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SOCIAL COGNITIVE THEORY AND THE UNVEILING OF INTENTIONS IN ACCOUNTING PRACTICE ADAPTATION WITHIN THE METAVERSE

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ABSTRACT

The metaverse has the potential to revolutionize the business world, including accounting. However, the adoption of this technology by accountants remains limited. This study aims to bridge this gap by analyzing the factors influencing accountants' intention to participate in the metaverse, focusing on technological literacy, gender, age, institutional support, self-efficacy, security, and trust. The sample for this study consisted of individuals working as accountants or in the accounting/finance/audit/taxation sector in Indonesia who have heard and are aware of transactions in the metaverse, with 184 respondents. Data was collected through questionnaires and analyzed using SmartPLS 4.0.9.9. The study findings reveal that technological literacy moderated by gender and institutional support does not significantly influence accountant self-efficacy, and security does not significantly impact the intention to participate in metaverse accounting. Conversely, technological literacy moderated by age significantly affects accountant self-efficacy. Self-efficacy and trust significantly affect the intention to participate in metaverse accounting. While gender does not significantly impact the relationship between technological literacy and self-efficacy, younger accountants, who tend to have higher technological literacy, demonstrate greater self-efficacy. The lack of specialized training programs in Indonesia limits the impact of institutional support on self-efficacy. These factors are crucial drivers for the intention to participate in metaverse accounting. Accountants with higher self-efficacy and trust are more likely to embrace and adapt to the metaverse. Security concerns did not significantly influence accountants' willingness to participate, suggesting a potential lack of awareness regarding security risks. To encourage broader adoption, fostering technological literacy, especially among older accountants, increasing institutional support through specialized training programs, and raising awareness about metaverse security are essential.

Keywords: *Metaverse Accounting, Technological Literacy, Institutional Support, Self-Efficacy, Intention*

1. INTRODUCTION

The utilization of technology today is increasingly leading to an intense relationship between society and online media that gives rise to a new world, namely the metaverse [1]. The metaverse describes a virtual world and reality beyond the real world that is built by humans using digital technology [2]. It is predicted that by 2026, 25% of people will spend at least one hour per day in the metaverse world for work, shopping, education, social interaction, and entertainment [3]. The development of the metaverse in Indonesia has even received strong support from the government through the Ministry of Communication and Information (KOMINFO), which supports local companies in building the Indonesian metaverse ecosystem. One of the national subsidiaries that intensively develops the metaverse in the country is WIR Group, which presented the Indonesian prototype to the global community at the G20 President's Summit in Bali in November 2022 [4].

In the business world, the metaverse is poised to reshape economies by fostering new industries and organizations, while providing opportunities for existing ones to innovate and expand [5]. Moreover, as an emerging technology, the metaverse has the potential to revolutionize various aspects of life, including financial fraud detection by enabling financial analysts from different locations to collaborate in virtual workspaces and facilitating the sharing of information and insights on fraud [6]. However, as a

novel technology, the metaverse also introduces new risks such as reputational damage and fraud [5].

With the widespread digital transformation, the role of the metaverse in defining the future of economic transactions and interactions is becoming increasingly evident [7]. Although the potential and advantages of the metaverse seem promising, there are certain challenges and negative aspects that must be addressed [8]. One vital aspect often overlooked in metaverse exploration is the role of individuals in adopting and adapting to this innovation, particularly in professional contexts like accounting. Self-efficacy plays a crucial role in determining how individuals approach, understand, and interact with new technologies [9]. The blurring lines between the real and virtual worlds with the advent of the metaverse makes an individual's belief in their capabilities highly relevant. This is because the metaverse is not just about technology, but also how that technology is integrated into daily routines, professional practices, and social interactions [10]. If the metaverse does not integrate the virtual and real worlds, then the metaverse is merely a regular game with elements of real-life [11].

In the field of accounting, the metaverse opens up new opportunities such as providing real-time access to data and information, enabling more in-depth financial analysis [7]. The metaverse is also capable of creating new digital assets that require accounting measurement to provide accurate tools and disclosure methods [7]. There are two types of digital assets in the metaverse, namely virtual currencies called crypto and digital tokens called NFTs [12] Like assets in the real world, both crypto and NFTs have fluctuating prices and are traded on secondary markets [13]. NFTs play an important role in the metaverse as ownership rights for digital assets (such as land, houses, cars, etc.) which are traded using crypto as a payment tool [14].

The metaverse is not just limited to NFTs and crypto but also brings about virtual branches of physical companies. This eventually will give rise to new assets in the form of virtual land, as exemplified by the acquisition made by PricewaterhouseCoopers (PwC) to form a business model that is adaptive to technological developments and attracts clients using a different approach [7]. In addition, one of the leading firms in New York, Prager Metis International LLC, even paid a considerable amount of $35,000 for a three-story digital space as their new branch office in the metaverse [15]. Even in Indonesia, one of the banking service providers, HSBC, has officially partnered with The Sandbox and obtained a piece of land to establish virtual real estate in the metaverse [16].

This raises the question of how financial capabilities will be managed and whether these virtual branches will have their accounting information systems [7]. Thus, these virtual branches will have their responsibilities in managing their accounting and financial reporting, which may differ from their actual physical branches [17]. This transition brings its challenges, especially due to the lack of scientific research discussing the metaverse in the field of accounting and auditing [7]. The metaverse has indeed become the focus of academic research in various fields in recent years, ranging from literature, art, and music, to education, but not a single one has discussed the metaverse in the context of accounting and auditing [18]. This lack of research not only creates an information gap but also affects how accountants respond and participate in the metaverse environment [7]. Moreover, the lack of knowledge and willingness to understand the technology and the metaverse is an obstacle for accountants to adapt to the metaverse [19]. Along with these adaptation challenges, there is a fundamental question about the relevance of accounting in the metaverse, which resembles economic exchange in the real world [7].

In response to these developments, with the advancement of metaverse technology, questions arise as to whether Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS), which currently guide accountants in their measurement and disclosure functions, remain consistent and relevant to the new challenges and dynamics offered by metaverse accounting [7]. Beyond conceptual challenges, the implementation of accounting in the metaverse faces practical challenges such as revenue recognition risks and timing recognition risks due to the potential for duplicate recordings and inaccurate information that can disrupt the reliability of transactions, given that everything is conducted virtually [20]. Even in assessing and recognizing assets in the metaverse, new risks emerge, namely the risk of overstating digital assets [21].

Given these challenges, the accounting world must be more active in adopting more adaptive approaches and systems to accommodate and interpret services and revenue in the metaverse [20]. Accountants' ability to participate in the metaverse environment will be greatly influenced by

the extent to which they feel capable and ready to do so. The intention to participate, viewed through the lens of social cognitive theory (SCT), becomes an important indicator of how accountants will change, develop, or even be disrupted by metaverse developments [1]. SCT enables us to understand how individuals interact with the metaverse and identify factors influencing the adoption of new technologies. SCT highlights several important aspects, such as institutional support, technological literacy, and self-efficacy [9]. By identifying factors such as self-efficacy, trust, and security, research can design more effective strategies for metaverse adoption in accounting. SCT highlights the importance of cognitive factors in technology adoption and can provide valuable insights for policymakers, educators, and industry professionals [22].

In today's digital age, trust is a key factor in the adoption of new technologies [23]. Trust in the technological and security aspects of the metaverse can increase individuals' intention to adopt and adapt to this technology, as well as influence how comfortable they are in transacting and interacting in the virtual world. In addition, security is also a major consideration, especially in the field of accounting, which handles highly sensitive financial data and information [24]. Challenges such as cyberattacks, data loss, and the potential for information manipulation are real obstacles to the adoption of accounting in the metaverse [25]. Therefore, in the context of accounting, research on how factors such as technological literacy, institutional support, age, gender, self-efficacy, trust, and security affect accountants' intention to participate and adapt to accounting practices in the metaverse is needed.

This research makes several significant contributions to the existing literature on accounting practices in the metaverse. First, it extends the understanding of how social cognitive theory (SCT) can be applied to the metaverse context. By examining the factors that influence accountants' intentions to adapt to and participate in the metaverse, this study provides valuable insights for policymakers, educators, and industry professionals. Second, this research introduces a new theoretical framework for investigating the factors that influence the adaptation of accounting practices in the digital age, particularly the metaverse. The framework incorporates age, gender, institutional support, technological literacy, trust, security, and self-efficacy, providing a comprehensive understanding of the complex interplay between individual and contextual factors in technology adoption. Third, this research facilitates further research on the interaction between SCT and external influences in the context of technology adaptation, specifically the metaverse. By exploring how moderators such as age, gender, trust, and security influence the relationship between SCT constructs and intention, this study opens up new avenues for investigation.

Finally, this research contributes to the empirical evidence on the factors that influence accountants' intentions to adopt metaverse technologies. By replicating and extending the work of Alvarez-Risco et al. (2022), this study provides robust findings that can inform strategies for promoting metaverse adoption in the accounting profession. In addition to these contributions, this research is unique in its focus on the Indonesian accounting context. By examining the perspectives of accountants in Indonesia, this study provides valuable insights that are relevant to the specific challenges and opportunities faced by the profession in this region.

2. LITERATURE REVIEW

Metaverse is a term first coined in science fiction that is a combination of the prefix "meta" meaning beyond, and "verse" meaning universe. Metaverse refers to a shared virtual world where properties, avatars, and even names can be bought and sold using cryptocurrency [26]. This virtual world is a digital reality that combines aspects of social media, online gaming, Augmented Reality (AR), Virtual Reality (VR), and cryptocurrency to allow users to interact virtually [27]. The metaverse is an open technology that drives a decentralized digital economy and serves as a user-created network of digital environments, where individuals can interact with diverse activities through digital avatars, enriched with virtual reality and augmented reality [10].

2.1 Metaverse Accounting

With the advancement of digital technology, accounting practices have also evolved, starting from the use of automated accounting software to the application of blockchain in auditing, which broadens the horizon of how accountants carry out their duties and responsibilities [28]. The metaverse presents new opportunities for the accounting field, including real-time access to data and information for more in-depth financial analysis

[7]. The metaverse also creates new digital assets that require accounting measurement to provide accurate tools and disclosure methods [7]. In the metaverse, there are two types of digital assets: virtual currency and digital tokens [12]. Digital assets are digital representations of value that can be traded or used for payments or investments [29]. One of the main components of digital assets in the metaverse economy is non-fungible tokens (NFTs), where digital and physical assets are each given a unique code as a token, making them valuable assets that can be managed and traded [7]. In addition to NFTs, cryptocurrency is another important digital asset in the metaverse, such as Bitcoin [30].

All these digital assets require accounting in their reporting [31]. IFRS accounting standards consider and conclude that cryptocurrency cannot be classified as cash, even though it is used as a medium of exchange [32]. Furthermore, cryptocurrencies cannot be considered inventory as inventory must be tangible and do not fall under the category of digital assets because they lack physical form [32]. Moreover, GAAP and IFRS have found inconsistencies and distortions in financial reporting due to the lack of specific standards for cryptocurrencies [33]. Although discussions on crypto and NFTs have been around since 2015, there is still no specific IFRS accounting standard for these currencies [33].

The categorization of these digital assets poses a challenge for accountants in assessing these assets [30]. Not only accountants, but auditors and tax consultants also face potential challenges from the presence of digital assets in the metaverse, as more companies will need valid data on these matters [34]. In conducting assessments of digital assets, accountants are required to verify the accuracy of transactions and information to mitigate fraud risks and to analyze financial statements that incorporate metaverse assets [35]. Due to the numerous transactions occurring in the metaverse, there arises a need to record, audit, and report these transactions in a form that can be understood and accepted by stakeholders [36]. This reflects an additional complexity in accounting practices in the evolving metaverse [35].

To meet these needs, the metaverse offers a new recording method called Triple-Entry Accounting using Blockchain and NFT technology, which will revolutionize the accounting world with a contemporary and complex approach to the general ledger[30]. This technology-based approach not only simplifies the audit process but also increases stakeholder confidence in the organization's financial statements[30]. Even the audit process will undergo significant changes as the integration of virtual reality technology and Blockchain allows auditors to virtually visit companies, saving costs and time [7]. In auditing digital assets or virtual metaverse assets, auditors must integrate technical understanding, attention to unique risks such as security and privacy risks, and understanding of the legal framework [37]. The audit experience in the metaverse now also looks promising, for example, by using the Second Life platform to conduct inventory audits which can provide a realistic experience in managing large stores or warehouses virtually [7].

Along with the potential, there are also challenges in adapting accounting practices in the metaverse, such as fraud and risk [5]. This is because the emergence of the metaverse necessitates new accounting skills such as digital, technical, and creative skills [38]. However, the accounting profession is considered lacking in willingness and still needs to understand metaverse technology more deeply [38]. Accountants must participate by understanding and integrating these new technologies into their traditional accounting practices to remain relevant and add value to stakeholders in the metaverse [22]. Accountants also need to enhance their digital, technical, and creative skills to face the challenges and potential brought by the metaverse revolution [38].

2.2 Social Cognitive Theory

Social Cognitive Theory (SCT), proposed by Albert Bandura, emphasizes the importance of social influence, observational learning, and the interaction between personal, behavioral, and environmental factors [9]. SCT states that human learning occurs in a social context as a reciprocal and dynamic interaction between people, behavior, and the environment [9]. This is relevant in the context of technology adoption, where individuals often learn and adopt new technologies based on observation and interaction with others in their social or professional environment [22]. The theory aims to explain how individuals regulate their behavior through control and reinforcement to achieve specific behaviors intended to reach a goal and can be maintained over time [9]. One important construct of SCT is self-efficacy, which refers to an individual's belief in their ability to execute the tasks or actions required to produce specific outcomes [9].

In SCT, self-efficacy is considered to influence human behavior both directly and through mediating processes such as outcome expectations, socio-structural factors, and goals [39]. Self-efficacy is regarded as a significant predictor of behavior and intention [1]. Self-efficacy determines the activities individuals choose to undertake, the amount of effort they will exert, and how long they will persevere in the face of difficulties [9]. Self-efficacy refers to the level of confidence a person has in their ability to successfully perform a specific behavior [9]. Self-efficacy can be influenced by the outcomes of actions, such as goal achievement, and by environmental inputs, such as institutional support [39]. Accountants with high self-efficacy may be more open to learning and adopting new methods required to operate in the metaverse, whereas those with low self-efficacy may feel anxious or reluctant. In this study, self-efficacy refers to an individual's belief in their ability to apply it to everyday behavior [1].

2.3 Intention to Participate

In response to the challenges, the accounting world must be more active in adopting approaches and systems that are more adaptive to accommodate and interpret services and revenues in the metaverse [20]. Intention to participate refers to what people desire in the metaverse due to the potential in the virtual world [1]. Intention to participate can also be defined as users' preference to accept or reject technology by applying several techniques to ensure the sustainable use of technology [40]. This variable is typically measured to determine the extent to which individuals are willing or likely to participate in a particular action or activity [41].

2.4 Self-efficacy

In Social Cognitive Theory (SCT), self-efficacy is considered to influence human behavior both directly and through mediating processes such as outcome expectations, sociostructural factors, and goals [39]. Self-efficacy is regarded as a significant predictor of behavior and intention [1]. Self-efficacy determines what individuals choose to do, the amount of effort they will expend on it, and how long they will persist in the face of difficulties [9]. In other words, if individuals believe they have the skills and abilities to successfully perform a task, they are more likely to engage in that behavior and persist, even when faced with challenges. Self-efficacy in this study refers to an individual's belief in their ability as applied to everyday behaviors [1].

2.5 Institutional Support

Institutional support refers to support from institutions or companies in terms of technology-related training [1]. When employees feel valued and supported by their organization, they will believe in the organization's values and try their best for the organization's success [42]. The implementation of continuous training and technological support has proven to be an effective method to improve employee capabilities [43]. The high level of perceived institutional support can increase a person's intention to participate in an activity [44].

2.6 Technological Literacy

Technological literacy refers to the ability to use technology properly which is influenced by external factors such as training [1]. Technological literacy, also known as computer literacy, is an important ability in the era of the Industrial Revolution to use computers, the internet, and other digital tools that enable individuals to know, search, understand, analyze, and utilize them [45]. In a digital environment, technological literacy is an important tool that strengthens individual performance and supports decision-making through efficient information management [46]. Given the rapid pace of technological growth in the industrialized world, the formation of technological literacy is crucial and should start as early as possible even though it takes a long time to develop knowledge and skills [47].

2.7 Trust

Trust is defined as an emotional state that encourages a person to trust others, which is based on the behavior of satisfying others [48]. Accountants need to understand various technological innovations because these technologies can increase or decrease trust in the system, which in turn affects the intention to use it [34]. To use new technology, namely the metaverse, trust in this technology must be ensured first [49]. This needs to be done because, in blockchain technology, it was found that trust affects the intention to use the technology [50].

2.8 Security

In the metaverse, security plays an important role for individuals when performing activities online and is the basis of trust to use the technology [25]. Preventing the leakage of personal information requires the implementation of security measures because the metaverse can reveal many real-world details about users' habits and physiological characteristics [24]. Security in the metaverse refers to protecting users' personal and sensitive information from the threat of being leaked or misused, ensuring data integrity and confidentiality while maintaining trust and privacy in a complex virtual environment [23].

2.9 Hypothesis Development

2.9.1 The relationship between technological literacy and self-efficacy moderated by gender

Training and education in technology can enhance an individual's skills and knowledge, which in turn can increase their confidence in facing technological challenges. This is supported by research conducted by [1], which states that technological literacy has a significant positive influence on self-efficacy. Good literacy leads to better abilities and skills, thereby increasing self-efficacy [51]. From the gender perspective, when faced with technological literacy, women have higher levels compared to men. However, when it comes to the practice of technology such as automation and coding, men score significantly higher [52]. This is supported by research that found that female respondents have better literacy levels than males [53]. On the other hand, another research found that there is no significant difference between genders in terms of technological literacy [53]. This is corroborated by research which found that gender does not play a significant role in technological literacy and self-efficacy [54]. Against this background, our first hypothesis is as follows:

H_1: Technological literacy moderated by gender has a significant positive effect on accountants' self-efficacy.

2.9.2 The relationship between technological literacy and self-efficacy moderated by age

Another factor influencing technological literacy is age, where older age is often associated with lower interest in literacy or the adoption of new technologies [55]. This is supported by other research which found that age has a significant influence on an individual's level of technological literacy [56]. Younger generations are considered more comfortable using technology in their activities compared to older generations, as younger people have more experience in making independent assessments of technology and are less concerned with what those around them believe [57].

In addition, the younger generation is a generation that grows up alongside technological developments, so they are more familiar with technology literacy and use [58]. When someone has a high level of technological literacy, they tend to have a better understanding of how to use technology effectively and efficiently, which in turn increases their self-efficacy. Self-efficacy refers to an individual's belief in their ability to successfully perform a specific task [9]. This is supported by research which states that technological literacy has a significant positive influence on self-efficacy [1]. Another research also found a positive correlation between an individual's level of technological literacy and self-efficacy [59]. Against this background, our second hypothesis is as follows:

H_2: Technological literacy moderated by age has a significant positive effect on accountants' self-efficacy.

2.9.3 The relationship between institutional support and self-efficacy

Institutional support refers to the support provided by institutions or companies in terms of technology-related training [1]. According to [9], self-efficacy determines what individuals choose to do, how much effort they will expend, and how long they will persist in the face of difficulty. Institutional support can increase a person's belief in their ability to perform a task or achieve a specific goal, known as self-efficacy [1]. When individuals are confident that they have the skills and abilities to successfully act, they are more likely to engage in that behavior and persist, even when faced with challenges. This is supported by research that states that institutional support has a significant positive effect on self-

efficacy [1]. Even institutional support can help someone develop their capacity so that self-efficacy can increase [60]. Against this background, our third hypothesis is as follows:

H_3: Institutional support has a significant positive effect on accountant self-efficacy.

2.9.4 The relationship between self-efficacy and intention to participate and adapt in metaverse accounting

Self-efficacy refers to an individual's belief in their ability to apply their capabilities in everyday behaviors [1]. Intention to participate determines the extent to which an individual is willing or inclined to engage in a particular action or activity [41]. Accountants with high self-efficacy may be more open to learning and adopting new methods required to operate in the metaverse, while those with low self-efficacy may be reluctant. This is supported by research which states that self-efficacy has a significant positive effect on the intention to participate [1]. Self-efficacy makes a significant contribution to individuals' technology-based interests, where the higher the individual's self-efficacy, the higher the individual's interest in doing an activity [61]. Against this background, our fourth hypothesis is as follows:

H_4: Self-efficacy has a significant positive effect on the intention to participate and adapt in metaverse accounting.

2.9.5 The Relationship between trust and intention to participate and adapt in metaverse accounting

To use new technology such as the metaverse, trust in this technology must first be ensured [49]. Trust in technology is very important in determining whether individuals will accept or reject the technology [49]. Intention to participate determines the extent to which an individual is willing or inclined to engage in a particular action or activity [41], This is supported by research which states that trust has a significant positive effect on the intention [48]. When adopting new technology, the level of trust has a strong influence on attitudes and intentions to adopt the technology [23]. Against this background, our fifth hypothesis is as follows:

H_5: Trust has a significant positive effect on the intention to participate and adapt in metaverse accounting.

2.9.5 The relationship between security and intention to participate and adapt in metaverse accounting

In the metaverse, security plays a crucial role for individuals engaging in online activities and serves as the foundation of trust for using this technology [25].The security aspect in the metaverse is a major consideration for many individuals before deciding to participate and adapt, especially in the context of accounting which involves financial transactions and sensitive data [25]. This is supported by research which states that security has a positive effect on intention, although not significant [23]. Technology can be said to be good and ready if the system is risk-free or safe because, with good security, the intention to use the technology will increase [62]. Against this background, our sixth hypothesis is as follows:

H_6: Security has a significant positive effect on the intention to participate and adapt in metaverse accounting.

3. METHODOLOGY

3.1 Research Model

The research model considers institutional support, technological literacy, age, gender, self-efficacy, trust, security, and intention to participate and adapt in metaverse accounting. The research model details the relationship between the variables (Figure 1).

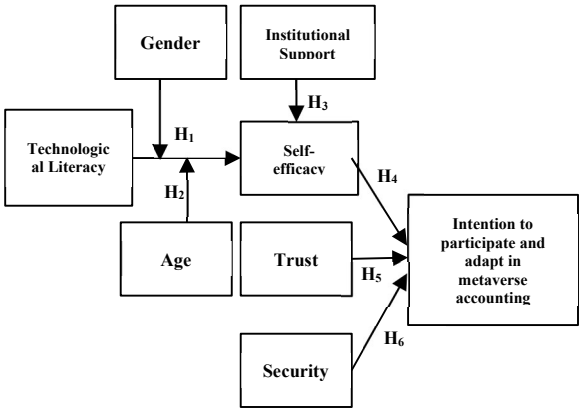

Figure 1. Research Model

3.2 Sample and Data Collection

Sampling this research uses the probability sampling method with a simple random sampling technique, which is a sampling technique that provides equal opportunities for each member of the

population to be selected as a sample. Determination of the sample size uses the provisions that state that the size that is considered feasible to use is 30 to 500, with a magnitude of 5 to 10 times the number of indicators [63]. This study uses 32 indicators with a minimum sample size of 5 so the total minimum sample size is 160 respondents. The sample of this

study is some people who work as accountants or work in the accounting/finance/auditing/tax area in Indonesia and have heard and know transactions in the metaverse. Data was obtained through a questionnaire in Google form with a 5-point Likert scale.

3.3 Measurement of variables and method of analysis

This study uses Partial Least Square (PLS) for analysis based on an approach that maximizes variance with endogenous constructs as explanatory [64]. PLS-SEM emphasizes prediction in estimating statistical models with a structure designed to provide a causal explanation of SEM which is divided into inner and outer models and conducts hypothesis testing using SmartPLS software version 4.0.9.9.

4. RESULTS & DISCUSSION

4.1 Respondent Profiles

The respondents of this study totaled 184 people who were divided into 2 categories of gender and 5 categories of age range. Respondent profiles based on gender are described in table 1. below:

Table 1. Respondent Profile Based on Gender

Profile	Category	Number of Respondent	Percentage
Gender	Pria	65	35.33%
	Wanita	119	64.67%
Total		**184**	**100%**

The respondent profile related to gender in table 1. explains that of the 184 respondents, 65 respondents (35.33%) were male and 119 respondents (64.67%) were female. So, it can be concluded that in this study, the data is dominated by female respondents at 64.67%.

Meanwhile, the profile of respondents based on age is described in table 2 below:

Table 2. Respondent Profile Based on Age

Profile	Category	Number of Respondent	Percentage
Age	21-25 years	36	19.57%
	26-30 years	44	23.91%
	31-35 years	36	19.57%
	36-40 years	25	13.59%
	>40 years	43	23.37%
Total		**184**	**100%**

The respondent profile based on age in table 2. explains that of the 184 respondents, 36 respondents (19.57%) were aged 21-25 years, 44 respondents (23.91%) were 26-30 years old, 36 respondents (19.57%) were 31-35 years old, 25 respondents (13.59%) were 36-40 years old, and the remaining 43 respondents (23.37%) were aged> 40 years. So, it can be concluded that in this study, the data is dominated by respondents from the millennial generation.

4.2 Measurement Of Variables

The outer model test aims to ensure that the research model is feasible to use after being declared valid and reliable. This test is carried out by looking at the outer loading value and average variance extracted (AVE) for the convergent validity test, while the composite reliability value for the reliability test. The test results are shown in Table 3.

Table 3. Construct validity using PLS-SEM

Scale Item	Outer Loading	Composite Reliability	AVE
Institutional Support			
I have completed the training provided by my workplace to use digital asset management platforms in the metaverse, such as Decentraland, The Sandbox, and Metanesia, to improve my ability to handle digital assets.	0.951	0.952	0.859
My workplace provides access to online education platforms that	0.913		

discuss metaverse digital assets, such as Tokoscholar and Binance Academy.			
I have taken virtual training provided by my workplace to learn about digital assets such as cryptocurrency and NFTs in the metaverse.	0.949		
My workplace organizes seminars or workshops on metaverse digital asset accounting.	0.893		
Technological Literacy			
I am proficient in using Excel for financial reporting and digital asset data analysis.	0.685	0.840	0.647
I am proficient in using crypto exchange software for digital asset transactions, such as Indodax, Tokocrypto, etc.	0.838		
I am active on social media for business purposes in the metaverse (e.g., building a network on LinkedIn).	0.792		
I am proficient in using cloud-based accounting software for integration with digital asset payment systems and metaverse business services.	0.890		
Self-efficacy			
I am ready to adapt accounting practices in the metaverse, such as managing digital assets.	0.929	0.969	0.916
I have the technical skills needed to manage digital assets in the metaverse.	0.967		
I am capable of handling the complexities of digital asset accounting in the metaverse with the help of my software and technical expertise.	0.965		
I am confident that I can integrate conventional accounting tasks with accounting responsibilities in the metaverse.	0.967		
Trust			
I am confident that metaverse platforms like Decentraland, The Sandbox, and Metanesia are secure and trustworthy for managing my digital assets (cryptocurrency, NFTs, virtual land).	0.871	0.947	0.752
Metaverse platforms like Decentraland, The Sandbox, and Metanesia adhere to accounting rules to ensure that my digital asset transactions are recorded correctly.	0.912		
Metaverse platforms like Decentraland,	0.877		

The Sandbox, and Metanesia allow me to transfer digital assets between countries easily and in accordance with my expectations.			
The privacy policies of metaverse platforms like Decentraland, The Sandbox, and Metanesia make me feel safe and comfortable using them to manage my digital assets.	0.891		
In my opinion, the metaverse technology policies related to sharing personal information with third parties are transparent and trustworthy, thus protecting the privacy of my digital asset data.	0.834		
I would trust metaverse platforms more to manage my digital assets if I could see and access my personal information on those platforms.	0.812		
The security rules on metaverse platforms like Decentraland, The Sandbox, and Metanesia ensure the security of my digital assets.	0.871		

Security			
I feel safe using metaverse platforms like Decentraland, The Sandbox, and Metanesia for my digital asset transactions.	0.966	0.969	0.915
I believe that metaverse platforms like Decentraland, The Sandbox, and Metanesia provide a secure and trustworthy way to manage my digital asset finances and accounting.	0.953		
I feel safe managing my digital assets using metaverse platforms (e.g., Decentraland, The Sandbox, Metanesia).	0.961		
I believe that metaverse platforms implement security measures to protect users and their digital assets.	0.946		
Intention to participate and adapt in metaverse accounting			
If needed, I would use metaverse platforms like Decentraland, The Sandbox, and Metanesia to assess and manage my digital assets.	0.788	0.948	0.716
I am interested in trying platforms like Decentraland, The Sandbox, and Metanesia that are integrated with the metaverse to record and	0.857		

report my digital asset transactions.			
I am open to attending seminars on metaverse platforms like Decentraland and VRChat, specifically those focused on digital assets and metaverse transactions.	0.814		
If available, I would like to take a digital asset training course in the metaverse.	0.874		
I would like to collaborate with other crypto users on online platforms like Discord to better understand digital asset management.	0.885		
I would recommend to my fellow accountants that they learn about the opportunities and practices of digital assets in the metaverse.	0.850		
If necessary, I would encourage colleagues to actively participate in the valuation, recording, and reporting of digital assets on metaverse platforms like Decentraland, The Sandbox, and Metanesia.	0.846		
If necessary, I would encourage accountants to utilize metaverse platforms like Decentraland, The Sandbox, and Metanesia to enter the metaverse and enhance their digital asset management.	0.852		

All indicators on all variables have outer loading values >0.708, so all indicators are declared reliable to measure the variable and all variables are declared valid with an AVE value >0.50.

Hypothesis testing is carried out to analyze the effect of the independent variable on the dependent variable by looking at the value of the path coefficients and the t-statistic value. The basis for decision-making based on the t-statistics value with a 95% confidence level is that the hypothesis will be supported if the t-statistics >1.645 and the hypothesis will be rejected if the t-statistics <1.645. Then the basis for decision making based on the p-value <0.05, the hypothesis will be supported and if the p-value >0.05, the hypothesis will be rejected. The results of the hypothesis test are shown in table 4. below:

Table 4. Hypothesis Testing Results

	Hypothesis	Path Coefficient	t-statistic	p-value
H_1	Technological literacy moderated by gender has a significant positive effect on accountants' self-efficacy	0.001	0.016	0.494
H_2	Technological literacy moderated by age has a significant positive effect on accountants' self-efficacy	0.082	1.979	0.024
H_3	*Institutional support* has a significant positive effect on accountant self-efficacy	0.034	0.888	0.187
H_4	Self-efficacy has a	0.679	10.078	0.000

	significant positive effect on the intention to participate and adapt in metaverse accounting			
H_5	*Trust* has a significant positive effect on the intention to participate and adapt in metaverse accounting.	0,222	2.352	0.009
H_6	*Security* has a significant positive effect on the intention to participate and adapt in metaverse accounting	-0.017	0.163	0.435

From the results of data processing shown in Table 4. it can be concluded that H2, H4, and H5 are supported because the t-statistic value >1.645 and p-value <0.05, while H1, H3, and H6 are not supported because they have a t-statistic value <1.645 and p-value >0.05.

4.2.1 Technological literacy moderated by gender does not have a significant positive effect on accountants' self-efficacy.

Based on Table 4. it can be seen that the relationship between the technological literacy variable and self-efficacy is moderated by gender, with a t-statistic value of 0.016 and a p-value of 0.494. So, the first hypothesis which states "technological literacy moderated by gender has a significant positive effect on accountant self-efficacy" is not supported, because the t-statistic value (0.016 < 1.645) and p-value (0.494 > 0.05). In addition, the path coefficient value is 0.001 which indicates a positive relationship. Thus, it can be concluded that there is a positive effect of technological literacy moderated by gender on self-efficacy but the effect is so small that it is not significant.

Although the effect size test found that technological literacy is an important variable for self-efficacy, the existence of gender moderation makes the first hypothesis related to the effect of technological literacy moderated by gender on self-efficacy rejected. This is clarified by comparing the average value of answers to each indicator of technological literacy and self-efficacy from male and female respondents in Table 5.

Table 5. Comparison of Average Indicator Scores for Each Gender

Indicator	Male	Female
TL1	3.169	3.395
TL2	3.000	2.655
TL3	2.662	2.454
TL5	2.569	2.563
Average TL	**2.850**	**2.767**
SE1	3.093	3.101
SE2	3.046	3.000
SE3	3.000	2.941
SE4	3.015	2.992
Average SE	**3.039**	**3.009**

From the table 5. it can be seen that the average value of answers to each indicator on technological literacy and self-efficacy does not provide a significant difference in male and female respondents. This difference causes gender moderation in technological literacy on self-efficacy to be insignificant. This is supported by research which states that there is no significant difference between the two genders in terms of technological literacy [53]. In addition, other research also found that gender has no significant role in technological literacy and self-efficacy [54]. This means that both male and female accountants have the same opportunity to learn and apply accounting in the metaverse, and their technological literacy will have the same effect on their self-confidence.

4.2.2 Technological literacy moderated by age has a significant positive effect on accountants' self-efficacy.

Based on Table 4. it can be seen that the relationship between the technological literacy variable and self-efficacy is moderated by age with the results of obtaining a t-statistic value of 1.979 and a p-value of 0.024. So, the second hypothesis which states "technological literacy moderated by age has a significant positive effect on accountant self-efficacy" is supported, because of the t-statistic value (1.979> 1.645) and p-value (0.024 <0.05). In the second hypothesis, the path coefficient value is 0.082 which indicates a positive relationship, meaning that every one-unit increase in the technological literacy variable moderated by age will increase self-efficacy by 0.082. Thus, it can be

concluded that there is a significant positive effect of technological literacy moderated by age on self-efficacy.

This is supported by the effect size test which found that technological literacy is an important variable for self-efficacy, with the moderation of age making the second hypothesis even stronger that there is an effect of technological literacy moderated by age on self-efficacy. This is clarified by comparing the average value of answers to each indicator of technological literacy and self-efficacy from respondents with various age ranges in Table 6.

Table 6. Comparison of Average Indicator Scores for Each Age

	21-25 years	26-30 years	31-35 years	36-40 years	>40 years
TL1	3.583	3.432	3.639	2.960	2.907
TL2	3.500	2.977	3.028	2.360	2.000
TL3	2.833	2.773	2.611	2.200	2.140
TL5	2.917	2.864	2.861	2.120	1.977
Average TL	**3.208**	**3.012**	**3.035**	**2.410**	**2.256**
SE1	3.528	3.409	3.444	2.600	2.419
SE2	3.667	3.409	3.250	2.560	2.140
SE3	3.583	3.295	3.167	2.560	2.163
SE4	3.472	3.409	3.278	2.600	2.186
Average SE	**3.563**	**3.381**	**3.285**	**2.580**	**2.227**

From table 6, it can be seen that the average value of answers to each indicator on technological literacy and self-efficacy is significantly different for respondents over 35 years of age and under 35 years of age. This difference causes moderation of age on technological literacy on self-efficacy to be significant. When viewed in the table, all indicators at the youngest age of 21-25 years have a very significant difference with indicators at the oldest age of >40 years. This is because the older generation tends to have a lower interest in new technology adoption literacy [57]. The younger generation is considered more comfortable in using technology in their activities than the older generation because the younger generation has more experience in making independent judgments about technology and is less concerned with what people around them believe [57].

Younger generations tend to have higher technological literacy and self-confidence than older generations because the younger generation is a generation that grows along with technological developments so they are more familiar with technology literacy and use [58]. Young accountants may be more easily adaptable to the metaverse accounting environment because they have higher technological literacy and self-confidence. This is also supported by research which states that technological literacy has a significant positive effect on self-efficacy [1].

4.2.3 Institutional support does not have a significant positive effect on accountants' self-efficacy.

Based on table 4. it can be concluded that the third hypothesis which states "institutional support has a significant positive effect on accountant self-efficacy" is not supported, because of the t-statistic value (0.888 < 1.645) and p-value (0.187 > 0.05). The value of path coefficients in the third hypothesis is obtained at 0.034 which indicates a very small positive relationship. Even the effect size test found that institutional support does not affect self-efficacy. Thus, it can be concluded that there is a positive influence of institutional support on self-efficacy but the effect is so small that it is not significant.

Although there is a positive relationship between institutional support and self-efficacy, the effect is very small and insignificant. This is likely because institutional support such as training, seminars, or workshops related to the metaverse is still minimal or even not available in Indonesia. This limitation causes accountants to not feel sufficient support from their institutions to learn and apply accounting in the metaverse. This can be seen from the answers given by respondents where almost all respondents stated that their workplace did not provide training, seminars, or education related to the metaverse. Other findings support the results of this study by stating that metaverse opportunities in Indonesia are very good but face obstacles in their application such as a talented workforce and network infrastructure that is not perfect compared to other countries [4]. In addition, the application of metaverse technology in Indonesian education is still very limited due to differences in the literacy of educators [65]

4.2.4 Self-efficacy has a significant positive effect on the intention to participate and adapt in metaverse accounting.

In Table 4. the obtained t-statistic value is 10.078 and the p-value of 0.000. So, the fourth hypothesis which states "self-efficacy has a significant positive effect on the intention to

participate and adapt in metaverse accounting" is supported. The path coefficient value in the fourth hypothesis is obtained at 0.679 which shows a positive relationship, meaning that every one-unit increase in the self-efficacy variable will increase intention by 0.679. Even in the effect size test, it was found that self-efficacy has a large effect on intention. Thus, it can be concluded that there is a significant positive effect of self-efficacy on intention.

This is supported by the fact that the average score for the self-efficacy variable was highest on the SE1 indicator regarding readiness to adapt to metaverse accounting practices, indicating that accountants are indeed prepared to adapt to metaverse accounting practices. Although the average scores for other indicators regarding technological capabilities and handling the complexity of digital asset accounting were lower, this suggests that accountants' self-efficacy in implementing metaverse accounting still needs to be improved through more comprehensive technology education and training to enhance respondents' confidence.

Self-efficacy contributes greatly to the interest of technology-based individuals, where the higher the individual's self-efficacy, the higher the individual's interest in doing an activity [49]. When someone has high self-efficacy, they tend to be more courageous to try new things and learn new technologies because they are not afraid to make mistakes and continue to learn from their experiences [66]. This finding means that accountants with higher self-efficacy are more likely to be open to learning and adopting new methods needed to operate in the metaverse, while accountants with lower self-efficacy may be hesitant. This is because people with high self-efficacy tend to be more courageous in trying new things and learning new technologies. After all, they are not afraid to make mistakes and continue to learn from their experiences. This is supported by research which states that self-efficacy has a significant positive effect on intention to participate [1].

4.2.5 Trust has a significant positive effect on the intention to participate and adapt in metaverse accounting.

Based on Table 4. the obtained t-statistic value is 2.352 and the p-value of 0.009. So the fifth hypothesis which states "trust has a significant positive effect on the intention to participate and adapt in metaverse accounting" is supported. The path coefficient value in the fifth hypothesis is obtained as 0.222 which indicates a positive relationship.

Respondent responses also indicate a relatively high level of trust in metaverse platforms for managing digital assets. This is demonstrated by the average scores on the trust indicator, which ranged from 3.054 to 3.440. However, there are doubts indicated by the lowest average score regarding metaverse platform privacy policies. This suggests a need for increased transparency and accountability in the protection of users' data by metaverse platforms.

To use the new technology, the metaverse, trust in this technology must first be confirmed [49]. Trust in technology is very important in determining whether individuals will accept or reject the technology [49]. This is supported by the results of answers from respondents who gave the most points for statements relating to respondents being more confident to use the metaverse platform if the platform is trusted to use. This means that the higher the individual's trust in metaverse technology, the higher their intention to participate and adapt in that environment. Trust becomes important because individuals who trust metaverse technology will be more open to accepting and using it in their work.

4.2.6 Security does not have a significant positive effect on the intention to participate and adapt in metaverse accounting.

Based on Table 4. the result of obtaining the t-statistic value is 0.163 and the p-value is 0.435. So the sixth hypothesis which states "security has a significant positive effect on the intention to participate and adapt in metaverse accounting" is not supported. The value of path coefficients in the sixth hypothesis is -0.017 which indicates a negative relationship.

The security aspect in the metaverse is a major consideration for many individuals before deciding to participate and adapt, especially in an accounting context involving financial transactions and sensitive data [25]. However, the results of this study state that security does not have a positive effect on intention. This means that security is not a major factor in determining accountants' willingness to use the metaverse for their work. Accountants who have never used the metaverse platform may

not have a clear understanding of the security risks associated with it. This may cause them to underestimate the importance of security and not consider it as a major factor in determining their intention. As a result, they may not prioritize security and do not consider it a major factor in their decision to participate.

5. CONCLUSION

The study delved into the factors influencing accountants' intention to participate and adapt in metaverse accounting. Interestingly, gender did not significantly impact the relationship between technological literacy and self-efficacy, suggesting equal opportunities for both genders. Although there was a positive relationship between technological literacy and self-efficacy, the effect was very small and insignificant. This is supported by research that found that gender did not play a significant role in technological literacy and self-confidence [53] [54].

However, age emerged as a significant factor, with younger accountants exhibiting higher self-efficacy due to their greater technological literacy. Younger generations tend to have higher levels of technological literacy and self-confidence compared to older generations [55]. Younger accountants may find it easier to adapt to the metaverse accounting environment due to their higher technological literacy and self-confidence [57]. This suggests that it is important for accountants to improve their technological literacy, especially for older accountants. This highlights the need for targeted technological literacy training, particularly for older accountants.

While institutional support currently lacks a significant impact on self-efficacy, likely due to limited metaverse-related training programs in Indonesia, increased training and education focused on the metaverse are crucial [4]. Therefore, institutions need to increase their support for accountants who want to learn and implement accounting in the metaverse through specialized training and education programs designed to help accountants enhance their knowledge and skills [65].

Self-efficacy and trust emerged as key drivers for intention to participate in metaverse accounting. Accountants with higher self-efficacy and trust in the technology are more likely to embrace and adapt to this new environment. This finding means that accountants with higher self-efficacy are more likely to be open to learning and adopting new methods required to operate in the metaverse, while accountants with lower self-efficacy may be hesitant [61]. This is because individuals with high self-efficacy tend to be more courageous in trying new things and learning new technologies as they are not afraid of making mistakes and continue to learn from their experiences [66]. Moreover, trust in metaverse technology is crucial, as individuals who trust it are more likely to accept and use it in their work. This means that the higher an individual's trust in metaverse technology, the higher their intention to participate and adapt to that environment [49]. Trust is important because individuals who trust metaverse technology are more open to accepting and using it in their work [48].

Security concerns, however, did not significantly influence accountants' willingness to use the metaverse, suggesting a potential lack of awareness regarding security risks. This means that security is not a primary factor in determining accountants' willingness to use the metaverse for their work. This may be because accountants who have never used a metaverse platform may not have a clear understanding of the security risks associated with it. As a result, they may not prioritize security and do not consider it a major factor in their decision to participate. Raising awareness of metaverse security could be beneficial [25].

In conclusion, fostering technological literacy, self-efficacy, and trust is crucial for encouraging accountant participation in metaverse accounting. Additionally, addressing security concerns through educational programs could further increase adoption rates. These findings offer valuable insights for policymakers, accounting firms, and training institutions as they develop strategies to prepare the accounting profession for the future of work in the metaverse.

5.1 Limitations

The limitations of this study are as follows:

1. The model in this study is only able to predict intention with effects in the large category for self-efficacy variables, while trust and security have little or no effect, so it is necessary to develop research models related to self-efficacy and intention in the context of metaverse accounting.

2. The limited coverage area in this study, therefore the results of this study cannot be generalized to other countries or regions.
3. Limitations of the research subject, in this study the individuals who were sampled or respondents in the study were mostly millennials. For this reason, the results of this study cannot be generalized to different generations or age groups.
4. This study did not ask questions about the experience of using metaverse platforms, so the results of this study related to the variables of security and intention cannot be generalized to different individuals.

5.2 Future Research Recommendation

Further research is needed to understand the various aspects of accounting in the metaverse. Here are some suggestions for future research:

1. Adding other factors that affect accountants' self-efficacy besides technological literacy and institutional support is important to increase accountants' confidence in the metaverse.
2. Researchers can examine how institutions such as universities and professional organizations can provide more effective training and education for accountants who want to adapt to the metaverse.
3. To overcome the limitations of the scope and limited subject pool, future studies should expand the scope to include a wider range of countries, regions, and age groups.
4. While the study found that technological literacy and institutional support significantly affect self-efficacy, individual differences such as personality traits, risk tolerance, and prior experience with technology may also play a crucial role. Future research could explore how these factors interact with technological literacy and institutional support to influence accountants' self-efficacy and intention to participate in metaverse accounting.
5. As the metaverse continues to evolve, ethical considerations such as data privacy, transparency, and accountability will become increasingly important. Future research could investigate how accountants perceive and address these ethical challenges within the context of metaverse accounting. This might include examining the development of ethical guidelines or frameworks specifically tailored to the metaverse.

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