The Impact of AI Adoption on the Productivity of Tax Consultants: The Moderating Effect of Digital Literacy

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A B S T R A C T

This study aims to analyze the influence of Artificial Intelligence (AI) adoption on the productivity of tax consultants, with a special focus on the role of digital literacy as a moderation variable. The approach is quantitative, with data collection through the dissemination of structured questionnaires compiled based on the General Attitudes toward Artificial Intelligence Scale (GAAIS) instrument. The questionnaire was distributed to 217 tax consultants registered as Indonesian Tax Consultants Association (IKPI) members. The results show that the adoption of AI has a significant influence on increasing the productivity of tax consultants. In addition, digital literacy has been shown to strengthen these relationships, where tax consultants with high levels of digital literacy experience greater productivity gains from using AI than those with low digital literacy. These findings confirm the importance of improving digital literacy and skills among tax professionals to optimize the benefits of AI technology. This research contributes to the literature on technology adoption in the professional services sector and offers practical implications for policymakers and professional training institutions.

1. Introduction

1.1 Background

Amid the ever-growing digital era, advances in information technology, especially artificial intelligence (AI), have brought significant transformations in various professional sectors, including tax services. Many tax services companies, both large and medium-scale, have begun to implement artificial intelligence (AI) to improve operational effectiveness and accuracy of work outcomes[1] Recent data shows that more than 65% of firms have leveraged artificial intelligence (AI) to automate routine work, analyze financial data, and provide customer service through chatbots or virtual assistants. The company "BIG FOR" has even developed an agentic AI system, an autonomous artificial intelligence that can carry out the audit process, ensure compliance, and make strategic decisions independently[2]. Implementing artificial intelligence (AI) has been proven to save up to 20% of work time, reduce the error rate in tax reporting, and increase accuracy and openness in financial data management. This dynamic requires tax practitioners to understand the regulatory environment.

Aspects and equip themselves with qualified digital literacy to keep up with the flow of change driven by innovative technology. Tax consultant productivity faces various complex problems, ranging from high administrative burdens due to frequently changing tax regulations to limitations in adopting technologies such as automation software and artificial intelligence (AI). Many consultants still rely on manual processes, which are time-consuming and increase the risk of errors. In addition, low digital literacy, lack of continuous training, and weak time and project

management also worsen performance. Internal factors such as the absence of clear productivity indicators and high employee turnover also hinder work efficiency. This problem is even more complex when associated with the increasing demands of clients in the digital age, requiring tax consultants to be able to work quickly, accurately, and technology-based [3].

Assessment of the application of technology, both in the pre- and post-adoption stages, is a crucial element that must be considered in various professional fields. In Indonesia, one of the main obstacles to the application of artificial intelligence (AI) is the lack of an integrated and structured governance framework to support the integration of AI into public service and administrative systems. Many studies still focus on the technical aspects and development of AI applications, but have not sufficiently explored the policy implications and the social and administrative impacts they cause. In the national context, a deep understanding of the potential risks, benefits, and essential issues such as data protection, ethics of technology use, and digital literacy inequality is very relevant[4]. Therefore, more thorough follow-up research is needed to develop an adaptive AI adoption approach that aligns with Indonesia's realities and local needs.

Digital literacy skills are crucial in supporting the successful adoption of technology, including artificial intelligence technology. Lack of understanding related to the use of technology, data protection, and digital ethics can be obstacles in the implementation process[5]. In Indonesia, the low level of digital literacy is one of the main obstacles, so strengthening literacy is a strategic step to ensure optimal and sustainable technology implementation.

Therefore, this study aims to provide a new contribution to the literature on technology adoption, particularly in the Indonesian tax professional services sector. This research integrates digital literacy as a moderator, a variable not widely explored in this context. Furthermore, the use of GAAIS to measure perceptions of Artificial Intelligence (AI) adoption also provides a novel approach that can be used as a reference for further research

1.2 Problem Statement

The rapid advancement of artificial intelligence (AI) technology has brought significant changes in various areas of the profession, including in tax services. Tax consultants are now not only required to master complex tax regulations, but also must have the ability to manage large-scale data (big data), analyze financial statements in real time, and compile recommendations based on predictive analytics. Implementing AI technology, such as machine learning, chatbots, and automated tax compliance systems, is believed to improve operational efficiency, reduce error rates, and boost labor productivity [6].

However, empirical research in Indonesia that highlights the direct impact of AI adoption on the productivity of tax consultants is still relatively minimal, especially for practitioners in the professional services sector. On the other hand, digital literacy is a moderating variable in the success of technology adoption. The relationship between the use of AI and the performance of tax consultants creates a deep understanding of this dynamic that is crucial, mainly because the digitalization process in Indonesia's tax sector still faces various obstacles, such as the low level of technology literacy among practitioners, limited supporting infrastructure, and the lack of optimal distribution of information technology-based training.

Further study of the linkage between AI adoption and tax consultant productivity is critical to ensure that the measurement tools used have met standards of reliability and validity. Although studies have used models such as TAM to measure technology acceptance in the sector, AI affects individuals and organizations directly. The reliability of these instruments still needs to be considered so that the research results are accurate and accountable.

1.3 *Objectives and Scope*

The purpose of this study is to ensure that the instruments used are valid and reliable in analyzing the influence of Artificial Intelligence (AI) adoption on the productivity of tax consultants, as well as to test the role of digital literacy as a moderation variable by using the GAAIS approach in this relationship. This research is expected to provide an overview of the level

of conformity and consistency of the indicators used in measuring theoretical constructs, so that it can be ensured that the instrument truly represents the concept being studied. Specific limits are set to maintain the focus and direction of the research. This research is limited to tax consultants officially registered in Indonesia through the Indonesian Tax Consultants Association (IKPI). Data collection was carried out using a quantitative approach, namely, by distributing questionnaires to members of IKPI or similar professional organizations. These limits are set to ensure that the data collected is relevant and credible in the context of the practice of the tax consulting profession in Indonesia. The scope that is a limitation in this study includes:

1. Validity of GAAIS-based instruments
   The use of GAAIS (General Artificial Intelligence Adoption Scale) in the context of the tax consulting profession in Indonesia is still relatively new, so adaptation and contextual validity tests are needed to ensure that this scale genuinely follows the characteristics of the profession being studied.
2. Lack of Previous Studies in Local Contexts
   A limited empirical literature specifically addresses the adoption of AI by tax consultants in Indonesia, thus limiting relevant conceptual and comparative references in building theoretical frameworks.
3. Potential Perception Bias
   Because the data is collected through a self-report questionnaire, there is potential for social bias or overestimation in answering questions, especially related to technology mastery and work productivity.

2. Literature Review

2.1 Related Work

Quoted from previous research, it has been shown that adopting technology, especially artificial intelligence (AI), significantly impacts work productivity and digital literacy as a moderator [7]. GAAIS refers to a general artificial intelligence system (general AI) that is not limited to one specific domain or function[8]. AI in the tax sector has been used for risk analysis, transaction anomaly detection, and reporting automation[9]. In Indonesia, the Directorate General of Taxes has begun adopting this technology through online reporting applications and tax intelligence systems.[10] Thus, this study uses For tax consultants, adopting AI can speed up data processing and reduce calculation errors a GAAIS (General Artificial Intelligence Adoption Scale)-based instrument validity measurement tool through a general questionnaire survey that is widely disseminated, especially among IKPI (Indonesian Tax Consultants Association) in tax consultants who focus on Indonesia, which is still limited. Hence, the purpose of this study is to fill the gap.

2.2 Work productivity

Work productivity is one of the leading indicators in measuring the performance of an organization, especially in the context of human resource management. In general, work productivity compares the output achieved with the resources (inputs) used in the production process or the completion of work in a specific period [9]. Productivity not only focuses on the number of outputs, but also on the quality and efficiency in the use of resources. According to Mangkunegara (2012), work productivity results from the quality and quantity an employee achieves in carrying out their duties following the responsibilities. This shows that work productivity includes two main dimensions: effectiveness (conformity of results with the goals set) and efficiency (the optimization level of existing resource use).

Workload describes the totality and complexity of the tasks an individual needs to complete to carry out their job responsibilities. This concept involves the number of functions and pays attention to the level of difficulty and demands inherent in each activity. These aspects are the primary focus in ergonomics and human resource management because of

their significant influence on work productivity. One of the main components of a workload is the quantitative workload, which refers to the number of tasks or activities that must be completed within a specific time limit, whether in a daily, monthly, or long-term range. When the quantitative workload is at an excessive level, workers have the potential to experience physical fatigue and high time pressure, which in turn can reduce work productivity. Conversely, if the workload is well managed and balanced, this can be a positive factor that encourages increased efficiency and achieving optimal work results[10].

The rapid development of technology today has become a significant factor in efforts to increase productivity in various types of organizations, both in the public and private sectors. Every organization must continue to innovate and adapt to survive and compete at the industry level and globally [11]. The daily operational activities of organizations, known as business processes, are increasingly influenced by technological advancements. This transformation journey can be described as a series that starts from the discovery phase, then develops through increasing digital literacy, and reaches the stage of widespread diffusion of technology. These changes are generally interpreted as adopting new tools, facilities, services, and technical procedures in the work environment. Some experts say that the results of good digital literacy will encourage technological change. In other words, every step that brings an organization towards technological transformation can be categorized as part of the innovation process. In the end, these technological changes have proven to have a significant positive impact on increasing organizational productivity.

2.3 Artificial intelligence

Artificial Intelligence is a branch of computer science that aims to create systems that mimic human behavior and cognitive abilities, such as reasoning, learning, and decision-making[12]. Various frameworks regarding technology adoption have been developed to explain and predict the factors that influence the adoption decisions of a technology. This framework refers to several theories and models from diverse disciplines, such as social psychology, organizational theory, and innovation diffusion theory. The technology adoption process is generally seen as a complex and ongoing stage, involving various elements, ranging from the characteristics of the technology itself, user perceptions and attitudes, to internal organizational factors and external environmental conditions that influence. The stages in the adoption process usually include phases such as awareness, interest, evaluation, trial, adoption decision, and the stage of further implementation and continued use (post-adoption). According to (Patrick Hemmer), the application and conceptualization value was tested through two experimental studies examining two primary sources of complementarity, namely information asymmetry and capabilities in collaboration between human teams and AI[13]. In both experiments, humans worked closely with AI models to complete decision-making tasks. AI models play a role by providing independent decision recommendations, which humans can then consider and integrate into the evaluation process to produce the final decision from the team.

Perceived usefulness positively influences an individual's intention to adopt AI technology, which refers to the extent to which potential users expect the system to be implemented and will not. Be complex. The Technology Acceptance Model (TAM) explains that significant measurements and developments have occurred in recent decades[14]. This development substantially contributes to economics and strategic management by strengthening basic concepts and applying them as a theoretical foundation to solve various theoretical and empirical problems. In addition, various previous studies have successfully utilized TAM as a practical framework in analyzing the factors that influence individual acceptance of new technological innovations.

2.4 Digital literacy

Digital literacy refers to the ability to utilize technology to search, access, use, and

disseminate information in the digital environment. Digital literacy includes knowledge, skills, and attitudes in using digital technology. In addition, digital literacy is defined as the skill in understanding, analyzing, assessing, managing, and evaluating information using various digital devices. In other words, digital literacy includes knowledge about multiple types of technology, an understanding of how to use it effectively, and an awareness of the impact of these technologies on individuals and the wider community[15]. Digital literacy is also essential in empowering individuals to communicate better, increase work effectiveness, and encourage personal productivity, especially in collaboration with others with comparable skills and capabilities.

Digital competencies include 12 types of skills grouped into two main categories: core and contextual skills[16]. Core skills include technical aspects, information management, communication, collaboration, creativity, critical thinking, and problem-solving. Meanwhile, contextual skills include ethical awareness, cultural understanding, adaptability, self-management, and a commitment to lifelong learning. In addition, digital competence also consists of the ability to adapt to change and develop a future mindset to face evolving digital challenges.

Digital literacy plays an essential role in individuals adapting to the development of the digital era and supporting growth in the labor market. This skill is necessary for everyone involved in the world of work, considering that digital skills that continue to develop as digital literacy increases are also needed in daily social life[17]. The purpose and urgency of this research lie in the fact that, in the current era, digital literacy among employees is crucial so that companies can more easily accept innovation and solve various problems effectively. In other words, employees' digital knowledge and skills are a form of human capital that is very valuable for the organization. In the context of tax consultants, digital literacy determines an individual's ability to utilize AI features optimally, including setting up, interpreting analysis results, and adjusting service strategies. Digital competency-based working capital is now a key strategic factor that helps companies gain and maintain a competitive advantage. In addition, improving the quality of working capital also affects the company's overall performance.

2.5 Hypothesis Development

The hypothesis serves as a systematic guide in the research process by presenting initial conjectures regarding the relationship between variables that can be tested scientifically. Its existence allows researchers to clarify the focus of the analysis, choose appropriate testing techniques, and become the basis for drawing valid conclusions, free from subjectivity based on data findings[18].

2.5.1 The influence of Artificial Intelligence on productivity

In facing the challenges of the Industrial Revolution, tax consultants are required to transform and integrate artificial intelligence technology in their work processes. Artificial Intelligence technology can support task automation, real-time data processing, and more accurate analysis of tax reports. Based on previous studies, the adoption of Artificial Intelligence has directly contributed to the increase in the productivity of the accounting and auditing professions[19]. Therefore, it is essential to empirically test the relationship between Artificial Intelligence adoption and tax consultant productivity.

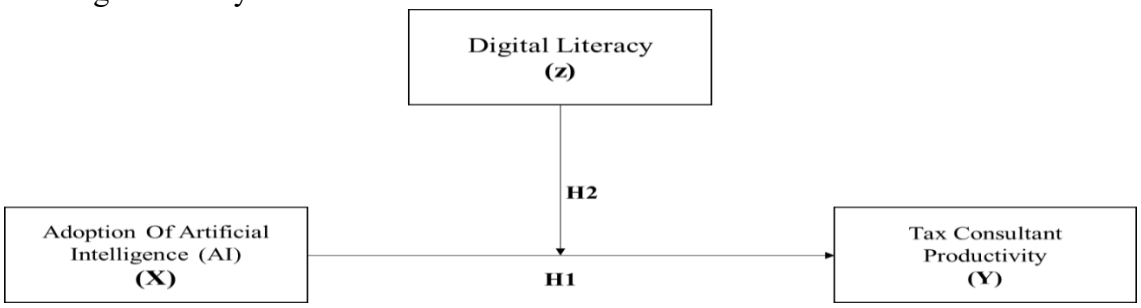
H1: There is an influence between the adoption of Artificial Intelligence and the productivity of tax consultants.

2.5.2 The role of digital literacy moderation

Mastery of digital technology has a strategic role in supporting the effectiveness of individual performance. Digital literacy is not just a technical skill, but includes cognitive,

collaborative, and ethical dimensions in digital information management[20]. As a moderation variable, digital literacy can strengthen the linkage between artificial intelligence adoption and work productivity because individuals with high digital literacy tend to be better prepared to adopt and apply AI technology optimally in a professional environment.

H2: Digital literacy moderates the influence of Artificial Intelligence adoption on the productivity of tax consultants, where the impact is more substantial in consultants with high levels of digital literacy.



Picture. Research Model
Source: author, 2025

2.2 Research Gap

Previous research conducted by Shchepkine et al. (2024) shows that adopting artificial intelligence positively influences the efficiency of work productivity. However, the study had limitations in not considering moderation factors that could affect the strength of the relationship between AI adoption and work productivity. It used a cross-sectional approach with a simple regression analysis method. These limitations lead to a lack of a deep understanding of specific conditions that can amplify or weaken the impact of AI on tax consultant productivity. Given the importance of productivity optimization in the digital era, this study aims to fill this gap by examining the role of moderation variables and using a quantitative approach based on moderation regression analysis in the tax consulting sector in Indonesia. The relationship between Artificial Intelligence (AI) adoption and tax consultant productivity is not always straightforward, as it can be influenced by other factors known as confounding variables. These variables can potentially affect both AI adoption rates and productivity simultaneously, and if uncontrolled, can introduce bias into estimates of AI's impact.

3. Methodology

The research techniques used in this study are intended to examine how the productivity of tax consultants is affected by the adoption of artificial intelligence (AI), taking into account the role of digital literacy as a moderation variable. This study aims to clarify the complex dynamics surrounding the implementation of AI in tax services practices and how the level of digital literacy affects the technology's effectiveness. The main elements of the research approach are outlined in the following sections.

3.1 Data Collection

Data Type: This study uses quantitative data obtained through the distribution of questionnaires to Indonesian tax consultants and primary data from journals and industry reports related to the use of AI. Data Collection Techniques: This study's primary data collection technique is through a structured questionnaire survey distributed by members of the Indonesian Tax Consultants Association (IKPI) spread across various regions of Indonesia. Research Instrument: The research instrument is a questionnaire with a Likert scale of 5 points (1 = Strongly Disagree to 5
= Strongly Agree). The questionnaire was compiled based on indicators adopted from previous studies, tested for validity and reliability, and modified according to the context of this study. Population and Sample: all tax consultants in Indonesia, while the sampling

technique uses the purposive sampling method with the following criteria: (1) Active tax consultant, (2) Using or familiar with AI technology in work, and (3) Willing to be a respondent.

This study makes 7,035 tax consultants the target population. Based on calculations with the Slovin formula and an error rate of 5% (e = 0.05), the minimum sample number was 379 respondents. However, until the end of the data collection period, only 217 respondents, or about 57% of the targeted number, were successfully collected. Although it did not reach the ideal number according to the results of Slovin's calculations, the number was still considered adequate because it had exceeded the minimum limit of 200 respondents required for the validity and reliability testing of the instrument. The data collection process was carried out from May to July 2025, with the control that each individual only filled in once and that there was no data duplication. The data that has been collected is then analyzed using SPSS statistical software to support the testing of the validity of the construct and the reliability of the research instrument.

3.2 Analysis Techniques

The data analysis technique in this study uses a quantitative approach with the moderation-based Moderated Multiple Linear Regression (MLR) method, where the digital readiness moderation variable is not included as a direct predictor, but only through interaction with independent variables. The analysis was carried out with the help of SPSS, starting with a descriptive test to determine the characteristics of the respondents, followed by a validity and reliability test to ensure the quality of the research instrument. Furthermore, classical assumption tests were carried out, which included normality, multicollinearity, and heteroscedasticity—the analysis process when b1 and b2 are not significant. The X1 alone does not affect the response variable Y or the moderation variable X2. When the variable X2 interacts with the moderation variable X2 (X1*X2), it does not affect the response variable Y. The effect of moderation is stated to be significant if the value of the interaction coefficient has a p-value of < 0.05, by looking at the change in the value of the determination coefficient (R^2) to assess the strength of the model [21].

Table. 3.2. Definition and Measurement of Operational Variables

No	Variabel	Definisi	Indikator
1.	AI Adoption (X)	The extent to which individuals demonstrate an attitude of acceptance, utilization, and readiness to use AI-based technology in their professional activities, sourced from GAAIS [22].	**Positive GAAIS** 1. Interest in using AI in everyday 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 in routine tasks 5. Positive emotions: admiration,

			pleasure, enthusiasm.
			Negative GAAIS 1. The view that AI is used unethically 2. Fears that AI is taking over human control 3. AI perception often makes mistakes 4. he discomfort of imagining the future with AI Negative emotions: fear, anxiety, suspicion
2.	Tax Consultant Productivity (Y)	Work productivity is the ability of individuals to complete tasks effectively and efficiently according to determined work standards, including quality, quantity, precision, and punctuality[23].	1. Work results following quality standards 2. Number of jobs according to the target 3. Getting the job done with Precision 4. Getting work done on time
3.	Digital Literacy (Z)	Individual's ability to understand, use, and manage digital information ethically, safely, effectively, and productively in the digital space[24].	1. Digital Skill 2. Digital Safety 3. Digital Ethics 4. Digital Culture

3.3 Validation

The validity test of the survey instrument was carried out using the Pearson Product-Moment correlation formula. This technique measures the extent to which each item in the questionnaire has a significant relationship with its total construct score. The analysis is carried out with the help of SPSS software. A study is valid if it can measure what is desired and reveal data from the variables being researched appropriately. In the output correlations, you can see that the result with an asterisk is valid. The AA, DL, and TPC symbols indicate that the item is valid at a significance level 0.05. The validity criteria are determined by comparing the calculated r value (Pearson correlation result) with the r table (Pearson Product-Moment critical value). Based on the number of respondents (n = 217) and the degree of freedom (df = n – 2 = 215), the r-value of the

table was obtained as 0.1332 at a significance level of 5%. It can be explained that the r-value of the table > r is based on a significant test of 0.05, meaning that the above variables that are declared valid have 217 variables, and the reliability test is carried out with Alpha Cronbach calculations, which shows that the variables used to measure the concepts in this study are pretty reliable. From the test results, all items in the variable showed the value of r calculated > r of the table, with a significance level of 0.001 < 0.05, which means that all items in the instrument are valid and can be used in the study.

Tabel.3.3 Rangkuman hasil uji Dari Validitas dan reliabilitas

NO	VARIABEL	CRONBACH ALPHA	ITEM	R TABLE	R CALCULATE	SIGNIFICANCE	INFORMATION
1	AA	0,881 (Reliabilitas)	AA.01	0,1332	0.583	0,001	VALID
2			AA.02	0,1332	0.556	0,001	VALID
3			AA.03	0,1332	0.641	0,001	VALID
4			AA.04	0,1332	0.549	0,001	VALID
5			AA.05	0,1332	0.572	0,001	VALID
6			AA.06	0,1332	0.525	0,001	VALID
7			AA.07	0,1332	0.550	0,001	VALID
8			AA.08	0,1332	0.628	0,001	VALID
9			AA.09	0,1332	0.482	0,001	VALID
10			AA.10	0,1332	0.594	0,001	VALID
11			AA.11	0,1332	0.555	0,001	VALID
12			AA.12	0,1332	0.592	0,001	VALID
13			AA.13	0,1332	0.517	0,001	VALID
14			AA.14	0,1332	0.500	0,001	VALID
15			AA.15	0,1332	0.464	0,001	VALID
16			AA.16	0,1332	0.610	0,001	VALID
17			AA.17	0,1332	0.496	0,001	VALID
18			AA.18	0,1332	0.588	0,001	VALID
19			AA.19	0,1332	0.586	0,001	VALID
20			AA.20	0,1332	0.532	0,001	VALID
1	DL	0,836 (Reliabilitas)	DL.01	0,1332	0.712	0,001	VALID
2			DL.02	0,1332	0.775	0,001	VALID
3			DL.03	0,1332	0.749	0,001	VALID
4			DL.04	0,1332	0.650	0,001	VALID
5			DL.06	0,1332	0.692	0,001	VALID
6			DL.07	0,1332	0.699	0,001	VALID
7			PTC.01	0,1332	0.808	0,001	VALID
1	TPC	0,837 (Reliabilitas)	PTC.02	0,1332	0.833	0,001	VALID
2			PTC.03	0,1332	0.820	0,001	VALID
3			PTC.04	0,1332	0.822	0,001	VALID
4			DL.05	0,1332	0.702	0,001	VALID
5			DL.01	0,1332	0.712	0,001	VALID

Source: author, 2025

1. Results and Discussion

1.1 Key Findings

In this study, the researcher used the General Attitudes towards Artificial Intelligence Scale (GAAIS) developed by Schepman & Rodway (2020) and validated in the Italian context by Cicero et al. (2025) as a measuring tool to assess respondents' attitudes towards artificial intelligence (AI) with an explanation of the interpretation of results.

1.1.1 Statistik Deskriptif

Descriptive statistical research on this variable was carried out to get a general picture of the data, such as the average values of Minimum, maximum, and Mean, and the standard deviation of each variable. The research results of the descriptive statistical test can be seen in the following table.

Table. 1.1.1 Statistics Descriptive

	N	Minimun	Maximum	Mean	Std. Deviation
AA	217	40,00	94,00	67,8479	11,62094
DL	217	7,00	35,00	27,5161	4,74351
PTC	217	7,00	20,00	15,6129	2,65054
Valid N (listwise)	217				

Source: author, 2025

Based on the results of the Descriptive Test above, we can describe the distribution of data obtained by this study. Variable AA can be defined as follows: the minimum value is 40, the maximum value is 94, and the average is 67.8479. The Standard deviation is 11.62094. The DL variable has a minimum value of 7, a maximum value of 35, and an average of 27.5161. The standard deviation is 4.74351. The PTC variable has a minimum value of 7, a maximum value of 20, and an average of 15.6129. The Standard deviation is 2.65054

This section includes:

1. Gender

This distribution shows a fairly balanced representation between male and female respondents, allowing researchers to gain a more comprehensive perspective on attitudes towards artificial intelligence, digital literacy levels, and work productivity.

Table 4.1.2. Gender

Gender	Number of respondents	Presentase
Male	104	47,93%
Female	113	52,07%
Total	217	100%

Source: author, 2025

Based on the data collection results, the number of respondents in this study was 217, consisting of 112 men (51.6%) and 105 women (48.4%).

2. Age

Respondents in this study had a varied age range, with the youngest age <25 years and the oldest age ≥55 years. Based on the results of the recapitulation, the age of the respondents was grouped into several categories to facilitate the analysis:

Table 4.1.2. Age

Age-Sensitive	Number of respondents	Presentase
< 25 tahun	26	11,98%
25–34 tahun	38	17,51%
35–44 tahun	83	38,25%
45–54 tahun	45	20,74%
≥ 55 tahun	25	11,52%
Total	217	100%

Source: author, 2025

Most respondents are in the productive age range, especially the 25-34 age group, which is generally an active age group in the professional world of work, including as tax consultants. This is relevant to the purpose of the study, as this age group tends to be closer to adopting technology and artificial intelligence in everyday work.

3. Last level of education

The respondents in this study had diverse formal education backgrounds, ranging from Diploma 3 (D3) to Strata 3 (S3).

Table 4.1.2. Last level of education

Tingkat pendidikan	Number of respondents	Presentase
D3	11	5,07%
S1	56	25,81%
S2	119	54,84%
S3	31	14,29%
Total	217	100%

Source: author, 2025

The majority of respondents (119 people, 54.84%) had a final S2 education, indicating that most of the tax consultants involved in the study had advanced academic qualifications. These qualifications are generally relevant to the demands of professionalism and understanding technologies such as artificial intelligence.

4. Long experience as a tax consultant

The duration of work experience in taxation affects the level of technological adaptation.

Table 4.1.2. Long experience as a tax consultant

Tingkat pendidikan	Number of respondents	Presentase
>1	61	28,11%

1-3	74	34,10%
4-6	48	22,12%
>6	34	15,67%
Total	217	100%

Source: author, 2025

These findings show that most of the tax consultants who were respondents in this study were classified as professionals with relatively short to medium work experience. This may reflect that the level of adaptation to technology is mainly in a dynamic phase, with a reasonably high likelihood of acceptance of digital innovation and the need for work efficiency.

5. Practice Domicile Area

The domicile area of the tax consultant practice in this study reflects the geographical distribution of respondents in various regions of Indonesia.

Table 4.1.2. Practice Domicile Area

Education level	Number of respondents	Presentase
sumatra	44	20,28%
javanese	39	17,97%
kalimantan	36	16,59%
sulawesi	33	15,21%
Bali / nusa	33	15,21%
Papua Maluku	32	14,75%
Total	217	100%

Source: author, 2025

These findings show that although the respondents are relatively evenly distributed in various regions, there is still a higher concentration in western Indonesia, such as Sumatra and Java. This may reflect the higher level of development of tax services and the higher concentration of economic activity in these regions.

6. Frequency of use of AI in work

Data collection to find out how often respondents use AI at work.

Table 4.1.2. Frequency of use of AI in work

Frequency of AI Use	Number of respondents	Presentase
Every day	45	20,74%
Several times per week	73	33,64%
Several times per month	66	30,41%
Infrequently	22	10,14%
Never	18	5,07%
Total	217	100%

Source: author, 2025

This data shows that most respondents have started integrating AI in their professional practices, although the level of intensity still varies. This information is essential to see how much exposure to AI can affect their attitudes and digital literacy.

7. Descriptive Digital Literacy Level

   Respondents' digital literacy levels are classified into three categories: low, medium, and High, based on their ability to access, understand, and utilize digital technology in professional work.

Table 4.1.2. Descriptive Digital Literacy Level

Frequency of AI Use	Number of respondents	Presentase
Low	32	14,75%
Medium	57	26,27%
haight	126	58,6%
Total	217	100%

Source: author, 2025

This distribution shows that most tax consultants in this study already have adequate digital literacy, which is essential in supporting the adoption of technologies such as AI in their work practices. Strong digital literacy contributes positively to technological adaptability, work efficiency, and data-driven decision-making.

4.1.2. Classic Assumption Test

Before running the moderation regression, a classical assumption test is performed to ensure that the model meets the statistical requirements. The tests carried out include normality, linearity, heteroskedasticity, and multicollinearity. The test results show that all assumptions have been met, making the model worthy of further analysis.

Gambar. Plot
Source: author, 2025

The normality plot shows the distribution pattern of the points close to the diagonal line, so it can be concluded that the data meets the normality assumption (Ghozali, 2018).

Table 4.1.2 Kolimogrov-smirnov

			Unstandardized Residual
N			30
Normal Parameters[a,b]	Mean		,0000000
	Std. Deviation		3,73194214
Most Extreme Differences	Absolute		,143
	Positive		,143
	Negative		-,091
Test Statistic			,143
Asymp. Sig. (2-tailed)[c]			,121
Monte Carlo Sig. (2-tailed)[d]	Sig.		,118
	99% Confidence Interval	Lower Bound	,110
		Upper Bound	,126

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. Lilliefors' method is based on 10000 Monte Carlo samples with a starting seed 2000000.

Source: author, 2025

Based on the Kolmogorov-Smirnov normality test results, a significance value of 0.118 was obtained, greater than the critical limit of 0.05. This shows that the residual data is usually distributed and there are no significant deviations from the normal distribution (Ghozali, 2018).

4.1.3. Uji Manufacturing Readiness Level

Table.4.1.3 MRL Results Summary

Variabel	B	Std. Error	t	Sig.	interpretation
(Constant)	1,028	6,031	1,981	0,011	Significant (initial value of productivity
AI Adoption (X)	0,111	0,097	2,123	0,033	Significant positive impact on productivity
Digital Literacy (Z)	0,377	0,206	1,971	0,041	Significant positive impact on productivity
AA_DL (X × Z)	0,102	0,003	1,966	0,024	Significantly positive, there is a moderating effect

Source: author, 2025

The results of the moderation regression analysis showed that AI Adoption significantly affected the productivity of tax consultants (B = 0.111; p = 0.033). Similarly, Digital Literacy also showed a significant influence (B = 0.377; p = 0.041). The interaction between AI Adoption and Digital Literacy (AA_DL) had a significance value of 0.024 and a positive coefficient (B = 0.102), which indicates a positive moderation effect. This means that digital literacy strengthens the relationship between AI adoption and productivity, so the higher the digital literacy, the stronger the influence of AI on increasing the productivity of tax consultants.

4.1.4. Uji hypothesis

Table 4.1.4. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1,028	6,031		1,981	,011
	AI Adoption	,111	,097	,487	2,123	,033
	Digital Literacy	,377	,206	,674	1,971	,041
	AA_DL	,102	,003	-,355	1,966	,024

a. Dependent Variable: Productivity Tax Consultant

Source: author, 2025

In the table above, the significance value of the AI Adaptation variable is 0.033 < 0.05. This shows that these variables have a significant effect on the dependent variables. Thus, the null hypothesis is rejected and the alternative hypothesis is accepted.

2. Discussion

This study uses a quantitative approach to fill the research gap from previous studies by presenting a more specific analysis [25] regarding the relationship between artificial intelligence (AI) adoption and work productivity and examining the role of digital literacy as a moderation variable in depth. The primary focus of the research lies in developing and testing instruments that can precisely measure the influence of AI adoption on productivity in the context of tax services. The discussion of this study includes several important elements, namely: Review of previous research results, Scrutiny of hypotheses, Identification of research limitations, Analysis of the role of digital literacy moderation, to determine whether this variable functions to strengthen or weaken the influence of AI adoption on the productivity of tax consultants.

All discussions are arranged logically and focused, referring to the conceptual framework that has been determined, and relevant to the context of the development of instruments based on theory and empirical data. Thus, the results of this research are expected to be the basis for further research, both in testing the relationship between variables in other professional services sectors, as well as in the development of strategic policies related to the adoption of digital technology in the field of taxation.

2.1 Comparison with Prior Research

This study's findings significantly enrich the literature on artificial intelligence (AI) adoption and work productivity, especially in the tax services sector. This research was also tested to present a new perspective by adding digital literacy as a moderation variable, which

was proven not only as a supporting factor but also as a strengthening of the relationship between AI adoption and tax consultant productivity. These findings show nuances that have not been explored explicitly in Previous research. This study used the General Attitudes toward Artificial Intelligence Scale (GAAIS) measurement tool and distributed questionnaires to Indonesian Tax Consultants Association (IKPI) members. The instruments were compiled based on previous study variables, which were further developed. This makes this research relevant and contributes significantly to the development of empirical studies, especially since most previous studies still use qualitative approaches or general theories without systematically standardized testing of instruments.

In addition, this discussion repeats the results descriptively and critically examines both supported and unsupported hypotheses. The researcher emphasized the relationship between the indicators and the empirical context of the respondents. For example, tax consultants with high levels of digital literacy also show a more positive attitude towards using AI, indirectly impacting increased work productivity. This indicates that perceptions of AI are greatly influenced by the level of digital ability and readiness of individuals to adopt technology. From a theoretical perspective, this study combines three main complementary approaches. First, GAAIS measures an individual's attitude toward AI, both affectively and cognitively. Second, the moderation model is used to see how much digital literacy strengthens or weakens the influence of AI adoption on productivity. Third, a technology adoption theory-based approach is used to understand the internal and external factors influencing the acceptance of new technologies, including technological readiness, organizational structure, and environmental pressures.

2.2 Limitations

This study has several limitations that focus on the moderation variable, namely digital literacy, in the relationship between artificial intelligence (AI) adoption and tax consultant productivity. First, the measurement of digital literacy in this study was carried out through a questionnaire instrument based on subjective perception, so there is a possibility of bias in assessing respondents' digital abilities. Not all respondents may have the same understanding of digital literacy, so the accuracy level in measuring moderation's role is still limited. Second, the respondents' organizational context and work environment were not explicitly measured, even though the support of technology in the workplace and organizational culture can affect the effectiveness of digital literacy as a moderator. Third, the moderation analysis approach used in this study is still linear, so it has not fully captured the complexity of the interaction between the variables involved. Fourth, there is no segmentation of respondents' demographic characteristics, such as age, education level, or length of work experience, which can potentially affect the power of digital literacy in moderating the relationship between AI adoption and productivity. These limitations are important to consider in interpreting results and can serve as a basis for developing more in-depth and targeted follow-up research. The relationship between AI adoption and productivity cannot be viewed as direct, as in practice, there are confounding variables that can potentially influence both variables simultaneously. For example, management support and organizational commitment can influence the decision to adopt AI while increasing productivity by providing adequate work facilities. Similarly, the availability of technological infrastructure, such as hardware and high-speed internet connections, is a crucial prerequisite for effective AI implementation and impacting work productivity.

2.3 Future Research

Based on the limitations of this research, especially related to the role of digital literacy as a moderation variable, several practical implications can be used as a basis for designing strategies to increase productivity through technology adoption. First, the measurement of digital literacy in this study still depends on the subjective perception of

respondents, so organizations need to develop more objective and standardized measurement tools. The implication is that the mapping of training needs will be more targeted. Therefore, it is recommended that professional organizations or associations, such as IKPI, develop measurable competency-based digital literacy assessment instruments. Second, because digital literacy has been proven to strengthen the influence of AI adoption on productivity, training programs must be prepared systematically and continuously. These findings imply the importance of digital training, which is not general but adaptive to needs based on respondents' work experience, job title, and background. The recommendation is to organize digital literacy training.

A modular approach is used so that each consultant can train according to their ability level. Third, digital literacy is inseparable from the support of the work environment. Organizations that do not provide infrastructure or do not encourage technology exploration tend to undermine the effectiveness of digital literacy moderation. The practical implication of these limitations is the need for organizations to create a work ecosystem that supports digital transformation, including providing tools, training access, and a best-practice sharing forum. The strategic recommendation is to build a technology-based work culture and continuous learning. Finally, this research opens opportunities for collaboration between academics, practitioners, and policymakers in developing programs to strengthen digital literacy in the tax services sector. The results of this research can be the initial basis for developing evidence-based policies, both at the professional and government levels, to support the success of sustainable digital transformation. These findings have strong practical implications for organizations and professional associations such as the Indonesian Tax Consultants Association (IKPI). Efforts to increase productivity through AI adoption must be accompanied by increased digital literacy and improvements in supporting factors such as technological infrastructure and an innovative organizational culture. This way, the benefits of AI can be optimized, and sustainable performance can be achieved.

3. Conclusion

This study raises issues related to the influence of artificial intelligence (AI) adoption on the productivity of tax consultants, as well as the role of digital literacy as a moderation variable. Using a quantitative approach with a survey method of 217 respondents, data were analyzed through moderation regression to test the relationship between variables. The findings show that AI adoption affects the hypothesis because it does not determine the direction (two-tailed), and digital literacy strengthens this relationship. These findings confirm that technology will only be effective if it is balanced with adequate digital capabilities. The implications of this study are practical in driving digital transformation in the tax sector but also make a theoretical contribution by broadening the understanding of the factors that influence productivity in the context of modern technology adoption.

4. Recommendation

This study examines the effect of artificial intelligence (AI) adoption on tax consultant productivity, adding digital literacy as a moderating variable. Unlike previous studies that only examined the direct relationship, this study shows that digital literacy strengthens the relationship between AI adoption and productivity. Using a quantitative approach and the GAAIS instrument, data were collected from IKPI members and analyzed using moderation tests. The results show that the higher the digital literacy, the stronger the positive influence of AI on productivity. This research enriches technology adoption studies by emphasizing the importance of digital competency in supporting the effective use of AI in the professional services sector.

Appendix

1. Research Questionnaire

Table I: I. I.Summary of the research questionnaire

No	Variabel	Statment	Answer				
			STS	TS	N	S	SS
	AA	I prefer to interact with AI systems rather than humans for routine					
1							
		transactions.					
2		AI can provide new economic opportunities for the Indonesian state.					
3		AI systems can help people feel happier.					
4		I was 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 to human employees.					
9		There are many beneficial uses of AI.					
10		AI systems can work better than humans.					
11		Most of society will benefit from an AI-filled future.					
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 may be controlling humans.					
17		I think AI is dangerous.					
18		I shiver with discomfort when thinking about future uses of AI.					
19		People like me will suffer if AI is used more and more frequently.					
20		AI is used to spy on humans.					
21	TCP	I will not invite people to make negative comments.					
22		I will not share screenshots of private conversations on social media.					

23		I will not comment rudely if someone makes a negative comment.					
24		I did not create a group and add people without permission.					
25		I do not upload photos with other people's children.					
26		I do not tag friends without needing to tell.					
27		I will not be sharing accident information right away.					
28		The quality of my work follows the standards set by the company.					
29		The quantity of my work follows the standards that the company has determined.					
31		I am meticulous in completing each job.					
32		I am on time to complete every job.					

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