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Strategic Adoption of Cloud Computing in SMEs: A Theoretical Framework Perspective

Dr. Nagaraju Kolli

PhD in Information Technology, University of the Cumberlands, 6178 College Station Drive, Williamsburg, KY 40769

Abstract

It looks at the strategies used by SMEs to apply cloud computing by connecting them to recognized theories of how technology is adopted and accepted. The book explains major theories such as TRA, TPB, TAM and TAM2, UTAUT, IDT, and SCT. The main points of these models focus on stating innovative features, controlling Behavior, having an attitude, caring about social norms, seeing the value in things, and how easy something is to use. We examine all of the methods in this study. Then, it investigates how these ideas play out when easy-to-access cloud solutions are used by small and medium-sized firms. The researchers included work that used various models, as adding new technologies to organizations is a complicated process, and one theory often has its limitations. It uses what has been discussed so far to suggest key points that form a framework that might help SMEs address the special situations, advantages, and difficulties of finding cloud computing solutions. The research ends by discussing the impacts of people's reactions to and acceptance of new technologies. The first part is for researchers who want to explore the adoption of technology, and the second will help policymakers, cloud providers, and SME managers better support SMEs when transitioning to digital services.

Keywords: Cloud, Security,SME,TRA, TPB, TAM and TAM2, UTAUT, IDT, and SCT.

1. Introduction

1.1 The Imperative of Digital Transformation for SMEs

SMEs must go digital to survive, grow, and thrive in today's fast-paced, competitive business climate. SMEs are vital to many economies, yet many fail in their first few years. Digital transformation may help small and medium-sized enterprises weather environmental shocks and become more resilient [1]. It alters how firms run, give value to clients, and generate new ideas, not just their technology. Digital technology may help SMEs compete with larger organizations by offering distinctive offerings and experiences. Businesses that customize services, simplify communication, automate activities, and maximize resources satisfy customers. Businesses may operate more effectively and reach more customers, notably through e-commerce [2]. Digital transformation stimulates new ideas, allowing SMEs to trial new business practices and respond faster to market developments. SMEs face difficulties, include lack of money, digitally skilled workers, enterprises that don't want to modernize, and data security [3]. To digitize, SMEs must overcome these obstacles and take advantage of cheaper prices, happy customers, competition, and government support [4].

2.2 Cloud computing speeds up the digitalization of small and medium-sized businesses. Cloud Computing (CC)

CC digitizes SMBs [5]. Cloud computing lets you rapidly and simply access a shared pool of customizable computer resources (networks, servers, storage, applications, and services) from anywhere, at any time, without service provider or administration aid [7]. On-demand self-service, extensive network access, resource pooling, quick flexibility, and measurable service are its main features [8]. SMEs may meet their needs with IaaS, PaaS, and SaaS service architectures and deployment patterns (public, private, community, and hybrid clouds) [6].

Cloud computing might solve several difficulties for SMBs. People enjoy its low cost. A pay-as-you-go concept shifts IT costs from CAPEX to OPEX, helping SMEs budget [5]. Studies show cost reductions of 20%–30% [10]. Cloud services enable SMEs add resources as required, helping them grow without huge upfront investments. Cloud computing may give SMEs enterprise-level software and analytics that would be too expensive or difficult to acquire otherwise [5]. This automates processes, reduces IT maintenance costs (the vendor handles it), and lets SMBs focus on their strengths [2]. Cloud solutions make it simpler for workers and outside partners to work together, no matter where they are, and keep companies adaptable, allowing SMEs to innovate and adapt to market changes [5]. These incentives help SMEs compete with larger firms. Cloud computing may benefit the economy, ecology, and society by saving energy and involving more people [11].

Despite these benefits, SMEs are sluggish to adopt cloud computing, especially in underdeveloped countries or certain industries [5]. Data security and privacy concerns [5], cloud service complexity [5], a lack of knowledge about cloud benefits and features [10], perceived costs [5], senior management support [5], regulatory and compliance issues [5], and technical issues like unreliable internet connectivity [5] are some challenges.

2.3 Justification: Theoretical Frameworks

You can't only use stories and lists of pros and cons to figure out how SMEs decide to utilize cloud technology. There are several social and technological issues that make it hard to adopt cloud computing. Theory gives us methodical and well-known ways to look at complexity. The Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB), the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), the Innovation Diffusion Theory (IDT), and the Social Cognitive Theory (SCT) all give us strong ideas and relationships to test attitudes, beliefs, subjective norms, and perceptions. These theoretical notions help us understand how adoption works. This theoretical base is useful in real life as well as in academics. Practitioners and policymakers may build cloud adoption strategies that are more focused and successful, better support initiatives, and assist the important SME sector digital transition by utilizing theoretical models to find what drives adoption [2].

2.4 Goals and Structure

This article critically evaluates and combines technology adoption theories (TRA, TPB, TAM/TAM2, UTAUT, IDT, and SCT) to examine how SMEs are adopting cloud computing. The study leverages this data and real-world facts to identify the most essential ideas and relationships for SMEs and create a conceptual framework. Paper structure: Each essential model's theoretical foundation is explained in Section 3. Section 4 examines how SMEs are embracing cloud technology and how crucial data-driven architectures are. Section 5 discusses single-theory model limits, integrated models, and SMEs' new cloud computing platform. Section 6 discusses how the approach affects academics, politicians, and field workers in theory and practice. Section 7 concludes with remarks. Technology Adoption Theory: We need

theories to explain why SMEs utilize or don't adopt cloud computing. The Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Technology Acceptance Model (TAM) and its extension TAM2, Unified Theory of Acceptance and Use of Technology (UTAUT), Innovation Diffusion Theory (IDT), and Social Cognitive Theory are discussed in this section.

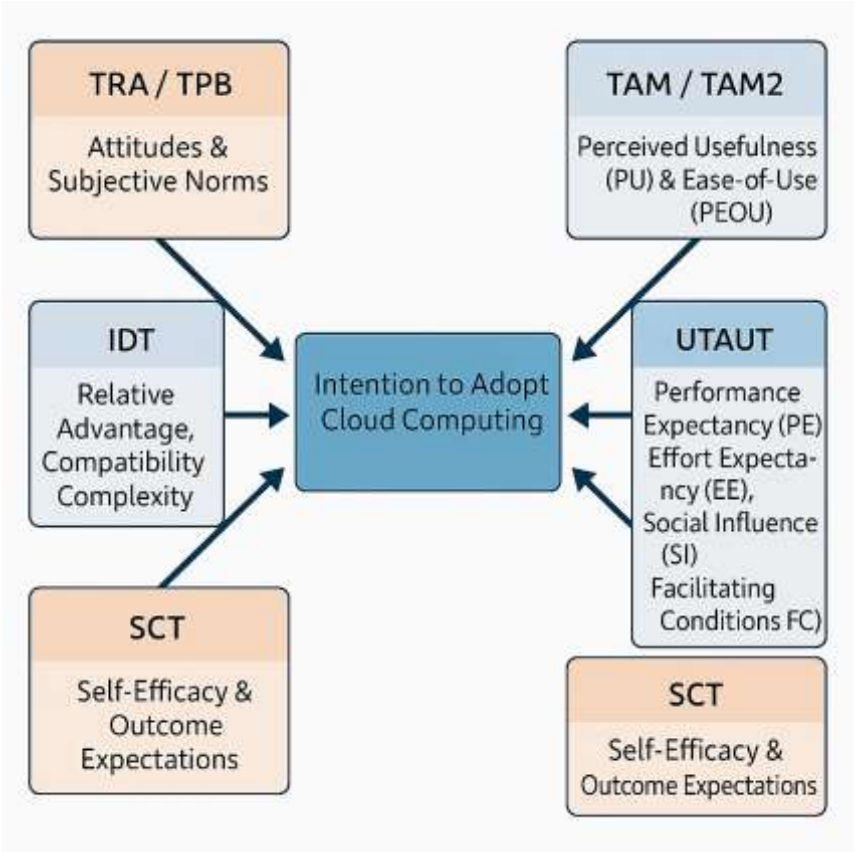

Fig 1: Foundations of Technology Adoption

3.1 Theory of Reasoned Action (TRA)

Martin Fishbein and Icek Ajzen developed the Theory of Reasoned Action (TRA) in 1975 to anticipate social psychology voluntary behaviors. This information integration theory principle links attitudes and actions. TRA claims Behavioral Intention (BI), or the plan or belief to accomplish something, best predicts behavior [34]. BI depends on two main factors:

Action attitude: How someone views doing it. It depends on a person's behavioral beliefs (BB) and action consequences (OE) [34]. People who care about others may find hope in helping them greatly.

Subjective Norm (SN): Individual perception of social pressure to succeed. How much a person wants to fit in determines their normative beliefs (NB) regarding whether significant individuals (referents) believe they should conduct the activity.

The TRA believes people process information rationally [34]. Ideas, ideas, and plans can become actions if not forced [34]. TRA needs action, target, context, and time [35]. Although seldom used, TRA is effective for behavioral research and was adapted for early Information Systems (IS) studies [22]. Volitional control limits it [34]. Introducing new technology to a company is difficult due to more than simply attitude and societal pressure. Example: resource availability and skill need. Limits affected

Planned Behavior Theory. Small and medium-sized organizations considering cloud computing don't hear from TRA about costs, technological skills, or infrastructure.

3.2 Theory of Planned Behaviour (TPB)

After TRA failed for non-voluntary tasks, Icek Ajzen developed the Theory of Planned Behavior (TPB) between 1985 and 1991. TPB retains TRA's attitude, subjective norm, and behavioral purpose. It adds perceived behavioral control (PBC) as a third intention-affecting component [36]. How simple or hard the action seems determines people's perceived behavioral control (PBC). They assess their resources, prospects, and competencies, as well as potential issues [36]. Like Bandura's self-efficacy, PBC consists of control beliefs and their perceived power.

In TPB, attitude, subjective norm, and perceived behavioral control impact behavioral intention. Behavioral intention is still the strongest predictor of behavior. TPB also claims PBC may directly alter behavior, especially when people feel in charge. If you don't feel in control, you may not do what you desire. A person with high PBC may establish huge goals and follow through, whereas someone with low PBC may not be able to act.

TPB thinks people make good decisions by evaluating their purpose (intention) and ability (control) to predict their behavior. TPB outperforms TRA for actions that are difficult due to resources or expertise. Health behaviors, technology adoption, e-payments, social media usage, general IT consumption, and early SME technology use [12] have all been widely investigated utilizing TPB. PBC [4] in TPB addresses the resource (capital and human) and capacity (skills and knowledge) constraints that prevent SMEs from adopting the cloud. A small or medium-sized business's (SME) trust in controlling expenditures, obtaining skills, and getting support determines whether to employ cloud services and how likely they are to succeed [15]. This demonstrates that TPB is better than TRA at understanding how SMBs utilize cloud computing.

3.3 Technology Acceptance Model (TAM) & TAM2

Fred Davis' 1989 Technology uptake Model (TAM) may be the most important IS theory for forecasting consumer technology uptake [13]. Information system-adapted TRA. User beliefs are key mediators of technology adoption, and TAM's core goal is to explain and advocate system design and implementation [23].

BI and Att impact system usage, according to the original TAM. Two notions govern attitude and intention. Perceived utility is how much a person thinks a technology will boost their work performance. User opinions on the technology's usefulness and potential are shown. Intention is substantially predicted by PU [13].

PEOU is “the degree to which a person believes that using a particular system would be free of effort.” [23] It measures system complexity and usability. By enhancing PU, PEOU impacts intention directly and indirectly by making easier-to-use solutions seem better. By changing PU and PEOU, system features, training, and user characteristics might indirectly impact intention and usage. TAM versions without Attitude suggested direct links between PU and PEOU and BI [24].

TAM was popular because of its simplicity [13], but its parsimony hindered its capacity to characterize PU's organizational underpinnings [49]. TAM2, developed by Venkatesh and Davis (2000), explains PU through social influence and cognitive instrumental processes.

These TAM2 constructs impact PU and/or BI:Social influences: Subjective norm (SN): System uses crucial others' opinions. Image and BI (especially mandatory) are affected. System use boosts social status. Influences Unvoluntary behavior moderates SN-BI. Employment-related cognition. System employment significance. Influences PU.Output quality: Job task system performance. Influences PU.

System results are real. PEOU directly impacts PU. Experience moderates social factors (SN) on intention over time.

SME cloud adoption is explained by TAM's PU and PEOU focus [13]. The initial simplicity may overlook organizational and environmental difficulties. TAM2 incorporates social dynamics (SN, Image) and work-context aspects (Job Relevance, Output Quality, Result Demonstrability) to better assess perceived usefulness [32]. SMEs need these capabilities because cloud service adoption is influenced by technological fit, output quality, demonstrable benefits, and peer or industry leader opinions. Understanding why a SME owner likes cloud accounting needs assessing elements beyond basic capabilities, such as relevance to specific tasks, report accuracy, and obvious benefits [32]. Subjective Norm and Result Demonstrability yielded conflicting findings in empirical TAM2 implementations. This diversity illustrates that these components' effects depend on the context (technology type, industry, organizational culture, voluntary vs. mandatory use) [48]. Context-dependent extended models like TAM2 are limiting and require more flexible frameworks like UTAUT or custom-integrated models to analyze varied populations like SMEs across sectors and nations.

3.4 Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh and his collaborators devised the Unified Theory of Acceptance and Use of Technology (UTAUT) in 2003 to bring together the dispersed area of technology acceptance research. UTAUT combines key ideas from eight well-known models: TRA, TAM, Motivational Model (MM), TPB, a combination TPB/TAM (C-TAM-TPB), Model of PC Utilization (MPCU), IDT, and SCT. The idea aims to explain why and how individuals use information systems, particularly in business [25].

According to UTAUT, four primary elements directly impact intention and/or usage behaviour Performance Expectancy (PE): "Belief that using the system will improve job performance". This concept incorporates perceived usefulness (TAM/TAM2), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and result expectations. PE usually predicts Behavioural Intention (BI) best [25].

"How easy it is to use the system" is EE. This includes perceived complexity (MPCU, IDT) and ease of use (TAM/TAM2). EE has an influence on BI, however this effect may grow reduced as users have more experience Social Impact: "The extent to which a person thinks that important people in their life think they should use the new system" . Image, social factors, and subjective norm (TRA, TPB, TAM2) are included. SI greatly affects use situations.

Facilitating factors: "The level of belief an individual has that an organizations and technical infrastructure exists to support the use of the system" . It encompasses perceived behavioral control (TPB), enabling conditions (MPCU), and compatibility. FC relates directly to Use Behaviour, unlike the other three fundamental components that largely impact BI [25]. Gender, Age, Experience, and Voluntariness of Use [25] may impact BI and Use Behaviour. UTAUT says user intention explains 70% of variance more than the models it combines [25].

In healthcare, education, e-government [33], mobile services, and IT adoption, UTAUT has been tested. It was even used to study small company cloud computing [11]. It has also been developed into UTAUT2 for consumer scenarios, which contains additional principles like Hedonic Motivation, Price Value, and Habit.

The best thing about UTAUT is that it brings together a lot of different theoretical points of view into one framework. Performance benefits (PE), ease of use (EE), social pressures (SI), and resource/support availability (FC) are crucial for small and medium-sized organizations considering cloud adoption [16]. SMEs often raise organizational preparedness and resource constraints, which FC addresses [4]. The

original UTAUT model was broad and intended for businesses, but it may not include all the details small and medium-sized businesses need to use the cloud. Researchers using UTAUT often need to consider provider confidence, perceived risk, or competitive pressure to determine how hard the adoption choice is. Performance Expectancy is always the strongest predictor [25], suggesting that practical small and medium-sized businesses that care about their resources prioritize the perceived value and real benefits (cost savings, efficiency gains, competitive edge) of using the cloud over other factors.

3.5 Innovation Diffusion Theory (IDT)

Since 1962, Everett M. Rogers' Innovation Diffusion Theory (IDT) has explained how social systems disseminate new ideas, behaviors, and technology [26]. IDT emphasizes new features and communication methods, unlike user-centered approaches like TAM or UTAUT [26]. It identifies four primary diffusion factors: novel concept, activity, or thing that adopting unit considers novel [26] Mass media to raise awareness, personal approaches to convince Time (the innovation-decision process, the timing of individual adoption that leads to adopter categories like innovators, early adopters, early majority, late majority, laggards [75], and the overall adoption rate, seen as an S-curve) [26]; and the Social System. Focusing on its five perceived Innovation Attributes helps IDT promote adoption: Relative Advantage (how much better something seems than what came before it, which is often the best sign of adoption) [27]; Compatibility (how well it fits with existing values, experiences, and needs); Complexity (how hard it is to understand and use, which makes adoption harder); Trialability. When deciding to accept or reject an innovation, IDT claims people go through five steps: Knowledge, Persuasion, Decision, Implementation, and Confirmation [26]. IDT and TOE are used in agriculture, marketing, public health, and IT/IS adoption studies to simplify [14]. IDT adds to user-centered theories by emphasizing on relative advantage, compatibility, complexity, trialability, and observability for resource-limited SMEs [29]. It also offers a dynamic, stage-based perspective to identify issues and personalize remedies [26]..

3.6 Social Cognitive Theory (SCT)

Albert Bandura extended his Social Learning Theory into Social Cognitive Theory (SCT) in 1986, which provides a complete framework for explaining human behavior through a dynamic, reciprocal interplay between personal variables (including cognition), behavior, and environmental effects. SCT highlights Triadic Reciprocal Causation, which maintains that people actively influence their experiences. Observational learning, self-efficacy, and outcome expectations are important constructs. People learn new behaviors by watching, retaining, and reproducing others' actions and outcomes [28]. Symbolic processing, foresight, and self-reflection are SCT priorities. SCT is more frequent in health behavior change [28], but its self-efficacy and reciprocal determinism may promote SME cloud adoption. Early cloud use can raise or lower confidence (self-efficacy), which interacts with organizational support and vendor assistance (environment) to impact future adoption decisions. SME leaders and personnel with poor technical self-efficacy might delay adoption even when the advantages are obvious [6]. Mastery training, case studies for vicarious learning, expert verbal persuasion coaching, and anxiety-reduction strategies help enhance self-efficacy and overcome cloud-adoption capacity challenges.

Table 1: Comparative Summary of Core Theoretical Models

Theory	Key Constructs	Core Proposition/ Focus	Key Assumptions	Primary Application Area (SME Cloud Context)	Strengths	Limitations (for SME Cloud Adoption)
TRA (Fishbein & Ajzen, 1975) 34	Attitude, Subjective Norm, Behavioral Intention, Behavioral Beliefs, Outcome Evaluation, Normative Beliefs, Motivation to Comply	Intention (driven by Attitude & SN) predicts volitional behavior.	Rationality, Volitional Control.	Understanding basic attitudes and social influences on intention.	Foundational, clear structure.	Assumes volitional control; ignores resource/skill constraints (PBC); limited scope.
TPB (Ajzen, 1991) 38	TRA constructs + Perceived Behavioral Control (PBC), Control Beliefs	Intention (driven by Attitude, SN, PBC) and PBC predict behavior, including non-volitional ones.	Rationality, acknowledges control limitations.	Assessing perceived ability/resource constraints alongside attitudes/norms.	Includes control factors (PBC), more applicable than TRA to constrained contexts.	Assumes planned behavior; may underemphasize environmental/innovation factors.
TAM/TAM2 (Davis, 1989; Venkatesh & Davis, 2000) 23	PU, PEOU, Attitude, Intention, Use (TAM); + SN, Image, Job Relevance, Output Quality, Result Demonstrability, Voluntarine	PU and PEOU are key determinants of IT acceptance intention/use. TAM2 details antecedents of PU.	User perceptions drive acceptance; external variables influence via PU/PEOU.	Evaluating user perceptions of cloud usefulness and ease of use; TAM2 adds social/job context.	Parsimonious (TAM), IS-specific, widely validated. TAM2 adds depth to PU.	Can be overly simplistic (TAM); TAM2 findings context-dependent; may neglect broader organizational/environmental factors.

	ss, Experience (TAM2)					
UTAUT (Venkatesh et al., 2003)	Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Intention, Use; Moderators (Age, Gender, Experience, Voluntariness)	Integrates 8 models; PE, EE, SI predict Intention; FC, Intention predict Use.	Synthesizes prior models for organizational context.	Providing a comprehensive checklist of individual, social, and resource factors influencing adoption.	Comprehensive integration, high explanatory power claimed, considers moderators.	Developed for organizational context, may still need tailoring for SMEs (e.g., risk, trust); complex.
IDT (Rogers, 1962/2003) 26	Innovation Attributes (Relative Advantage, Compatibility, Complexity, Trialability, Observability), Communication Channels, Time (Adopter Categories, Rate), Social	Innovation characteristics and communication within a social system drive diffusion and adoption over time.	Perceived innovation attributes are key; adoption is a process.	Understanding how perceived cloud characteristics (benefits, fit, difficulty) and social communication influence adoption process.	Focuses on innovation attributes; considers diffusion process over time; widely applicable.	Less focus on individual cognitive processes (attitude, intention); less predictive at individual level than TAM/UTAUT.

	System, Innovation-Decision Process					
SCT (Bandura, 1986)	Reciprocal Determinism (Person-Behavior-Environment), Observational Learning, Self-Efficacy, Outcome Expectations, Self-Regulation	Behavior results from continuous interaction between personal (cognitive), behavioral, and environmental factors; emphasizes agency and self-efficacy.	Learning occurs socially; self-beliefs (efficacy) are critical; reciprocal influence.	Analyzing the role of confidence (self-efficacy), learning from others, and the dynamic interplay between SME capabilities, actions, and environment.	Dynamic, interactionist view; strong focus on self-efficacy (relevant to SME skills gap); provides basis for interventions.	Primarily focused on individual learning/behavior; less developed for organizational-level adoption; complex interplay can be hard to measure.

4. Theoretical Models for Small and Medium-Sized Business Cloud Adoption

When small and medium-sized businesses (SMEs) think about using or using cloud computing, the theoretical notions above become more important. The overall favorable or negative appraisal of a SME decision-maker's attitude derives from evaluating predicted benefits like cost savings, operational efficiency, scalability, and access to advanced technologies [5] against perceived negatives like security risks or data loss [12][14]. There is a strong link between SME executives' favorable opinions and their plans to use the cloud [15]. Subjective norms or social influence are the perceived expectations from competitors, industry peers, customers, and government officials. For example, witnessing competitors use cloud solutions or respond to digital-transformation regulations can affect the decisions of small and medium-sized businesses [109]. Perceived behavioral control (or favorable conditions) is how a small business sees its financial resources, technological infrastructure (such reliable internet access), and in-house IT skills to adopt cloud services. [5] [10]. One of the major problems with adoption is not having these resources or skills [4][15].

IDT innovation features give small and medium-sized businesses (SMEs) decision-making criteria, together with social and psychological factors. SMEs look at cloud solutions in terms of how much better they are than their current IT, how well they fit with their current procedures and culture, how hard they are to migrate and administer, how easy they are to pilot, and how well they work for other companies [29]. High relative advantage and compatibility make it easier to use, whereas perceived complexity usually makes it harder. Owners and staff' trust in their ability to choose, set up, and use cloud services

affects their intentions. Even businesses that are very driven might have trouble if they don't believe in themselves since they don't have good technological skills [31]. Finally, trust and perceived risk—such as data security, privacy compliance, and vendor reliability—are very important. Risk can make it hard for people to accept new things, although many small and medium-sized businesses undertake a realistic risk-benefit analysis when the expected value is higher than the perceived hazards [16].

Theoretical mappings like these are backed up by real-world evidence. According to Theory of Planned Behavior research, attitudes, subjective norms, and perceived behavioral control predict SMEs' cloud-adoption intentions [15]. TAM studies often show that how useful and easy to use people think cloud services like accounting systems and ERP platforms are affects their intention and usage behavior [13]. UTAUT research reveal that performance expectancy, effort expectancy, and enabling conditions promote cloud adoption, usually along with trust and competitive-pressure components [11]. Research that uses the IDT framework demonstrates that SMEs' decisions to embrace new technologies are based on how they see the advantages and disadvantages of the technology, as well as how complicated it is. This is commonly done in combination with organizational and environmental factors from the TOE framework [29]. Research based on SCT, however not very common, stresses the importance of self-efficacy in the adoption of technology in organizations [31].

A study that looked at both theory and real-life examples found several things that impact small and medium-sized businesses' use of cloud computing. The fundamental reason for adoption is perceived value, which is the net benefits of doing so [5]. [16]. People think that the most discouraging thing is how hard or complicated something is, but ease of use makes it less so. The ability of an organization to be ready depends on its financial situation, the quality of its infrastructure, and the digital capabilities of its employees [4]. Integration is easier when new systems and procedures work with old ones. Trust and how risky a business thinks it is to outsource key data also affect how ready it is to do so. Finally, attitudes and intents are affected by competition, industry norms, and help from the government. These things depend on digital literacy; without it, things seem more complicated, self-efficacy goes down, and the value of the cloud is less clear. On the other hand, having better digital skills makes things easier to use and gives you more confidence [19].

5. Towards an Integrated Conceptual Framework for SME Cloud Adoption

No one hypothesis can fully explain why small and medium-sized businesses (SMEs) are adopting cloud computing. This is because cloud adoption is complicated and involves people's opinions, technological characteristics, organizational capabilities, and outside factors [33]. We provide an integrative framework made up of six interrelated aspects. This approach is built on earlier attempts to combine innovation characteristics (IDT) with elements that affect user acceptance (TAM/UTAUT) and the contexts of the organization and the environment (TOE). First, the Perceived Value construct combines perceived usefulness, performance expectancy, and relative advantage into one construct that shows how small and medium-sized businesses (SMEs) anticipate profiting from using the cloud [16]. Second, the Perceived Effort meter takes into consideration how hard people think it will be to learn, integrate, and manage cloud services [11]. This statistic is based on how easy the work seems to be, how much effort it will take, and how hard it is. Third, Organizational Readiness is a full assessment of how well a small or medium-sized business (SME) can employ cloud computing. This evaluation looks at things like perceived behavioural control, supporting environment, self-efficacy, and important organizational factors like financial resources, infrastructure quality, and top-management commitment [4, 15]. Compatibility is how well

cloud services work with the procedures, culture, and IT systems that are already in place [29]. The final part is Trust and Risk Perception, which includes concerns about security, privacy, reliability, and the honesty of the provider. It says that ways to develop trust, such as certifications and service level agreements (SLAs), may help lower perceived risks [16], [6]. Lastly, External Environment Influence includes demands and support that come from rivals, industry standards, government programs, and vendor actions [109]. The size of the company, the industry it is in, its level of digital maturity, and the country it is in all affect these relationships. A process lens based on IDT's decision stages helps with phase-specific interventions, like awareness campaigns during the Knowledge stage or pilot programs during the Persuasion and Decision stages [26].

6. Discussion and Implications

This integrated framework adds to adoption theory by putting together the most important parts of six basic models into a structure that is as simple as feasible and fits the needs and limitations of small and medium-sized businesses (SMEs). It shows how important longitudinal studies are for academics. These are studies that follow small and medium-sized firms (SMEs) through the process of making new decisions. These studies show how perceived worth, effort, and readiness change over time [26]. These results also show how important it is to do comparative tests in different business sizes and countries to make sure the framework's moderators are correct and to make it more useful [5]. Policymakers should focus on digital literacy efforts and giving people money to do things to make organizations more ready and cut down on the amount of work that is thought to be needed [10], [11]. Cloud service providers may build trust and show their worth by offering clear security certifications, free trials, and integration toolkits that work with the systems that small and medium-sized businesses use most of the time [11]. Before committing to cloud solutions, small and medium-sized businesses (SMEs) should get senior management on board, train staff to feel more confident in their abilities, and do a lot of research on the reliability of vendors and their compliance with regulations [15], [19].

Conclusion

This paper brings together ideas from six major theories of technology adoption to show the many factors that affect how small and medium-sized businesses (SMEs) use cloud computing. We create an integrated framework that shows how individual beliefs, technological attributes, firm capabilities, and market pressures work together by breaking down overlapping constructs into six main dimensions: value perception, effort perception, organizational readiness, compatibility, trust and risk, and external influence. This framework not only helps us understand theory better by giving us a clear, SME-focused view, but it also gives us practical advice: policymakers can focus on developing skills and supporting infrastructure; cloud providers can focus on clear value propositions, trials, and strong security guarantees; and SME leaders can get leadership buy-in, invest in digital skills, and do thorough due diligence. Future empirical work—particularly longitudinal and comparative studies—will help enhance and validate this model, ensuring that cloud-adoption strategies stay sensitive to the growing demands of SMEs and allow their successful digital transformation.

8. References

1. Abdullah, P. Y., et al. (2020). *Source related to challenges impeding cloud adoption*.[29]
2. Agarwal, R., & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness

in the domain of information technology. *Information Systems Research*, 9(2), 204-215. [27]

3. Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11-39). Springer-Verlag. [38]
4. Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [36]
5. Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Prentice-Hall. [38]
6. Akpan, I. J., Effiom, L., & Akpanobong, O. E. (2023). *Source related to digital transformation and resilience*.[1]
7. Al-Fahim, N. H., et al. (2024). Factors influencing cloud accounting adoption in MSMEs: Integrating digital literacy into the TAM framework. *International Review of Management and Marketing*, 14(6), 1-12. [53]
8. Al-Hujran, O., et al. (2023). Perceived risk in cloud computing technology adoption: An empirical study of SME accounting firm leadership perspectives. *International Journal of Economics and Business Management*, 9(3), 1-12. [15]
9. Alharbi, J., & Sohaib, O. (2021). *Source related to Technology Readiness Index (TRI)*.[36]
10. Alshamaila, Y., Papagiannidis, S., & Li, F. (2013). Cloud computing adoption by SMEs in the north east of England: A multi-perspective framework. *Journal of Enterprise Information Management*, 26(3), 250-275. [10]
11. Arpaci, I., Al-Emran, M., & Al-Sharafi, M. A. (2024). Examining the impact of cloud computing adoption on organizational performance in Bahraini SMEs: The mediating role of the technology acceptance model. *European Strategic Journal*, 12(1), 1-18. [13]
12. Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall. [33]
13. Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman. [100]
14. Behrendt, S., et al. (2023). Factors influencing cloud computing integration in small and medium-sized enterprises and its impact on sustainable performance: A hybrid SEM-ANN approach. *PLoS ONE*, 18(5), e0285812. [11]
15. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340. [13]
16. Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Addison-Wesley. [22]
17. Gupta, P., Seetharaman, A., & Raj, J. R. (2013). The usage and adoption of cloud computing by small and medium businesses. *International Journal of Information Management*, 33(5), 861-874. [29]
18. Harrison, D. A., Mykytyn, P. P., & Riemenschneider, C. K. (1997). Executive decisions about adoption of information technology in small business: Theory and empirical tests. *Information Systems Research*, 8(2), 171-195. [45]
19. Kaushik, A. K., & Agrawal, A. K. (2021). *Source related to Technology Readiness Index (TRI)*.[36]
20. Khan, N., & Al-Yasiri, A. (2016). *Source related to SME security vulnerabilities*.[6]
21. Kim, W., Kim, S. D., Lee, E., & Lee, S. (2009). *Source related to cloud adoption impediments*.[14]
22. Kuan, K. K., & Chau, P. Y. (2001). A perception-based model for EDI adoption in small businesses using a technology–organization–environment framework. *Information & Management*, 38(8), 507-521. [85]

23. Mell, P., & Grance, T. (2011). *The NIST definition of cloud computing* (Special Publication 800-145). National Institute of Standards and Technology. [7]
24. Oliveira, T., & Martins, M. F. (2011). Literature review of information technology adoption models at firm level. *The Electronic Journal Information Systems Evaluation*, 14(1), 110-121. [85]
25. Parasuraman, A. (2000). Technology Readiness Index (TRI): A multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, 2(4), 307-320. [36]
26. Priyadarshinee, P., et al. (2017). Examining the role of trust in cloud computing adoption: A systematic literature review. *International Journal of Information Management*, 37(1), 11-25. [70]
27. Ratten, V. (2013). Cloud computing: A social cognitive perspective of ethics, entrepreneurship, technology marketing, computer self-efficacy and outcome expectancy on behavioural intentions. *Australasian Marketing Journal (AMJ)*, 21(3), 137-146. [107]
28. Rogers, E. M. (1962). *Diffusion of innovations*. Free Press. [76]
29. Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press. [26]
30. Senyo, P. K., Effah, J., & Addae, E. (2023). Digitalisation adoption among European SMEs: Extending the UTAUT with competitive pressure. *Asia Pacific Journal of Information Management*, 10(1), 1-20. [64]
31. Sharma, S. K., et al. (2020). Examining the role of organizational factors in cloud computing adoption: A study of SMEs in a developing country. *VINE Journal of Information and Knowledge Management Systems*, 51(1), 1-23. [16]
32. Thong, J. Y. (1999). An integrated model of information systems adoption in small businesses. *Journal of Management Information Systems*, 15(4), 187-214. [29]
33. Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186-204. [23]
34. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478. [25]
35. Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157-178. [31]
36. Yeboah-Boateng, E. O., & Essandoh, K. A. (2014). Factors influencing the adoption of cloud computing by small and medium enterprises in developing economies. *International Journal of Emerging Science and Engineering*, 2(4), 13-20. [6]
37. Zhu, D. H., Sun, H., & Ting Jie, L. (2010). *Source related to Self-efficacy-based Value Adoption Model (SVAM)*.