

## Digital Literacy and Skills of Generations Y and Z Accountants<sup>1</sup>

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### Abstract

Digital literacy is a set of essential skills in the digital era, encompassing the ability to understand and utilize digital information. Young accountants from generations Y and Z have been familiar with technology and digital tools from the outset, and this advantage enable them to perform their tasks in complex and evolving financial scenarios. The goal of this article is to determine the relationship between the level of digital literacy and the skill levels of young accountants. With the participation of 175 young accountants in completing a questionnaire and extracting a model using structural equation modeling, the article's objective was achieved. The findings indicate that the average digital literacy of young accountants is at a desirable level. The results of direct path analysis indicate that among young accountants, the level of digital literacy has a positive relationship with agile mindset and design thinking skill, but does not have a significant relationship with management control competency. However, in the indirect path analysis, it was observed that the level of digital literacy and agile mindset influence the level of management control competency of accountants through design thinking skill. Applying a curriculum with digital technology subjects can improve accountants' performance.

**Keywords:** Agile Mindset, Design Thinking Skills, Digital Literacy, Management Control Competency, Young Accountants.

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## Introduction

The digitalization and the rapid growth of technological innovations have had a profound impact on social norms and values. With the widespread use of mobile devices and online platforms, communication channels have been facilitated, and the use of conventional communication tools and handwritten correspondence has been affected (Appel et al; 2020). The impact of this technological revolution goes far beyond just communication and has led to changes in business strategies, educational approaches, and the reconfiguration of professional paradigms (Haleem et al; 2022). Stakeholders' expectations for receiving results electronically have increased, and the accounting field is facing a growing demand for integrating information technology in service delivery (Al-mamary, 2022). In response to these demands, companies have invested heavily in information technology infrastructure, but research shows that this alone is not enough for success, and they can only fully benefit from the adoption of information technology when their employees have a high level of digital literacy (Al-mamary & Alraja, 2022; Nawaz et al; 2024). Therefore, companies have realized that in addition to investing in technological infrastructure, they need to take effective steps to educate accountants on digital literacy skills and prepare them for successful participation in the job market (Al-mamary & Alraja, 2022; Nawaz et al; 2024). The results of the studies show that the use of educational technologies and digital games in introductory accounting classes makes these courses more attractive to students and leads to a positive attitude towards accounting (Haji Moradkhani & Mashayekh, 2021).

The new generation of accountants, who were born between 1995 and 2019, have used digital technologies and tools to handle complex and evolving financial scenario (Handoyo & Anas, 2019). Their cognitive agility and strong desire to learn drive them to innovate and develop unique solutions to tackle complex challenges (Grace, 2023). They act as catalysts for modernization and ensure that the profession keeps pace with prevalent digital trends (Imjai et al; 2024). It is expected that this generation of accountants will be proficient in managing numbers and have an agile and flexible mindset in understanding and utilizing technology (Dwivedi et al; 2022).

However, in Iran, no research has been conducted to examine the level of digital literacy of young accountants and its relationship with skills such as agile mindset, design thinking, and management control competency. Given that familiarity with various application software and big data analysis methods is essential for success in the accounting and auditing profession, and this requires a sufficient level of digital literacy among accountants, the objectives of this study are: 1) to measure the level of digital literacy and soft skills such as agile mindset, design thinking, and

management control competency of young accountants in Iran, and 2) to investigate the relationship between the level of digital literacy of young accountants and these skills. The results of this study will provide information about the level of digital literacy of young accountants in Iran and its relationship with the level of soft skills in accountants. These findings can serve as a basis for professional bodies to plan the necessary measures to address the emerging requirements in the accounting profession. Additionally, it will provide information to educational planners to align the university curriculum with the digital age needs and prepare accounting graduates for successful participation in the profession.

### **Theoretical Background and Hypothesis Development**

In the current era, characterized by market volatility and the pervasiveness of technology, the importance of digital literacy has increased. Young accountants belonging to generation Y and Z have embraced technological advancements and social changes more than their predecessors. Generation Y, born between 1980 and 2000, is the first generation that grew up in the midst of the digital revolution, which was accompanied by increased access to technology and internet-based communications (Bolton et al; 2013). After them, generation Z, born in 2000 or later, grew up in a period where the use of smartphones and related technologies has become essential in daily life (Barnes et al; 2023). The educational and professional paradigms in accounting have emphasized the use of digital technologies by these young accountants, which distinguishes them from previous generations of accountants. According to these paradigms, accountants in this generation should possess skills such as "agile mindset", "design thinking", and "management control competency" to address the challenges of the digital age (Imjai et al; 2024).

To understand the relationship between the level of digital literacy and these skills, the study utilizes the agency theory, diffusion of innovation theory, and control theory. Agency theory focuses on the relationships between principals (owners) and agents (managers), addressing issues such as conflict of interest and the implementation of mechanisms to align their divergent interests (Jensen & Meckling, 1976). According to this theory, the application of management control competencies leads to the design and implementation of control mechanisms, governance structures, and performance management systems, ensuring correct decision-making, risk management, and alignment of interests within the organization (Imjai et al; 2024). The diffusion of innovation theory examines the process through which new ideas, technologies or practices are disseminated within a social system (Rogers, 1962) and can be effectively applied to the adoption of digital tools and literacy (Acikgoz et al; 2023). According to this theory, management control competencies enhance the adoption and effectiveness

of innovations in control systems, thereby contributing to the success of the organization. Control theory also examines the control mechanisms that organizations establish to regulate and manage information flows and processes. This theory is suitable for understanding how organizations support information security and data governance (Ashby, 1956). There is a complex interaction among these skills. The level of digital literacy and agile mindset have a significant impact on the development of design thinking and management control competency and accountants with an agile mindset and high digital literacy have demonstrated a remarkable capacity for effectively utilizing these skills (Imjai et al; 2024). The following provides a comprehensive definition of each of these concepts.

### **Digital Literacy**

Digital literacy refers to a set of essential skills in the digital age that are as important as traditional literacy. This concept goes beyond mere computer operations and encompasses the ability to accurately access and utilize digital information (Yugay, 2023). The use of these skills facilitates the specialized analysis and presentation of data and for this reason educational environments place a strong emphasis on developing digital literacy. This is particularly important in the field of accounting, where digital skills are crucial for deciphering complex accounting data (O'callaghan et al; 2021). Accounting is considered one of the main systems within management information systems and its function is to meet the informational needs of various management levels regarding resource planning and control, performance evaluation and decision-making (Hajiha & Nabiouni, 2014). Research indicates that digital literacy plays a significant role in enhancing the efficiency of accounting information systems (Golberenji, 2024). Digital literacy includes the following skills:

1. **Digital tools proficiency:** this refers to the ability to use digital systems and tools effectively, beyond just basic familiarity. It is a critical factor for improving work efficiency and optimizing results (Reisořglu, & Çebi, 2020; Haleem et al; 2022).
2. **Online research skills:** the ability to search for and identify reliable online information, which is essential for informed decision-making in personal and business contexts (Tang & Chaw, 2016).
3. **Digital communication:** it refers to the exchange of information through digital channels. Choosing the appropriate communication tools improves communication efficiency, creates a professional image, and increases business opportunities (Hazlehurst et al; 2023; Coursera, 2023).

4. Data protection awareness: the core skill of comprehending data protection mechanisms, including encryption and access management, to mitigate cyber risks and comply with regulations (Cremer et al; 2022).

### **Agile Mindset**

Agility is a multidimensional structure that emphasizes the importance of customer satisfaction with the products and services of a business entity (Kent et al; 2001). It includes the ability to respond quickly and effectively to environmental changes, embrace transformative experiences, and gain insights from them to enhance value from the customer's perspective (Limaj and Bernroider, 2022). The fundamental principles of an agile mindset are as follows:

1. Adaptability: the ability to respond quickly to rapid changes in a constantly evolving environment, allowing individuals and organizations to embrace and adapt to changes more swiftly (Eilers et al; 2022).
2. Continuous learning: the commitment of individuals to ongoing learning and self-development through training and experience, enabling them to stay aligned with changing conditions (Mlambo et al; 2021).
3. Collaborative approach: the collective effort of multiple individuals working towards a common goal, involving knowledge and experience sharing across diverse perspectives, and teamwork for rapid response (Barker Scott & Manning, 2022; Eilers et al; 2022; Injai et al; 2024).
4. Solution-oriented thinking: approaching problems with the mindset of quickly and effectively solving them, through exploring solutions and refining problem definitions (Jaynes, 2018) which enhances decision-making and operational efficiency in the face of challenges (Klunder et al; 2022).

### **Design thinking skill**

This skill is applied in various fields, including the development of applications that meet user needs and the implementation of social programs that address community issues (Meyer & Norman, 2020). The components of design thinking skill are as follows:

Creativity: the effective application of new ideas that helps in finding new ways to solve problems (Wang & Nickerson, 2017; Bander-Salazar, 2023). Brainstorming and teamwork are tools that enhance creativity (Venkut et al; 2020).

1. Empathy: the recognition and understanding of others' feelings, which helps designers comprehend user needs (Moudatsou et al;

- 2020). In design thinking, creating outputs that respond to users' emotions and needs is essential (Kumar, 2017; Gasparini, 2015).
2. Problem solving: problem solving does not mean finding a single answer but rather identifying the root of the problem and discovering diverse ways to meet user needs (Mohammed, 2023).

### **Management control competency**

Management control competency refers to the necessary capacity to direct and oversee an organization's activities in a predetermined direction (Duggal, 2023). This capability is an essential skill set for leaders involved in organizational management, aimed at improving decision-making, monitoring employee performance and enhancing work practices in alignment with the organization's vision (Lind and åberg, 2020). In this competency, inherent adaptability and flexibility are of great importance, enabling organizations to respond appropriately to external changes and foster a culture of employee participation (Kim & Jung, 2022). One aspect of this adaptability involves contingency planning for unforeseen circumstances such as natural disasters, technological disruptions, or the spread of infectious diseases that can disrupt business operations (Fischer et al; 2019). Management control competency includes the following:

1. Strategic planning: the process by which an organization defines its long-term objectives and determines the strategies to achieve them (Maleka, 2014).
2. Resource allocation: the distribution of an organization's resources based on the importance of its strategic plans (Landau, 2023). Effective resource allocation enables organizations to adapt to the market and provide greater value to customers (Fuertes et al; 2020).
3. Performance measurement: involves the evaluation and assessment of the success of activities or projects (Korhonen et al; 2023), which supports better decision-making and refinement processes (Kibira et al; 2016).
4. Risk management: focuses on the identification, assessment and management of risks that may prevent an organization from achieving its objectives (Srinivas, 2019). This ensures that organizations are prepared to respond to potential threats (Mcgowan et al; 2023).

### **Hypothesis**

Digital literacy is an essential skill that cannot be underestimated (Murtadho et al; 2023). In the digital age, literacy encompasses not only individual skills but also a set of social actions in both real and digital

spaces that utilize new or digital technologies for communication. As one of the new and multidimensional literacies, digital literacy represents the best and most useful approach to understanding the changing landscape of the world and cannot be separated from education (Ghadrdan et al; 2023). In today's world, the need for information and communication to acquire knowledge has fundamentally transformed educational systems and led to the emergence of e-learning in the training of organizational employees. However, research results conducted in Iran indicate that organizations and financial institutions, such as Bank Melli (national bank), do not have the necessary readiness in terms of financial resources and educational content for the implementation of e-learning systems. This issue can affect employees' access to information technology and their ability to establish effective communication (Faezi & Behzadi, 2014). The integration of digital literacy with an agile mindset prepares individuals for adaptability, rapid learning, and acceptance of change (Eilers et al; 2022) and plays a crucial role in communication, coordination, and responding effectively to dynamic changes (Jose, 2016). Digital knowledge acts as a catalyst for fostering creativity (Kaputa et al; 2022) and is very important for managers and those entrusted with management control responsibilities. This capability enables effective use of digital tools for data analysis, monitoring results, and making quick decisions (Lundell and Forzelius, 2017; Haleem et al; 2022), enhances creative thinking, and aids decision-making in complex situations (Sinnaiah et al; 2023). Based on these concepts, the following hypotheses are proposed:

**Hypothesis 1:** the level of "digital literacy" has a positive relationship with the level of "agile mindset."

**Hypothesis 2:** the level of "digital literacy" has a positive relationship with the level of "design thinking" skill.

**Hypothesis 3:** the level of "digital literacy" has a positive relationship with the level of "management control" competency.

Agile mindset and design thinking are skills that enable organizations to adapt to changes in the digital age. An agile mindset allows managers to quickly adjust to changing goals and environments while enhancing efficient internal communications within organizations (Dikert et al; 2016). Furthermore, it emphasizes flexibility, responsiveness to change, and results-oriented approaches (Miler & Gaida, 2019). The integration of agile mindset and design thinking fosters a culture that promotes experimentation, learning, and the development of products or services that meet needs, leading to agile organizational management and rapid decision-making (Hutter et al; 2023). This discussion leads to the following hypotheses:

**Hypothesis 4:** the level of "agile mindset" has a positive relationship with the level of "design thinking" skill.

**Hypothesis 5:** the level of "agile mindset" has a positive relationship with the level of "management control" competency.

The integration of design thinking skill and management control competency creates synergy in problem-solving, decision-making, creativity, and knowledge transfer within organizations (Bender-Salazar, 2023; Abubakar et al; 2019; Avsec, 2023). Design thinking enhances flexible thinking and responses to business challenges, while management control competency effectively monitors activities and ensure their alignment with multifaceted challenges (Duggal, 2023). The combination of these two aligns managerial decision-making with organizational goals, enhances sustainability, dynamic capabilities, and open innovation, and facilitates skilled guidance in rapidly changing environments (Lind & Åberg, 2020; Gomez-Conde et al; 2022). Therefore, the sixth hypothesis is proposed as follows:

**Hypothesis 6:** the level of "design thinking" skill has a positive relationship with the level of "management control" competency.

The integration of design thinking and management control competency fosters a collaborative approach that enhances creativity and skilled management within organizations (Bender-Salazar, 2023). Given the interplay between digital literacy, design thinking, and management control competency, another hypothesis is proposed, indicating that design thinking skill mediate the relationship between digital literacy and management control competency. Design thinking, with its emphasis on collaboration and creative problem-solving, can act as a bridge and enhance the application of digital literacy in the realm of management control. The continuous and open-minded approach of design thinking can help align digital literacy skill with the requirements of dynamic management. This reasoning forms the basis for the seventh hypothesis:

**Hypothesis 7:** the level of "digital literacy" positively affects the level of "management control" competency through the mediation of "design thinking" skill.

In addition to the mediating role that design thinking skill play in the relationship between digital literacy and management control competency, this skill may also mediate the relationship between agile mindset and management control competency. The integration of design thinking and management control competency effectively facilitates problem-solving, decision-making, knowledge transfer, creativity, and enhances management control capabilities (Bender-Salazar, 2023; Abubakar et al, 2019; Avsec, 2023). In this context, it can be stated that design thinking skill mediate the relationship between agile mindset and management control competency. The open-mindedness and collaborative approach inherent in design thinking may serve as a bridge, aligning agility skills

with the requirements of dynamic management. Accordingly, the eighth hypothesis is proposed as follows:

**Hypothesis 8:** the level of "agile mindset" positively affects the level of "management control" competency through the mediation of "design thinking" skill.

Today, most research utilizes the model proposed by Crocetta et al; (2021), which illustrates the relationship between these concepts. This model is depicted in Figure 1.

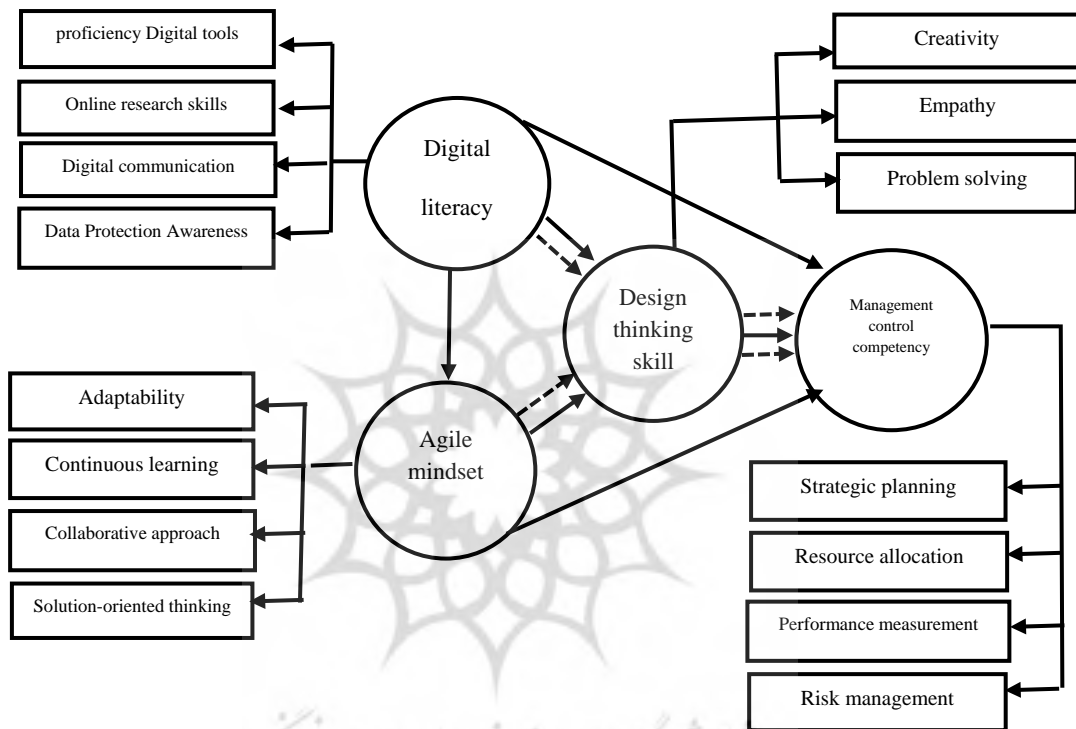


Figure 1. The Model Proposed by Crocetta et al. (2021)

## Research Methodology

### Model

For the analysis of the conceptual model, the researchers used the partial least squares structural equation modeling (PLS-SEM) method. The measurement models were evaluated using reliability, convergent validity, and discriminant validity indicators. The assessment of the structural model was also carried out using the r-squared metric (Hair et al; 2019).

Finally, a comprehensive analysis was performed to validate the research hypotheses.

### Questionnaire

The required data was collected using a questionnaire. The questionnaire included 30 statements to assess indicators of "digital literacy," "agile mindset," "design thinking skill," and "management control competency." respondents expressed their opinions using a five-point likert scale with options ranging from "strongly disagree," "disagree," "neutral," "agree," to "strongly agree." out of the 30 statements, 8 were related to measuring digital literacy, 8 pertained to the agile mindset, 6 were related to design thinking skill, and 8 concerned management control competency. The questionnaire was derived from the research by Imjai et al (2024). Its face validity was reviewed and revised by one faculty member, four phd students, and two master's students in accounting. To assess the reliability of the questionnaire, cronbach's alpha test was conducted on a sample of 30, and since the cronbach's alpha coefficient was above 0.7, the reliability of the questionnaire was confirmed.

### Population and Sample

Generation Y is recognized as the first digital generation that grew up with the internet and new technologies, while generation Z has been in contact with these technologies since the very beginning of their lives. The statistical population consists of young accountants from generations Y and Z, born between 1981 and 2002 in the iranian calendar, who are currently aged between 22 and 43 years. To collect the sample, a convenience sampling method was used, and the following criteria were applied for selecting respondents: a) they must hold at least a bachelor's degree to have a general understanding of accounting principles, b) they must have a minimum of six months of professional work experience in accounting, and c) they must have worked with digital tools and technologies. In cases where the population size is not specified, the sample size is calculated using cochrans formula.

Cochran's formula: 
$$n = \frac{(Z_{\alpha}^2 \times S^2)}{d^2}$$

$\alpha$ : this represents the significance level, which is set at five percent.

$d$ : this is the margin of error determined by the researcher, equal to 0.05.

$s$ : if the population variance is not available, it is equal to the variance of the initial sample data (the first 30 questionnaires), which is 0.33.

Based on these parameters, the minimum required sample size was determined to be 167 respondents. The questionnaire was distributed through various professional groups on telegram and whatsapp in 2023,

and 545 individuals viewed the questionnaire, but only 234 responded. To assess the respondents' attention and carefulness, four "lie detector" questions were included in the questionnaire. Respondents who provided inconsistent answers to these similar questions were considered inattentive and were excluded from the sample. As a result, 59 respondents were removed, and the final analysis was conducted on the data from 175 questionnaires. The demographic information of the final respondents is presented in table 1.

**Table 1. Demographic Characteristics of the Sample**

Gender	Frequency	Percentage	Generation	Frequency	Percentage
Male	81	46.3	Y	127	72.6
Female	94	53.7	Z	48	27.4
Total	175	100		175	100
Age					
Minimum	21				
Maximum	43				
Average	32.5				
Highest educational level	Frequency	Percentage	Type of university for bachelor's degree	Frequency	Percentage
Bachelor's	37	21.1	Public	121	69.2
Master's student and master's	96	54.9	Payame noor	17	9.7
Doctoral student and doctorate	42	24	Others	37	21.1
Total	175	100		175	100
Bachelor's degree gpa	Frequency	Percentage	Number of books read per year	Frequency	Percentage
Less than 16	52	29.7	Less than 5	106	60.5
99.17 -16	75	42.9	15 -5	67	38.3
20 - 18	48	27.4	More than 15	2	1.2
Total	175	100	Total	175	100

Gender	Frequency	Percentage	Generation	Frequency	Percentage
Occupation	Frequency	Percentage	Professional experience	Frequency	Percentage
Accountant	50	28.6	Up to 3 years	47	26.9
Auditor	44	25.1	3 to 6 years	41	23.4
Head of accounting and financial manager	23	13.2	6 to 10 years	33	18.8
Capital market expert or manager	9	5.1	10 to 15 years	40	22.9
Faculty member or university instructor	6	3.4	More than 15	14	8
Others	43	24.6			
Total	175	100		175	100

Resource: research findings

## Research Finding

### Descriptive Statistics

A total of 175 questionnaires were analyzed. Respondents selected one of the options: "strongly disagree," "disagree," "no opinion," "agree," and "strongly agree" for each statement. In the data analysis, the corresponding scores for each of these options were assigned values from 1 to 5, respectively. The descriptive statistics related to the scores of each of these skills are reported in table 2. The average level of digital literacy among individuals is 3.92, indicating that the digital literacy level of accountants is relatively acceptable. The average levels of agile mindset, design thinking skill, and management control competency among them are 4.09, 4.04, and 4.02, respectively, reflecting a high level of these skills among accountants.

*Table 2. Descriptive Statistics*

Construct	Average	Maximum	Minimum	Mod	Standard deviation
Digital literacy	3.92	5	2.25	3.75	0.46
Agile mindset	4.09	5	3	4	0.41
Design thinking skill	4.04	5	3	4	0.41
Management control competency	4.02	5	2.88	4	0.44

Resource: research findings

### Results of the Evaluation of Measurement Models

The measurement models were evaluated using the indicators of composite reliability, convergent validity, and discriminant validity. Cronbach's alpha and composite reliability coefficients including dillon-goldstein's rho and jöreskog's rho were used to assess reliability. Convergent validity was evaluated using average variance extracted (ave) and factor loadings, while discriminant validity was assessed using the fornell-larcker criterion and the heterotrait-monotrait (HTMT) ratio.

As observed in table 3, the cronbach's alpha and composite reliability coefficients are all above 0.7, indicating the reliability of the models. The ave values are also equal to or greater than 0.5, confirming the convergent validity.

**Table 3. Results of Composite Reliability and Convergent Validity Assessment**

Construct	Cronbach alpha	Composite reliability (tho-a)	Composite reliability (tho-c)	Average variance extracted (ave)
Digital literacy	0.82	0.94	0.87	0.50
Agile mindset	0.84	0.87	0.88	0.50
Design thinking skill	0.87	0.87	0.87	0.53
Management control competency	0.90	0.92	0.92	0.60

Resource: research findings

According to the fornell-larcker criterion for confirming discriminant validity, the square root of the ave of each construct should be greater than the correlations with the other constructs. Based on the data presented in table 4, this condition is met for all constructs except agile mindset. To further ensure discriminant validity, the heterotrait-monotrait (HTMT) ratio was also used. If the HTMT value is less than 0.85 or 0.90, discriminant validity is considered acceptable. The information provided in table 4 shows that the HTMT ratios are within the acceptable range for all constructs, thus confirming discriminant validity.

**Table 4. Results of Discriminant Validity Assessment**

Construct	Digital literacy	Agile mindset	Design thinking skill	Management control competency
Fornell – larcher criterion				
Digital literacy	0.70			
Agile mindset	0.69	0.70		
Design thinking skill	0.25	0.41	0.73	
Management control competency	0.51	0.77	0.44	0.77
Heterotrait – monotrait ratio of correlation (HTMT)				
Construct	Digital literacy	Agile mindset	Design thinking skill	Management control competency
Digital literacy				
Agile mindset	0.71			
Design thinking skill	0.33	0.40		
Management control competency	0.47	0.85	0.35	

Resource: research findings

The information regarding factor loadings is reported in table 5. Factor loadings should be greater than 0.4. As observed in the table, in most statements, the factor loading exceeds 0.4. This criterion, along with the average variance extracted, indicates that convergent validity is confirmed. In this table, the weights determine the relative importance of each indicator in measuring each construct. Additionally, to examine multicollinearity, the variance inflation factor (VIF) was used. The value of this indicator should be less than 5, and according to the information presented in table 5, the VIF values are within this range in all cases, indicating the absence of multicollinearity among the components.

**Table 5. Factor Loadings, Weights and Variance Inflation Factor**

Construct	Indicator	Statement	Loadings	Weight	Variance inflation factor (VIF)
Digital literacy	Digital tool proficiency	1	0.52	0.24	1.15
		2	0.40	0.13	1.08
	Online search skills	1	0.54	0.20	1.22
		2	0.63	0.31	1.31
	Digital communication	1	0.64	0.23	1.41
		2	0.66	0.31	1.25
	Data protection awareness	1	0.54	0.13	1.38
		2	0.51	0.23	1.32
Agile mindset	Adaptability	1	0.60	0.20	1.32
		2	0.60	0.21	1.37
	Continuous learning	1	0.56	0.23	1.24
		2	0.67	0.22	1.49
	Collaborative approach	1	0.59	0.21	1.36
		2	0.47	0.13	1.21
	Solution-oriented thinking	1	0.71	0.23	1.53
		2	0.67	0.20	1.49
Design thinking skill	Creativity	1	0.62	0.29	1.21
		2	0.57	0.22	1.20
	Empathy	1	0.65	0.33	1.19
		2	0.40	0.10	1.08
	Problem-solving	1	0.71	0.29	1.50

Construct	Indicator	Statement	Loadings	Weight	Variance inflation factor (VIF)
		2	0.75	0.31	1.57
Management control competency	Strategic planning	1	0.61	0.17	1.62
		2	0.77	0.21	1.97
	Resource allocation	1	0.64	0.16	1.66
		2	0.69	0.18	1.67
	Performance measurement	1	0.69	0.20	1.54
		2	0.74	0.21	1.67
	Risk management	1	0.66	0.18	1.45
		2	0.54	0.18	1.38

Resource: research findings

### Results of the Evaluation of the Structural Model and Hypothesis Testing

To assess the quality of the model, the adjusted r-squared was used according to the method of Hair et al. (2019). If this coefficient is greater than 0.1, the explained variance of a specific endogenous construct is considered sufficient (Falk & Miller, 1992). In this study, the adjusted r-squared for all variables is greater than 0.1, indicating that the dependent variable is well explained by the independent variables. The effect of each exogenous variable on the endogenous variable was examined using the effect size index. Values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively (Cohen, 1988). In this research, all exogenous variables have medium to large effects on the endogenous variable, with the only exception being the effect of digital literacy on management control competency, which is relatively small. The fit of the model was evaluated using the standardized root mean square residual (SRMR) index (Henseler et al; 2014). If the value of this index is less than 0.1, it indicates good fit. The value of the index in this model is 0.08.

For testing hypotheses one to six, direct path analysis was used, while indirect path analysis was employed for testing hypotheses seven and eight, with the results presented in table 6. The level of "digital literacy" has a positive relationship with the level of "agile mindset" and "design thinking" skill (with beta values of 0.54 and 0.21, respectively, and a significance level of zero), confirming hypotheses one and two. However, there is no

relationship with the level of "management control competency" (with a beta of 0.06 and a significance level of 0.36), leading to the rejection of hypothesis three. The level of "agile mindset" has a positive relationship with both "design thinking" skill and "management control competency" (with beta values of 0.53 and 0.31, respectively, and a significance level of zero), confirming hypotheses four and five. The level of "design thinking" skill has a positive relationship with "management control competency" (with a beta of 0.43 and a significance level of zero), confirming hypothesis six as well. Indirect path analysis examines the relationship of one variable through a mediating variable with the target variable. The levels of "digital literacy" and "agile mindset" are related to "management control competency" through "design thinking" skill (with beta values of 0.09 and 0.23, respectively, and a significance level of zero), confirming hypotheses seven and eight. The results are illustrated in Figure 2.

**Table 6. Hypothesis Test Results**

Direct Path Analysis							
Hypothesis		Beta ( $\beta$ )	Mean	Standard deviation	T statistic	Significance level	Result
1	Digital literacy -> agile mindset	* 0.54	0.55	0.05	10.46	0.00	Acceptance
2	Digital literacy -> design thinking skill	* 0.21	0.21	0.07	3.18	0.00	Acceptance
3	Digital literacy -> management control competency	0.06	0.06	0.06	0.92	0.36	Rejection
4	Agile mindset -> design thinking skill	* 0.53	0.54	0.07	7.64	0.00	Acceptance
5	Agile mindset -> management control competency	* 0.31	0.31	0.09	3.35	0.00	Acceptance
6	Design thinking skill -> management control competency	* 0.43	0.44	0.08	5.40	0.00	Acceptance

Direct Path Analysis							
Hypothesis		Beta ( $\beta$ )	Mean	Standard deviation	T statistic	Significance level	Result
	control competency						
Indirect path analysis /mediation							
7	Digital literacy -> design thinking skill-> management control competency	*0.09	0.09	0.03	2.85	0.00	Acceptance
8	Agile mindset -> design thinking skill-> management control competency	*0.23	0.24	0.06	4.11	0.00	Acceptance
Adjusted r <sup>2</sup> coefficients							
Agile mindset		0.29					
Design thinking skill		0.44					
Management control competency		0.50					
Adjusted f <sup>2</sup>							
Digital literacy -> agile mindset		0.41					
Digital literacy -> design thinking skill		0.06					
Digital literacy -> managerial control competency		0.02					
Agile mindset -> design thinking skill		0.36					
Agile mindset -> management control competency		0.11					
Design thinking skill-> management control competency		0.21					
Goodness-of-fit index (srmr)		0.08					
Values marked with * indicate significance at the 0.95 level.							

Resource: research findings

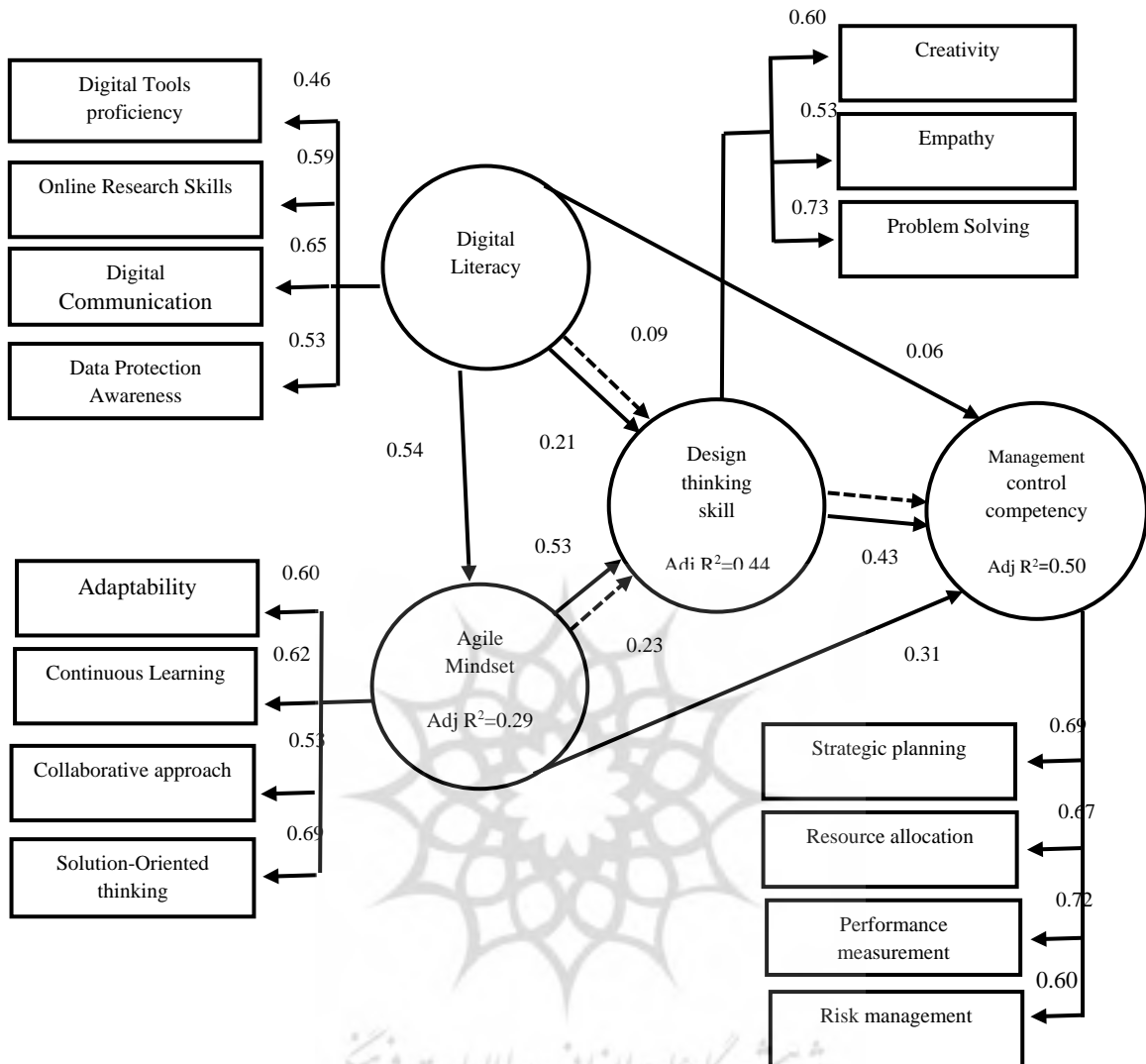


Figure 2. The Confirmed Model

### Discussion and Conclusion

With the growth of technology, the business environment has changed, and the accounting and auditing profession, like other professions, has been affected by these transformations. The emergence of artificial intelligence, blockchain, and big data has transformed accounting and auditing processes, and accounting graduates and practicing accountants,

with only specialized knowledge and without familiarity with the latest technologies, cannot respond to the diverse demands of business owners and the business environment. Therefore, digital literacy has become a critical skill for individuals, especially generation Z who have grown up in a technology-based environment, and it provides young accountants with the necessary tools and knowledge to utilize the latest technologies in the accounting profession, from data analysis to informed financial decision-making.

This research examines the impact of digital literacy levels on the skills of young accountants. The significant impact on development indicates that the level of digital literacy among accountants fosters an agile mindset in them, as shown by the results of the first hypothesis test. In other words, accountants with higher levels of digital literacy are more adaptable to environmental changes, are constantly seeking to learn, are more successful in collective efforts, and have better performance in dealing with challenges. The results of testing the second hypothesis indicate that the higher the level of digital literacy of accountants, the greater their design thinking skill. This means that increasing the level of digital literacy in accountants makes them more creative, have a better understanding and perception of users' emotions and needs, and respond well to their needs. The test of the third hypothesis indicates that the level of digital literacy among accountants does not directly impact their management control competency. Management control competency refers to the necessary capacity to guide and oversee the activities of an organization and encompasses a set of essential skills for organizational managers. Although the third hypothesis was not confirmed, which indicates that the level of digital literacy is not directly related to the level of management control competency, the confirmation of the subsequent hypotheses shows that the level of digital literacy has a positive relationship with the level of management control competency through mediating factors. The research by Imjai et al (2022) confirms the impact of the level of digital literacy on the level of management control competency.

The results of the fourth hypothesis show that the agile mindset of accountants strengthens their design thinking skill, enabling them to develop applications that are tailored to the needs of users.

The fifth hypothesis also indicates that in accountants with an agile mindset, management control competency is stronger, and they perform better in areas such as strategic planning, resource allocation, performance measurement, and risk management.

The results of testing the sixth hypothesis show a positive impact of the level of design thinking skill on the level of management control competency in young accountants. Design thinking provides an open space

for sharing ideas and knowledge. Accountants who have a deep understanding of technology and can use it effectively in their work are more successful in finding innovative solutions to business problems and providing services to clients. Moreover, they have the skills to effectively manage internal resources and control the professional teams they oversee, and they improve the management of systems and processes in a way that allows their teams to operate more efficiently (Abubakar et al; 2019).

The confirmation of these hypotheses indicates the interconnected relationships between digital literacy, agile mindset, design thinking skill, and management control competency in accountants. Despite these intertwined relationships, it is expected that digital literacy will both directly strengthen these skills and indirectly strengthen them by strengthening other skills, having a compound positive effect on other skills. The confirmation of the seventh hypothesis corroborates this, showing that design thinking skill act as a mediator between digital literacy and management control competency. This means that a higher level of digital literacy in young accountants strengthens their design thinking skill, which then strengthens their management control competency. This effect also applies to the relationship between agile mindset and management control competency. The confirmation of the eighth hypothesis means that the more agile the mindset of accountants, the more their design thinking skill are strengthened, and with the growth of design thinking skill, their management control competency are also strengthened. The results of other studies also confirm the mediating role of design thinking skill (Hatane et al; 2019).

Given the results of this research and similar studies, the role of digital literacy in developing soft skills in accountants is an established fact. Therefore, it seems that the curriculum of accounting education requires revision, and changing the educational curricula and placing more emphasis on learning existing technologies can improve the performance of young accountants and lead to better results in the profession. Therefore, it is suggested that the weight of courses related to the teaching of digital technologies in the undergraduate curriculum of the accounting major be increased, and these curricula be reviewed periodically at different time intervals and in line with environmental changes, and of course, considering the contextual and cultural factors. On the other hand, given the effect of the level of digital literacy on the skills of accounting graduates, it is suggested that organizations evaluate the level of digital literacy of applicants at the time of recruitment. It also seems that holding training classes on familiarity with the latest technologies for financial managers can improve their performance in effective management of organizational resources and risk management.

Conducting experimental research on digital literacy can well reveal the results of its training. Therefore, it is suggested that in different universities, in the curriculum of the accounting major, elective courses be defined in the direction of teaching digital tools, online search skills, digital communications, and data protection awareness, and then the professional performance of students who have taken the relevant units and participated in these classes be compared with other students. Examining the level of digital literacy of financial managers and comparing the performance of managers with different levels of digital literacy can also be the subject of future research. Another issue that can be investigated is the effect of the level of digital literacy of university faculty members on the quality of education in the accounting major. The unwillingness of individuals to complete the questionnaire due to reasons such as workload and professional commitments is considered one of the limitations of this study. A total of 234 individuals completed the questionnaire, of which 59 were discarded due to inaccuracies in responses, resulting in a total of 175 questionnaires being analyzed. Despite significant efforts to distribute the questionnaire among various specialized groups and coordination with respected university professors to send the questionnaire to students, an increase in the number of completed questionnaires was not achieved.

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