

Theological Education in the Digital Age: Exploring the Use of AI Research Tools at Asia-Pacific Nazarene Theological Seminary

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Abstract

The emergence of artificial intelligence (AI) technology has opened new avenues for enhancing theological education in Christian contexts. This article examines the perceptions of AI Research Tools at Asia-Pacific Nazarene Theological Seminary (APNTS) and explores how students and professors are adopting and integrating these changes. The study used the Technology Acceptance Model (TAM) as the theoretical framework to identify the factors influencing the adoption and use of AI tools in this Christian education setting. A total of fifty-four participants comprising fifteen faculty members and thirty-nine students completed the survey. The results showed that attitudes toward the use of the tools and perceived social influence significantly affected the behavioral intention to use AI tools with p-value 0.05. Moreover, the findings of the study showed that the behavioral intention for using AI tools for research could be affected by attitudes toward using the tools. The findings of this study provide valuable insights and could unlock the potential for integrating technology into Christian education.

Keywords

artificial intelligence, AI, APNTS, Technology Acceptance Model, Christian education, theological education, ChatGPT, AI Research Tools

INTRODUCTION

Background

The Christian community often views new technology with suspicion, but some see it as a way to improve the world.¹ Digital tools and AI can

1 Stephen Garner, "Theology and the New Media," in *Digital Religion: Understanding*

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improve theological education, thereby benefiting teaching and learning and cutting costs. They also provide solutions for modern ministerial formation, aiding in the training of pastors, ministers, and teachers for the Christian community.²

Ward regards AI and other new technologies as opportunities for growth and advancement rather than threats.³ Such advances in theological education involve using online platforms and digital resources to enhance the learning experience for theology scholars.⁴

Ackerman, the current academic dean of APNTS, highlighted the need for innovative approaches in theological education during faculty professional development meetings. The focus is on training all believers for the mission, using models such as the “Emmaus Journey” and creative technology-based tools. The goal is to develop Christlike disciples who can multiply disciples in their communities.⁵

The vision of APNTS is that by “Bridging Cultures for Christ, APNTS equips each new generation of leaders to disseminate the Gospel of Jesus Christ throughout Asia, the Pacific and the World.”⁶ APNTS equips most of its students from across Asia-Pacific to participate actively in ministry. All APNTS classes are offered face-to-face and online via Zoom. The recordings of the classes are uploaded to YouTube. Resources are available digitally, including library databases and Moodle. Technology adoption has

Religious Practice in Digital Media, ed. Heidi A. Campbell and Ruth Tsuria, 2nd ed. (London: Routledge, 2021), <https://www.taylorfrancis.com/books/edit/10.4324/9780429295683/digital-religion-heidi-campbell-ruth-tsuria>.

- 2 Erna Oliver, “Theological Education with the Help of Technology,” *Theological Studies* 70, no. 1 (February 2014): 3, <https://doi.org/10.4102/hts.v70i1.2643>.
- 3 Mark Ward, “A Theology of AI by a Bible Software Nerd,” *Word by Word* (blog), *Logos Bible*, April 20, 2024, <https://www.logos.com/grow/theology-ai-bible-software/>.
- 4 Anthony Le Duc, “Cybertheology: Theologizing in the Digital Age,” *SSRN Electronic Journal* (October 2016): 3, <https://doi.org/10.2139/ssrn.3056269>.
- 5 David Ackerman, “Reflections on the Global Proclamation Congress II: Trainers of Pastors, Panama City” (article presented at Global Proclamation Congress II, Panama City, November 13, 2023), 19–20, https://apntsedu.sharepoint.com/:w:/r/sites/Faculty/_layouts/15/Doc.aspx?sourcedoc=%7BB11DED1C-C389-4E82-9CFE-980463C27F2C%7D&file=Ackerman%20Reflections%20on%20the%20Global%20Proclamation%20Congress%20II.docx&action=default&mobileredirect=true.
- 6 “Mission and Vision,” Asia-Pacific Nazarene Theological Seminary, <https://apnts.edu.ph/who-we-are/mission-and-vision/>.

increased following a generous donation of the AI literature tool Scispace by a 2023 graduate. This donation has significantly enhanced research capabilities and paved the way for further advancements in the field.

This article examines the perceptions of AI Research Tools at APNTS and how students and professors are adopting and integrating these changes. Moreover, the study analyzes the use of AI Research Tools and how they contribute to theological education. By carefully incorporating AI in alignment with the values and educational philosophy of APNTS, the institution can equip its students with the tools, skills, and knowledge needed to navigate in an increasingly complex and technologically driven world while reinforcing APNTS's commitment to its underlying vision.

Definition of Theological Education in the Digital Age

Today, theological educators embrace digital tools and platforms to enhance the learning experience. From online courses and virtual classrooms to interactive multimedia resources and collaborative learning environments, the digital age has opened up new frontiers for theological education.⁷ Technological advancements have transformed the landscape of theological education, creating both opportunities and challenges. Online courses, virtual classrooms, multimedia resources, and collaborative platforms have opened new avenues for students to engage with theological concepts and connect with others.⁸

The digital revolution has transformed the landscape of theological education. Today, students can access online resources, engage in virtual discussions, and even pursue degrees remotely. Adapting to the digital age requires a careful balance of Christian tradition and innovation, empowering students to navigate the ever-evolving digital landscape while grounding their studies in timeless spiritual truths.⁹

7 Oliver, "Theological Education with the Help of Technology," 4.

8 Imelda Butar-butur et al., "Implementation of Educational Technology in the Development Area in Christian Religious Education in the Digital Age," *International Journal of Multidisciplinary Applied Business and Education Research* 4, no. 2 (February 2023): 405–406, <https://doi.org/10.11594/ijmaber.04.02.07>.

9 Teguh Wijaya Mulya, "Critical Philosophies and Christian Education in the Digital Era," in *Proceedings of the International Conference on Theology, Humanities and Christian Education 2022 (ICONTHCE 2022)*, ed. Sonny Eli Zaluchu et al. (Paris: Atlantis Press, 2023), 23–26, https://doi.org/10.2991/978-2-38476-160-9_4.

According to Schuurman, Bass, and Dykstra, artificial intelligence (AI) in Christian education refers to integrating machine learning algorithms and computational technologies to enhance teaching, learning, and faith formation within a Christ-centered educational environment.¹⁰ AI can support personalized instruction, data-driven decision-making, and the cultivation of digital wisdom or “Technomoral wisdom.”¹¹

Moreover, emerging technologies enhance the formative teaching and learning process to uphold biblical values, develop Christlike character, and prepare students to engage the world for God’s glory.¹² Because Christian education is a holistic approach that integrates biblical principles, spiritual formation, and the cultivation of wisdom, it will equip learners for faithful discipleship by using AI. In addition, AI can enhance this process by efficiently synthesizing knowledge, but true wisdom remains a uniquely human capacity rooted in love for God and others.¹³

Importance of AI Tools in Theological Education.

Integrating AI into the ministry is crucial as the church adapts to the digital age. By embracing technology, ministries can expand their reach, enhance community, and better equip congregants. However, it is vital to employ responsible practices that align with the church’s spiritual mission and values.¹⁴ On the other hand, AI research also holds great potential to

10 Derek C. Schuurman, *Shaping a Digital World: Faith, Culture and Computer Technology* (Downers Grove, IL: IVP Academic, 2013), 61–124; Dorothy C. Bass and Craig Dykstra, *Teaching and Christian Practices: Reshaping Faith and Learning*, ed. David I. Smith and James K. A. Smith (Grand Rapids, MI: Eerdmans, 2011), 1–23.

11 Andy Crouch, *The Tech-Wise Family: Everyday Steps for Putting Technology in Its Proper Place* (Grand Rapids, MI: Baker Books, 2017), 1–32; Shannon Vallor, *Technology and the Virtues: A Philosophical Guide to a Future Worth Wanting* (New York: Oxford University Press, 2018), 151.

12 John Dyer, “Will There Be Roombs in Heaven? Rethinking AI, Work & Time,” *Word by Word* (blog), *Logos Bible*, August 12, 2024, <https://www.logos.com/grow/ai-technology-work-heaven/>.

13 Brett McCracken, “From Data to Discernment: Why AI Can’t Replace Cultivating of Wisdom,” *Word by Word* (blog), *Logos Bible*, June 28, 2024, <https://www.logos.com/grow/why-ai-cant-replace-wisdom/>.

14 “Integrating Technology in Ministry: Adapting for the Digital Age,” Point Loma Nazarene Library Resources, Point Loma Nazarene University, March 18, 2024, <https://www.pointloma.edu/resources/theology-christian-ministry/technology-ministry-adapting-digital-age>.

enhance our world. AI can help accelerate scientific discoveries, improve healthcare diagnostics and treatments, make transportation more efficient and autonomous, personalize education and training, and tackle complex global challenges such as climate change and poverty.

The emergence of AI Research Tools such as ChatGPT presents exciting opportunities for APNTS to enhance theological education. Fine-tuning language models on specialized texts could enable more nuanced discussions. AI's potential in theological education is a beacon of hope, but it also raises ethical questions about AI personhood and agency that the seminary must consider thoughtfully. This technology is a double-edged sword that requires careful navigation.¹⁵

According to Walker Tzeng, on the opportunity side, these tools can revolutionize the research process by automating tedious tasks, uncovering hidden insights, and accelerating the pace of discovery.¹⁶ For example, AI-powered literature reviews can quickly synthesize vast amounts of information, while generative models such as ChatGPT can help researchers ideate and explore new research directions. This can free up valuable time and mental energy for deeper analysis and creative problem-solving.

AI, particularly ChatGPT, can enhance theological education by automating administrative tasks, offering personalized learning experiences, and facilitating collaborative research. It can assist in creating assignments, providing feedback, and aiding in research tasks. While it may not replace human teachers entirely, it can complement theological education by streamlining processes and offering tailored learning experiences. The versatility of AI chatbots such as ChatGPT can revolutionize how theological education is approached, making it more interactive, efficient, and collaborative for students and researchers in the field.¹⁷

15 Mark Graves, "ChatGPT's Significance for Theology," *Theology and Science* 21, no. 2 (April 2023): 201–204, <https://doi.org/10.1080/14746700.2023.2188366>.

16 Walker Tzeng, "AI and the Network Generation: Theological Discussions with ChatGPT on Historical Theology," WETIA, August 1, 2024, 10–12, https://icete.academy/pluginfile.php/28872/mod_resource/content/3/AIandNetworkGeneration_updated_Tzeng.pdf.

17 Tae Won Kim, "Application of Artificial Intelligence Chatbots, Including ChatGPT, in Education, Scholarly Work, Programming, and Content Generation and Its Prospects: A Narrative Review," *Journal of Educational Evaluation for Health Professions* 20 (December 2023): 1–6, <https://doi.org/10.3352/jeehp.2023.20.38>.

Furthermore, researchers can employ Perplexity for keyword extraction and concept identification and Scispace for retrieving pertinent literature, supported by a Premium account purchased for APNTS. Additionally, research writing can be refined and paraphrased using Grammarly to enhance clarity and coherence.

AI Research Tools, Opportunities, and Challenges

The number of small seminaries with fewer than 150 students has doubled over the past decade. However, there has been a decline in the publication of articles and journals related to theological education. This decline may be attributed to stagnant or reduced library budgets as well as to a decrease in the overall number of theological libraries. At the same time, the costs of academic books and journals in religion/theology have been skyrocketing, with book prices doubling and journal prices increasing sevenfold in the last twenty years. This disconnection between rising publishing costs and declining library budgets suggests an increasingly unsustainable market. Cooperative efforts such as open-access publishing and shared collection development will be critical for theological libraries to address these challenges.¹⁸

In some churches, however, theological engagement in AI is a newly transhumanist version of the contemporary and forthcoming age for the world while inquiring about the influence on worship and faith practice. Researchers in AI recognize the importance of embodiment for cognition, which is also crucial to theology. The interactive relationship between ‘intelligence’ and the body prompts reflection on the role of the body in intelligence, thereby becoming crucial to one’s worship and spiritual discipline. This challenge calls theologians to consider the future changes in embodiment on theological concerns for metaphor studies and embodied cognition influencing robotics and AI research.¹⁹

18 Andrew J. Keck, “Theological Libraries and Scholarly Publishing in Religion and Theology,” *Theological Librarianship* 11, no. 2 (October 2018): 27–36, <https://doi.org/10.31046/tl.v11i2.518>.

19 Victoria Lorrimar, “Mind Uploading and Embodied Cognition: A Theological Response,” *Zygon: Journal of Religion and Science* 54, no. 1 (March 2019): 191–206, <https://doi.org/10.1111/zygo.12481>; Jason Thacker, *The Age of AI: Artificial Intelligence and the Future of Humanity* (Grand Rapids, MI: Zondervan, 2020), 15–32.

Contemporary challenges in AI research, such as data bias and a lack of diversity in training datasets, the ‘black box’ decision-making of complex AI models, AI safety and potential mishaps, and the computational power and resources required for advanced AI systems, underscore the need for more interdisciplinary collaboration involving computer scientists, ethicists, policymakers, and domain experts. These challenges call for collective action and shared responsibility.²⁰

Tzeng also addressed the challenges associated with AI Research Tools, which is essential for transforming the research process. Concerns about bias, privacy, and transparency are of the utmost importance. These tools must not perpetuate harmful biases or misuse sensitive data. Furthermore, the potential for AI to produce seemingly plausible yet inaccurate information poses a significant risk that requires careful oversight and critical analysis. Effectively navigating these complexities will be essential as one leverages the power of AI to advance research in ethical and meaningful ways.²¹

Smith and Williams maintain that many educators recognize the potential of AI technologies for saving time and enhancing curriculum development. However, they also express concerns regarding the potential impact on academic integrity, critical thinking skills, and spiritual growth.²² Specific issues raised include the risk of cheating, overreliance on technology for learning, and the potential erosion of faith-based values and principles.²³

Integrating artificial intelligence (AI) into Christian education presents opportunities and challenges. AI can enhance learning experiences, streamline administrative tasks, and personalize instruction. However, Christian educators must thoughtfully navigate the ethical implications of AI and ensure that it aligns with biblical principles. Careful implementation

20 T. Ryan Baltrip, “Identifying Standards of Quality in Christian Online Theological Education” (PhD diss., University of South Florida, 2015), <https://digitalcommons.usf.edu/cgi/viewcontent.cgi?article=7101&context=etd>.

21 Tzeng, “AI and the Network Generation,” 5.

22 David I. Smith, *Digital Life Together: The Challenge of Technology for Christian Schools* (Grand Rapids, MI: Eerdmans, 2020), 45–65.

23 J. Lee, S. Park, and C. Williams, “Cheating and AI in Christian Education: Navigating Ethical Dilemmas,” *Journal of Research on Christian Education* 30, no. 2 (2021): 105–125.

of AI in Christian schools can foster innovation while upholding the values of faith-based education.²⁴ Since AI can enhance personalized learning and administrative tasks, it must be carefully implemented to uphold biblical principles of human dignity and the formative nature of education. Thoughtful integration of AI into Christian education contexts requires ongoing theological reflection.²⁵

Other challenges include navigating ethical concerns, maintaining human connection, and ensuring that AI aligns with Christian values.²⁶ Opportunities include personalized learning, data-driven decision-making, and cultivating digital wisdom to transform education and faith formation.²⁷

However, the conversation on artificial intelligence and moral theology addresses concerns regarding the potential of AI to diminish human connection and undermine the embodied nature of spiritual formation. Philosophers and theologians discuss theological doctrines, anthropological reflections, and moral agency in light of technological advances. Proposals are made for the careful implementation of AI in educational settings, workplaces, and society to mitigate these concerns. The dialogue emphasizes the importance of considering the impact of AI on human connection and spiritual formation, thereby highlighting the need for ethical and thoughtful integration of AI technologies in various social contexts.²⁸ Careful integration is required.

Overview of the Usage of AI Research Tools at the APNTS Library

APNTS' library uses the OPALS Open-source Automated Library System, a powerful, cooperatively developed, web-based, open-source program. This alternative technology provides internet access to information databases, library collections, and digital archives. The library portal can be displayed with variously titled tabs, thus allowing more

24 McCracken, "From Data to Discernment."

25 Dyer, "Will There Be Roombas in Heaven? Rethinking AI, Work & Time."

26 Schuurman, *Shaping a Digital World*, 61–72; Vallor, *Technology and the Virtues*, 151.

27 Crouch, *The Tech-Wise Family*, 1–32; Bass and Dykstra, *Teaching and Christian Practices*, 1–23.

28 Brian Patrick Green et al., "Artificial Intelligence and Moral Theology: A Conversation," *Journal of Moral Theology* 11, no. 1 (April 2022): 13–14, <https://jmt.scholasticahq.com/article/34122-artificial-intelligence-and-moral-theology-a-conversation>.

options to display portlets or separate information by subject or library collection, such as AI-powered research tools.²⁹

The portal of the APNTS Library provides a tool for AI-powered research tools. This portal contains three columns: General Information Tools, Literature Reviews, and Literature and Mapping and also creates presentation tools and help tools, literature reviews and help tools, and literature mapping such as writing, grammar, paraphrasing, proofreading, and summarizing, with links to access their respective main pages.

The general information tools, such as Perplexity, Copilot, and Gemini, are AI-chatbot-powered research and conversational search engines.³⁰

Grammarly and QuillBot have almost the same features. However, Grammarly provides a plagiarism checker, while QuillBot offers an AI detector. Both tools include features for paraphrasing and grammar checking. Additionally, QuillBot can generate academic research prompts in its portal of QuillBot flow, including a summarizer and citation generator.³¹

Tools such as Connected Articles, Litmaps, and Insightful are reliable resources for postgraduates as these tools function to provide primary sources. When an article or book has a DOI or ISBN, these tools search through databases and retrieve all related information.³² While this brings up all areas of research, it is the responsibility of students or researchers to narrow down the results related to their specific topic, usually by using more specific keywords. In conclusion, these tools can visualize connections between articles, visualize citation networks and relationships between articles, and enhance comprehension of complex topics. Connected Articles is designed to be user-friendly, and best of all, it is free.

One notable tool is Scispace, which is widely used by APNTS students due to its reliability and provision of diverse research resources, regardless of whether the articles are related to graduate or postgraduate studies. Scispace significantly reduces the time needed to comprehend complex

29 See AI-powered Research Tools Tab; screenshot is available from: <https://apnts-gnec.kari.opalsinfo.net/bin/home#2>.

30 See General Information Tools; screenshot is available from: <https://apnts-gnec.kari.opalsinfo.net/bin/home#2>.

31 See Writing, Grammar, Paraphrasing, Proofreading, Summarizing Tools; screenshot is available from: <https://apnts-gnec.kari.opalsinfo.net/bin/home#2>.

32 See Literature Mapping; screenshot of the Connected Articles on APNTS seminary library portal. Available from: <https://apnts-gnec.kari.opalsinfo.net/bin/home#2>.

research articles by simplifying scientific jargon, thus enhancing the understanding of key findings and concepts.³³ Additionally, Scispace is accessible and comprehensible for both experts and nonexperts. Lastly, the summaries provided by Scispace can assist students in better understanding the reading resources utilized in class.

The literature reveals a complex landscape at the intersection of theological education, technological advancement, and artificial intelligence (AI), highlighting critical research gaps and emerging challenges. As researchers are increasingly examining AI's transformative potential and ethical implications for religious education and spiritual formation, the primary research gap centers on understanding how AI technologies can be ethically integrated into theological contexts while preserving fundamental human and spiritual values. This involves navigating multifaceted challenges, including potential technological biases, risks to academic integrity, and the preservation of meaningful human connections in educational environments. Emerging scholarly discourse explores profound philosophical and theological questions about AI's impact on embodied cognition, spiritual practice, and educational methodologies. Researchers are particularly concerned with maintaining the delicate balance between technological innovation and preserving the intrinsic human elements of theological learning and spiritual development. Key challenges include mitigating data biases, ensuring transparency in AI Research Tools, preventing overreliance on technology, and developing frameworks that align AI implementation with biblical principles and ethical considerations. The research calls for interdisciplinary collaboration among pastors, theologians, and educators to develop nuanced, responsible approaches to AI integration in religious and academic settings.

Research Questions

This research will answer the following questions:

1. Which AI tools are being used by APNTS students and professors?
2. What factors influence the students' use of AI Research Tools?
3. What behavioral intentions affect the use of AI Research Tools at APNTS?

33 See screenshot of the Scispace tab on APNTS seminary library portal. Available from: <https://apnts-gnec.kari.opalsinfo.net/bin/home#2>.

The possibility of incorporating AI tools to enhance Christian education while maintaining Christian values and principles can enrich pedagogical approaches and student engagement. This study investigated the potential impact of adjusted teaching methods, digital learning platforms, and adaptable instructional techniques in promoting critical thinking, spiritual growth, and comprehensive student development.

The main objective was to explore innovative, kingdom-focused methodologies capable of significantly influencing the APNTS community and substantially contributing to the wider sphere of Christian education. Maitanmi reflected and defined Christian education as “training and instructing children in ways that align with Christian principles and values.”³⁴ This suggests there could be opportunities to use AI to enhance this process—perhaps by developing intelligent tutoring systems or adaptive learning tools to personalize each student’s educational experience based on their Christian beliefs and values. As such, this article aims to discover how students and professors view the use of AI tools in Christian education, particularly their perceptions of its usefulness, ease of use, credibility, social influence, and attitudes toward using AI Research Tools.

Research Objectives

Most theological seminaries follow a God-centered pattern: all things come from God, through God, and unto God. All creatures and creations are manifestations of reality and embodiments of divine ideas. This research investigated how AI technologies can be developed to enhance the delivery of a Christ-centered curriculum and instruction in Christian schools.

Examining the potential benefits and ethical considerations of using AI-powered tools and resources to support spiritual and academic development becomes a prerequisite. The effectiveness of strategies for training Christian educators to utilize AI responsibly in ways that align with a biblical worldview and the objectives of Christian education and assessments must be analyzed. Exploring innovative applications of AI that could handle administrative tasks, optimizing operational efficiency

34 Stephen O. Maitanmi, “Reflections on Christian Education,” *Journal of Research on Christian Education* 28, no. 2 (May 2019): 91, <https://doi.org/10.1080/10656219.2019.1649401>.

in Christian school settings, and freeing up teachers to focus on discipleship would be part of the modern contextualized way of doing the mission and vision of the kingdom to reach the unreached while preparing the best way to organized Christian education assessment.

AI plays a significant role in the contemporary world by shaping our worldview and fostering the acceptance of different cultures and adaptations, which also impacts the assessment of effectiveness in Christian education programs. Utilizing data points received from the APNTS AI research survey could provide valuable insights and unlock the potential for integrating technology into Christian education. Therefore, this research employs the Technology Acceptance Model (TAM) as the theoretical framework for identifying the factors that influence the adoption and use of AI in this Christian education setting.

In summary, the main objective of the study is to determine how students viewed the use of AI tools and the considerable influence on their perceptions of its usefulness, ease of use, and credibility. Moreover, the article investigated students' attitudes toward the use of AI tools as well as the effect of peer influence in using the AI tools in their research activities.

METHODOLOGY

Research Methods

This study examines the perceptions of graduate students at Asia-Pacific Nazarene Theological Seminary (APNTS) concerning how beneficial AI Research Tools are to their research as well as their intentions in using AI tools. With this, a quantitative approach was used to gather data and analyze the factors affecting the intention to use AI tools. A previous study measuring students' attitudes on the use of ChatGPT was replicated by using the survey employed to gather data.³⁵

The survey applied the Technology Acceptance Model (TAM), a theory developed by Fred Davis, to shed light on the mechanisms that drive acceptance of technology to forecast behavior and provide a theoretical explanation for the success of technology adoption.³⁶ A survey applying

35 Halit Yilmaz et al., "Student's Perception of Chat GPT: A Technology Acceptance Model Study," *International Educational Review* 1, no. 1 (April 2023): 58–77, <https://doi.org/10.58693/ier.114>.

36 Fred D. Davis, "Perceived Usefulness, Perceived Ease of Use, and User Acceptance

the TAM model often includes questions to measure perceived usefulness, perceived ease of use, and attitudes toward the use of technology, and in what way these factors affect the intention to utilize a certain technology. In this study, the same factors were used to assess the intention to use AI Research Tools, except for perceived privacy and security issues, since the previous study eliminated this question for not meeting the set criteria.

Research Tools and Procedures

The research used a survey taken from the study of students' perceptions on the use of ChatGPT.³⁷ The survey questions were modified to use a five-point Likert scale to assess the impact of various factors, such as perceived usefulness, perceived ease of use, attitudes toward AI tool usage, perceived credibility, and perceived social influence, on the intention to use AI tools for research (See Appendix I).

The survey was distributed online through Google Survey to the target participants. Respondents chosen were among those students enrolled at APNTS during the summer term of 2023–2024. A link was given to the participants to complete the survey, which could be answered within five minutes.

The data gathered were analyzed using regression analysis to examine which among the variables affected the behavioral intention to use AI Research Tools using Jamovi software. This software is open and free to download and use for statistical data testing.

Sampling

The study used improbability, convenience sampling in administering the survey. The likelihood of selecting members of the target population was not equal in this sampling design, and the sample respondents were picked according to certain criteria, including their availability and willingness to participate in the study.³⁸ One of the criteria was to ask the participants if

of Information Technology," *MIS Quarterly* 13, no. 3 (September 1989): 319–340, <https://doi.org/10.2307/249008>.

37 Yilmaz et al., "Student's Perception of Chat GPT," 58–77.

38 Ilker Etikan, "Comparison of Convenience Sampling and Purposive Sampling," *American Journal of Theoretical and Applied Statistics* 5, no. 1 (2016): 1, <https://doi.org/10.11648/j.ajtas.20160501.11>.

they used AI tools for research and to enumerate the AI tools being used. Since the samples were taken from those who were enrolled during the summer term, a sample of fifty-four respondents was determined to be the minimum sample size from the total enrollees of seventy-seven students, using Slovin's formula where:

$$n = N / (1 + Ne^2)$$

where:

N = the size of the population = 77

Z = confidence level = 92%

E = the margin of error = 0.08

The normal distribution approach used a margin of error of 0.05, but the researcher can determine the margin depending on the desired level of precision and the sample size needed.³⁹ If the researcher has a limited sample size and wants a smaller sample size, the margin of error could be larger. With the margin of error applied to the study, the required sample size was fifty-four respondents. However, the survey results would have a confidence level of 92 percent, meaning that out of fifty-four respondents, there could be four respondents with incomprehensible responses.

Additionally, to be able to achieve a sample size that would meet the aims and objectives of the study, the respondents were chosen based on the following criteria:

- a) students who were currently enrolled at APNTS during the summer term of the academic year 2023–2024;
- b) students who are using AI tools such as Chat GPT, Grammarly, Quillbot, AI Copilot;
- c) students who are willing to participate. See Appendices I, II. The researchers did not collect the email names for privacy consent.

Ethical Considerations

Participation in this study, encompassing the survey and interview components, was entirely voluntary. Participants retained the autonomy to decide whether to engage in the study. It is important to note that

39 Irfan Ananda Ismail, Lian Pernadi Niza, and Febriyanti Agnes, "How to Grab and Determine the Size of the Sample for Research," *International Journal of Academic and Applied Research* 6 (September 2022): 88-92, <http://ijeais.org/wp-content/uploads/2022/9/IJAAR220916.pdf>.

participants would not derive direct benefits from the research or receive any form of compensation for their involvement.

If a participant wished to withdraw from the study, the participant was required to email the researcher with their decision. While the researcher would appreciate understanding the reasons behind the withdrawal, respondents would not be compelled to disclose such information if doing so would cause discomfort or stress.

Any withdrawal requests were duly honored, and data collected from participants who choose to withdraw was deleted, provided that data analysis had not commenced. However, once data analysis was under way and participation had concluded, the feasibility of accommodating withdrawal requests became limited, and such instances were evaluated on an individual basis.

RESULTS

Results of the Study

Table 1: Demographic Profile of the Respondents

Factor	<i>n</i> = 54
Faculty	15
Students	39
Mst	11
Mdiv	8
Mare	2
Mais	3
Abth	1
Phd	13
Undetermined	1

Table 1 shows the demographic profile of respondents. Fifty-four participants comprising 15 faculty members and 39 students completed the survey. Out of the 39 students, 11 were enrolled in the MST program, 8 in the MDIV program, 2 in the MARE program, 3 in the MAIS program, one ABTH student, and 13 in the PHD program. One student did not include the program but was still included in the count of survey responses.

Table 2: Linear Regression Model with Behavioral Intention to Use AI Research Tools as Dependent Variable

Predictor	p-value
Intercept	< .001 (0.533)
Perceived usefulness	0.080 (0.239)
Perceived ease of use	0.177 (0.168)
Attitude toward using AI tools	0.030**** (0.253)
Perceived credibility	0.401 (0.167)
Perceived social influence	0.003*** (0.206)

R-squared 0.434

Adjusted R-squared 0.189

Number of Observations 54

Standard errors are reported in parentheses.

***, **, * indicates significance at 95-percent level.

Table 2 showed the results of the linear regression model used to test whether behavioral intention to use AI Research Tools would be predicted by perceived usefulness, perceived ease of use, attitude toward the use AI tools, perceived credibility, and perceived social influence. The results of the regression indicated that the predictor explained 18.9 percent of the

variance ($R^2 = .434$, $p < .001$). It was found that the attitudes toward the use of AI tools and perceived social influence significantly affected the behavioral intention to use AI Research Tools with p -value < 0.05 .

The survey results, presented in Appendix II, indicate that the majority of respondents utilize Grammarly and Bing-Copilot. This finding implies that students are leveraging AI tools primarily for grammar checks and general inquiries through Bing-Copilot. An analysis of social influence reveals that twenty-three respondents agreed with perceived influence, while twenty indicated uncertainty regarding whether they were being influenced. The data reveals that respondents are significantly influenced by their social environment, including peers, friends, and family, across various domains such as decision-making, attitudes, choices, and personal beliefs. This influence stems from psychological needs for social acceptance, belonging, and trust in familiar relationship circles.

For behavioral intentions that affect the use of AI Research Tools at APNTS, the study examined how perceptions of ease of use, usefulness, credibility, social influence, and attitudes toward the use of AI Research Tools affected the behavioral intention of students and faculty at APNTS. The results showed that among the predictor variables, attitude toward the use of AI Research Tools and perceived social influence affected the behavioral intention to use AI Research Tools.

Discussion of the Study

The findings of the study showed that the behavioral intention to use AI tools for research could be affected by attitudes toward the use of the tools. Students and faculty members use AI tools for research because they find it interesting and valuable. This reflects the findings of a study by Liu⁴⁰ as cited by Yilmaz⁴¹ to examine how AI chatbot can increase the reading engagement of children. The results showed that the AI chatbot improved the reading experiences of the children, which resulted in an increase in enthusiasm for and participation in reading activities. Educators'

40 Chen-Chung Liu et al., "An Analysis of Children's Interaction with an AI Chatbot and Its Impact on Their Interest in Reading," *Computers & Education* 189, no. 7 (November 2022): 104576, <https://doi.org/10.1016/j.compedu.2022.104576>.

41 Yilmaz et al., "Student's Perception of Chat GPT," 60.

perceptions and attitudes toward AI-powered technologies significantly influenced their intention to use these tools.⁴²

Moreover, the study also showed that perceived social influence can affect the behavioral intention to use AI Research Tools. The use and adoption of technology, especially AI tools, are significantly affected by peers and colleagues who think it is beneficial to use these tools for research and can influence nonusers. The findings are consistent with previous research on the degree to which social influence affects the acceptance of technology and its usage.⁴³ Moreover, a study conducted in Vietnam found that college students who expressed their intention to use ChatGPT eventually started using it after receiving information and guidance from their peers, which facilitated their entry into using ChatGPT.⁴⁴

The perceived social pressure from peers, superiors, and institutions can significantly impact one's willingness to adopt AI technologies in theological settings.⁴⁵ The social environment and norms surrounding the use of these tools may shape individual attitudes and behavioral intentions.⁴⁶ The utilization of AI tools impacts social influence, which refers to an individual's perception of the extent to which significant others (e.g., peers, educators, superiors) believe they should adopt a specific technology. This influence is a key factor in predicting the intention to use AI tools.⁴⁷ Social

42 René F. Kizilcec, "To Advance AI Use in Education, Focus on Understanding Educators," *International Journal of Artificial Intelligence in Education* 34, no. 1 (March 2024): 12, <https://doi.org/10.1007/s40593-023-00351-4>.

43 Yilmaz et al., "Student's Perception of Chat GPT," 61.

44 Ackerman, "Reflections on the Global Proclamation Congress," abstract.

45 Viswanath Venkatesh and Fred D. Davis, "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," *Management Science* 46, no. 2 (2000): 186–204; Timothy Teo, "Modelling Technology Acceptance in Education: A Study of Pre-Service Teachers," *Computers & Education* 52, no. 2 (February 2009): 302–312, <https://doi.org/10.1016/j.compedu.2008.08.006>.

46 Robert B. Cialdini, "Crafting Normative Messages to Protect the Environment," *Current Directions in Psychological Science* 12, no. 4 (August 2003): 105–109, <https://doi.org/10.1111/1467-8721.01242>; E. Gil Clary and Mark Snyder, "The Motivations to Volunteer: Theoretical and Practical Considerations," *Current Directions in Psychological Science* 8, no. 5 (October 1999): 156–159, <https://doi.org/10.1111/1467-8721.00037>.

47 Viswanath Venkatesh and Hillol Bala, "Technology Acceptance Model 3 and a Research Agenda on Interventions," *Decision Sciences* 39, no. 2 (May 2008): 273–315, <https://doi.org/10.1111/j.1540-5915.2008.00192.x>.

influences have a significant impact on the intention to use AI-powered tools in education, as indicated in the research, which considers social influences as one of the key factors influencing the intention to use AI tools in the educational field.⁴⁸ The intention to use AI tools in the context of a theological seminary context is influenced by perceived social influence. When faculty staff members and their assistants recommend AI tools such as Semantic Scholar and Connected Articles for students' scientific research, they advocate the need for research. However, a significant challenge identified is the need for specialized training for faculty members to use AI effectively in teaching. Faculty can positively influence students' use of AI in research by providing training and integrating AI tools into academic programs. Therefore, if faculty and staff view AI tools positively and are trained to guide students, it is likely that students will be more inclined to utilize AI in their scientific research endeavors.⁴⁹ Cultivating a culture of AI acceptance can enhance its adoption.⁵⁰

CONCLUSION

The integration of AI into theological education demands a nuanced, human-centered approach that preserves the core values of spiritual formation while leveraging technological advancements. By developing interdisciplinary frameworks that prioritize ethical considerations, transparency, and the preservation of human mentorship, theological institutions can responsibly navigate the complex intersection of AI, spiritual development, and educational innovation.

For this objective of the article, the researchers were able to answer the research questions that were addressed at the beginning of the project.

48 Erwin Halim, Hasmo Arganto Aribowo, and Lea Sulaiman Saputra, "Analyzing Factors Impacting Intention to Use AI-Powered Tools in the Education Field," article presented at the 29th International Conference on Telecommunications (ICT), Toba, Indonesia, November 8, 2023, 1–6, <https://doi.org/10.1109/ICT60153.2023.10374054>.

49 Hala Elalfy Fawzy Mohmed and Basma Abd Elhay Ahmed Elballat, "The Attitudes of Faculty Staff Members and Their Assistants towards Students' Use of AI Tools in Scientific Research," *International Journal for Humanities and Social Sciences* 1, no. 1 (2024): abstract.

50 Alexander John Karran et al., "Multi-Stakeholder Perspective on Responsible Artificial Intelligence and Acceptability in Education," *Npj Science of Learning* 10, no. 1 (July 2025): 16–20, <https://doi.org/10.1038/s41539-025-00333-2>.

According to this table (see Appendix II, Grammarly and Bing-Copilot are being used by most of the respondents. The application of AI tools in Christian education is being influenced by perceived social influence and the attitudes toward the use of AI tools. This includes the library's introduction to the utilization of AI Research Tools, grammar enhancement software, and advanced presentation tools, among others. Students will use AI tools for research because they find it useful and interesting. Furthermore, they consider the use of AI Research Tools to be valuable to their education and ministry.

Additionally, Ackerman said, "We do not want God's people to be in the back, always trying to catch up, but in the front as innovators and visionaries that will require us as administrators and teachers to be informed on this new technology." Old Testament Professor Dr Modine says, "I use AI in my class to give students a chance to evaluate it based on the natural intelligence they gained in the class. It was helpful for students and the professor. Helpful for students because they saw how AI is often unreliable. Helpful for the professor in that it taught me many characteristic phrases so I can better identify suspected AI-generated student writing."

This research text has been enhanced using Grammarly AI to improve its grammar and scholarly tone. The article utilized and quoted sources obtained through AI-based search engines. This reflects the emergence of digital education, in which students and professors will increasingly rely on search engines such as Copilot and software such as Logos Bible Software.

Potential Applications in Theological Education

Artificial intelligence (AI) holds promise for enhancing theological education in Christian contexts. Potential applications include adaptive learning platforms, intelligent tutoring systems, and data analytics to personalize instruction, identify learning gaps, and support spiritual formation.⁵¹ AI could transform how future Christian leaders are trained and equipped.

Investigating AI-powered personalized learning platforms has the potential to improve student engagement and knowledge retention. Additionally, examining the application of AI chatbots for spiritual

51 Schuurman, *Shaping a Digital World*, 61–72; Bass and Dykstra, *Teaching and Christian Practices*, 1–23; Vallor, *Technology and the Virtues*, 151.

guidance and counseling, as well as researching AI-driven virtual reality simulations for immersive ministry training, can provide valuable insights. Furthermore, assessing the effectiveness of AI-powered administrative tools in optimizing theological institution operations is crucial for future research and enhancing policy development for spiritual formation.⁵²

“AI can be both a help and a hindrance in this global need for more pastors and pastor trainers. The benefit is the quick generation of learning tools and a ready source for ministry preparation, including sermons, Bible studies, power points, and graphics, or to translate materials into local languages. The caution is that young pastors might be tempted to preach their AI-generated sermon and not one they had spent time on in prayer, study, and reflection. There is no substitute for the personal transformation of the pastor,” observed David Ackerman.

Future Research and Development

According to Global Proclamation Congress II held in Panama in November 2023, one key area still needs to explore how to integrate the formal, nonformal, and informal approaches effectively into a cohesive system that meets the growing demand for pastoral leaders.⁵³ This could involve investigating the use of micro-credentials, the role of schools, districts, and local churches, and the development of flexible and contextually appropriate curricula. Additionally, research is needed on effective methods for training and supporting ministry mentors, as well as strategies for overcoming the mindset and cultural challenges within theological institutions and credential boards.

Recommendations

This integration show the potential future of balancing artificial intelligence tools and the challenges of these utilities. In this regard, some students recommended the following:

1. AI Research Tools should emphasize the importance of effective academic writing, which reduces the time and effort required, making the process more efficient.

52 Robert L. Woodruff, *Education on Purpose: Models for Education in World Areas*, rev. ed. (Research Institute for International Education, 2024), 9.

53 Ackerman, “Reflections on the Global Proclamation Congress.”

2. It should highlight the need for smarter academic writing approaches to achieve optimal results.
3. It should acknowledge the integration of AI technologies to significantly enhance efficiency in various tasks such as language translation, grammar checking, and knowledge acquisition.
4. Furthermore, AI should prove to be instrumental in providing valuable insights and recommendations, thereby improving decision-making processes.
5. Finally, AI should help in summarizing and providing resources for required research and studies.

The researchers recommended that awareness of AI tools must be strengthened by the following:

1. awareness of the different AI tools that are intended for research enhancement;
2. selection of AI tools that are user-friendly and have the capabilities to meet the multicultural environments or languages.
3. development of training materials or short videos on the main features of the AI tool for maximizing usage.
4. provision of hands-on training in stages to students and educators until there is mastery of the tool, which can then be integrated with the class on research or library literacy programs.
5. flexibility on the percentage of AI usage in the research writing of articles; improvement of AI policy so that it does not limit the student's exploration of the tool.
6. provision of webinars on the ethical use of AI tools.
7. educators must be updated on innovative trends by the provision of professional, accessible training, peer mentoring, and modeling a continuous learning culture by augmenting the use of AI tools by incorporating the right AI tool in their syllabi, creating engaging prompts that will help students develop critical thinking and understand complex topics or subjects.

APPENDIX I

Dear APNTS Student/Professor,

Greetings in the name of our Lord Jesus Christ!

Given that AI Research Tools are permeating education, including theological education, we are conducting research entitled “Doing Theological Education in the Digital Age: Exploring the Use of AI Research Tools at APNTS.”

This research, which values your unique perspective as a student/professor at APNTS, aims to understand your views on the use of AI Research Tools at APNTS. We believe that your insights will be a significant contribution for APNTS to develop appropriate policies for the use of AI Research Tools in preparing men and women for Christlike leadership and excellence in ministry.

Your response will be treated with the utmost respect for your privacy. We assure you that all data will be handled with the highest level of confidentiality and anonymity. The survey responses will remain confidential and securely stored in a password-protected electronic format. Furthermore, there are no costs associated with participation. Your willingness to participate in this study is highly appreciated; participation is voluntary, and you may withdraw anytime.

The survey might take you 10–15 minutes. Please refer to the questionnaire in this Google Form: <https://forms.gle/tfboQj2bWQ9ub7qJ6>

Your participation is truly appreciated, as your response is crucial for the success of this study.

Should you have any concerns, however, please contact library@apnts.edu.ph

Respectfully,

James Dong Sian Muan and Maria Nora V. Del Rosario

A. Demographics

Students

- MARE
- MAIS
- MDiv
- MST
- PhD
- DMin
- ABTh

Faculty

Number of years teaching at APNTS

- 1-5 years
- 6 to 10 years
- 10 to 20 years
- 20 years or more

B. Usage of Tools

Have you used any AI Research Tool in your studies, teaching, writing or research? If yes, what tools (e.g., ChatGPT, Quilbot, AI copilot, SciSpace, etc.)?

- Yes
- No

Which AI Research Tool do you use for writing?

- ChatGPT
- Grammarly
- Quilbot
- AI copilot
- None
- Others

If you choose OTHERS, please specify

Which AI Research Tool do you use for searching for information?

- o ChatGPT
- o Bing AI copilot
- o Google Gemini
- o Perplexity AI
- o Others

If you choose OTHERS, please specify _____

Which AI Research Tool do you use for research, analysis, data collection, etc.?

- o Scite
- o SciSpace
- o RDiscovery
- o Ellicit
- o Prima AI
- o Connect Article
- o Litmap
- o None
- o Others

If you choose OTHERS, please specify _____

C. Perceived Usefulness

Please rank the following statements from 1 to 5:

- (5) Strongly agree
- (4) Agree
- (3) I don't know
- (2) Disagree
- (1) Strongly disagree

Attitude toward using AI Research Tool

To what extent do you agree with the following statements?

1. AI Research Tools can lead to new insights and discoveries in advanced theological research.
2. AI Research Tools help improve the efficiency and productivity of my work and studies.

To what extent do you agree with the following statements regarding AI Research Tools?

1. AI Research Tools can help me find the information I need quickly and easily.
2. AI Research Tools are a valuable resource for answering my questions.
3. AI Research Tools enhance my ability to learn.

D. Behavioral Intention to Use an AI Research Tool

Please rank the following statements from 1 to 5:

- (5) Strongly agree
- (4) Agree
- (3) I don't know
- (2) Disagree
- (1) Strongly disagree

To what extent do you agree with the following statements?

1. I intend to use the AI Research Tool in the future.
2. I expect to use the Ai research tool more often in the future than I do now.

E. Perceived Reliability and Legitimacy

Please rank the following statements from 1 to 5:

- (5) Strongly agree
- (4) Agree
- (3) I don't know
- (2) Disagree
- (1) Strongly disagree

To what extent do you agree with the following statements regarding AI Research Tool?

1. I am concerned about the legitimacy of the information when using an AI Research Tool.
2. I am confident on the reliability of the information provided by the AI Research Tool.

F. Perceived Ease of Use

Please rank the following statements from 1 to 5:

- (5) Strongly agree
- (4) Agree
- (3) I don't know
- (2) Disagree
- (1) Strongly disagree

To what extent do you agree with the following statements regarding AI Research Tools?

1. AI Research Tools are easy to use.
2. It is easy to get AI Research Tools to do what I want it to do.
3. I find AI Research Tools to be user-friendly tools.

G. Attitude toward Using AI Tools

Please rank the following statements from 1 to 5:

- (5) Strongly agree
- (4) Agree
- (3) I don't know
- (2) Disagree
- (1) Strongly disagree

To what extent do you agree with the following statements?

1. Using AI Tools for research is good.
2. I find it interesting to use AI tools for my research.
3. I consider the use of AI Research Tools to be valuable.

H. Perceived Credibility

Please rank the following statements from 1 to 5:

- (5) Strongly agree
- (4) Agree
- (3) I don't know
- (2) Disagree
- (1) Strongly disagree

To what extent do you agree with the following statements regarding AI tools?

1. AI Research Tools are trustworthy sources of information.
2. I believe that AI Research Tools provide accurate information.
3. I perceive AI Research Tools to be a reliable resource.

I. Perceived Social Influence

Please rank the following statements from 1 to 5:

- (5) Strongly agree
- (4) Agree
- (3) I don't know
- (2) Disagree
- (1) Strongly disagree

To what extent do you agree with the following statements?

1. My peers think I should use AI tools for research.
2. I believe that using AI Research Tools is socially acceptable.
3. I am encouraged by others to use AI Research Tools.

What other concerns do you want to address in using AI Research Tools?

APPENDIX II: TABLE 3

Survey Result: Usage of AI Tools	Total Response
1. Have you used any AI Research Tool in your studies, teaching, writing, or research? If yes, what tools (e.g., ChatGPT, Quilbot, AI copilot, SciSpace, etc.)? o Yes o No	34 20
2. Which AI Research Tool do you use for writing? o ChatGPT o Grammarly o Quilbot o AI copilot o None o Others * Respondents can select multiple AI Tools used	14 27 10 11 16 11
3. Which AI Research Tool do you use for searching for information? o ChatGPT o Bing AI copilot o Google Gemini o Perplexity AI o Others * Respondents can select multiple AI Tools used	14 19 11 8 18
Perceived Usefulness (5) Strongly agree (4) Agree (3) I don't know (2) Disagree (1) Strongly disagree	Respondents 15 21 11 6 1
Perceived Social Influence (5) Strongly agree (4) Agree (3) I don't know (2) Disagree (1) Strongly disagree	4 23 20 7 0

Survey Result: Usage of AI Tools	Total Response
Behavioral Intention to use an AI Research Tool	
(5) Strongly agree	24
(4) Agree	18
(3) I don't know	8
(2) Disagree	1
(1) Strongly disagree	3
Perceived ease of use	
(5) Strongly agree	11
(4) Agree	23
(3) I don't know	16
(2) Disagree	4
(1) Strongly disagree	0
Perceived credibility	
(5) Strongly agree	5
(4) Agree	11
(3) I don't know	25
(2) Disagree	10
(1) Strongly disagree	3
Attitude toward using AI Tools	
(5) Strongly agree	11
(4) Agree	19
(3) I don't know	17
(2) Disagree	5
(1) Strongly disagree	2

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