

Submitted: Jan. 31, 2025; Accepted: May 23, 2025; Published: Jul. 1, 2025  
DOI: 10.62461/RRJ052325



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## **Understanding Pope Francis' Framing of Technology in *Laudato Si'* and *Fratelli Tutti* in Light of Shannon Vallor's Technomoral Virtues**

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### **ABSTRACT**

*In an era defined by rapid technological advancements, technosocial issues have emerged, positioning technology as a double-edged tool that can either foster human flourishing or contribute to moral and societal decline. These challenges provide an opportunity for the Catholic Church to reassess its moral teachings and establish guidelines for technology. Pope Francis addresses these concerns in his papal encyclicals *Laudato Si'* (2015) and *Fratelli Tutti* (2020), where he critically examines the ethical implications of technology and calls for its responsible and morally grounded application. This study analyzes Pope Francis' framing of technology through Claes H. de Vreese's (2005) *Framing Theory*, identifying the internal and external factors that influence his perspective. Additionally, it employs qualitative critical content analysis to extract key themes from the encyclicals and relational content analysis to relate them with Shannon Vallor's (2016) twelve Technomoral Virtues. The study's findings reveal that Pope Francis' framing of technology acknowledges both its benefits and risks while emphasizing moral responsibility as a guiding principle. Furthermore, the findings highlight the need for ethical*

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*discernment in technological advancements, reinforcing Pope Francis' call for responsible and morally grounded digital engagement.*

**Keywords:** *Catholic, ethics, framing, technology, virtues*

## 1. Introduction

The world continues to develop, especially in the realms of technology and communication. These advancements have not only transformed how societies interact and function but also bring ethical dilemmas and societal challenges. Internet and Communication Technologies (ICT), social media platforms, and Artificial Intelligence (AI) are pivotal tools in modern communication, yet their misuse can lead to significant societal issues, including misinformation, disinformation, and malinformation. Environmental issues have, likewise, risen as the need for technological inventions require spaces and areas in which the larger eco-system has been affected. This dichotomy of technology, as both a tool for progress and a source of ethical concern, forms the foundation of this study (Hameleers and Minihold 2022, 1176-1199).

Despite their risks, technologies have become valuable tools for the Catholic Church. Priests, as moral guides, play a crucial role in shaping ethical technology use, balancing spiritual authority with their expertise in the usage of such innovations in both communication and pastoral aspects. The Church actively addresses these challenges, integrating technology into pastoral work while promoting its responsible use (Bolu 2012, 80-94).

Technology can reclaim its original good image and intended purpose as a tool for helping humanity. Constant education and sound teachings on the moral and virtuous use of technology must be continually imparted, as Shannon Vallor (2016, 1-13) emphasizes in her philosophy of technomoral virtues. The twelve technomoral virtues articulated by Vallor—honesty, self-control, humility, justice, courage, empathy, care, civility, flexibility, perspective, magnanimity, and wisdom—are adapted from Aristotelian, Confucian, and Buddhist reflections. These virtues can help enhance humanity's capacity to flourish in an increasingly complex and unpredictable world shaped by technologies. Some of the greatest lessons

about technology's use often come from those who have experienced its negative consequences but have nonetheless managed to use it morally and for the good of their members, such as the Catholic Church herself.

How humanity views technology greatly affects how it will contribute to the development or deterioration of humanity. Thus, it is necessary to delve into framing analysis, as it helps in understanding why different users of technology interpret and evaluate it in various ways (Soliman and Tuunainen 2021, 473-519).

Before Pope Francis, Popes John Paul II and Benedict XVI had already emphasized the ethical use of Internet and Communication Technologies (ICT), urging the faithful to engage with them in a Christian manner. Both pontiffs explored Information Ethics in theology and communication, putting an emphasis on technology's potential to improve lives while stressing the need to safeguard human dignity. Pope John Paul II, in *Inter Mirifica*, discussed media as a tool for truth and education, while Pope Benedict XVI recognized its role in evangelization, particularly through emerging digital platforms (Sanchez-Camacho 2022, 319-414).

Before recent papal discussions on digital media, Blessed James Alberione, founder of the Society of St. Paul, had already emphasized its value for evangelization. He saw technology as a powerful tool for spreading truth, provided it was used ethically and purposefully. His teachings continue to inspire the Church's engagement with modern communication (Peña 2014, 1-24).

This study holds significant value in addressing a notable research gap by analyzing Pope Francis' framing of technology through the lens of Shannon Vallor's technomoral virtues. While existing studies have explored the relationship between the Church and technology primarily from a theological perspective, there is a lack of research that examines how Pope Francis frames technology in a way that incorporates ethical and moral dimensions. By filling this gap, this study contributes to the broader discourse on technology and ethics, offering new insights that can guide individuals and institutions in their engagement with digital advancements. More broadly, it benefits all technology users by presenting a moral and virtuous perspective on navigating technosocial issues in today's rapidly evolving digital landscape.

Furthermore, this study has practical implications for various stakeholders. For the Catholic Church, it provides a framework for understanding how Pope Francis envisions the ethical use of technology,

aiding Church leaders in shaping digital evangelization efforts. Environmental advocates can gain insights into the ethical dimensions of technology that align with sustainable development. Policymakers may find guidance in integrating moral considerations into technology-related legislation. Technology developers and ICT professionals can use this study to incorporate ethical principles into their innovations and workplace policies. Corporate leaders can align their business strategies with social responsibility, while Catholic media evangelizers can reassess how they utilize digital tools for spreading the faith. Lastly, media researchers can benefit from this study's contribution to understanding the role of modern technology in shaping human behavior and interactions across diverse religious and cultural contexts.

The study uses Framing Theory to examine how technological and moral messages are constructed (Vreese 2005, 51-62). By analyzing Pope Francis' writings, it aims to contribute to the Church's ethical discourse on technology, engaging with digital ethics and religious communication in the growing network society where capitalism, productivity, and profitability are inevitable (Castells 2010, 94). The research applies framing and content analysis to uncover insights into the Church's evolving view on technology.

## **2. Review of Related Literature**

### **2.1. Technology**

Technology, defined by its physical and informational components, serves as both knowledge and a means for task accomplishment (Wahab et al. 2012, 61-71). While advancements like AI and social media enhance communication and simplify tasks, they also bring societal challenges. Hameleers and Minihold (2022, 1176) examine misinformation on social media in Austria, Germany, and the Netherlands, showing how partisan biases shape reality perceptions, with radical right-wing populists more likely to spread misinformation. Murdock (2018, 360) highlights the ethical concerns of digital technology's production and environmental costs. Gunkel (2012) critiques traditional communication studies, advocating for a revised approach that recognizes AI's active role in communication. Kleinnijenhuis et al. (2020, 276) reveal that media framing influences

political behavior, with individuals that resonates with partisan-friendly media while perceiving EU coverage as hostile. Framing studies, such as Laitinen and Valo (2018, 12-22) on virtual team communication, stress the need for tailored technological adoption, while Soliman and Tuunainen (2021, 474) identify two frames, gain and hedonic, that shape user interactions. Weinstein and Przybylski (2019) find that motivational framing influences adolescents' concealment behaviors regarding technological restrictions.

## 2.2. Technology and the Church

The Catholic Church has historically contributed to scientific and technological progress, but its engagement with technology has declined. Green (2017, 106) argues that while past popes embraced scientific optimism, the Church now lacks a clear theology of technology and must not only support beneficial technology but also promote its moral use. Bolu (2012, 80-94) highlights ICT's role in Nigerian churches for evangelism and pastoral care, especially among younger members. Witman et al. (2010) explore how online social networks improve church engagement by collaboration and overcoming geographical barriers. Nyarko (2023, 11) reflects on the ethical use of technology through Romans 8:19–23, and its role in the Church's mission. Casayas (2023) examines Mabuting Balita, a digital program for OFWs, addressing their social and emotional needs, while Ugboh (2023, 99-78) introduces techno-theology, advocating for digitalizing church ministries to navigate disruptions and enhance theological practice.

## 2.3. Technomoral Virtues

Vallor (2016) argues that technology, when aligned with human values, can support flourishing, and opposing it equates to rejecting progress. In *Technology and the Virtues*, she advocates for a global ethical strategy through technomoral virtues incorporating Aristotelian, Confucian, and Buddhist virtues, like honesty and wisdom (Barerra 2019, 128-131). Kawall (2017, 281-286) raises concerns about which virtues to prioritize as technosocial environments evolve. Beach (2021) discusses how technological advancements lead to “deskilling” but also offer opportunities for “upskilling” and “reskilling”. Jin (2024, 21) stresses the need for a structured technomoral framework in AI development to align technology with ethical values. Together, these studies highlight the importance of

cultivating technomoral virtues to navigate the ethical challenges of emerging technologies.

## 2.4. Pope Francis and Encyclicals

Since becoming Pope in 2013, Pope Francis has gained global recognition for his humility and accessibility, earning *Esquire's* “Best Dressed Man of the Year” and holding a high public trust in the Philippines in 2015 (Pangilinan 2023, 8). Mills (2015, 45-55) analyzes *Laudato Si'*, and finds that Pope Francis critiques the technocratic paradigm and calls for integral ecology, while Neumayr (2017) discusses the Pope's political engagement on social issues, which sometimes lead to misinterpretations. Piscos (2021, 240-262) examines *Fratelli Tutti* and the Pope's use of digital media, respectively, inclusivity and connection in a global context, similar to Cardoso and Barraco's (2019, 777-782) study of Pope Francis' communication style on his Instagram posts. Papal encyclicals, as formal documents offering guidance on social and moral issues, play a key role in religious authority and communication (Neven and Peine 2017, 26). Studies by Zozimo et al. (2023, 383-399) explore the ethical and environmental tensions in the Pope's teachings. Pope Francis' environmental emphasis, in *Laudato Si'* and *Fratelli Tutti*, are built on the foundational work of Pope Benedict XVI, complementing his predecessor's efforts by expanding the theological and practical framework for ecological stewardship. While Pope Benedict XVI emphasized the moral responsibility to care for creation and initiated tangible sustainability projects, such as installing solar panels and promoting carbon neutrality, Pope Francis deepened this vision by integrating environmental concerns with social justice, global inequality, and the ethical dimensions of consumerism urging systemic change (Ivereigh 2020, 123). Together, their teachings highlight a continuity in Catholic environmental thought, with Pope Benedict laying the groundwork and Francis amplifying the call for systemic change and holistic ecological conversion.

## 2.5. Synthesis

The reviewed literature highlights studies on technosocial issues, exploring solutions through philosophical discourse or Church practices in digital technology. Many analyses focus on Pope Francis' societal messages, recognizing his influence on both Catholics and non-Catholics. While his voice is crucial in shaping discussions, most studies on the

Church and technology are theological reflections. Notably, no research examines Pope Francis' framing of technology in *Laudato Si'* and *Fratelli Tutti* through Shannon Vallor's technomoral virtues. Pope Francis focuses on tackling technosocial issues and urges everyone, including non-Catholics, to use technology ethically, but he does not explicitly introduce technomoral virtues. By incorporating Vallor's technomoral virtues, Pope Francis' messages on technology will be enriched, which is what this research aims to provide. By learning these technomoral virtues from *Laudato Si'* and *Fratelli Tutti*, this study can offer a new perspective on how media content creators can frame their technological stance, like Pope Francis. Through this study, technology developers may also get knowledge on how they can make technologies more inclusive and ethical for all beings in our Common Home.

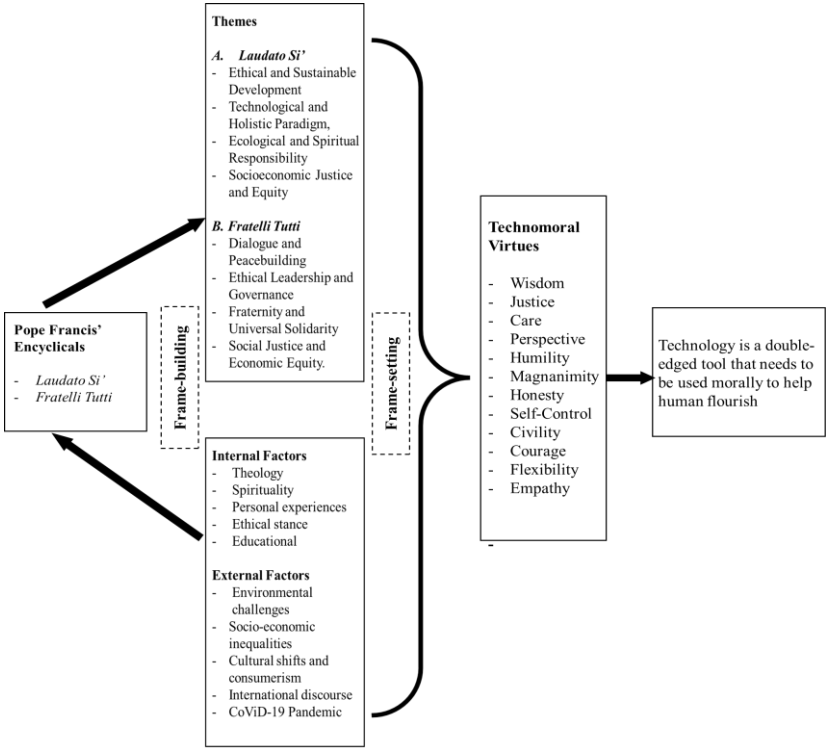
### 3. Statement of the Problem

This research aims to answer the problem: How does Pope Francis frame technology in his *Laudato Si'* and *Fratelli Tutti* encyclicals and how can this framing be understood in light of Shannon Vallor's technomoral virtues?

Specifically, this study aims to answer the following specific questions:

1. What are Pope Francis' themes on technology in *Laudato Si'* and *Fratelli Tutti*?
2. What are the internal and external factors of Pope Francis that influenced his framing of technology in his encyclicals *Laudato Si'* and *Fratelli Tutti*?
3. How can Pope Francis' framing of technology be understood through Shannon Vallor's technomoral virtues?

4. Theoretical and Conceptual Framework



**Figure 1.** Researcher’s Conceptual Framework. This Conceptual Framework is developed based on de Vreese (2005) Theoretical Framework process, constituting frame-building and frame-setting. The technomoral virtues of Shannon Vallor are incorporated in the framework as an overarching concept to understand deeper the contexts (factors) and the themes of Pope Francis framing of technology.

This study uses Claes H. de Vreese’s (2005, 51-62) framing paradigm to analyze how Pope Francis frames his messages on technology in *Laudato Si’* and *Fratelli Tutti*. Framing theory examines how media frames are built and how they influence public perception (D’Angelo 2011, 870-888; Entman 1993, 51-58). In this study, internal and external factors that affect Pope Francis’ framing of technology in his *Laudato Si’* and *Fratelli Tutti* have been determined as seen in figure 1 above. The encyclicals serve as the analyzed media frames, with frame-setting exploring how these frames



interact with audience predispositions. Framing effects are evaluated through Shannon Vallor's (2016) twelve technomoral virtues, which provide an ethical framework for analyzing the Pope's messages on technology and morality in a digitally evolving world.

## 5. Methodologies

This qualitative study uses relational content analysis method of Luo (2019) to examine how Pope Francis frames technosocial issues in *Laudato Si'* and *Fratelli Tutti*, identifying relationships between concepts within the texts to reveal deeper meanings and patterns. Coding guide and sheet for the content analysis are developed, and another coding guide for relating the analyzed themes to Shannon Vallor's technomoral virtues are made and used for a systematic analysis in categorizing Pope Francis' messages, their thematic analysis, internal or external framing factors, and alignment with Vallor's technomoral virtues to see the connections within paragraphs (Busch 2005; Supan 2022). The coding guide and sheet have been validated by three. Data collection follows Bhandari (2022) using AI software to code and categorize data into moral themes analyzed in relation to Vallor's virtues, validating tools, and all research instruments approved by the SPSF Institutional Review Board, following GREIP ethical protocols (Dooley et al. 2017, 352-356).

## 6. Presentation, Interpretation, and Analysis

This section provides a detailed examination of the data collected and its alignment with the study's research questions. The chapter begins by mapping the themes found in Pope Francis' encyclicals, *Laudato Si'* and *Fratelli Tutti*. It then interprets these themes through the lens of Shannon Vallor's technomoral virtues, identifying their frequency and contextual relevance. The discussion highlights significant resonances between Vallor's technomoral virtues and Pope Francis' messages on technology. Finally, the analysis synthesizes these findings to demonstrate how moral principles and virtues can guide technological progress while addressing

global challenges. This chapter thus bridges theological insights with contemporary ethical frameworks for responsible technological engagement.

### **6.1. Mapping the Themes: Insights from *Laudato Si'* and *Fratelli Tutti***

The following themes, as discussed in the methodology of this study, were analyzed using AI software (Atlas.ti and GPT-4). After extracting the themes, the researcher identified commonalities among them and formulated unifying themes that encapsulate the grouped concepts.

#### *6.1.1. Laudato Si'*

Pope Francis' *Laudato Si'* calls for ethical transformation, ecological stewardship, and socioeconomic justice to address modern crises. The themes analyzed are ethical and sustainable development, technological and holistic paradigm, ecological and spiritual responsibility, and socioeconomic justice and equity. Pope Francis critiques consumerism and technocracy, advocating for solidarity and the alignment of technological advancements with the common good.

#### *Ethical and sustainable development*

The first theme identified in Pope Francis' *Laudato Si'* is "ethical transformation and sustainable development." This unifying theme is based on the categorized analyzed themes: call for ethical transformation, responsibility to future generations, moral responsibility for energy transition, call for global consensus, ethical decisions in short-term solutions, moral imperative to align progress with human flourishing, call for generosity and sacrifice, combatting corruption and inequitable consumption, lack of ethical development, need for ethical restraint and cultural maturity, loss of ethical horizons, recovery of lost values and goals, integration of contemplation and action, theological perspective on humanity and nature, redefinition of progress, misuse of sustainability language, loss of identity and self-awareness, human creativity as participation in god's creative action, and dignified life through work.

Pope Francis advocates for ethical responsibility in technology, its long-term impact and alignment with the common good. He critiques shortcomings in development and sustainability, stressing global interconnectedness and the need to address ethics, corruption, and moral decline, particularly among leaders. He writes, "Every ecological approach

needs to incorporate a social perspective which takes into account the fundamental rights of the poor and the underprivileged,” and links ethics and sustainability (Francis 2015, no. 93).

He also calls for recovering lost values and integrating diverse perspectives, including theology, anthropology, and metaphysics in decision-making. “Integral ecology calls for openness to categories which transcend the language of mathematics and biology and take us to the heart of what it is to be human” (Francis 2015, no. 11).

This theme encapsulates a multifaceted call to action, urging humanity to align technological and economic progress with moral imperatives and ecological responsibility. The theme highlights the interconnectedness of individual ethics and collective stewardship, addressing issues like energy transitions, equitable consumption, and the recovery of lost values. It advocates for a paradigm shift in human behavior, moral decision-making and a theological vision that harmonizes humanity’s creative potential with divine action. These elements demonstrate the necessity of generosity, sacrifice, and a global consensus to combat systemic corruption and ensure the flourishing of future generations.

### *Technological and holistic paradigm*

The second identified unifying theme in *Laudato Si’* is “technological and polistic paradigms.” This unifying theme is based on the categorized analyzed themes: critique of technological solutions, technological reductionism as an epistemological paradigm, illusion of progress through power, overreliance on power without restraint, detachment from nature, technological advancements, failure of technological ingenuity to solve global issues, rejection of superficial innovation, domination of the technocratic paradigm, disconnect between economy and human well-being, misguided anthropocentrism and lifestyle, schizophrenia between technocracy and biocentrism, environmental and social consequences of technocratic dominance, role of science in public good, integration of faith and reason, ethical implications of technological decisions, gratitude for scientific efforts, and creation of God’s design.

Pope Francis urges a re-evaluation of technological paradigms, advocating for holistic approaches over linear, profit-driven systems. In *Laudato Si’*, he critiques the “modern myth of unlimited material progress” and calls for technology to serve the common good rather than perpetuate exploitation (Francis 2015, no. 78). He warns, “Never has humanity had

such power over itself, yet nothing ensures that it will be used wisely,” and because of this, there is a need for ethical responsibility (Francis 2015, no. 104).

Pope Francis argues that technocratic paradigms reduce technology to a mere tool, neglecting its broader moral and ecological impacts. “Our immense technological development has not been accompanied by a development in human responsibility, values, and conscience” (Francis 2015, no. 105). This narrow focus undermines the dignity of all life, requiring a “broader vision of reality.” Pope Francis also critiques consumerism, warning that detachment from deeper values leads to material excess: “The emptier a person’s heart is, the more he or she needs to buy, own, and consume things” (Francis 2015, no. 204). He calls for reconnecting technology with ethics and spirituality to ensure true human and ecological flourishing.

Humans do not live alone in this world. Though Pope Francis, bearing a theological perspective, recognizes humanity as the apex of creation, he asserts that humans are not above all other forms of creation. He identifies the current problem of the technological age as a product of misguided anthropocentrism, which he describes as a tendency to “consider ourselves more important than others” (Francis 2015, no. 122).

He calls for a shift toward a holistic perspective in formulating technological paradigms, urging society to acknowledge its interconnectedness with all forms of life. “Everything is interconnected,” he writes, “and this invites us to develop a spirituality of that global solidarity which flows from the mystery of the Trinity” (Francis 2015, no. 240). This holistic approach challenges humanity to create technology that respects and enhances life in its totality.

This theme critiques the technocratic paradigm that reduces progress to technological advancement, detached from ethical and ecological considerations. This theme underscores the illusion of power-driven progress and the failure of technological ingenuity in addressing global challenges holistically. It advocates for a balanced integration of faith and reason, gratitude for scientific efforts while calling for responsible decision-making. This theme critiques misguided anthropocentrism and superficial innovations, the disconnection between economic systems, human well-being, and nature. Ultimately, it calls for an ethical framework that aligns technological progress with environmental stewardship and respect for God’s creation.

### *Ecological and spiritual responsibility*

The third identified unifying theme in Pope Francis' *Laudato Si'* is "ecological and spiritual responsibility." This unifying theme is based on the categorized analyzed themes: interconnectedness of all creation, world as a sacrament of communion, creation as a seamless garment, reverence for creation, integration of ecology and anthropology, spiritual and moral dimensions of ecology, aesthetic contribution, call to protect the Earth, protection of ecosystems, sustainable agriculture, waste disposal and recycling, reduction of pollution, sustainable resources management, and role of biodiversity in ecosystem stability.

He stresses the interconnectedness of all creation, urging leaders to integrate ecology, anthropology, and spirituality to prevent unjust technocratic systems. He writes, "the universe as a whole, in all its manifold relationships, shows forth the inexhaustible riches of God," framing creation as a divine gift that deserves respect (Francis 2015, no. 86).

He asserts that a deeper sense of spirituality fosters care for the world, because "all creatures are connected" and must be "cherished with love and respect" (Francis 2015, no. 42). Francis challenges society to recognize the harm caused by industrial practices that exploit nature, calling for a shift toward ethical and sustainable stewardship.

This theme emphasizes the interconnectedness of all creation and the spiritual and moral imperative to protect and nurture the Earth. It presents the world as a sacrament of communion and creation as a seamless garment, calling for reverence and care for nature. By integrating ecological and anthropological perspectives, this theme highlights the intrinsic link between human well-being and environmental health. Practical considerations such as sustainable agriculture, waste management, pollution reduction, and biodiversity preservation are framed within a spiritual ethic that recognizes the Earth as God's creation, calling humanity to stewardship and sustainable resource management.

### *Socioeconomic justice and equity*

The fourth identified unifying theme in *Laudato Si'* is "socioeconomic justice and equity." This unifying theme is based on the categorized analyzed themes: economic interests over the common good, responsibility for social decline, social exclusion and inequity, economic inequality and pseudo-freedom, balancing consumption and equity, critique of compul-

sive consumerism, forthright and honest debate, binding commitments and political realism, advocacy for ecological integrity, calling for dialogue and comprehensive solutions, and need for urgent and just policy development.

Pope Francis critiques profit-driven consumerism, social inequity and environmental degradation. He warns that prioritizing financial gain over the common good leads to elitism and exclusion, stating, “economic powers continue to justify the current global system where priority tends to be given to speculation and the pursuit of financial gain” (Francis 2015, no. 56). He also condemns compulsive consumerism, which “promotes extreme consumerism in an effort to sell its products” straining natural resources and deepening inequality (Francis 2015, no. 203).

To counter this, he calls for “an ecological conversion” toward mindful consumption and a lifestyle free from material obsession (Francis 2015, 222). He urges leaders to engage in ethical policymaking, because “a healthy politics... is sorely needed” to promote sustainability and justice (Francis 2015, no. 181).

This theme highlights the interconnectedness of environmental issues with economic and social injustices. It critiques the prioritization of economic interests over the common good and exposes the links between social exclusion, inequality, and environmental degradation. This theme calls for a balanced approach to consumption, equity, and the promotion of policies that prioritize ecological integrity and fairness. It advocates for forthright dialogue, binding commitments, and political realism to address these challenges. This theme underscores the moral imperative to foster socioeconomic systems that uphold human dignity and ecological responsibility.

#### 6.1.2. *Fratelli Tutti*

Pope Francis’ *Fratelli Tutti* presents the themes dialogue and peace-building, ethical leadership and governance, fraternity and universal solidarity, and social justice and economic equity. Pope Francis emphasizes the need for truth-seeking through dialogue, responsible stewardship of technology, and fraternity to bridge cultural divides and promote global peace. By integrating charity, solidarity, and empathy, this theme advocates for dialogue as a transformative alternative to indifference and violence, that can help to build unity in diversity.

### *Dialogue and peacebuilding*

The first identified unifying theme in Pope Francis' *Fratelli Tutti* is "dialogue and peacebuilding." This unifying theme is based on the categorized analyzed themes: technology and hidden fears, inequality in technological progress, reality altered by technology, pursuit of truth through dialogue, manipulation of conscience and democratic process, digital campaigns of hatred and destruction, media's role in supporting terrorism, the internet as a gift from God, technology as a tool for human development, responsible stewardship of technology, digital infrastructure's environmental costs, culture of walls and isolation, dialogue as an alternative to indifference or violence, building fraternity through authentic encounters, bridging cultural components through technology, integration of charity in institutions, call for solidarity and empathy, and unity in diversity.

Pope Francis warns of technology's potential to instill fear, deepen inequality, and distort reality through misinformation and manipulation. He cautions that the digital world fosters "addiction, isolation, and gradual loss of contact with concrete reality" and enables the "shameless manipulation of information," eroding trust and fueling division. He also highlights the environmental impact of digital infrastructures (Francis 2022, nos. 43-45).

To counter these issues, Francis urges truth-seeking through dialogue and emphasizes technology as a gift that can foster solidarity when used responsibly. "The solution is not relativism" but engagement in "a process of encounter and dialogue" (Francis 2022, no. 206). He calls for fraternity built on integrity and empathy, asserting, "Life exists where there is bonding, communion, and fraternity" (Francis 2022, no. 87).

This theme emphasizes the necessity of authentic dialogue to counteract societal divisions and promote global peace. This theme critiques the misuse of technology for manipulation, hatred, and isolation, while acknowledging its potential as a tool for human development and fraternity. It calls for responsible stewardship of technology to bridge cultural divides, foster empathy, and support solidarity. By integrating charity into institutions and promoting unity in diversity, this theme highlights dialogue as a transformative alternative to indifference and violence, advocating for peacebuilding through authentic encounters and shared responsibility.

*Fraternity and universal solidarity*

The second identified unifying theme in Pope Francis' *Fratelli Tutti* is "fraternity and universal solidarity." This unifying theme is based on the categorized analyzed themes: erosion of human dignity, loss of fraternity and human connection, superficiality in digital communication, anonymity and accountability, erosion of human empathy, loss of authentic relationships, failure to build bridges, individualism and community breakdown, hypocrisy in religious communication, sacredness of life and human dignity, global justice as a root cause of terrorism, call for universal peace, integration of technology and civic life, and role of international cooperation.

Pope Francis suggests that technology, while a tool for progress, often erodes human dignity. He critiques the spread of "fake news" and digital exposure, cautioning that "people's lives are combed over, laid bare and bandied about, often anonymously" (Francis 2022, no. 42). This culture of misinformation weakens fraternity, empathy, and connection. He also condemns hypocrisy in religious communication, stating, "Religious leaders are called to be true mediators... not intermediaries who seek their own interests", that can help ethical failures in leadership (Francis 2022, no. 284).

To counter these issues, He calls for ethical technology use, international cooperation, and policies serving the common good. "A better kind of politics... truly at the service of the common good" is needed (Francis 2022, no. 154). He stresses that "lasting peace will only be possible" through solidarity and cooperation, urging respect for human dignity and justice in the digital age (Francis 2022, no. 127).

This theme underscores the importance of reestablishing human connections and global unity. It critiques the erosion of human dignity and empathy brought about by individualism, superficial digital communication, and the failure to cultivate meaningful relationships. This theme calls for international cooperation to address the root causes of terrorism and global injustice and emphasizes the sacredness of life and the necessity of building bridges between communities. By integrating technology into civic life responsibly, the theme advocates universal peace and solidarity grounded in shared human dignity.



### *Ethical leadership and governance*

The third unifying theme in Pope Francis' *Fratelli Tutti* is "ethical leadership and governance." This unifying theme is based on the categorized analyzed themes: are moral deterioration and responsibility, silence amid injustice, weakening of spiritual values, loss of integrity in Catholic media, verbal violence and slander in digital spaces, moral responsibility in technological development, rejection of hatred and violence, charity as a driver of change, ethical responsibility of business, economic systems prioritizing efficiency over humanity, polarization and ideological echo chambers, media's influence in daily conversations, critique of technocracy, regulation of power, primacy of politics over economics, and role of legal systems in limiting power.

Pope Francis calls for collective responsibility in addressing moral decline, that leadership may extend beyond positions of power to everyday actions. He condemns silence in the face of injustice, particularly within religious institutions, stating, "Good politics combines love with hope and with confidence in the reserves of goodness present in human hearts" (Francis 2020, no. 196). He also warns against religious hypocrisy, asserting that "violence is not encouraged by religion itself, but by its deformities" (Francis 2020, no. 285).

To combat these issues, Francis urges policymakers to regulate digital platforms to prevent violence and exploitation, because "regulating the legitimate use of power is an essential way to limit its excesses" (Francis 2020, no. 174). He calls for rejecting hatred and solidarity, stating, "Social friendship and universal fraternity... call for an acknowledgment of the worth of every human person" (Francis 2020, 106). Through empathy and moral accountability, societies can navigate technological challenges while preserving spiritual values.

This theme urges everyone to have integrity, responsibility, and morality in leadership across societal, political, and technological domains. It critiques the erosion of spiritual and ethical values, the rise of verbal violence in digital spaces, and the prioritization of economic efficiency over human dignity. The encyclical calls for leaders to reject hatred and polarization, embrace charity as a transformative force, and regulate power through ethical governance and robust legal systems. It emphasizes the primacy of politics over economics, urging leaders to foster justice and uphold the common good over self-serving technocratic or economic priorities.

*Social justice and economic equity*

The fourth identified unifying theme in Pope Francis' *Fratelli Tutti* is "social justice and economic equity." This unifying theme is based on the categorized analyzed themes: economic inequalities and injustice, systemic marginalization of the poor, neglect of immediate human needs, business as a noble vocation, economic opportunism and inequality, rejection of utilitarianism, universal destination of goods, resource distribution and sustainability, technology's role in sustainability, digital infrastructure's environmental costs, sustainable use of technology, and indirect reference to sustainability.

Pope Francis points out the need to reject utilitarianism to combat injustices and inequality. He calls on humanity to hear the cries of both the environment and the poor, advocating for a holistic approach to progress and development that prioritizes inclusion. Inclusion, as Francis envisions, extends not only to marginalized people but also to all life forms on Earth, our Common Home. In *Fratelli Tutti*, he asserts, "Every human being has the right to live with dignity and to develop integrally; this fundamental right cannot be denied by any country" (Francis 2020, no. 107). By rejecting utilitarian practices that favor profit over people, Francis urges a reimagining of progress that considers the well-being of all creation, recognizing the interconnectedness of humanity and the environment.

In the process of inclusion, Pope Francis emphasizes the importance of equity, particularly in the distribution of common goods. Equity, he argues, entails prioritizing those most affected by societal and environmental challenges while warranting justice for all. Francis calls upon world leaders to embrace social justice as a guiding principle for decision-making. In *Fratelli Tutti*, he writes, "Solidarity finds concrete expression in service, which can take a variety of forms in an effort to care for others" (Francis 2020, no. 115). This vision of social justice extends beyond economic policies, requiring leaders to adopt a moral commitment to addressing systemic inequities and environmental degradation. Francis's call for equitable progress serves as a moral imperative to uplift the marginalized and protect the natural world as part of a shared responsibility.

This theme emphasizes addressing economic inequalities and systemic marginalization through ethical and sustainable practices. The encyclical critiques the neglect of human needs, economic opportunism, and utilitarian approaches that prioritize profit over people. It highlights the universal destination of goods, advocating for equitable resource distribution and the

sustainable use of technology. By framing business as a noble vocation, the theme calls for economic systems that uphold dignity, justice, and the common good.

## **6.2. Pope Francis: Internal and External Factors**

### *6.2.1. Laudato Si'*

Pope Francis' *Laudato Si'* integrates both internal and external factors in framing the ethical dimensions of technology. Internally, his theological background, pastoral concerns, integral ecology, and educational background in chemistry shape his perspective (Mills 2015, 45-55). Externally, factors such as climate change, socio-economic inequalities, consumerism, scientific discourse, and weak international agreements influence his views (IPCC 2014; Harris 2016, 181-199). He critiques the "throwaway culture" that fuels environmental degradation and calls for global solidarity in addressing technological and ecological ethics (Francis 2015, no. 21).

### *6.2.2. Fratelli Tutti*

Similarly, *Fratelli Tutti* reflects internal influences like Catholic social teaching, pastoral concerns over social division, and inspiration from St. Francis of Assisi. External factors include socioeconomic inequalities, the COVID-19 pandemic, digital misinformation, and the lack of cyber regulations (Gaudet 2022). Pope Francis warns that "digital connectivity is not enough to build bridges" and calls for just technological policies (Francis 2020, no. 43). His ethical framework merges spiritual insights with global challenges, advocating for technology that promotes human dignity and unity.

## **6.3. Pope Francis and Shannon Vallor's Technomoral Virtues**

### *6.3.1. Laudato Si'*

Pope Francis' messages in *Laudato Si'* strongly align with Shannon Vallor's twelve technomoral virtues. Technomoral Wisdom appears most frequently (43 times), followed by Justice (35), Care (34), and Perspective (34). His call for "ecological conversion" and critique of unregulated technological progress reflect Vallor's emphasis on moral discernment and sustainability. Other virtues like Humility, Honesty, and Magnanimity highlight the ethical responsibility in technological advancements (Harris

2016, 181-199). Less frequent but still significant are Empathy, Flexibility, and Courage, reinforcing Pope Francis' emphasis on global solidarity and adaptive responses to technological challenges (Francis 2015, no. 91).

### 6.3.2. *Fratelli Tutti*

In *Fratelli Tutti*, Perspective (28 appearances) is the dominant virtue, reflecting the need to view technology within a broader ethical and societal framework (Francis 2022, no. 137). Justice (23), Technomoral Wisdom (21), Care (19), and Civility (19) also play key roles, reinforcing fairness, inclusivity, and responsible digital engagement. Pope Francis critiques misinformation and digital manipulation, advocating for honesty, humility, and flexibility in addressing technology's ethical dilemmas (Francis 2015, no. 45). His vision promotes a fraternal digital world, where technology fosters dialogue, respect, and human solidarity.

## 6.4. Two Minds, One Heart

Technology is a powerful force that can either uplift or harm humanity. Pope Francis and Shannon Vallor emphasize the need for ethical virtues to guide its use. Pope Francis calls for open and honest dialogue rooted in social justice and care for creation, while Vallor advocates for technomoral wisdom, civility, empathy, and justice to mitigate technology's divisive effects (Massaro 2023, 2-4).

A central theme in both perspectives is inclusivity, Pope Francis urges simplified, accessible technology for marginalized communities, while Vallor frames inclusivity as a technomoral virtue and an operational necessity, to ensure equitable technology design (Fonseca 2016, 50-60; Bergen and Robaey 2022, 168-170).

Both share a positive outlook on technology's transformative potential. Pope Francis views it as a divine gift, improving human life through medical, agricultural, and industrial advancements, but warns that it must be used responsibly to promote justice and reduce inequalities. Vallor has a similar view that technology's value depends on moral wisdom and human-centered values.

Their perspectives align with United Nations Sustainable Development Goals (SDGs) 2030 numbers 10 (Reduced Inequalities), 16 (Peace, Justice, and Strong Institutions), and 17 (Partnerships for the Goals). By integrating

ethical wisdom into technological progress, societies can achieve human flourishing alongside innovation.

## 7. Summary

This study on Pope Francis' framing of messages in his *Laudato Si'* and *Fratelli Tutti* aims to uncover the themes present in his messages and know the internal and external factors that affects Pope Francis' framing through de Vreese Framing theory. In addition, this study seeks to understand the analyzed themes through Shannon Vallor's technomoral virtues.

Firstly, through critical content analysis of Pope Francis *Laudato Si'* and *Fratelli Tutti*, this study presents eight main themes on technology namely, (1) Ethical and Sustainable Development, (2) Technological and Holistic Paradigms, (3) Ecological and Spiritual Responsibility, (4) Socioeconomic Justice and Equity, (5) Dialogue and Peacebuilding, (6) Fraternity and Universal Solidarity, (7) Ethical Leadership and Governance, (8) Social Justice and Economic Equity.

Secondly, this study reveals that Pope Francis' ethical perspective on technology in *Laudato Si'* and *Fratelli Tutti* is shaped by both internal and external factors. *Laudato Si'* reflects his theological and scientific background, pastoral concerns, and commitment to integral ecology, while also responding to climate change, socio-economic inequalities, and weak international agreements. He critiques the "throwaway culture" and urges global solidarity in addressing environmental and technological ethics. Similarly, *Fratelli Tutti* draws from Catholic social teaching and St. Francis of Assisi's ideals, while addressing modern challenges like digital misinformation and the COVID-19 pandemic. Pope Francis warns that mere digital connectivity cannot foster true unity and calls for ethical technological policies that uphold human dignity and social justice.

Lastly, this study shows that Pope Francis' ethical vision in *Laudato Si'* and *Fratelli Tutti* aligns closely with Shannon Vallor's technomoral virtues in which wisdom, justice, care, and perspective in technology's role in society are emphasized. He critiques unchecked technological progress and digital misinformation, advocating for humility, honesty, and global solidarity.

## 8. Conclusion

This study provides a critical content analysis of how Pope Francis frames technology through an ethical lens, and shows emphasis on the moral implications of it on this technological age. His moral teachings align with Shannon Vallor's technomoral virtues, advocating virtues like humility, justice, and care in addressing digital misinformation, sustainability, and inequality. The findings call for global cooperation among policymakers, religious leaders, and technologists to ensure technology serves the common good. Additionally, this study encourages further interdisciplinary research on faith, ethics, technology, and philosophy to address modern digital and ecological challenges.

In addition, this study reveals that Pope Francis framing of technology is closely related to Shannon Vallor's technomoral virtues. In addition, the applied communication style of Pope in his framing of technology embodies also the twelve technomoral virtues that Vallor encourages especially technomoral wisdom, honesty, courage and civility because Pope Francis courageously speaks about the external technosocial issues drawing from his faith, educational background, spirituality and ethics he believes as part of the internal factors that influenced his framing of technology. Both thinkers stress inclusivity, with Pope Francis urging accessible technology for marginalized communities and Vallor promoting ethical design. They share a hopeful view of technology's transformative power, provided it is guided by moral responsibility. Their perspectives align with UN Sustainable Development Goals, showing the need for ethical wisdom to ensure technology fosters justice, equity, and human flourishing. Understanding Pope Francis framing of technology in his *Laudato Si'* and *Fratelli Tutti*, gives a better perspective through relating his moral teachings to Shannon Vallor's technomoral virtues.

By incorporating Pope Francis' messages on technology and Shannon Vallor's technomoral virtues in technology-related discussions educators and church leaders can guide individuals toward more ethical and responsible digital engagement. Furthermore, those who are engaged in writing and publishing on various media platforms are encouraged to follow the example of Pope Francis' communication style and his approach to framing issues, particularly technosocial issues, while maintaining courage and honesty at all times. With these findings, it has been found important to integrate technomoral virtues into digital literacy programs

within Catholic institutions, and this study also recommends that Internet and Communication Technology (ICT) developers ensure digital ethics that safeguard the privacy and safety of media users, as encouraged by Pope Francis, while bearing Vallor's twelve technomoral virtues.

### **Statements and Declarations:**

The author declares that there are no financial or non-financial conflicts of interest directly or indirectly related to the work submitted for publication. This research was conducted independently without any grants, funding, or financial support from external organizations. The author acknowledges the support of colleagues, mentors, and academic institutions that have contributed to the development of this study. The views and analyses presented in this work are solely those of the author and do not necessarily reflect the perspectives of any affiliated organizations.

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