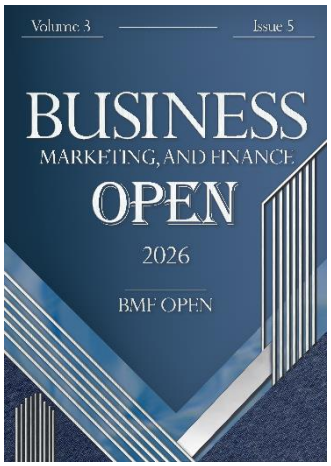
# Blockchain Technology Acceptance in Accounting Information Systems by End Users in the Domain of Accountants' Competencies

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**Abstract:** The present study was conducted with the aim of examining the acceptance of blockchain technology in accounting information systems by end users in relation to their competencies. In terms of purpose, this study is applied; in terms of research type, it employs a mixed-methods design (qualitative and quantitative); based on its foundation, it is survey-based; and in terms of nature, it is descriptive-analytical. It was designed to provide practical solutions for achieving operational objectives. The statistical population of this study consisted of all financial managers, deputy managers, and experts in the financial sector across the country, who were selected using simple random and convenience sampling methods. Data analysis was carried out through qualitative analysis using the fuzzy Delphi technique and quantitative testing using structural equation modeling. The quantitative findings of the study indicated that all major dimensions of the model, including digital knowledge and skills, attitude toward technology, organizational support, organizational culture, information technology infrastructure, and interaction with the professional environment, had high path coefficients and significant t-values. In particular, information technology infrastructure (with a path coefficient of 0.759 and a t-value of 11.560) and interaction with the professional environment (0.799, t = 9.842) had the greatest effects on empowerment. In addition, individual factors such as digital knowledge (0.854) and attitude toward technology (0.752) also had substantial effects. Organizational factors such as managerial support and organizational culture were likewise confirmed with high coefficients.

**Keywords:** blockchain technology acceptance, accounting information systems, accountants' competencies

## 1. Introduction

The accelerating digital transformation of business processes has fundamentally altered the logic of information production, control, and decision support in contemporary organizations, and accounting information systems now stand at the center of this transition. Accounting is no longer confined to the retrospective recording and reporting of transactions; rather, it increasingly functions as a dynamic, technology-mediated system for generating transparent, timely, and decision-useful information in digitally networked environments. Within this context, blockchain technology has emerged as one of the most consequential technological innovations for accounting, auditing, and financial governance because it

introduces distributed recordkeeping, immutability, traceability, and programmable verification into transaction-processing architectures. At the same time, the practical realization of blockchain's potential in accounting information systems depends not only on technical feasibility but also on the willingness and capability of end users to accept, understand, and operationalize the technology in routine professional practice. This makes the question of blockchain acceptance among accountants and financially oriented users especially significant, because adoption failures often arise not from the absence of technological sophistication alone, but from a mismatch between system requirements and user competencies, organizational conditions, and professional expectations [1-5].

Blockchain technology has attracted growing scholarly attention in accounting because it promises to reshape several core functions of the profession, including transaction validation, internal control, assurance, reporting reliability, audit trail integrity, and interorganizational trust. The literature suggests that blockchain can reduce reconciliation burdens, improve the transparency of shared ledgers, enable real-time verification, and support more secure and auditable financial ecosystems. Recent systematic and empirical work indicates that blockchain is no longer examined merely as a theoretical innovation, but as a practical infrastructure with implications for accounting standards, audit quality, professional judgment, and the redesign of accounting workflows. Yet this transformation is not linear. The accounting profession operates within tightly regulated, ethics-sensitive, and institutionally embedded settings where the adoption of novel technologies must be balanced against concerns related to security, interoperability, legal accountability, and the changing role of human expertise. As a result, the acceptance of blockchain in accounting information systems requires a multidimensional understanding that connects technology characteristics to user beliefs, digital capabilities, organizational readiness, and broader professional ecosystems [3, 6-10].

A major reason this topic deserves focused investigation is that end users in accounting environments are not passive recipients of technological change; they are active interpreters, adopters, resistors, and implementers whose competencies directly shape the effectiveness of digital transformation. The concept of accountants' empowerment therefore becomes analytically central. Empowerment in this context extends beyond formal training and includes digital knowledge, confidence in using intelligent systems, adaptive attitudes toward innovation, access to supportive organizational resources, and interaction with professional communities capable of normalizing new tools and practices. Studies on digital transformation and technology adoption consistently show that human capability and behavioral readiness condition whether organizations can translate technological investments into performance improvements. Research on accounting transformation similarly emphasizes that technological modernization in financial functions requires shifts in skill profiles, learning orientation, and role identity. If accountants lack the competencies needed to evaluate, trust, and integrate blockchain-enabled processes, adoption is likely to remain superficial, symbolic, or fragmented, regardless of managerial enthusiasm or infrastructural investment [11-16].

The technology acceptance literature provides a useful theoretical basis for understanding these dynamics, particularly through models such as the Technology Acceptance Model, the Unified Theory of Acceptance and Use of Technology, and related integrative frameworks that link perceived usefulness, ease of use, facilitating conditions, and behavioral intention. However, the rapid evolution of advanced digital technologies has exposed the limitations of traditional acceptance models when applied to complex systems such as blockchain, artificial intelligence, and intelligent audit platforms. Contemporary studies argue that user behavior in relation to advanced technologies is shaped not only by instrumentality and usability, but also by trust, perceived risk, digital literacy,

organizational legitimacy, ethical implications, and the degree to which the technology aligns with task structures and professional values. Revised and extended models of technology acceptance therefore call for richer explanatory constructs, especially in contexts where emerging technologies alter not only the means of work but also the boundaries of responsibility, transparency, and control. In blockchain-enabled accounting systems, acceptance depends on a hybrid configuration of cognitive, behavioral, organizational, and institutional variables rather than on a narrow evaluation of system efficiency alone [7, 8, 17-20].

Another important dimension of the problem is the convergence between blockchain and other digital technologies, especially artificial intelligence, intelligent analytics, cloud platforms, and automated auditing tools. In practice, blockchain adoption in accounting is increasingly discussed within a broader ecosystem of digital innovation in which data verification, smart decision support, predictive analytics, and automated compliance systems interact. Research on AI in accounting and auditing shows that the profession is undergoing a structural transition toward more technologically intensive modes of analysis, reporting, and assurance. This convergence increases both the opportunities and the complexity of acceptance. On the one hand, integrated digital ecosystems may enhance efficiency, reduce errors, and support better governance. On the other hand, they amplify the cognitive demands placed on end users, who must understand not just one tool but a network of interdependent technologies with distinct affordances, risks, and operational consequences. Consequently, blockchain acceptance cannot be isolated from the larger trajectory of digital accounting innovation, and the competencies required of accountants increasingly involve digital fluency, interpretive flexibility, and the ability to operate in data-rich, automated, and sometimes opaque environments [10, 14, 21-24].

The need to examine blockchain acceptance through the lens of empowerment is also reinforced by organizational research showing that technological adoption is strongly contingent on institutional support structures. Even highly promising technologies fail when organizations do not provide adequate training, managerial commitment, access to digital tools, and a culture that encourages experimentation and learning. In accounting settings, where error aversion and procedural rigidity may be pronounced, supportive environments become even more critical for reducing uncertainty and legitimizing new practices. Studies on digital transformation across sectors suggest that organizational support, resource commitment, and innovation-oriented culture are among the most consistent predictors of successful adoption. This is especially relevant for blockchain, whose operational logic may challenge conventional processes of recordkeeping, verification, and oversight. If organizations do not cultivate a culture of digital readiness and cross-functional coordination, end users may perceive blockchain as disruptive, unnecessary, or too risky to integrate into established routines. Thus, user acceptance is embedded in organizational contexts that either enable or constrain empowerment [7, 8, 15, 25-27].

Professional environment and ecosystem interaction constitute another underexplored yet highly relevant dimension. Accountants do not develop technological competencies in isolation; they are influenced by professional associations, industry norms, peer learning, regulatory discourse, educational systems, and the diffusion of best practices across organizations. Recent scholarship highlights that acceptance of emerging technologies is often mediated by exposure to professional communities that frame technologies as legitimate, useful, and compatible with professional roles. Where such communities are weak or fragmented, uncertainty remains high and adoption slows. This issue is particularly important in relation to blockchain because its applications in accounting are still evolving, standards are not fully stabilized, and many practitioners remain unsure about implementation pathways, governance implications, and long-term value creation. The extent to which accountants interact with knowledgeable peers, expert institutions, and professional forums may therefore

shape not only their technical understanding but also their confidence and motivation to embrace blockchain-enabled systems. In this sense, empowerment involves social and institutional embeddedness as much as individual skill acquisition [3, 6, 9, 19, 28, 29].

Digital literacy remains one of the foundational determinants in this process. Although digital literacy is often discussed in broad socio-economic contexts, its relevance to accounting is highly specific because the profession increasingly relies on system interaction, data interpretation, automated interfaces, cybersecurity awareness, and technology-enabled judgment. Studies on digital literacy and technology adoption show that users with higher digital capability are more likely to perceive digital tools as useful, manageable, and empowering rather than threatening or alienating. In accounting environments, digital literacy involves familiarity with software environments, analytical tools, digital controls, and the logic of data-driven workflows. It also includes the capacity to critically engage with the outputs of smart systems and to understand the limitations of technological automation. Because blockchain systems may integrate cryptographic structures, distributed validation, and smart contract logic, insufficient digital literacy can become a major barrier to acceptance even when the technology is objectively beneficial. Therefore, an empowerment-based framework is necessary to move beyond simplistic assumptions that technology adoption follows automatically from exposure or organizational mandate [11, 12, 14, 16, 20, 30].

At the same time, the adoption of blockchain in accounting raises ethical, governance, and control-related questions that can influence user attitudes. Emerging technologies can enhance transparency and accountability, but they may also generate new forms of ethical blindness, overreliance on automated outputs, and ambiguity in professional responsibility if their operation is not well understood by users. The literature on emergent technologies in accounting warns that digital transformation can reshape not only work processes but also ethical perception, professional skepticism, and accountability structures. When end users perceive blockchain systems as difficult to audit, hard to govern, or potentially disruptive to professional judgment, resistance may emerge despite recognized technical advantages. Conversely, when users see blockchain as a tool that strengthens trust, security, and information integrity, acceptance becomes more likely. Understanding these attitudinal and normative dimensions is essential, because acceptance in accounting is inseparable from questions of control, trustworthiness, and the preservation of professional standards [2, 3, 6, 9, 10, 31].

Despite the growing body of research on digital accounting, blockchain, and artificial intelligence, an important gap persists in the literature. Many existing studies either examine blockchain adoption at a broad organizational level or focus on technological outcomes such as audit quality, process efficiency, or innovation performance, while fewer studies explicitly investigate the competencies and empowerment conditions that shape end-user acceptance within accounting information systems. Moreover, much of the literature addresses adoption in generalized or cross-sectoral terms, which can obscure the specific realities of accounting practice, where formal procedures, skill asymmetries, and organizational controls strongly influence technology use. There is therefore a need for a context-sensitive model that identifies the principal dimensions through which accountants become empowered to accept and use blockchain technology. Such a model should integrate individual factors such as digital knowledge and attitude, organizational factors such as support and culture, infrastructural factors such as access and security, and environmental factors such as professional interaction and institutional linkage. By doing so, it can provide a stronger explanatory basis for understanding why blockchain adoption succeeds in some settings and stalls in others [4, 5, 7, 8, 13, 27].

This issue is especially timely because organizations are entering an era in which competitive resilience increasingly depends on the agility with which they can absorb and operationalize digital innovations. Research on digitalization in supply chains, services, education, healthcare, and financial systems consistently shows that the value of emerging technologies is realized only when institutions develop the human, procedural, and infrastructural capacities needed for meaningful use. In the field of accounting, this means that blockchain acceptance should be analyzed not as a narrow binary decision but as a developmental process involving competence formation, organizational alignment, and the reconfiguration of professional practice. A more comprehensive understanding of this process can support managers, policymakers, educators, and professional bodies in designing interventions that strengthen accountants' readiness for digital transformation. It can also contribute theoretically by extending technology acceptance research into a domain where behavioral intention is deeply intertwined with professional competency and organizational empowerment. The aim of this study is to design and test a conceptual model of accountants' empowerment for the acceptance of blockchain technology in accounting information systems based on the key dimensions of digital knowledge and skills, attitude toward technology, organizational support, organizational culture, information technology infrastructure, and interaction with the professional environment

## 2. Methodology

The present study is applied in terms of purpose. Regarding the research approach, this study adopts an exploratory mixed-methods design (quantitative–qualitative). In the qualitative phase, the focus was on extracting the dimensions of accountants' empowerment through scientific literature and expert opinions. Data collection was conducted using a combination of library-based and field methods. The statistical population included financial managers, accountants, and financial professionals across the country. Sampling was carried out using simple random and convenience methods, and the sample size was determined to be 384 participants based on the Morgan table. Qualitative data were analyzed using thematic analysis and the Delphi method to identify and localize key components. Subsequently, quantitative data obtained from a structured questionnaire were analyzed using SPSS software, and structural equation modeling was conducted using SmartPLS version 3.3.

## 3. Findings and Results

This section presents the data collected from both the qualitative and quantitative phases of the study. Qualitative data gathered through the Delphi technique were analyzed accordingly. In the quantitative phase, the demographic characteristics of the questionnaire respondents were examined. Data were collected from 384 accountants, financial managers, and financial experts across the country. The primary objective of the qualitative analysis was to identify and explain the key components related to accountants' empowerment in adopting blockchain technology. Data collection tools in the qualitative phase included multiple rounds of the Delphi technique. Interviews were conducted to obtain expert perspectives, refine components, and localize concepts. Based on expert survey results and alignment with valid domestic and international studies, these sub-criteria were categorized into seven main criteria, leading to the design of a 21-item questionnaire inspired by previous research.

**Table 1. Distribution of Questions Related to Research Variables**

| Code | Main Dimensions of Empowerment | Proposed Sub-components |
|---|---|---|
| A | Digital Knowledge and Skills | Familiarity with financial software, proficiency in analytical tools, training in emerging technologies |
| B | Attitude Toward Technology | Acceptance of change, trust in intelligent systems, motivation for learning |
| C | Organizational Support | On-the-job training, investment in technology, managerial support |
| D | Organizational Culture | Inclination toward innovation, resistance to change, collaborative learning environment |
| E | Information Technology Infrastructure | Access to digital tools, information security, technical support |
| F | Interaction with Professional Environment | Communication with professional institutions, learning from others' experiences, participation in professional associations |
| G | Accountants' Empowerment | Specialized training in emerging technologies, access to digital resources and tools, managerial support and organizational motivation |

To collect data related to factor identification, the Delphi method was employed, and for prioritizing research variables, a matrix questionnaire based on pairwise comparisons was used. After completing the Delphi technique stages to identify components, an expert questionnaire was developed using pairwise comparisons of options. For each level of the hierarchy, a separate expert questionnaire was designed, and a nine-point scale was used for scoring. The primary basis for questionnaire design was prior research studies and insights obtained from domain experts, which also informed the design of this study's instrument. In this study, a Likert scale was used to measure responses, assigning scores from 5 (very high impact) to 1 (no impact).

The findings obtained from the first and second rounds of the Delphi survey indicate that the level of disagreement among experts can be calculated using the following formula. Based on this relationship, each expert could compare their opinion with the average of all responses and, if desired, revise their previous opinions. Subsequently, experts provided their revised evaluations.

Mean = [(Very High × 5) + (High × 4) + (Moderate × 3) + (Low × 2) + (Very Low × 1)] / 15

**Table 2. Differences Between Geometric Means in the First and Second Delphi Rounds**

| Row | Sub-criterion | Mean (Round 1) | Mean (Round 2) | Mean Difference |
|---|---|---|---|---|
| 1 | Familiarity with financial software | 3.86 | 3.80 | 0.06 |
| 2 | Proficiency in analytical tools | 3.76 | 3.73 | 0.03 |
| 3 | Training in emerging technologies | 4.47 | 4.46 | 0.01 |
| 4 | Acceptance of change | 4.00 | 3.98 | 0.02 |
| 5 | Trust in intelligent systems | 3.86 | 3.83 | 0.03 |
| 6 | Motivation for learning | 4.20 | 4.17 | 0.03 |
| 7 | On-the-job training | 3.82 | 3.80 | 0.02 |
| 8 | Investment in technology | 4.06 | 4.05 | 0.01 |
| 9 | Managerial support | 4.46 | 4.40 | 0.06 |
| 10 | Inclination toward innovation | 4.50 | 4.20 | 0.30 |
| 11 | Resistance to change | 3.87 | 3.86 | 0.01 |
| 12 | Collaborative learning environment | 4.40 | 4.33 | 0.07 |
| 13 | Access to digital tools | 4.87 | 4.80 | 0.07 |
| 14 | Information security | 4.40 | 4.40 | 0.00 |
| 15 | Technical support | 4.26 | 4.20 | 0.06 |
| 16 | Communication with professional institutions | 4.00 | 4.00 | 0.00 |
| 17 | Learning from others' experiences | 3.85 | 3.80 | 0.05 |
| 18 | Participation in professional associations | 3.80 | 3.80 | 0.00 |
| 19 | Specialized training in emerging technologies | 4.36 | 4.33 | 0.03 |
| 20 | Access to digital resources and tools | 4.13 | 4.13 | 0.00 |
| 21 | Managerial support and organizational motivation | 4.26 | 4.26 | 0.00 |

Based on Table 2, since the differences in the mean values of expert opinions between the two rounds are equal to or less than 0.1, it can be concluded that consensus among experts has been achieved regarding the research strategies, and the Delphi process was terminated at this stage. This indicates that experts had a relatively consistent perspective on the identified dimensions of the study.

The analysis of Delphi responses was conducted using the following methods:

- Thematic analysis of open-ended responses to identify new concepts and examine overlap with previous findings
- Calculation of the mean and standard deviation of closed-ended responses to assess the level of expert agreement
- Examination of the consensus rate, where components with an agreement rate above 75% were accepted as final components
- Feedback to experts, whereby the results of each stage were presented to allow for revision and refinement of opinions

**Table 3. Final Components Confirmed by the Delphi Technique**

| Main Theme | Final Confirmed Component | Mean Importance | Consensus Rate (%) |
|---|---|---|---|
| Digital Knowledge and Skills | Proficiency in financial and analytical software | 4.6 | 89% |
| Attitude Toward Technology | Acceptance of change and trust in intelligent systems | 4.5 | 85% |
| Organizational Support | On-the-job training and managerial support | 4.7 | 92% |
| Organizational Culture | Inclination toward innovation and a collaborative learning environment | 4.4 | 81% |
| Information Technology Infrastructure | Information security and access to digital tools | 4.6 | 87% |
| Interaction with Professional Environment | Communication with professional institutions and associations | 4.3 | 78% |

The implementation of the Delphi technique in this study played a significant role in validating the components of the conceptual model. By utilizing expert opinions and conducting multi-stage analysis, components that were scientifically, empirically, and practically valid were identified and confirmed. These components served as the basis for designing the structured questionnaire and conducting the quantitative testing of the model in the subsequent phase of the research.

The design of the model was based on the analysis of qualitative data obtained from semi-structured interviews and the implementation of the Delphi technique, leading to the development of the initial conceptual model of the study. The purpose of this model is to explain the theoretical structure of accountants' empowerment in the context of adopting emerging technologies, such that the identified key components can coherently illustrate the relationships among different dimensions of empowerment.

This conceptual model serves as the theoretical framework of the study and forms the basis for designing the structured questionnaire in the quantitative phase, and it will be tested in subsequent stages using structural equation modeling.

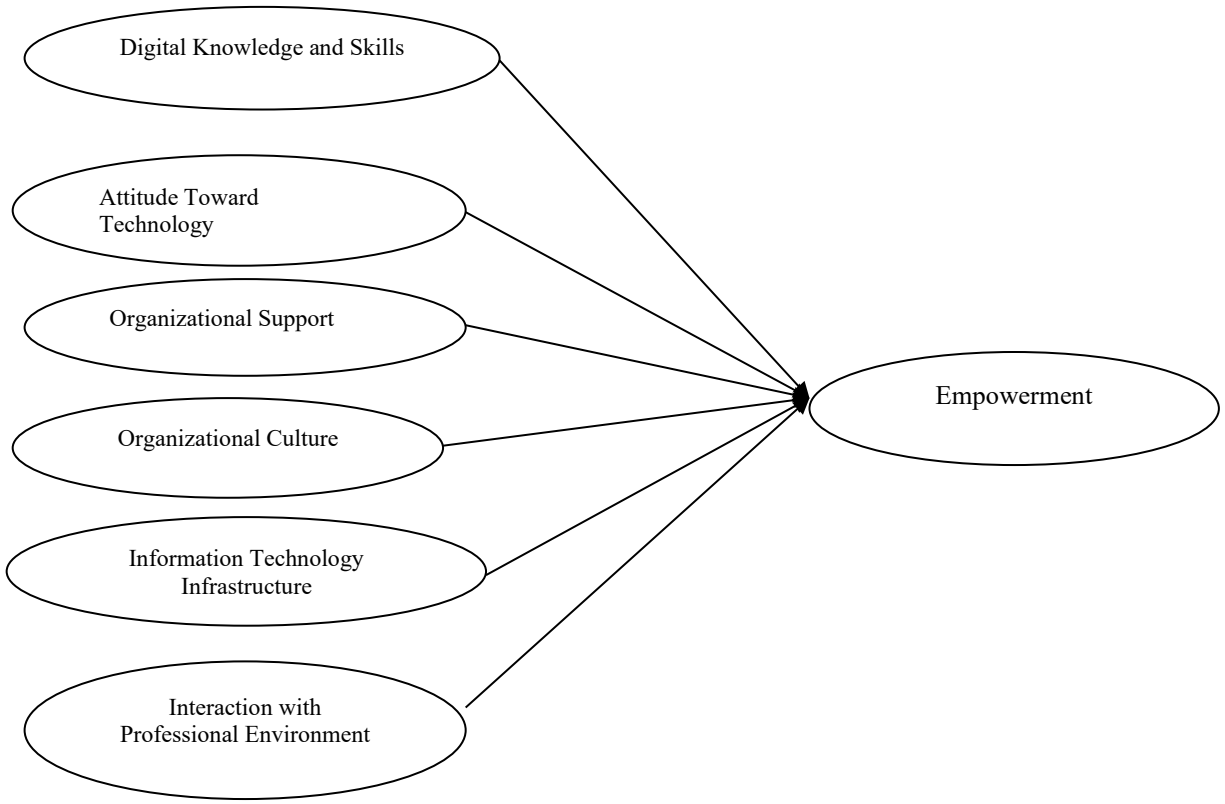


**Figure 1. Conceptual Model**

The logic of model design is structured across three levels: the first level includes the main dimensions of empowerment, consisting of six key themes extracted from thematic analysis of qualitative data; the second level includes the sub-components of each dimension, comprising 18 components confirmed and stabilized through the Delphi process; and the third level includes the conceptual relationships among components, representing the interactions incorporated into the model's structural paths.

**Table 4. Components of the Initial Conceptual Model**

| Main Dimensions of Empowerment | Proposed Sub-components |
|---|---|
| Digital Knowledge and Skills | Familiarity with financial software, proficiency in analytical tools, training in emerging technologies |
| Attitude Toward Technology | Acceptance of change, trust in intelligent systems, motivation for learning |
| Organizational Support | On-the-job training, investment in technology, managerial support |
| Organizational Culture | Inclination toward innovation, resistance to change, collaborative learning environment |
| Information Technology Infrastructure | Access to digital tools, information security, technical support |
| Interaction with Professional Environment | Communication with professional institutions, learning from others' experiences, participation in professional associations |

In the proposed conceptual model, each of the main dimensions is considered an independent variable influencing the adoption of emerging technologies. These dimensions affect accountants' empowerment through their respective sub-components. The relationships among components are designed as conceptual paths, which will be tested in the quantitative phase using structural equation modeling.

The results of direct relationships and significance coefficients of the research model questions indicate that among the examined factors, information technology infrastructure and interaction with the physical/professional environment carry the highest impact weights (0.003), highlighting the importance of providing operational

infrastructures and a suitable work environment in enhancing individual competencies. In contrast, digital knowledge and attitude toward technology, with weights of 0.001, have the lowest impact; however, if their significance values (Sig) are less than 0.05, these factors remain statistically valid and should be considered in human resource development planning. The model demonstrates that empowerment is a multidimensional phenomenon requiring a comprehensive approach at both organizational and individual levels.

In this conceptual model, path coefficients indicate the strength of the effect of each factor on empowerment and are all at a high level, reflecting strong and significant relationships among variables. The greatest effect is associated with digital knowledge and skills (0.854), indicating that empowerment in technological environments is directly dependent on individuals' level of digital literacy. This is followed by interaction with the professional environment (0.799) and organizational support (0.784), emphasizing the importance of workplace context and managerial support in enhancing competencies. Other factors, including information technology infrastructure, attitude toward technology, and organizational culture, also show coefficients above 0.7, indicating their significant impact and the necessity of simultaneously addressing infrastructure, individual beliefs, and organizational culture in the empowerment process. These findings confirm that empowerment is a multilayered process requiring coordination among individual, organizational, and environmental factors.

The t-statistics for the paths in the conceptual empowerment model are all significantly high. The highest t-values are observed for information technology infrastructure (11.560) and interaction with the professional environment (9.842), indicating very strong statistical significance of these relationships. Other factors, such as attitude toward technology (8.654), organizational culture (8.554), digital knowledge (8.542), and organizational support (7.524), also have t-values greater than 1.96, confirming that all model paths are statistically significant and reliable. These results demonstrate that all identified factors play an effective role in empowerment and can serve as a scientific foundation for designing practical solutions within organizations.

**Table 5**. **Results of Direct Relationships and Significance Coefficients of the Research Model Questions**

| Research Question | Path Coefficient | t-value | Significance (Sig) | Test Result |
|---|---|---|---|---|
| Question 1: What role does the environmental factor of accountants' empowerment play in the adoption of new technologies? | 0.799 (Interaction with professional environment) | 9.842 | < 0.001 | Confirmed; significant relationship exists |
| Question 2: How does the managerial factor of accountants' empowerment influence the adoption of new technologies? | 0.759 (Information technology infrastructure) | 11.560 | < 0.001 | Confirmed; significant relationship exists |

## 4. Discussion and Conclusion

The findings of this study provide strong empirical support for the multidimensional model of accountants' empowerment in the context of blockchain technology acceptance within accounting information systems. The quantitative results demonstrated that all identified dimensions—digital knowledge and skills, attitude toward technology, organizational support, organizational culture, information technology infrastructure, and interaction with the professional environment—exert statistically significant and substantial effects on accountants' empowerment, as reflected in high path coefficients and significant t-values across all structural relationships. In particular, the dimensions of information technology infrastructure and interaction with the professional environment exhibited the strongest effects, indicating that both technological readiness and external professional engagement are critical drivers of empowerment. These results confirm that empowerment is not solely an individual-level construct but rather a systemic outcome shaped by the interplay of technological, organizational,

and environmental factors. The robustness of the structural model further suggests that the conceptual framework developed in this study provides a valid and comprehensive explanation of how blockchain acceptance can be operationalized through competency development and contextual support mechanisms.

The dominant role of information technology infrastructure in influencing empowerment highlights the foundational importance of access to reliable digital systems, secure platforms, and technical support in facilitating blockchain adoption. This finding aligns with prior research emphasizing that advanced technologies such as blockchain and artificial intelligence require robust infrastructural ecosystems to function effectively and to be trusted by users. Studies have shown that the integration of blockchain into accounting and auditing processes depends heavily on system interoperability, data security, and technological maturity, all of which are embedded within the broader infrastructure of the organization [3, 9, 29]. Furthermore, research on digital transformation indicates that without adequate infrastructure, even technologically literate users may be unable or unwilling to adopt new systems due to concerns about reliability, performance, and risk exposure. The present findings therefore reinforce the argument that infrastructural readiness is a prerequisite for meaningful empowerment and that investments in digital infrastructure are essential for translating technological potential into practical outcomes in accounting environments [1, 14, 22].

The strong effect of interaction with the professional environment also represents a critical insight, as it underscores the role of social and institutional embeddedness in shaping technology acceptance. Accountants who actively engage with professional bodies, industry networks, and knowledge-sharing platforms are more likely to develop awareness, confidence, and motivation to adopt emerging technologies such as blockchain. This finding is consistent with prior literature suggesting that professional ecosystems facilitate the diffusion of innovation by providing legitimacy, shared knowledge, and normative guidance regarding new practices. In contexts where blockchain remains relatively novel and complex, interaction with peers and experts can reduce uncertainty and accelerate learning processes, thereby enhancing empowerment. Existing studies on technology adoption similarly emphasize the importance of interorganizational collaboration and knowledge exchange in shaping user behavior, particularly in professional domains characterized by high levels of standardization and regulatory oversight [8, 19, 28]. Thus, the present results highlight that empowerment extends beyond internal organizational mechanisms and is deeply influenced by the broader professional environment in which accountants operate.

Digital knowledge and skills emerged as another highly influential factor, confirming that technical competence remains a central determinant of empowerment in technology-driven accounting systems. The high path coefficient associated with this dimension indicates that accountants' ability to understand, operate, and critically evaluate digital tools directly affects their readiness to engage with blockchain systems. This finding is strongly supported by the literature on digital literacy and accounting transformation, which identifies skill development as a key enabler of effective technology adoption. Research has shown that accountants equipped with advanced digital competencies are better positioned to leverage new technologies, interpret complex data outputs, and integrate digital solutions into their workflows [11, 12, 16]. Moreover, the increasing convergence of blockchain with artificial intelligence and data analytics further elevates the importance of digital skills, as users must navigate integrated technological environments that require both technical proficiency and analytical judgment. The present findings therefore reinforce the notion that empowerment in the digital era is fundamentally grounded in the development of human capital capable of interacting with sophisticated technological systems [10, 15, 21].

The dimension of attitude toward technology also demonstrated a significant and meaningful effect on empowerment, highlighting the importance of cognitive and psychological factors in shaping adoption behavior.

Accountants who exhibit openness to change, trust in intelligent systems, and motivation for learning are more likely to embrace blockchain technology and to perceive it as an opportunity rather than a threat. This finding aligns with established theories of technology acceptance, which emphasize that perceived usefulness, trust, and behavioral intention are critical predictors of adoption. However, the results of this study also extend these theories by demonstrating that attitude toward technology operates within a broader empowerment framework that includes structural and environmental factors. Contemporary research suggests that user attitudes toward advanced technologies are increasingly influenced by concerns related to transparency, accountability, and ethical implications, particularly in fields such as accounting where trust is paramount. As such, fostering positive attitudes toward blockchain requires not only technical training but also efforts to build confidence in the reliability, security, and value of the technology [17, 18, 31].

Organizational support was found to play a significant role in enhancing accountants' empowerment, reinforcing the importance of managerial commitment, training programs, and resource allocation in facilitating technology adoption. The presence of supportive organizational structures reduces resistance to change and enables users to experiment with new systems in a controlled and encouraging environment. This finding is consistent with prior studies indicating that organizational support is a key determinant of successful digital transformation, as it provides the necessary conditions for learning, adaptation, and innovation. In accounting contexts, where procedures are often standardized and risk aversion may be high, managerial support becomes particularly critical for legitimizing new technologies and encouraging their adoption. Empirical evidence suggests that organizations that invest in employee training and foster a culture of continuous improvement are more likely to achieve positive outcomes from technology implementation [7, 25, 26]. Therefore, the present findings underscore the need for organizations to adopt a proactive approach to supporting their workforce during technological transitions.

Similarly, organizational culture was identified as a significant factor influencing empowerment, highlighting the role of shared values, norms, and behavioral expectations in shaping technology acceptance. A culture that promotes innovation, collaboration, and learning creates an environment in which accountants feel encouraged to explore new technologies and to develop their competencies. Conversely, cultures characterized by resistance to change or rigid adherence to traditional practices may hinder empowerment and slow the adoption of blockchain systems. This finding is supported by existing research on digital transformation, which emphasizes that cultural readiness is a critical component of organizational change. Studies have shown that organizations with adaptive and innovation-oriented cultures are better equipped to integrate emerging technologies and to respond to evolving market demands. In the context of accounting, where professional identity and established practices play a significant role, cultural transformation may be necessary to align organizational values with the requirements of a digitalized environment [5, 8, 13].

Overall, the results of this study confirm that accountants' empowerment in relation to blockchain technology acceptance is a complex and multilayered phenomenon that cannot be explained by a single factor. Instead, it emerges from the interaction of individual competencies, organizational conditions, technological infrastructure, and professional networks. This integrated perspective is consistent with contemporary views on digital transformation, which emphasize the need for holistic approaches that address both human and technological dimensions. By demonstrating the relative importance of different empowerment factors, this study contributes to the literature by providing a nuanced understanding of how blockchain adoption can be facilitated in accounting information systems. It also highlights the need for coordinated strategies that simultaneously enhance digital

skills, foster positive attitudes, strengthen organizational support, and build robust technological and professional ecosystems. These findings are particularly relevant in the context of rapid technological change, where organizations must continuously adapt to remain competitive and effective [4, 20, 27].

One limitation of this study is that the data were collected using a cross-sectional design, which restricts the ability to draw causal inferences or to capture changes in empowerment and technology acceptance over time. Additionally, the reliance on self-reported questionnaire data may introduce response bias, particularly in relation to perceptions of digital competence and organizational support. The sample, although statistically adequate, may not fully represent all segments of the accounting profession, especially those operating in highly specialized or technologically advanced environments. Furthermore, the study focused on a specific set of empowerment dimensions, and other potentially relevant factors, such as regulatory frameworks or organizational size, were not explicitly examined.

Future research should adopt longitudinal designs to examine how accountants' empowerment and blockchain acceptance evolve over time, particularly as technologies mature and become more widely integrated into accounting practices. Researchers are also encouraged to explore additional contextual variables, such as industry characteristics, regulatory environments, and organizational complexity, to provide a more comprehensive understanding of adoption dynamics. Comparative studies across different countries or professional settings could offer valuable insights into the role of cultural and institutional factors in shaping empowerment. Moreover, integrating qualitative approaches, such as case studies or in-depth interviews, could enrich the understanding of how accountants experience and interpret technological change in real-world contexts.

From a practical perspective, organizations should prioritize the development of digital competencies among accountants through targeted training programs and continuous learning initiatives. Investments in information technology infrastructure should be aligned with user needs to ensure accessibility, security, and usability of blockchain systems. Managers should actively support technological innovation by fostering a culture that encourages experimentation, collaboration, and knowledge sharing. Additionally, organizations should facilitate interaction with professional networks and industry bodies to enhance exposure to best practices and emerging trends. By adopting a comprehensive approach that integrates individual, organizational, and environmental factors, organizations can effectively enhance accountants' empowerment and increase the likelihood of successful blockchain technology adoption.

**Authors' Contributions**

Authors equally contributed to this article.

**Ethical Considerations**

All procedures performed in this study were under the ethical standards.

**Acknowledgments**

Authors thank all participants who participate in this study.

**Conflict of Interest**

The authors report no conflict of interest.

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