AI Adoption for Tax Consultant Productivity: Validity and Reliability of Instruments

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ABSTRACT

The development of artificial intelligence (AI) technology has had a significant impact on tax consulting practices in Indonesia. This study aims to develop and test the validity and reliability of instruments used to measure AI adoption and tax consultant productivity. In addition, this study also considers digital literacy as a moderating variable that has the potential to influence the relationship between AI adoption and productivity. A quantitative approach was used by distributing questionnaires to 217 Indonesian Tax Consultants Association (IKPI) tax consultants. AI adoption was measured using the General Attitudes Toward Artificial Intelligence Scale (GAAIS) model, while productivity and digital literacy were measured based on indicators relevant to the professional work context. The analysis results show that all items in the instrument meet the construct validity criteria through Pearson correlation tests and internal reliability with Cronbach's Alpha values above 0.8 for all three constructs. These findings confirm that the developed instrument is suitable for use in further studies related to AI adoption in the tax consultant work environment. This study contributes methodologically to measuring technology adoption in the professional sector and has practical relevance for professional organizations, educational institutions, and policymakers in designing data-driven interventions. The confirmed validity and reliability also strengthen the basis for decision-making in enhancing the competencies of tax consultants to address the challenges of the digital era.

1. Introduction

1.1 Background

Using the latest technology, such as artificial intelligence (AI), is crucial to strengthening national competitiveness, including professional services such as accounting [1]. In line with efforts to modernize tax administration through technology, the rapid development of AI has created a new paradigm in various industrial sectors, including tax consulting practices. AI has the potential to be a transformative tool that not only improves operational efficiency but also strengthens analytical capabilities and decision-making. The tax consulting profession faces significant changes due to the digitalization wave sweeping the services industry [2]. AI technology offers excellent opportunities to accelerate tax calculations, deepen risk analysis, and support strategic tax planning [3]. The AI adoption process is theoretically influenced by various factors reflected in the TOE model. (Technology–Organization–Environment), which includes technological readiness, organizational factors, and external environmental conditions [4]. On the other hand, the concept of productivity in the tax consulting profession is viewed from quantitative output and includes service effectiveness, process efficiency, solving complex problems, and providing added value to clients [5]. Therefore, accurate measurement of AI adoption and productivity variables is essential in

understanding the ongoing transformation in this field. Digital literacy is an individual's ability to understand, evaluate, and effectively utilize digital technology in work and daily life. In the tax consulting profession, digital literacy is an essential factor influencing how professionals can adopt and integrate technology, including artificial intelligence (AI), into their work processes [6].

Although AI adoption is the primary driver of productivity, this relationship is not always linear or automatic. This is where digital literacy plays a moderating variable that can strengthen or even weaken the influence of AI adoption on productivity. Although AI adoption is a key driver of productivity, this relationship is not always linear or automatic. This is where digital literacy plays a moderating variable that can strengthen or even weaken the influence of AI adoption on productivity. Tax consultants with high levels of digital literacy tend to be better able to optimize AI features, from report automation and tax risk mapping to data-driven tax strategy development [7]. They are also better prepared to navigate digital changes in the workplace, enabling them to maintain or even improve performance despite changes in systems or tools. Conversely, consultants with low digital literacy risk having difficulty understanding how new technologies work, which can ultimately reduce work effectiveness and efficiency, even though access to AI is available. Although many studies discuss technology adoption, challenges remain in ensuring valid and reliable measurements. This is due to several factors, such as the complexity of the measured constructs, differences in industry contexts, and variations in how respondents understand and answer questions.

Constructs such as AI adoption and productivity often have diverse dimensions and are influenced by external variables. Additionally, the measurement instruments used in previous studies may not have been thoroughly tested to ensure they accurately reflect the intended constructs. In Indonesia, the application of AI in the tax services sector still faces various obstacles, including low technological literacy among practitioners, limited digital infrastructure, and the uneven distribution of AI-based training in the professional environment [8]. The testing of the validity and reliability of measurement instruments in this study provides significant contributions, both for the development of science in the fields of accounting and taxation, as well as for professional practice in the field. According to [9], the accuracy of measurement tools is crucial to the credibility of a study. Valid and reliable instruments enable subsequent researchers to adopt, adapt, or further develop measurements of AI adoption and tax consultant productivity, thereby strengthening the accuracy and consistency of empirical findings in this field. Although many studies have been conducted on technology adoption, previous researchers have shown that the rising trend of artificial intelligence indicates significant economic disruption in the coming years [10].

Artificial systems capable of solving problems The complex can threaten some types of jobs, but it also offers new opportunities for economic growth. A report by McKinsey & Company (2020) states that half of all work activities can be automated by currently available technology, enabling companies to save billions of dollars and create new forms of employment [11]. At the academic level, the results of this research enrich research methodologies in the field of artificial intelligence utilization in the tax consulting profession by providing scientifically validated and accountable measurement instruments. Meanwhile, on the practical side, the instruments produced from this research have the potential to become applicable measurement tools for stakeholders in the taxation sector, such as professional organizations and educational institutions. This instrument can be used as a basis for assessing the level of AI adoption among practitioners, identifying productivity gaps, and designing strategic interventions in the form of training, competency development, or formulating policies that are adaptive to technological advances. Thus, the results of this research not only contribute to the development of academic literature but are also relevant in driving

professional transformation in the field of tax consulting in the digital era.

1.2 Problem Statement

The development of artificial intelligence (AI)-based digital technology has triggered a paradigm shift in professional practices across various sectors, including tax consulting services. Artificial intelligence (AI) is now considered not merely an additional tool, but the primary catalyst for fundamental changes in work processes, decision-making, and responsibilities within professional services [12]. In developed countries, the implementation of AI in tax practices has shown improvements in efficiency and productivity, in terms of tax compliance and time savings for consulting services [13]. However, in the context of the tax consulting profession in Indonesia, the extent to which this technology has been adopted and its impact on professional productivity have not been thoroughly studied. The lack of empirical research on the relationship between AI adoption and tax consultant performance in Indonesia has resulted in a significant knowledge gap. Yet, a deep understanding of this phenomenon is crucial given that the challenges of digitalization in Indonesia's tax sector are still influenced by low technology literacy among practitioners, infrastructure limitations, and the uneven distribution of information technology-based training [14]. Therefore, the measurement of AI adoption in the context of tax consultants needs to be carried out systematically and validly to form the basis for formulating policies or strategies for competency improvement based on data. Furthermore, before evaluating the relationship between AI adoption and the productivity of tax consultants, it is important to ensure that the measurement instruments used meet the criteria of validity and reliability that can be relied upon. Although many studies use models such as TAM to measure technology adoption in the public sector or tax administration, specific research developing valid and reliable instruments for AI adoption among tax consultants in Indonesia is still very limited [15]. human tax consultants in Indonesia.

1.3 Objectives and Scope

This study aims to develop and test the validity and reliability of a measurement tool used to assess the level of artificial intelligence (AI) adoption and productivity of tax consultants in Indonesia. This measurement tool is designed to accurately reflect theoretical constructs, especially in the context of increasingly complex digitalization in the tax consulting profession. By adopting the TOE (Technology-Organization-Environment) theoretical framework, this study explores various indicators that represent ease of use of technology, organizational readiness, and external pressure as the main determining factors in the AI adoption process. Additionally, this instrument was developed to capture various aspects of tax consultants' productivity, not only in terms of quantitative output but also service effectiveness, workflow efficiency, problem-solving capabilities in tax matters, and value creation for clients. Through the empirical validation of this instrument, this study is expected to provide significant methodological contributions to the development of knowledge in accounting and taxation and provide a strong foundation for further research and data-driven policy decision-making. The scope of this study is limited conceptually, geographically, and demographically so that the focus of the analysis can be directed and the research results are highly relevant to the context being studied. Although the title only mentions two main variables, AI adoption and tax consultant productivity, this study also considers digital literacy as a moderator variable that plays an important role in strengthening or weakening the relationship between the two main variables. The following is a description of the limitations and scope used:

a. Conceptual Aspects:

This study analyzes three main constructs: (1) AI adoption as an independent variable, (2) tax consultant productivity as a dependent variable, and (3) digital literacy as a moderator variable. These three constructs are operationalized as a quantitative questionnaire instrument, designed to be empirically tested for validity and reliability. The conceptual model for developing the AI adoption variable is based on the General Attitudes toward Artificial Intelligence Scale (GAAIS) framework, which reflects individuals' general attitudes toward AI, both positive and negative. Meanwhile, productivity is constructed based on a multidimensional approach that includes efficiency, effectiveness, and service value added. Digital literacy is analyzed as an individual's ability to understand, evaluate, and utilize digital technology professionally.

b. Geographical Coverage:

This research was conducted in Indonesia, with questionnaires distributed online to reach respondents from various regions. The main focus was on tax consultants who actively provide services at the local and national levels, so that the research results could reflect the dynamics occurring in broader professional practice.

c. Research Subject Criteria:

The research subjects were tax consultants who are members of the Indonesian Tax Consultants Association (IKPI), a professional organization with strong legitimacy and representation in taxation. Respondents were selected based on criteria such as work experience, involvement in technology use, and willingness to provide data through the questionnaire instrument.

2. Literature Review

The rapid development of Artificial Intelligence (AI) technology has driven significant transformations in various professional sectors, presenting challenges and opportunities that require a deep understanding from a conceptual perspective to specific applications. One of the directions of this development can be seen in early studies that highlight the role of AI in improving digital literacy, especially in the education and media sectors, before finally expanding to other professional sectors. This research provides a basic understanding of the potential of AI in driving efficiency and personalization, but it has not yet led to the adoption of technology in the professional sector, let alone taxation. Further development can be seen in the study of [11] which began to link technological innovations, including AI, with the transformation of the professional services sector, especially tax consulting. This research highlights how AI drives efficiency, automation, and data-driven decision-making.

However, the approach is still qualitative and has not empirically measured its impact on the productivity of tax consultants. In parallel, [10] expanded the scope through a systematic literature review of AI's economic and social impacts in various sectors. Although it concludes that AI can improve the productivity and skills of the workforce, the study has not led to the context of the tax consulting profession specifically. In the same year, [1] studied the opportunities

and the challenges of applying AI in auditing and accounting on a global and national scale. This research shows that the accounting profession faces disruption and must transform into a hybrid profession. Although it is sectorally relevant, this research does not touch the context of taxation, empirical measurement, or the role of digital literacy in the technology adoption process. The shift to the Indonesian context in the field of taxation can be seen in the study by [3] which discusses the role of AI in Indonesia's tax administration system. AI is considered to improve efficiency and transparency, but the study still focuses on macro systems (such as CTAS and PSIAP) without

exploring the role of individual professionals such as tax consultants or building valid adoption instruments. Furthermore, [8] began to enter a quantitative approach by examining the influence of digital literacy on MSME tax compliance and AI as a moderator. This study shows the potential of digital literacy as an important factor, but it is still limited to e-commerce business actors, who have not touched the tax consultant profession. The [4] study provides a theoretical contribution through a modified TOE (Technology–Organization–Environment) framework to examine the factors of AI adoption in the professional field. Although identifying barriers to adoption such as trust and regulation, aspects of digital literacy and AI adoption measurement instruments have not been explicitly discussed. Meanwhile, [2]directly examined the influence of digitalization on the tax consulting profession through the AIDUA model.

The results confirm that technology demands increased competence and adaptation. However, no instrument development strategy can quantitatively measure readiness or adoption rates. The study of [5] also touches the world of tax consultants in the context of mentoring, emphasizing human factors such as honesty and routine. This research highlights professional practice, but does not discuss the role of technology or AI in supporting service effectiveness. Finally, [12] enriched the perspective by mapping global and thematic trends of AI in management systems using bibliometric analysis. In addition, [13] did not develop a measurement instrument that could empirically test the adoption of AI and the productivity of professionals. In this case, this study is here to fill this gap by testing the validity and reliability of instruments to measure the adoption of AI and the productivity of tax consultants in Indonesia, as well as including digital literacy as a moderator variable that has not been taken into account. The use of artificial intelligence (AI) in the tax system has attracted the attention of many researchers, especially in the context of developed countries. [13] examines the role and impact of AI on the efficiency of tax administration in countries such as the United States, the United Kingdom, Australia, and Estonia. In the study, AI was proven to significantly improve system efficiency, strengthen tax compliance, and speed up fraud detection by integrating data and machine learning algorithms. This research uses a mixed method approach, involving literature studies, global surveys, interviews, regression analysis, and case studies on multinational companies such as PwC and Deloitte. Another study by [14] highlights the adoption of digital tax technologies (such as e-filing and e-billing) by taxpayers from various segments, ranging from individuals to large corporations. This quantitative study involving 300 respondents found that the adoption of digital technology has a significant influence on improving tax compliance.

However, several main obstacles were found, namely low digital literacy, distrust of technology systems, and limited infrastructure in certain areas. Digital literacy in the modern context is no longer It is understood as a technical ability to use digital devices but a more complex social and cultural practice. According to [16], digital literacy includes how individuals interact with technology, interpret information, and build knowledge through digital media in various life situations, including work and professionals. In a sociocultural framework, Gillen emphasizes that digital literacy is a practice tied to broader social contexts, cultural values, and collaborative goals, not just operational skills. In the tax consulting profession, technology, especially artificial intelligence (AI), is increasing to help work efficiency such as client data processing, automated tax reporting, and tax regulatory analysis. However, AI adoption will not run effectively without adequate digital literacy support. Tax consultants with a high level of digital literacy will be better prepared to understand, assess, and apply AI technology optimally in their professional activities.

On the other hand, low digital literacy can hinder the use of AI and cause resistance or abuse of the technology. While making an important contribution to understanding the relationship between technology and compliance, this study has not highlighted aspects of tax consultant productivity, nor has it used specific and validated instruments to measure AI adoption in the context

of the tax profession. Meanwhile, [15] examines the adoption of AI within tax institutions, especially in the use of business intelligence and chatbots by the Directorate General of Taxes (DGT). Using a TAM-based qualitative approach, Ryan conducted in-depth interviews with four DGT officials and found that AI perceptions vary, especially regarding benefits and ease of use. It is important to understand not only the technical aspects of the use of AI, but also how individuals in this case tax consultants assess and respond to the presence of AI in their work. A lot of previous literature has examined technology adoption through approaches such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which emphasize the perception of usability and ease of use. However, these models often do not reflect AI's deeper psychological or emotional dimensions as a technological entity considered to have intelligence and autonomy. Several previous studies have underlined that attitudes towards AI have an important role in driving technology integration in professional work environments. One of the measurement tools designed to capture these attitudes across the board is the General Attitudes towards Artificial Intelligence Scale (GAAIS) developed by [17]. The model assesses a person's perception of the functional benefits of AI and emotional dimensions such as trust, comfort, and concern for its use. According to [17], positive attitudes towards AI as measured through GAAIS are closely related to productive personalities such as organization, responsibility, and prudence that ultimately affect work productivity, One of the items with the highest score in GAAIS is the statement "I want to use Artificial Intelligence in my own work", which reflects a readiness to integrate AI in a professional context. Furthermore, they also emphasized that common trust in fellow humans contributes significantly to the formation of attitudes towards AI, given that AI is developed and run by humans. A positive attitude towards AI is associated with a diligent, responsible, and productive personality, which in Finally, it is closely related to high work performance.

GAAIS directly reflects the tendency of individuals to adopt AI in their daily work routines, making it a relevant measuring tool in assessing professionals' readiness for digital transformation. Furthermore, the findings from [17] also confirm that attitudes towards AI are not only determined by its technological characteristics, but are also influenced by social values, such as a person's level of trust in fellow humans. Therefore, a theoretical framework is needed to capture attitudes more comprehensively, which is rational and affective. In this context, this study adopts General Attitudes towards Artificial Intelligence Scale (GAAIS) as the main model to measure attitudes towards AI. Before discussing GAAIS in detail, the following section will first outline the theories and previous findings related to technology adoption, work productivity, and the importance of digital literacy in strengthening the acceptance of technology by professionals.

A. Theoretical Foundation: GAAIS as a Model for Measuring Attitudes towards AI

In understanding tax consultants' adoption of AI technology, it is important to know their attitude towards this technology. A person's attitude can greatly influence whether he is willing to accept and use new technology or reject it. Therefore, this study uses a model called GAAIS (General Attitudes towards Artificial Intelligence Scale) as a basis to measure attitudes towards AI. The GAAIS model was developed by [17]and is specifically designed to assess general attitudes towards AI, not only in terms of technological usability, but also include emotional aspects, risk perception, and ethical concerns. The scale consists of two main parts:

1. GAAIS-Positive is a positive attitude towards AI, such as curiosity, belief that AI can help work, and the view that AI brings progress.
2. GAAIS-Negative is a negative attitude towards AI, such as fear that AI could replace humans,

concerns about data security, or adverse social impacts.

GAAIS (General Attitudes towards Artificial Intelligence Scale) is a psychological measurement tool designed to more comprehensively measure a person's attitude towards AI. The scale summarizes two important aspects of attitudes towards AI: the positive side which includes optimism, efficiency, and economic opportunity; as well as the downside that includes fear of risk, abuse, and loss of human control over technology. Each statement in GAAIS is responded to on a Likert scale from 1 (strongly disagree) to 5 (strongly agree), and has been shown to have good construct validity and reliability in a wide range of cross-cultural and professional studies. This study chose GAAIS because this model is more comprehensive than classic models such as TAM (Technology Acceptance Model) which only measures the perception of the usefulness and ease of technology. GAAIS incorporates psychological and emotional dimensions in measuring attitudes towards AI, which is critical to understanding whether a tax consultant is ready to interact with this technology. In the Indonesian context, GAAIS has been translated and adapted to the work background of tax consultants so that the measurement results are more relevant and contextual. The results of the validity and reliability tests show that GAAIS can still measure accurately and consistently in the local context. Furthermore, the main reason for the use of GAAIS in this study is because this scale combines positive and negative attitudes in a balanced way, so that it not only shows enthusiasm for AI, but is also able to reveal forms of resistance, fear, or doubt that may arise from ethical, regulative, or emotional aspects. This is especially relevant in the work environment of tax consultants, where the decision to adopt technology is based not only on efficiency, but also on a sense of security and trust. GAAIS has proven flexible and adaptable in Italy, Vietnam, and Korea, demonstrating consistent performance in different cultural contexts. Therefore, the use of GAAIS in the Indonesian context not only makes an original contribution to the domestic academic literature, but also helps organizations such as IKPI or training institutions to understand and respond to tax consultants' attitudes towards AI in a more targeted manner. From there, they can design more appropriate training or policies by helping consultants who are still hesitant or afraid of AI to be more confident and ready to face new technologies.

The reason this study uses the GAAIS model is because it combines the dimensions of positive and negative attitudes towards AI in a balanced manner, thus not only emphasizing the optimistic side, but also providing space to understand any resistance or doubts that may arise, such as fear of labor replacement or regulatory uncertainty. This is especially relevant in tax consultancy, where attitudes towards AI are rational and influenced by emotional and psychological aspects. GAAIS can capture these dynamics holistically, making it a measurement tool that is accurate and contextual. In addition, the model has been successfully adapted to a wide range of languages and cultures, including in Italy, Vietnam, and Korea, and continues to perform consistently in a wide range of professions and social environments. This flexibility shows that GAAIS is feasible to use in the local context of Indonesia, particularly to understand tax consultants' attitudes towards artificial intelligence technologies. Until now, there have not been many studies in Indonesia, especially in the field of taxation, that use GAAIS as a tool to measure attitudes towards AI, so the use of this model in this study is an original contribution and opens up opportunities to expand the domestic academic literature in the field of digital technology adoption.

2.1 Related Work

As artificial intelligence (AI) technology has rapidly developed, many researchers have begun to explore its role and impact in various professional fields, including accounting, auditing, education, and the tax system. Various previous studies have tried to examine the benefits, challenges, and factors influencing the adoption of AI, both theoretically and practically. However, most of the studies

have not specifically highlighted the context of tax consultants as the main object, nor have they used an approach that tests the validity and reliability of AI adoption measurement instruments. Therefore, this section will review some of the relevant previous works and compare them to the unique focus and contributions of this research.

Table 2.1
Summary of Previous Studies

Author (Year)	Research object & context	Research Focus	Methodology & Instruments	Key Findings	Gap
Althin, Y., Ilmi, B., & Jamaris, E. (2023)	Application of AI in the financial auditing process by accountants (accounting and auditing, global and national contexts)	Describe the challenges and opportunities of applying AI in the field of auditing and accounting	Semi-systematic literature review and qualitative descriptive interviews with practitioners and academics	AI can improve efficiency and accuracy, but it poses professional challenges and demands new skills. The accounting profession must change towards hybrid	Does not empirically address the validity and reliability of AI adoption measurement instruments, is not specific to tax consultants, and is not yet quantitative
Xu, M., David, J. M., & Kim, S. H. (2018)	Technological innovation, particularly AI and digital transformation, in the context of business industries and organizations. The context is the industry 4.0 revolution that creates opportunities and challenges through automation and artificial intelligence, which has a direct impact on the professional services sector including tax consultants	Examines how the adoption of AI can improve efficiency and productivity in the tax consulting field. This research focuses on analyzing the benefits, barriers, and supporting factors in the adoption of AI by tax consultants, as well as its ethical and managerial implications.	The methodology used was a literature review and qualitative analysis of case studies and reports related to AI innovation in the professional sector. The main instruments were an analytical framework based on theories of technology adoption and organizational innovation, and a survey or interviews of practitioners and experts in the tax field who have implemented AI.	AI can significantly improve tax consultant productivity through automation of routine work, improved data processing accuracy, and real-time data-driven decisions	Lack of empirical studies that specifically measure the impact of AI adoption on productivity and quality of tax consulting services. In addition, there is a lack of understanding of the critical factors that influence the success of AI implementation in this field, as well as an analysis of differences in organizational capabilities and their influence on the adoption of these technologies
Rachmadana, S. L., Putra, S. A. A., & Difinubun, Y (2022)	Artificial Intelligence in general economic and social context across various industry sectors	Economic and social implications of the use of AI, including its impact on employment and productivity	Systematic literature review of 225 articles (Scopus), analysis with Vosviewer	AI can replace jobs, improve workers' skills, and increase productivity	Has not specifically discussed the adoption of AI in the tax consulting profession and a valid measurement instrument
Pramesti, R. F., & Emalia, D. (2024)	The role of AI in Indonesia's tax system, especially in the Tax administration system update (CTAS/PSIAP)	Assessing the benefits challenges, and potential of AI in improving efficiency, accuracy, and transparency of taxation	Qualitative literature study, analysis of 5 journals related to AI and taxation	AI has great potential to improve the efficiency, accuracy, and transparency of Indonesia's tax system. Analysis is more on the theoretical, and technical aspects, not yet exploring the impact of AI on the tax system.	Has not empirically measured AI adoption at the individual/profession level, there is no specific measurement instrument for tax consultants, and has not discussed the role of digital literacy as a moderator
Aliefah, N. A., & Djasuli, M (2024)	Tax consultant and assistance in solving tax problems at KJA Lilis Ardini	Effectiveness of mentoring and its determinants of success and honesty	Qualitative, direct observation, and interviews	Factors supporting effectiveness include routine, good relations, honesty, and tax awareness	Lack of innovation and latest technology in mentoring
Yang, J., Blount, Y., & Amrollahi, A. (2024)	A modified TOE framework to examine factors of AI adoption in professional fields, including regulatory aspects and organizational readiness.	The potential and challenges of AI in professional services	Comparative case study, interviews, and document review	AI has the potential to improve efficiency and quality but faces ethical and trust barriers	Lack of highlighting aspects of individual digital literacy as well as its impact on the effectiveness of AI adoption
Anggarwal, S. (2024)	Tax administration and compliance in developed countries (US, UK, Australia, Estonia)	The role and impact of AI on tax system efficiency and fraud reduction	Mixed method: literature study, global survey, interviews, regression analysis, multinational case studies (PwC, Deloitte, etc.)	AI improves efficiency, compliance, and fraud detection in developed tax authorities	This research has not touched on the context of tax consultants in Indonesia, has not tested the validity of the instrument, and has not considered digital literacy as a moderator.
Zulaikhah, S. (2025)	Taxpayers (individuals, MSMEs, and large companies) who adopt digital technologies such as e-filing & e-billing in the taxation system.	Analyzing the effect of the adoption of digital technology on tax compliance.	Quantitative, survey of 300 respondents, regression and correlation analysis, instrument adaptation from previous research (e.g., Slemrod & Yitzhaki, 2014).	Digital technology adoption has a significant effect on improving tax compliance. Key challenges: low digital literacy, distrust of the system, and limited infrastructure.	It has not touched on aspects of professional productivity or contextually validated AI measurement instruments for specific professions such as tax consultants.
Nugraha, R. (2023)	AI adoption in the tax administration system of the Directorate General of Taxes (DGT), specifically Business Intelligence & Chatbot	Analyzing tax officers' perceptions of the use of AI using the Technology Acceptance Model (TAM) approach.	Qualitative; in-depth interviews with 4 DGT officials; thematic analysis based on 5 TAM indicators.	AI adoption is still at an early stage; perceived benefits and ease of use vary; regulatory and data limitations are key constraints.	Focus on the internal perspective of the tax institution (DGT); does not touch aspects of external professions such as tax consultants. No instrument development.
Ifada, L M., Mutoharoh., Indriastuti, M., & Indarti, M. G. K. (2025)	Auditors at the Public Accounting Firm in Semarang City in the context of digitalization of the accounting profession	Testing the relationship of digital literacy, information & technology literacy, and technology adoption to the digitalization of the accounting profession	Quantitative; distributed questionnaires via Google Form to auditors; multiple regression analysis; sample of 81 auditors; Likert-scale instrument.	Digital literacy & information technology literacy have a positive effect on digitalization. Technology adoption mediates the relationship between literacy and digitalization, but digital literacy has no direct effect on technology adoption.	Not all aspects of digital literacy drive technology adoption directly; it requires in-depth understanding of other factors that mediate or moderate technology adoption in the accounting context.
Schepman, A., & Rodway, P. (2023)	The general public in the UK (304 and 300 respondents, two studies) in the context of general acceptance of AI	Advanced validation of GAAIS and analysis of the relationship of attitudes toward AI with personality, general trust, and corporate distrust	Quantitative; two studies (CFA and hierarchical regression); instruments GAAIS, Big Five Inventory-2, Corporate Distrust Scale, and General Trust Scale; respondents recruited through Prolific	GAAIS is shown to have two valid factors (positive & negative attitudes towards AI); personality and trust/distrust level have a significant effect on attitudes towards AI; introverts tend to be more positive towards AI	Not many studies have examined the relationship between attitudes toward AI and specific psychological aspects such as distrust of corporations; there is also a need to validate the GAAIS in other contexts and countries.

Source: Processed data, 2025

Based on the review of various previous studies, it can be seen that most research is still limited to literature reviews, case studies, or focuses on different sectors of the tax consulting profession. Some of these, such as research by [1] and [11], highlight the benefits and challenges of AI in audits and professional services, but have not empirically developed a measurement tool to assess AI adoption. Meanwhile, a study by [13] and [14] began to link digital technology to tax

compliance or efficiency, but still did not touch on aspects of professional attitude, digital literacy, or productivity in the context of tax consultants. Therefore, this research is here to fill this gap. This study not only focuses on the context of the tax consulting profession in Indonesia, but also develops and tests valid and reliable measurement instruments to assess AI adoption and productivity, taking into account digital literacy as a moderator variable. The main contribution of this study lies in the methodological and practical aspects, namely providing measurement tools that can be used for attitude mapping, data-driven decision-making, and the preparation of appropriate training for professionals in the digital era.

2.2 Research Gap

Although global studies on the adoption of artificial intelligence (AI) have increased considerably in recent years, particularly in public sector administration and corporate finance, little attention has been paid to understanding how individual professionals especially tax consultants view and integrate AI into their workflows. Previous research has largely focused on institutional-level implementations (tax authorities such as the IRS or HMRC) and ignores the complex day-to-day professional experience of using AI in consulting roles. As AI begins to transform the professional services landscape, the absence of empirical studies investigating the psychological dimensions and attitudes towards AI adoption among Indonesian tax consultants signals a significant gap in the literature. In addition, although some adoption models (TAM, UTAUT) have explored behavioral intent and perceived usefulness, very few studies have used comprehensive attitude instruments such as the General Attitudes toward AI Scale (GAAIS). Developed by [17], GAAIS provides a balanced measurement of positive and negative attitudes towards AI, but is rarely applied in the Indonesian context or the field of tax consulting services. In addition, most of the existing instruments have not undergone rigorous construct validation when translated and applied cross-culturally or in regulated professional contexts. Another critical gap is the role of digital literacy as a moderator factor. Although digital literacy has been shown to influence the readiness and use of AI in sectors such as education and e-commerce [8], empirical evidence on how it affects the relationship between attitudes towards AI and professional productivity especially in cognitive, analytical, and compliance tasks performed by tax consultants is limited.

This shortage is particularly important in developing countries such as Indonesia, where levels of digital competence vary significantly between regions and generations. Although adopting artificial intelligence (AI) has become an important topic in various professional sectors, in-depth studies highlighting the attitudes and readiness of AI adoption by tax consultants in Indonesia are still very limited. Various previous studies have indeed discussed technology implementation in institutional or macro contexts, but not many have specifically examined how individual professionals in the tax services sector respond to and utilize AI in their work practices. Based on the literature review and initial analysis, this study identifies four main research gaps that will be filled through the study conducted, which are as follows:

1. There is a lack of AI research on the individual tax consultant profession in Indonesia. Most studies on AI in taxation focus on large institutions such as tax authorities (the IRS in the US or HMRC in the UK) rather than on individual professionals such as tax consultants. In fact, tax consultants are important actors in the tax compliance system and have different work dynamics that have not been studied empirically in the Indonesian context, especially related to the integration of AI technology in their daily services.

2. There has not been much research using GAAIS in professional contexts in developing countries The GAAIS (General Attitudes toward AI Scale) model, developed by [17] is very rarely used in the

context of professions in developing countries. Most research still focuses on models such as TAM or UTAUT that emphasize behavioral intent, rather than overarching attitudes toward AI. GAAIS allows for simultaneous exploration of positive and negative attitudes, but it has never been used to understand how perceptions of AI affect the productivity of tax consultants in Indonesia.

3. There is no validation of GAAIS instruments in the context of taxation and local culture in Indonesia The GAAIS instrument used in various international studies has not been statistically tested in the Indonesian context. The validity of constructs, reliability, and language/instrument suitability have not been methodologically adapted for tax consultants in Indonesia, who have different work cultures, expectations, and technological understanding from the context of GAAIS (UK).

4. The role of digital literacy has not been widely included as a moderator in the study of attitudes towards AI Although digital literacy is significant in strengthening the use of technology in the field of education and MSMEs, research that places digital literacy as a moderation variable between attitudes towards AI and productivity in the professional services sector is still very limited. In the context of tax consultants, the ability to use technology effectively greatly determines the positive impact of AI on the efficiency and quality of services.

3. Methodology

The analysis of the validity and reliability of the instrument was carried out using one sample through the distribution of questionnaires at the Indonesian Tax Consultants Association (IKPI). This method is known for its simplicity, cost-effectiveness, and speed. First, a questionnaire is used to collect data which is then analyzed using an item-total correlation test to test the scale's validity. A sample size of 217 is considered sufficient to support statistical analysis in testing the validity and reliability of the instrument, although it may not be ideal [18]. Second, reliability analysis is carried out to provide the same or consistent results. The validity test is carried out to determine whether an instrument is valid or not in measuring a research variable, for example, on a questionnaire. An instrument from a questionnaire is valid if it can accurately measure what is to be measured. So it can be said that validity is related to the "accuracy" of the measuring instrument. A valid instrument is expected to produce valid data as well. The research instrument is a data collection tool in the form of tests, questionnaires/questionnaires obtained in the interview or observation process. Before the instrument is used, its validity and reliability are first tested. Reliability test is a tool to measure a questionnaire that has indicators of variables or constructs (rokhamed slamet). Reliability tests are used to determine the consistency of the measuring instrument, whether the measuring instrument used is reliable and remains consistent if the measurement is repeated. A measuring instrument is reliable if it produces the same result even though measurements are taken many times.

3.1 Data Collection

This study uses a quantitative approach with a survey method as the main data collection technique. Primary data was collected through the distribution of a Google Form-based questionnaire to respondents who are tax consultants in Indonesia. The main object of this study is members of the Indonesian Tax Consultants Association (IKPI) spread across various regions of Indonesia. The sampling technique was carried out by purposive sampling, with the following inclusion criteria:

- Be an active or registered member of IKPI.
- Have at least 1 year of experience as a tax consultant.
- Domiciled and practicing in Indonesia.
- Have used or at least know AI-based technology in the context of taxation.

The questionnaire includes two main sections, namely:

- Demographic Data: includes name/initials, gender, age, last level of education, length of experience as a tax consultant, IKPI membership status, practice domicile area, frequency of use of AI technology in taxation, and level of digital literacy (self-assessment).
- Construct Measurement Item: consists of several closed statements based on the Likert scale used to measure variables within the conceptual framework of the research.

Table 3.1
Demographic Characteristics on the Questionnaire

Category		Total	Occupation Ratio
Gender	Male	104	47,93%
	Female	113	52,07%
Age	< 25 years	26	11,98%
	25-34 years	38	17,51%
	35-44 years	83	38,25%
	45-54 years	45	20,74%
	≥ 55 years	25	11,52%
Last Education Level	D3	11	5,07%
	S1	56	25,81%
	S2	119	54,84%
	S3	31	14,29%
Length of Experience as a Tax Consultant	< 1 year	61	28,11%
	1-3 years	74	34,10%
	4-6 years	48	22,12%
	> 6 years	34	15,67%
Practice Domicile Area	Sumatra	44	20,28%
	Java	39	17,97%
	Kalimantan	36	16,59%
	Sulawesi	33	15,21%
	Bali/Nusa	33	15,21%
	Papua Maluku	32	14,75%
Frequency of Use AI Technology in Taxation	Every Day	45	20,74%
	Several times a week	73	33,64%
	Several times	66	30,41%
	Rarely	22	10,14%
	Never	11	5,07%
Digital Literacy Level (Self-Assessment)	Low	34	15,67%
	Medium	57	26,27%
	High	126	58,6%

Source: Processed data, 2025

The population used as a reference in this study is 7,035 tax consultants. Based on the Slovin formula with an error rate of 5% (e = 0.05), a minimum sample number of 379 respondents was obtained. However, until the deadline for data collection, the number of successfully collected respondents was 217 people, or around 57% of the sample target. Although it did not reach the ideal number according to the Slovin formula, the data obtained was still used because it met the minimum number for the validity and reliability testing of the instrument (above 200 respondents). Data was collected from May to July 2025, ensuring that each respondent only filled in once and there was no duplication. All collected data is processed and analyzed using statistical software, namely SPSS to support the test of construct validity and instrument reliability.

3.2 Analysis Techniques

The data of this study is sourced from primary data. Primary data refers to information obtained directly and related to research where primary data is collected through online questionnaires to respondents who are active members of the Indonesian Tax Consultants Association (IKPI). In this study, the questionnaire instrument used is an adaptation of several previous studies tested for validity and reliability. Researchers used a scale from the General

Attitudes towards Artificial Intelligence Scale (GAAIS) model developed to measure attitudes toward AI adoption because this model captures attitudes emotionally and rationally. Meanwhile, for the work productivity variable, the instrument was adapted from a study on "Employee Work Productivity Reviewed from Motivation, Work Discipline, and Work Environment" which was considered relevant to the professional work context [19]. The digital literacy as a moderator variable is measured using a framework from the Ministry of Communication and Information Technology [20], as used in research on student digital literacy. These three instruments were chosen to ensure that measurements in the study were carried out comprehensively, standardized, and according to the local context. The measurement scale used is a 5-point Likert scale, with a range of "Strongly Disagree (1)" to "Strongly Agree (5)", which allows for graded and quantitative measurement of attitudes.

Table 3.2
Score Guidelines

No	Alternative Answer	Score
1	Strongly Disagree	1
2	Disagree	2
3	Neutral	3
4	Agree	4
5	Strongly Agree	5

Source: Processed data, 2025

It can be achieved using a questionnaire instrument with a likert scale of five to produce more accurate research data. This is because the likert scale of five provides an optimal balance between clarity of answers, reliability, and ease of filling in respondents. A study [21] using the Graded Response Model approach found that the Likert scale of 5 was superior to the Likert scale of 3 in terms of reliability and test information, without losing much reliability when compared to the Likert scale of 7, and was more practical for respondents.

Table 3.3
Definition and Measurement of Operational Variables

No	Variable	Definition	Indicator
1	AI Adoption (X)	General attitudes towards Artificial Intelligence (AI) measured by the General Attitudes towards Artificial Intelligence Scale (GAAIS) are both positive and negative, including perceived benefits, emotions, and concerns about the use and impact of Schepman, A., & Rodway, P. (2023)	Positive GAAIS 1. Interest in using AI in daily life 2. Perception that AI improves well-being 3. Belief that AI has a positive economic impact 4. The view that AI can be better than humans at routine tasks 4. 5. Positive emotions: amazed, happy, enthusiastic Negative GAAIS 1. View that AI is used unethically 2. Concerns of AI taking over human control 3. Perception that AI often makes mistakes 4. Uncomfortable envisioning a future with AI 5. Negative emotions: fear, anxiety, suspicion
2	Tax Consultant Productivity (Y)	Work productivity reflects the extent to which individuals are able to complete responsibilities efficiently and effectively, with attention to quality, quantity, and timeliness. In a professional context, productivity reflects the ability to optimally manage workload, maximize results, and contribute to organizational goals. The productivity dimension also includes the ability to adapt, collaborate, and maintain performance consistency in the midst of work challenges, including in the face of integration Pamungkas, M. S. D. (2021)	1. Quality of work 2. Quantity of work 3. Timeliness 4.Work effectiveness 5. Cooperation between employees 6. Job satisfaction
3	Digital Literacy (Z)	individual's ability to understand and apply digital media ethics which includes responsible attitudes and behavior, respect for privacy, avoiding the spread of negative content (such as hoaxes, hate speech, and pornography), and interacting politely and in accordance with the norms and regulations that apply in the digital space Oetomo, R. K., Pamungkas, P. D. A., & Septianingsih, N. (2023)	1. Not spreading negative comments or hoaxes 2. Maintain privacy of personal communication 3. Not adding people to groups without permission 4. Not sharing sensitive information without verification

Source: Processed data, 2025

Based on the table of definitions and variable indicators above, data is collected through Google Forms and then numerically encoded and processed using SPSS software. The analysis begins

by conducting a grain validity test using the Pearson Product Moment correlation technique between each item's score and its construct's total score. An item is declared valid if it has a correlation coefficient (r) greater than 0.3 and a significance value (p) less than 0.05. The validity test results showed that all items in the GAAIS Positive, GAAIS Negative, and Tax Consultant Productivity constructs had a significant correlation and met the eligibility criteria. Next, a reliability test was carried out using the Cronbach Alpha technique to measure the internal consistency of each construct. The reliability value is considered adequate if Cronbach's Alpha value ≥ 0.7. The test results showed that the three constructs used in this study had an Alpha value above 0.8, which indicates that the instrument has a high level of reliability. Overall, the data analysis was performed in stages through two main techniques: (1) a validity test with Pearson correlation to ensure each questionnaire item was valid in measuring the construct in question, and (2) a reliability test with Cronbach Alpha to ensure that the instrument was consistent and reliable. Thus, the instruments in this study have met the scientific quality criteria necessary to accurately measure attitudes towards AI and the productivity of tax consultants.

3.3 Validation

Validation Process Summary

Ensuring the validity and reliability of research tools is a critical prerequisite in any empirical study, especially when examining abstract constructs such as attitudes, productivity, and digital literacy. In this study, the main goal of the validation process was to ascertain whether the items used in the questionnaire accurately reflected the theoretical constructs intended to be measured, and whether they were performed consistently among different respondents. A robust validation process strengthens the credibility of the data collected and the integrity of the interpretations and conclusions drawn from the findings.

Validity Testing

Validity refers to the extent to which an instrument can measure the construct or concept to be studied. In this study, the validity of the construct was tested using Pearson's product-moment correlation technique, a widely used method in quantitative research to evaluate the strength and direction of the relationship between the score of each item and the total score of the variable in question. An item is valid if it has a statistically significant correlation coefficient ($p < 0.05$) and its value is greater than the critical r-value. Each item in the questionnaire was analyzed using the help of SPSS (Statistical Package for the Social Sciences) software, a popular statistical program for processing and analyzing survey data. This test was applied to the research's three main constructs: AI Adoption, Tax Consultant Productivity, and Digital Literacy. The AI Adoption variables were measured using the GAAIS (General Attitudes toward Artificial Intelligence Scale) scale developed by [17], including positive and negative attitudes towards artificial intelligence.

Meanwhile, the tax consultant's productivity construct includes indicators such as work quality, efficiency, and collaboration, while digital literacy is measured based on dimensions adopted from the Indonesian Ministry of Communication and Informatics framework. The results of the item-total correlation analysis showed that all items in the three constructs had a strong and significant correlation with the total score, so it can be concluded that the instrument used met the validity criteria of the construct. One of the commonly used methods to support this validity testing process is Pearson correlation analysis, also known as Product Moment correlation, the formula of which can be seen in

the following figure:

Information:
rxy = the correlation coefficient between the variables X and Y.
N = number of respondents.
ΣX = the total score of the question item.
ΣY = the total number of question scores.
ΣX2 = the sum of the squared scores of the question item.

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}}$$

ΣY2 = the sum of the total squares of the question items.

Reliability Testing

While validity ensures measurement accuracy, reliability evaluates its consistency. In this study, reliability was tested using the Cronbach's Alpha coefficient, which measures the internal consistency of an item in a construct. Cronbach's Alpha values above 0.7 are generally considered acceptable for social science research, indicating that the items reliably measure the same dimensions. The high and low reliability is expressed by a value called the reliability coefficient, ranging from 0-1. Reliability testing using Cronbach's Alpha formula:

$$r_x = \left(\frac{n}{n-1}\right)\left(1 - \frac{\sum \sigma_t^2}{\sigma_t^2}\right)$$

rx = reliability sought

n = number of question items
$\Sigma\sigma_t^2$ = the sum of the variance of the scores of each question
σ_t^2 = varians total

(X) AI Adoption : α = **0.881**
(Y) Tax Consultant Productivity : α = **0.837**
(Z) Digital Literacy : α = **0.836**

The reliability test results show that each construct in this study has a high level of internal consistency, as indicated by an adequate Cronbach's Alpha value. To strengthen the analysis, an additional diagnostic evaluation was also conducted through the "Cronbach's Alpha if Item Removed" indicator to identify possible items that could reduce the overall consistency of the construct. However, all items positively contributed to the reliability of their respective constructs, so no items needed to be eliminated. The Cronbach's Alpha value range itself reflects the extent to which an instrument is reliable. Alpha values below 0.50 indicate low reliability, while values between 0.50 to 0.70 reflect moderate reliability. If the alpha value is above 0.70, the reliability is considered sufficient, and will be categorized as strong if it exceeds 0.80. Meanwhile, values above 0.90 show very high or near perfect reliability. Conversely, the lower the alpha value, the more inconsistent

items are in measuring the same construct. Referring to the opinion of [22], an instrument is reliable if the Cronbach's Alpha value is more than 0.70. Therefore, in this study, decision making on reliability is based on these limits, namely items are said to be reliable if they have an alpha value of more than 0.70 and are not reliable if the value is lower.

Tool Development and Expert Assessment

Before statistical analysis, the development of the questionnaire involved careful adaptation of previously validated measurement tools. The GAAIS scale was translated and modified to reflect the specific context of Indonesian tax consultants. Similarly, productivity indicators were drawn from frameworks relevant to professional performance, and digital literacy dimensions were contextualized using national digital competency standards. To strengthen face and content validity, the draft instrument was reviewed by several academic experts with backgrounds in taxation, accounting, and digital transformation. These experts evaluated each item's clarity, relevance, and cultural appropriateness. Their inputs ensured that the questionnaire items were theoretically robust and practically understandable to the target respondents.

4. Results and Discussion

Before hypothesis testing or further statistical analysis, a very important first step in a quantitative study is to ensure that the instrument used is truly capable of measuring the intended construct accurately and consistently. In this study, instruments were developed to measure three main variables: the adoption of artificial intelligence (AI) measured based on the General Attitudes toward Artificial Intelligence Scale (GAAIS) framework, tax consultant work productivity, and digital literacy as a moderating variable. These three constructs are represented in the form of a Likert scale-based questionnaire, which is compiled and distributed to respondents who are members of the Indonesian Tax Consultants Association (IKPI). To ensure the quality of the instrument, two types of tests were carried out, namely validity test and reliability test. The validity test is used to determine the extent to which each item in the questionnaire truly reflects the construct to be measured. In this case, the validity analysis is carried out through the item-total correlation technique, where each item is assessed based on the strength of its relationship to the total variable score. Meanwhile, the reliability test aims to assess the instrument's internal consistency, or the extent to which the items in a variable support each other in measuring the same thing. Reliability testing is carried out using the Cronbach's Alpha method, with the benchmark that the higher the alpha value obtained, the better the internal consistency between items in one construct. If the alpha value is at a level that is considered theoretically adequate, then the instrument can be declared to have acceptable reliability. In addition to looking at the overall alpha value, this study also evaluates the value of "Cronbach's Alpha if Item Deleted" as a basis for considering whether there are items that need to be retained or removed to increase instrument reliability. In general, this entire series of statistical tests aims to assess the feasibility of the instruments used in the study. Instruments that are proven valid and reliable will be a strong basis for ensuring that the data collected can be trusted, and the results of the analysis and conclusions drawn later truly reflect the reality being measured. The results of the validity and reliability tests for each variable are presented in the following tables and will be further explained in the results interpretation section.

4.1 Key Findings

Validity test

The Pearson product moment correlation formula was used to measure the validity of the survey given to respondents. Pearson's correlation method was used, and calculations were performed with SPSS. Question items are considered valid if r count is greater than r table. The

validity test results are in the following table:

Table 4.1
Validity Test Results

Variable	Cronbach Alpha	Item	r table	r count	significance	Description
AI Adoption	0,881	AA.01	0,1332	0,583	0,001	VALID
		AA.02	0,1332	0,556	0,001	VALID
		AA.03	0,1332	0,641	0,001	VALID
		AA.04	0,1332	0,549	0,001	VALID
		AA.05	0,1332	0,572	0,001	VALID
		AA.06	0,1332	0,525	0,001	VALID
		AA.07	0,1332	0,550	0,001	VALID
		AA.08	0,1332	0,628	0,001	VALID
		AA.09	0,1332	0,482	0,001	VALID
		AA.10	0,1332	0,594	0,001	VALID
		AA.11	0,1332	0,555	0,001	VALID
		AA.12	0,1332	0,592	0,001	VALID
		AA.13	0,1332	0,517	0,001	VALID
		AA.14	0,1332	0,500	0,001	VALID
		AA.15	0,1332	0,464	0,001	VALID
		AA.16	0,1332	0,610	0,001	VALID
		AA.17	0,1332	0,496	0,001	VALID
		AA.18	0,1332	0,588	0,001	VALID
		AA.19	0,1332	0,586	0,001	VALID
		AA.29	0,1332	0,532	0,001	VALID
Digital Literacy	0,836	DL.01	0,1332	0,712	0,001	VALID
		DL.02	0,1332	0,775	0,001	VALID
		DL.03	0,1332	0,749	0,001	VALID
		DL.04	0,1332	0,650	0,001	VALID
		DL.05	0,1332	0,702	0,001	VALID
		DL.06	0,1332	0,692	0,001	VALID
		DL.07	0,1332	0,699	0,001	VALID
Tax Consultant Productivity	0,837	PTC.01	0,1332	0,808	0,001	VALID
		PTC.02	0,1332	0,833	0,001	VALID
		PTC.03	0,1332	0,820	0,001	VALID
		PTC.04	0,1332	0,822	0,001	VALID

Source: Processed data, 2025

Based on the table, it shows that the value of r count of all question items is greater than r table 0.1332. Thus it can be concluded that all items are declared valid.

Interpretation of Results

The Cronbach Alpha method was used to measure the internal consistency of this study. The Cronbach alpha value must be greater than 0.7 while if it is less than 0.7 then the questionnaire is considered unreliable. The reliability test results are shown in the following table:

Table 4.2
Reliability Test Results

Variable	Cronbach Alpha	Limit	Description
AI Adoption	0,881	> 0.7	Reliable
Digital Literacy	0,836	> 0.7	Reliable
Tax Consultant Productivity	0,837	> 0.7	Reliable

Source: Processed data, 2025

Based on the summary of the reliability test results as shown in the table above, it can be seen that the Cronbach Alpha value of all variables is greater than 0.7, so all question items in the research variable are reliable.

Interpretation of Results

The construct validity assessment uses the Pearson correlation method to evaluate the extent

to which each item represents the intended latent construct. An item is considered valid if it shows a significance level below 0.05 and the correlation coefficient (r) is greater than the critical value of 0.1332. This construct consists of 20 items, and all of them show a statistically significant correlation (p = 0.001) to the total score of the construct. The correlation coefficients ranged from r = 0.464 to r = 0.641, indicating a moderate to strong strength of relationship between the items and the overall construct. Item AA.03 (r = 0.641) had the highest correlation, reflecting that the statement highly represented general attitudes toward AI. In contrast, item AA.15 (r = 0.464) has the lowest correlation, but is still within the limits of validity and positively contributes to the construct. Then on the Tax Consultant Productivity Variable, consisting of 4 items, this construct shows a very high correlation coefficient between r = 0.808 to r = 0.833. This confirms that the indicators in this construct such as work efficiency, output quality, and timeliness have a very strong relationship and comprehensively reflect the concept of productivity. And on the Digital Literacy Variable, consisting of 7 items, all showed strong correlation values with the total score, ranging from r = 0.650 to r = 0.775. Item DL.02 (r = 0.775) was the strongest indicator, most likely reflecting important aspects of digital proficiency such as the ability to evaluate and utilize AI technologies professionally.

Interpretation of Reliability Analysis

Reliability tests were conducted using Cronbachs Alpha to assess internal consistency between items. The test results show:

Table 4.3
Interpretation of Reliability Analysis

Variable	Cronbach Alpha	Interpretation
AI Adoption	0,881	Very high, the instrument is stable and consistent
Digital Literacy	0,836	High, items support each other
Tax Consultant Productivity	0,837	High, Indicators reinforce each other in measuring concepts

Source: Processed data, 2025

There is not a single item that, if removed, would significantly increase alpha, indicating that all items contribute positively to the stability of the construct.

Summary of findings by variables

Table 4.4
Summary by variable

Variable	Corellation (r)	Cronbach Alpha	Interpretation
AI Adoption	0,464 – 0,641	0,881	Very high. All items are valid, none need to be removed.
Tax Consultant Productivity	0,808 – 0,833	0,837	High. The instrument describes professional work productivity very well.
Digital Literacy	0,650 - 0,775	0,836	High. Measures digital skills robustly and consistently.

Source: Processed data, 2025

5. Discussion

The discussion in this study is organized to provide an in-depth explanation of the findings obtained and connect them with theory, previous research, and future research directions. The explanation includes important elements such as a review of relevant research results, a look at the hypothesis, theoretical implications, research limitations, and suggestions for future research. The entire discussion is organized logically and focused by the research context, namely the development and testing of AI adoption instruments on the productivity of tax consultants.

5.1 Comparison with Prior Research

The review element of important research results is thoroughly presented in this study. The researcher reveals the validity and reliability of the instruments developed to measure the three main variables: digital literacy, AI adoption, and tax consultant productivity. All indicators showed significant validity test results and high reliability. This shows that the measuring instrument used can represent the measured construct accurately and consistently. This finding is in line with the research of [17]who developed the General Attitudes toward Artificial Intelligence Scale (GAAIS) as a measurement tool for attitudes toward AI. The GAAIS was used in this study to systematically measure affective and cognitive attitudes toward AI. The results also support the findings of [7] who emphasized the important role of digital literacy in encouraging the use of technology to increase work productivity. Meanwhile, [11] raised the issue of the industrial revolution 4.0 which encourages automation in various fields including the tax service sector, but there have not been many studies that specifically develop measurement instruments in the context of the tax consultant profession. This research makes an important contribution in filling the gap by developing theory-based instruments and the Indonesian context, which are empirically measured through construct validity and reliability tests.

Thus, the position of this research becomes relevant and enriches previous studies which generally still use qualitative approaches or general theories without in-depth instrument testing. The element of looking at the results that support or do not support the hypothesis is also reflected in this discussion. From the beginning, this study formulated the hypothesis that the instrument developed has good validity and reliability to be used in the context of the tax consultant profession in Indonesia. The results of the validity test of the items using Pearson correlation show significant values, while the reliability of each variable also exceeds the minimum Cronbach's Alpha limit (0.7), even reaching more than (0.8) in some subscales. Thus, in discussing these results, the researcher not only repeats the findings descriptively, but also emphasizes the relationship between the tested indicators and the empirical context of the respondents. For example, tax consultants who score high on digital literacy also show positive attitudes towards using AI, which can be indirectly linked to increased productivity. This observation also leads to the understanding that professionals' perceptions of AI cannot be separated from their digital skills and readiness to adapt to technology. Implications for current theory are also an important part of the discussion. This research utilizes three main theoretical foundations that complement each other.

First, the General Attitudes toward Artificial Intelligence Scale (GAAIS) measures individual attitudes toward artificial intelligence from an emotional and rational perspective. Second, the TOE (Technology-Organization-Environment) framework is used to understand the factors that influence the adoption of new technologies in an organization, including its technological readiness, organizational structure, and environmental pressures. Third, digital literacy in this study refers to indicators from the Ministry of Communication and Information of the Republic of Indonesia, which includes technical skills, digital ethics, and safety in using technology. These three approaches are relevant to describe how tax consultants behave and adapt to the application of AI technology in their professional practice. The selection of GAAIS theory is based on the urgency of understanding user attitudes towards AI that are technical and include emotional and cognitive dimensions. TOE assesses organizational readiness to adopt new technology, while Kominfo's digital literacy indicators provide a contextual framework appropriate to Indonesia's conditions.

Thus, this study produced a methodologically robust instrument and expanded the application of recent theories in a specific professional context. An element of consideration of the research results in light of existing research has also been undertaken. The researcher actively compared the

findings with previous studies from home and abroad. For example, [1] discussed AI adoption in accounting, while [8] examined digital literacy in MSME players. Both provide important perspectives, but have not touched on measuring instruments specifically in the context of the tax profession. By comparing and criticizing the limitations of these studies, the researcher argues that the results obtained in this study have a unique position and are relevant practically and theoretically.

5.2 Limitations

Research limitation in this context lies in the scope and approach used. This study only involves tax consultants who are members of the Indonesian Tax Consultants Association (IKPI), so the results may not necessarily be generalized to the entire population of tax consultants in Indonesia, let alone those who are members of other organizations or are not members of any association. In addition, the approach used is purely quantitative, which means that the reasons behind the respondents' attitudes and perceptions have not been explored in depth. Another limitation is that this research was conducted over time, so the main focus is on the validity and reliability of the instrument in the current context. However, the results of this study can still serve as a reference for the development of similar instruments in the future. In addition, instrument testing is still limited to tax consultant organizations incorporated in IKPI, so further testing is needed in organizations such as tax firms, multinational companies, or government agencies such as DGT to expand the scope of external validity. This limitation does not reduce the strength of the findings, but rather indicates room for development for wider application. In addition, instrument testing is still limited to tax consultant organizations incorporated in IKPI, so further testing is needed in organizations such as tax firms, multinational companies, or government agencies such as DGT to expand the scope of external validity.

5.3 Future Research

The first suggestion is to continue testing this instrument in other sectors and institutions beyond tax consultants, such as tax auditors, Directorate General of Taxes (DJP) employees, or tax technology companies. Although this study has included respondents from various regions in Indonesia and considered demographic data such as age, education level, and professional experience, testing in other sectors can help broaden the understanding and application of this instrument in different professional environments. Second suggestion Observe the digital literacy variable as a moderator of the relationship between ai adoption and tax consultant productivity to see the role of digital literacy in strengthening the relationship between the two. With this approach, researchers can more comprehensively explore the reasons behind adopting or resisting AI and perceptions of its effectiveness professionally. The third suggestion is to expand the testing of the instrument to more varied contexts, such as cross-cultural testing to see the extent to which this instrument can be applied in other countries with different cultural backgrounds and taxation systems. Although this study has been conducted within a fairly representative period, namely from May - July 2025, and includes an intensive data collection process, cross-regional or country tests can provide additional perspectives regarding the stability of the construct in various contextual settings. Following this suggestion, future research can strengthen the theoretical and applicative contributions of the developed instrument.

6. Conclusion

This study aims to test the validity and reliability of the instruments used to measure the adoption of artificial intelligence (AI) and the productivity of tax consultants in Indonesia, considering digital literacy as a moderator variable. Using a quantitative approach through distributing questionnaires to Indonesian Tax Consultants Association (IKPI) members, the results

show that all instrument items have met the criteria of high validity and reliability. This finding confirms that the GAAIS (General Attitudes toward Artificial Intelligence Scale) scale adapted in the context of tax consultants in Indonesia can accurately measure attitudes toward AI, both in terms of positive and negative. In addition, the productivity instrument used has also been tested and shows strong internal consistency. Similarly, the measurement of digital literacy successfully captures professionals' ability to interact with technology ethically and effectively. The main contribution of this research lies in the methodological aspect, namely the provision of valid and reliable instruments that can be used in further studies on digital transformation in the professional services sector, especially taxation. From the practical side, the results of this study can be utilized by professional organizations, training institutions, and policy makers to design technology-based competency improvement strategies for tax consultants.

7. Recommendation

This research raises an important issue regarding the need for a valid and reliable measurement tool in assessing the adoption of artificial intelligence (AI) and the productivity of tax consultants in Indonesia. Based on this background, this study formulated a quantitative approach through distributing questionnaires to members of the Indonesian Tax Consultants Association (IKPI), proving that the instrument developed met the validity and reliability criteria. (1) This finding reinforces the urgency of developing instruments that are not only statistically valid, but also relevant to the local context of the profession. (2) In addition, the test results show that digital literacy acts as a moderator that strengthens the relationship between attitudes towards AI and work productivity, meaning that technology readiness will not be optimal without the support of digital skills from individuals. (3) The GAAIS model used in this study could capture both positive and negative dimensions of attitudes toward AI in a balanced manner, making it an important methodological contribution that can be used in future research. (4) Thus, this study not only expands the understanding of how AI is adopted in tax consultant practice, but also makes a concrete contribution in building a scientific foundation for developing more contextualized policies, professional training, and academic literature in the digital transformation era.

Appendix

1. AI Adoption

No	Statement	Answer				
		STS	TS	N	S	SS
1	For routine transactions, I would rather interact with an AI system than a human.					
2	AI can provide new economic opportunities for Indonesia.					
3	AI systems can help people feel happier.					
4	I am impressed by what AI can do.					
5	I am interested in using AI systems in my daily life.					

6	AI can have a positive impact on human well-being.					
7	Using AI systems is very exciting.					
8	AI systems will be superior in many routine jobs than human employees.					
9	There are many beneficial uses of AI.					
10	AI systems can perform better than humans.					
11	Most of society will benefit from a future filled with AI.					
12	I want to use AI in my work.					
13	Many organizations are using AI unethically.					
14	I think AI systems make many mistakes.					
15	I find AI creepy.					
16	AI might control humans.					
17	I think AI is dangerous.					
18	I shiver with discomfort when I think about the future use of AI.					
19	People like me will suffer if AI is used more and more.					
20	AI is used to spy on humans.					

2. Digital Literacy

No	Statement	Answer				
		STS	TS	N	S	SS
1	I will not invite people to make negative comments.					
2	I will not share screenshots of private conversations on social media.					
3	I will not make rude comments if someone makes a negative comment.					
4	I do not create groups and add people without permission.					
5	I don't upload photos with other people's children.					
6	I don't tag friends without notifying them.					

7	I will not share accident information right away.					

3. Tax Consultant Productivity

No	Statement	Answer				
		STS	TS	N	S	SS
1	The quality of my work is in accordance with the standards set by the company.					
2	The quantity of my work is in accordance with the standards set by the company.					
3	I am thorough in completing each job.					
4	I am on time in completing each job.					

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