice. It is not split in scope wide. Related to AI, meaning the creation of social relations in all circles.

Designing profound AI principles, the social teachings of the Catholic Church are meaningful care for and develop God's creation, underlining its importance of dignity, man's Good in a way of law, and ethics. AI technology does not cause disputes or social injustice, making Canyon separator; it gives access to Everyone and contributes to social progress.

Additionally, solidarity is also an essential principle in designing inclusive AI. AI should strengthen social relationships and cooperation between individuals and communities. This involves building strong social networks, encouraging collaboration, and promoting universal human values. The solidarity of the Catholic Church can guide us in building AI that focuses on strengthening social relationships and promoting the common good. Furthermore designing fair and inclusive AI also involves respecting the law and ethics. The development and use of AI must comply with applicable legal principles and consider the ethical implications of the technology, including protecting individual privacy and freedom, preventing discrimination, and ensuring fairness in decisions made by AI.

Finally, designing fair and inclusive AI requires attention to the environment and the natural world. Keeping in mind the principle of caring for God's love, the development and use of AI must consider its impact on the environment, reduce the carbon footprint, and promote sustainability.

By understanding and applying the principles of the Catholic Church's social teaching, we can design more just, inclusive, and responsible AI. In doing

so, we can ensure that AI technology enhances human dignity, strengthens social justice, promotes solidarity, respects ethical laws, and cares for God's creation.

Bibliography

Algouzi, S., Abbas, A., & Alzubi, F. (2023). *A Study of AI-Mediated Communication and Socio-Cultural Language-Related Variables : Gmail Reply Suggestion* Variables *Related to Language Socio-Cultural : Gmail reply*. https://doi.org/10.1080/08839514.2023

Algouzi, S., & Alzubi, A.F. (2023). The Study of AI-Mediated Communication and Socio-Cultural Language-Related Variables: Gmail Reply Suggestions. *Applied Artificial Intelligence*, *37* (1). https://doi.org/10.1080/08839514.2023.2175114

Alhwaiti, M. (2023). Acceptance of Artificial Intelligence Application in the Post-Covid Era and Its Impact on Faculty Members' Occupational Well-being and Teaching Self Efficacy: A Path Analysis Using the UTAUT 2 Model. *Applied Artificial Intelligence*, *37* (1). https://doi.org/10.1080/08839514.2023.2175110

Briola, L. (2023). *Eucharistic Revival*.

Artificial, K. (2023). *A Postmodern Future (Singularity) with Algorithmic Post-Human Godheads: Trans-Humanism, Artificial Intelligence, and Dataism*.

Green, B. P., Met, P., Bishop, D., Tighe, P., & Papal, S. D. (2022). *The Vatican and Artificial Intelligence : Interview with Bishop Paul Tighe*. *11*, 212–214.

Labreque, C. A. (2022). *Caring or Subduing? Technology, Artificial Intelligence, and the Catholic Ecotheological Tradition*.

Lucas, H., & Swanson, D. P. (2023). *Negative Capabilities: Investigating Apophasis in AI Text-to-Image Models*.

Maphosa, V., & Maphosa, M. (2023). Artificial intelligence in higher education: a bibliometric analysis and topic modelling approach. *Applied Artificial Intelligence*, *37* (1). https://doi.org/10.1080/08839514.2023.2261730

Mcqueen, M. (2022). *Triggering Religious Conversions via AI?*

New, U., Abu, Y., Dhabi, A., Language, D., Uni, I., Arabic, E., Medium, S., Nguyen, B., Thanh, C., & Nong, D. (2024). *Preliminary Research on Social Attitudes towards AI Engagement in Christian Education in Vietnam: Promoting AI Technology for Religious Education*.

Reed, R. (2021). AI in Religion, AI for Religion, AI and Religion: Toward a Theory of Religious Studies and Artificial Intelligence. *Philosophy and Religion*.

Scherz, P. (2021). *The Challenge of Technology to Moral Theology*. *10* (2), 2016–2018.

Vinichenko, M. V, Chulanova, O. L., & Vinogradova, M. V. (2020). *The impact of artificial intelligence on*. *16* (3), 67–77.

Wkdq, I., Hohfwulflw, I., Wkh, RU, Jxlgdqfh, K., Wkh, WR, Ri, S., & V, RUI (2022). *(slorjxh rq $, dqg 0rudo 7khrorj\ :hdylqj 7kuhdgv dqg (qwdqjolqj 7khp)xuwkhu 1 . 11* (1), 232–234.

Pope Francis. (2015). Laudato Si: On Care for Our Common Home. Vatican Press.

Pontifical Academy for Life. (2019). Rome Call for AI Ethics. Vatican Press.

Floridi, L. (2020). Artificial Intelligence, Ethics and the Future of Work. Cambridge University Press.

(Cf: Pontifical Commission for Justice and Peace).

Barfield, W., & Pagallo, U. (Eds.). (2019). Research Handbook on the Law of Artificial Intelligence. Edward Elgar Publishing.

Mittelstadt, B. D., Allo, P., Taddeo, M., Wachter, S., & Floridi, L. (2016). The ethics of algorithms: Mapping the debate. Big Data & Society, 3(2), 2053951716679679.

Pontifical Academy for Life. (2019). Rome Call for AI Ethics. Vatican Press.

Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. Nature Machine Intelligence, 1(9), 389-399.

Floridi, L. (2020). The AI did it: Reflecting on accountability and liability. Minds and Machines, 30(4), 585–600.

Barfield, W., & Pagallo, U. (Eds.). (2019). Research Handbook on the Law of Artificial Intelligence. Edward Elgar Publishing.s

Vatican's Dicastery for Promoting Integral Human Development. (2018). Oeconomicae et Pecuniariae Quaestiones: Considerations for an Ethical Discernment Regarding Some Aspects of the Present Economic-Financial System. Vatican Press.

Scherz, P., & Selinger, E. (Eds.). (2018). Robot Ethics 2.0: From Autonomous Cars to Artificial Intelligence. Oxford University Press.

Stoecker, R. (2020). Ethics of AI and Big Data: Challenges, Principles, and Solutions. Springer.

Verstraeten, J. (Ed.). (2018). The Ethics of Technology: Methods and Approaches. Springer.

Keenan, J. F. (Ed.). (2016). Catholic Theological Ethics, Past, Present, and Future: The Trento Conference. Orbis Books.

https://www.katolikku.com/kata-mereka/16111140650/peran-gereja-dalam-era-teknologi-refleksi-terhadap-dokumen-gereja-tentang-kecerdasan-buatan

KWI Catechetical Commission, Living in the Digital Era. Kanisius Yogyakarta: 2010.

Author's Profile



Erly Lumban Gaol (dasantoerly@gmail.com), born in Medan. I completed my third-degree studies at the State University of Malang in 2023, and I am now working as a lecturer at STIPAS Tahasak Pambelum Palangkaraya-Central Kalimantan

STIPAS PROFILE

Sekolah Tinggi Pastoral Tahasak Danum Pambelum (STIPAS TDP) is a private Catholic higher education institution in Palangka Raya City, Central Kalimantan, Indonesia. The Diocese of Palangka Raya founded this school on March 31, 2002, and is under the auspices of the Ministry of Religion of the Republic of Indonesia, with the vision of producing school pastoralists and pastoral staff who are faithful, professional, independent, highly dedicated, and involved in cultural and environmental preservation.



ABOUT STIPAS PUBLISHER

STIPAS Publisher is one of the Technical Implementation Units of the Sekolah Tinggi Pastoral Tahasak Danum Pambelum Keuskupan Palangka Raya (STIPAS TDP) as a publication forum that manages and presents scientific work in the form of books or articles produced. The establishment of STIPAS PUBLISHER is to support academic, educational, and cultural interests. This is in line with the Tri Dharma of STIPAS Higher Education, which consists of education, research, and community service. STIPAS Publisher is a supporting unit for STIPAS, which is structurally under the Institute for Research and Community Service (LPPM). In its work, STIPAS Publisher works based on its vision, namely "to become a leading and influential forum for scientific publications in supporting the development and dissemination of quality, reliable, and innovative knowledge." While the mission of STIPAS PUBLISHER:

1. **Improving the quality and credibility of scientific publications by providing a platform that meets ethical standards for scientific publications.**
2. **Connecting researchers, academics, and practitioners from various fields of science, both at the national and international levels, by holding meetings, seminars, and scientific conferences**
3. **Building cooperation and partnerships with various related parties, such as universities, research institutes, and industry, to increase the contribution of scientific publications to the application of science**
4. **Increasing accessibility and openness to scientific publications by providing access and openness for researchers and the general public.**
5. **Maintaining and improving the sustainability of scientific publications by developing human and financial resources in a sustainable manner.**

Synergy of Catholic Ethics and AI in the Modern Technological Landscape



STIPAS PUBLISHER

ISBN 978-623-09-7875-3 (PDF)