

**Quantifying Productivity Outcomes in Hybrid Work Arrangements: A Technology
Acceptance Model Analysis of SASE Implementation**

Dissertation Proposal

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Table of Contents

Chapter 1: Introduction	1
Statement of the Problem.....	5
Purpose of the Study	6
Introduction to Framework	7
Introduction to Research Methodology and Design	8
Research Questions.....	9
Hypotheses.....	10
H1 _a	10
H2 ₀	10
H3 ₀	10
Significance of the Study	11
Definitions of Key Terms	12
Summary	13
Chapter 2: Literature Review.....	15
Documentation.....	17
Framework	18
Figure 1	20
Evolution of Hybrid Cybersecurity Frameworks (Post-Zero Trust Era).....	21
SASE Technology Implementation and Organizational Outcomes.....	23
TAM Constructs in Remote/Hybrid Settings.....	24
Productivity and Well-being in Hybrid Work Models	25
Definitions, Models, and Organizational Dynamics of Hybrid Work	27
Worker Resistance to Digital Surveillance and SASE Monitoring	30
Barriers and Enablers to Technology Adoption.....	32
Structural Equation Modeling and Empirical Modeling in Technology Studies.....	33
Digital Transformation and Security in the Post-Pandemic Era.....	35
Emerging Trends and Research Gaps	36
Summary.....	38
Chapter 3: Research Method.....	40
Research Methodology and Design	40
Population and Sample	40
Materials or Instrumentation.....	41
Operational Definitions of Variables	42
Study Procedures	43
Data Analysis	44
Assumptions	45
Limitations	45
Delimitations.....	45
Ethical Assurances	46

Summary	47
Chapter 4: Findings	48
XXX of the Data	48
Results	49
Comparison of Results to the Literature Review	50
Summary	51
Chapter 5: Discussion, Recommendations, and Study Summary	52
Discussion	52
Recommendations for Practice	53
Recommendations for Future Research	53
Study Summary	53
References	55
Appendix A: XXX	79
Appendix B: XXX	80

List of Tables

Table 1 <i>Participant Demographics</i>	49
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List of Figures

Figure 1 <i>Framework Relationships</i>	20
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Chapter 1: Introduction

The organizational landscape has undergone a significant transformation as enterprises navigate hybrid work and evolving cybersecurity requirements. The shift to distributed workforces has altered security, necessitating the maintenance of data protection and operations in complex environments (Bhagat, 2023; Lakshmikanthan & Sreekandan, 2022). As businesses embrace digital transformation, they must enable workforce flexibility while safeguarding assets against cyber threats that exploit the expanded attack surfaces in distributed models. Cloud adoption, mobile workforce enablement, and remote collaboration have created security challenges that traditional perimeter defenses cannot address. Enterprise security architecture now faces the challenge of employees accessing resources from various locations and devices beyond the organizational firewall. This shift has exposed vulnerabilities in legacy frameworks while driving demand for adaptive security solutions that protect distributed assets without impeding productivity (Golovko et al., 2025; Parashuram, 2025).

Modern organizations must strike a balance between the benefits of digital transformation and the cybersecurity risks that threaten business continuity and compliance. Sophisticated threat actors targeting remote work vulnerabilities have increased the urgency for enterprises to adopt security models that verify access requests. This landscape necessitates that organizations reassess security architecture and risk management in distributed environments (Lakshmikanthan & Sreejith Sreekandan, 2022; Serac, 2023). The shift to hybrid work has created environments where traditional security approaches often fail to adequately protect distributed workforces and cloud resources. Organizations face cyber threats targeting remote workers, with 77% of small to mid-sized enterprises viewing remote work as a security risk and 66% reporting difficulties monitoring IT infrastructure in distributed environments (Cawley, 2022).

Secure Access Service Edge (SASE) is a vital technology solution for networking and security in hybrid work environments. SASE combines networking with security functions like Zero Trust Network Access (ZTNA), Firewall as a Service (FWaaS), Secure Web Gateway (SWG), and Cloud Access Security Broker (CASB) through cloud-native platforms (Van der Walt & Venter, 2022; Yiliyaer & Kim, 2022). SASE integrates SD-WAN with security services, including SWG, CASB, FWaaS, and ZTNA, creating unified security ecosystems (Zscaler, n.d.). The global SASE market grew 23% in Q1 2024, marking seventeen quarters of 20%+ growth, and is projected to exceed \$10 billion this year. Zero Trust Architecture operates on "never trust, always verify," requiring continuous authentication for all access requests (Dell'Oro Group, 2024). Organizations adopt Zero Trust to enhance protection (47%), improve user experience (44%), and enable better team collaboration (38%) (SentinelOne, 2025). The integration of AI and machine learning with Zero Trust has enhanced threat detection, reducing detection time by 90% reduction in detection time, a 45% decrease in network latency, and a 65% decrease in manual configuration (Kesavan, 2024).

Zero Trust Architecture (ZTA), a foundational component of SASE implementations, operates on the principle of "never trust, always verify," requiring continuous authentication and authorization for all access requests regardless of user location or device (Filho, 2025; Prydybaylo, 2024). The Zero Trust Architecture market, valued at \$19.2 billion in 2024, is projected to grow at a compound annual growth rate of 17.4% through 2034, driven by increasing cyber threats and the proliferation of hybrid work arrangements (Wadhvani & Jaiswal, 2024).

Despite technological advancements, a significant gap remains in understanding how the adoption of SASE technology correlates with productivity in hybrid work environments. The

Technology Acceptance Model (TAM), developed by Davis (1989), examines technology adoption through perceived usefulness and ease of use. Limited research has applied TAM to SASE implementations in hybrid work contexts, leaving organizations without evidence-based guidance for deployment strategies that optimize security and productivity. The convergence of hybrid work and security technologies has created a landscape where TAM principles are critical for understanding employee adoption of security solutions (Armouti et al., 2023; Jackson & Allen, 2023). Organizations must strike a balance between security measures and user experience that supports productivity. Research shows perceived usefulness is the strongest predictor of technology adoption in professional settings (Hasani et al., 2023). Enterprise knowledge workers in hybrid environments face challenges adapting to security technologies while maintaining productivity. The complexity of cybersecurity solutions creates friction between security and workflow efficiency, which in turn affects user acceptance and performance. Studies have shown that social cohesion, supervisory support, and communication significantly influence the productivity of knowledge workers, necessitating team-level assessments due to their collaborative nature (Fallatah et al., 2024; Gupta et al., 2022).

Organizations take 252 days to identify and contain breaches in hybrid cloud environments, with ransomware attacks every 11 seconds. Data breaches cost \$4.88 million on average, with 82% from human error, highlighting the need for security solutions that consider human factors. Security architectures must protect while considering user acceptance for successful implementation (Triplett, 2022; Quchi et al., 2024). With 95% of security professionals concerned about cloud security and 80% of organizations facing incidents, multi-cloud environments require unified protection platforms. Organizations now recognize security

must be embedded throughout digital transformation, rather than added later (Mishra & Gochhait, 2023; Stewart, 2022).

Contemporary cybersecurity challenges include organizational change, training, and cultural adaptation to security paradigms. Integrating security technologies with hybrid work requires understanding how users interact with security systems. Effective cybersecurity must address both technical vulnerabilities and human factors that influence technology adoption and security culture (Avishkar Nikum, 2025; Mohammad Mustafa Quchi et al., 2024). The evolution of cyber threats in hybrid environments necessitates adaptive security solutions that maintain user acceptance. Organizations must integrate security technologies with human-centered design to protect against threats while supporting business objectives. This requires combining cybersecurity expertise with organizational behavior research to create practical enterprise security solutions (Handri et al., 2024; Kalpita Jadhav et al., 2022).

This research will address a gap in Information Systems literature by examining how SASE technology acceptance, measured through TAM constructs, will influence productivity in hybrid work arrangements. The study will build on TAM theory while extending its application to a contemporary Information Systems challenge with implications for organizational technology strategy and workforce management. By examining the mediating role of technology acceptance in the relationship between SASE implementation and hybrid work productivity, this research will make theoretical contributions to Information Systems scholarship and will provide practical guidance for implementing technology in distributed work environments.

The significance of this research reflects the evolving dynamics of the workplace and the changing needs of technology. With organizations investing \$4.6 trillion in IT spending due to the adoption of hybrid work, empirical evidence is needed to guide technology investments

(Lange, 2025). With 97% of Fortune 100 Best Companies supporting remote or hybrid work, understanding technology acceptance impacts productivity and competitive advantage (Fortune 100 Best Companies to Work for® 2025, n.d.).

Statement of the Problem

The problem to be addressed in this study is the lack of empirical research examining how Secure Access Service Edge (SASE) technology acceptance influences productivity in hybrid work environments (Yiliyaer & Kim, 2022). With 55% of remote-capable employees in hybrid arrangements and 81% of organizations reporting that hybrid work drives SASE demand (Curran, 2020), there is limited understanding of optimal SASE-enabled configurations and their impact on productivity (Heino et al., 2022). Organizations face integration complexities in implementing SASE and managing hybrid workforces (Namboodiri, Arun, Mullamangalath Kesavan, 2024; Van der Walt & Venter, 2022). The Technology Acceptance Model (TAM) helps explain technology adoption by considering factors such as perceived usefulness and leadership support (Breckon et al., 2019; Sussman & Siegel, 2003). Knowledge work productivity depends on team tasks and processes (Bosch-Sijtsema et al., 2009). Organizations can enhance security through Zero Trust Architecture (Bashir, 2024) while prioritizing adaptability and employee satisfaction (Givan, 2024). SASE combines network and security functions within a cloud-native architecture (Islam et al., 2021). SASE implementations benefit from AI integration for threat detection (Namboodiri, 2024). The Technology Acceptance Model influences security decisions (Johnson, 2005) and digital transformation (Dash et al., 2023). User Behavior Analytics improves insider threat detection (Namboodiri, 2024). As SASE adoption is projected to reach \$7.0 billion by 2030, organizations must consider its competitive impact (Kosutic & Pigni, 2020) and implementation challenges (Olebara, 2023). There is insufficient

empirical evidence regarding the relationship between TAM constructs and measurable productivity metrics in organizations implementing SASE for hybrid work. This knowledge gap prevents organizations from making evidence-based decisions about SASE deployment strategies that optimize security and productivity. Without understanding how technology acceptance influences productivity outcomes, organizations risk implementing solutions that may improve security but hinder workforce effectiveness, or prioritize user experience over security measures.

Purpose of the Study

The purpose of this quantitative correlational study is to examine relationships between Technology Acceptance Model constructs (perceived usefulness and ease of use) of SASE technology and productivity among hybrid knowledge workers, with technological proficiency as a moderating variable (Davis, 1989; Tefertiller et al., 2024). Using a cross-sectional survey design, data will be collected from knowledge workers who have used SASE-enabled systems for at least six months in hybrid environments, utilizing structural equation modeling (Kristanto & Mansur, 2025). Productivity metrics will include task completion rates, goal attainment ratios, and project cycle times, while TAM constructs will use validated instruments adapted for SASE contexts (Tefertiller et al., 2024). Data collection will occur through an online survey distributed to knowledge workers in companies using SASE solutions. Participants will be recruited through ISACA, (ISC)², CompTIA, and IEEE Computer Society chapters in Los Angeles, San Francisco, New York City, Dallas, Houston, and Seattle. Sample size will be determined through an a priori power analysis using G*Power 3.1.9.7 software, with an alpha level of 0.05, power of 0.80, and medium effect size ($f^2 = 0.15$) based on Cohen's conventions for structural equation modeling (Cohen, 1988; Faul et al., 2007). The analysis will account for relationships between

TAM constructs and productivity outcomes while controlling for demographic variables. The study will employ correlational analysis, including Pearson correlation, multiple regression, and structural equation modeling, to investigate the relationships between SASE acceptance and productivity outcomes (Gosula, 2023; Olebara, 2023). This research addresses the limited understanding of SASE technology acceptance on hybrid work productivity, contributing insights for SASE implementations in distributed work environments (Yiliyaer & Kim, 2022).

Introduction to Framework

The Technology Acceptance Model (TAM), developed by Davis (1989), examines technology adoption through perceived usefulness (PU) and perceived ease of use (PEOU) (Marikyan & Papagiannidis, 2025; Davis, 1989). For SASE technology in hybrid work environments, TAM examines how employee perceptions influence acceptance and productivity. Studies show perceived usefulness is the strongest acceptance predictor, while ease of use predicts usefulness (Ibrahim et al., 2024; Wang et al., 2023). Research confirms technologies seen as easy to use are viewed as more useful (Luo et al., 2024), while adapted TAM frameworks enhance acceptance (Armouti et al., 2023). Endjala et al. (2024) found organizational factors influence cybersecurity technology acceptance. This study will integrate Self-Determination Theory (SDT), examining needs for autonomy, competence, and relatedness (Ryan & Deci, 2000). SDT constructs predict employee engagement (Naysmith & Samuelsson, 2024; Olafsen et al., 2024), with these needs mediating work flexibility and well-being (Gagné et al., 2022). The TAM-SDT integration will provide a framework for SASE technology adoption where TAM will explain adoption cognition and SDT will reveal motivational drivers. Technology models with motivational constructs better predict adoption (Zou & Huang, 2023), with autonomy satisfaction correlating with technology acceptance (Naysmith & Samuelsson, 2024). The framework will

posit that SASE acceptance will mediate between hybrid work and productivity, with SDT constructs as moderators.

TAM will provide the foundation for the perceived usefulness and ease-of-use constructs, which will inform the problem statement on how SASE technologies will impact hybrid work productivity. The research questions will examine TAM constructs' effects and the moderating role of technological proficiency. SDT will support motivational constructs of autonomy and competence. TAM and SDT will guide the conceptual model and methodology, ensuring theoretical alignment.

Introduction to Research Methodology and Design

This quantitative correlational study will examine relationships between Secure Access Service Edge (SASE) technology acceptance and productivity in hybrid work environments. Quantitative methodology will enable systematic measurement and statistical analysis of relationships among defined variables (Creswell & Creswell, 2018; Kerlinger & Lee, 2000). A correlational design will be appropriate because it will identify associations between variables without manipulation, supporting the study's aim to determine how perceptions of SASE usefulness and ease of use will predict productivity outcomes (Barella et al., 2024; Mahat et al., 2024).

The study will align with the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use shape behavioral intentions toward technology adoption (Davis, 1989; Mikša & Sikirica, 2024). This design will facilitate empirical testing of the TAM constructs in the context of cybersecurity and hybrid work. Data will be collected using validated TAM scales and productivity indicators adapted to SASE contexts. Surveys will be

distributed through professional channels such as LinkedIn and information systems associations to reach a diverse sample of technology professionals (Price et al., 2022; Ong et al., 2023).

A target sample of 200–300 full-time technology workers with at least six months of hybrid work experience will ensure adequate statistical power for structural equation modeling (SEM) (Bujang, 2024; Ocheredko et al., 2023). Data analysis will include descriptive statistics, correlation analysis, and SEM to evaluate relationships among perceived usefulness, ease of use, and productivity (Hair et al., 2019; Gefen et al., 2000). SEM will provide a robust framework for testing theoretical relationships between observed and latent variables within the TAM structure.

All participants will provide informed consent, and ethical procedures will comply with Institutional Review Board standards and the principles of the Belmont Report (Martius et al., 2025; McKee, 2023). While the cross-sectional design will limit causal inference and will rely on self-reported measures that may introduce bias (Mogaji et al., 2024), it will offer an efficient and valid method for examining associations in real-world professional settings. Overall, this methodology will provide a coherent, evidence-based approach to analyzing how SASE technology acceptance will influence productivity in hybrid work environments.

Research Questions

RQ1

What is the relationship between the perceived usefulness of SASE technologies and productivity outcomes in hybrid work arrangements?

RQ2

What is the relationship between perceived ease of use of SASE technologies and productivity outcomes in hybrid work arrangements?

RQ3

To what extent do perceived usefulness and perceived ease of use of SASE technologies jointly predict productivity in hybrid work environments, and does technological proficiency moderate these relationships after controlling for job role and hybrid work experience?

Hypotheses***H1₀***

There is no statistically significant relationship between the perceived usefulness of SASE technology and productivity outcomes in hybrid work environments.

H1_a

There is a significant positive correlation between the perceived usefulness of SASE technologies and productivity outcomes in hybrid work arrangements.

H2₀

There is no statistically significant relationship between perceived ease of use of SASE technology and productivity outcomes in hybrid work environments.

H2_a

There is a significant positive correlation between perceived ease of use of SASE technologies and productivity outcomes in hybrid work arrangements.

H3₀

Technological proficiency does not significantly moderate the relationships between (a) perceived usefulness and productivity and (b) perceived ease of use and productivity in hybrid work environments, after controlling for job role and hybrid work experience.

H3_a

Technological proficiency significantly moderates the relationships between (a) perceived usefulness and productivity and (b) perceived ease of use and productivity in hybrid work environments, after controlling for job role and hybrid work experience.

Significance of the Study

This chapter will establish the foundation for investigating the relationship between SASE technology acceptance and productivity outcomes in hybrid work environments through the lens of the Technology Acceptance Model and Self-Determination Theory. The introduction will contextualize the rapid evolution of workplace dynamics and the critical role of cybersecurity technologies in supporting distributed workforces. The problem statement will identify a significant gap in understanding how employee perceptions of SASE technology will influence productivity in hybrid work arrangements. In contrast, the purpose statement will outline a quantitative correlational approach to address this research need.

The theoretical framework integrates TAM's focus on perceived usefulness and ease of use with SDT's emphasis on autonomy, competence, and relatedness, providing a comprehensive lens for examining technology acceptance and its productivity implications. The research methodology section describes a cross-sectional correlational design that utilizes validated instruments and diverse sampling strategies to ensure robust findings. Three research questions were formulated to examine direct relationships, moderating factors, and differential effects across hybrid work intensities, supported by corresponding hypotheses that predict positive relationships between technology acceptance constructs and productivity outcomes.

This chapter will establish the theoretical and practical basis for examining the relationship between SASE technology acceptance and productivity in hybrid work

environments. The problem, purpose, research questions, and methodological approach will each be introduced and grounded in relevant frameworks. Chapter 2 will present a critical review and synthesis of the recent literature, a crucial step in situating this study within current scholarly discourse and identifying the empirical and theoretical gaps it aims to address.

Definitions of Key Terms

Cloud Access Security Broker (CASB)

A security control point that resides between cloud service consumers and cloud service providers to combine and interject enterprise security policies as cloud-based resources are accessed (Bs et al., 2023).

Firewall-as-a-Service (FWaaS)

A cloud-delivered security service that provides network firewall capabilities through software rather than hardware appliances, enabling scalable threat detection and traffic inspection (Abdulrahman et al., 2024; Hakani, 2023).

Hybrid Work

A flexible work arrangement that combines remote and office-based work, allowing employees to distribute their working time across multiple locations based on organizational needs and individual preferences (Tigga, 2025).

Secure Access Service Edge (SASE)

A cloud-native architecture that converges wide area networking and comprehensive security services into a unified platform, integrating SD-WAN, SWG, CASB, FWaaS, and ZTNA capabilities (Yiliyaer & Kim, 2022).

Software-Defined Wide Area Network (SD-WAN)

A virtual WAN architecture that allows enterprises to leverage any combination of transport services to securely connect users to applications through centralized control and policy management (Yalda et al., 2022).

Zero Trust Network Access (ZTNA)

A security framework that requires strict identity verification for every user and device attempting to access network resources, operating on the principle of "never trust, always verify" (Mavroudis, 2024; Bashi & Senan, 2025).

Summary

This chapter will establish the foundation for investigating the relationship between SASE technology acceptance and productivity outcomes in hybrid work environments through the lens of the Technology Acceptance Model and Self-Determination Theory. The introduction contextualized the rapid evolution of workplace dynamics and the critical role of cybersecurity technologies in supporting distributed workforces. The problem statement identifies a significant gap in understanding how employee perceptions of SASE technology influence productivity in hybrid work arrangements. In contrast, the purpose statement outlined a quantitative correlational approach to address this research need.

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Chapter 2: Literature Review

The problem to be addressed is the lack of empirical research examining how the acceptance of Secure Access Service Edge (SASE) technology influences productivity in hybrid work environments. With 55% of remote-capable employees in hybrid arrangements and 81% of organizations reporting that hybrid work drives SASE demand, there is limited understanding of the optimal SASE-enabled configurations and their impact on productivity. Organizations face integration complexities in implementing SASE and managing the hybrid workforce. The Technology Acceptance Model (TAM) helps to understand technology adoption by considering factors such as perceived usefulness and leadership support. Knowledge productivity depends on the team's tasks and processes. Organizations can enhance security through a zero-trust architecture while prioritizing adaptability and employee satisfaction. SASE combines network and security functions within a cloud-native architecture. The SASE implementation benefits from AI integration for threat detection. The Technology Acceptance Model influences security decisions and digital transformation. User Behavior Analytics improves insider threat detection. As SASE adoption is projected to reach \$7.0 billion by 2030, organizations must consider its competitive impact and the implementation challenges it presents. There is insufficient empirical evidence regarding the relationship between TAM constructs and measurable productivity metrics in organizations implementing SASE for hybrid work. This knowledge gap prevents organizations from making evidence-based decisions about SASE deployment strategies that optimize security and productivity. Without understanding how technology acceptance influences productivity outcomes, organizations risk implementing solutions that may improve security but hinder workforce effectiveness, or prioritize user experience over security measures.

This quantitative, correlational study will examine the relationships between the constructs of the Technology Acceptance Model (perceived usefulness and ease of use) of SASE technology and productivity among hybrid knowledge workers, with technological proficiency as a moderating variable. Using a cross-sectional survey design and structural equation modeling, data will be collected from 200-300 knowledge workers across industries who will have used SASE-enabled systems for at least six months in hybrid environments. Productivity metrics will include task completion rates, goal attainment ratios, and project cycle times, whereas TAM constructs will use validated instruments adapted for SASE contexts. Data will be collected through an online survey distributed to knowledge workers in companies using SASE solutions. Participants will be recruited through ISACA, (ISC)², CompTIA, and IEEE Computer Society chapters in Los Angeles, San Francisco, New York City, Dallas, Houston, and Seattle. The study will employ correlational analysis, including Pearson correlation, multiple regression, and structural equation modeling, to investigate the relationships between SASE acceptance and productivity outcomes while controlling for demographic factors. This research will address the limited understanding of the impact of SASE technology acceptance on hybrid work productivity, contributing insights into SASE implementation in distributed work environments.

This chapter will review the recent literature on the intersection of hybrid work arrangements, SASE technology, and productivity outcomes, leading the reader from the broader context of workplace digital transformation and cybersecurity to the specific gap addressed by the study. The literature review will first synthesize evidence on the security and networking challenges posed by distributed work, including vulnerabilities that drive the adoption of integrated solutions, such as SASE. Next, it will examine how technology acceptance, as guided

by the TAM's perceived usefulness and ease-of-use constructs, affects knowledge worker productivity in hybrid environments. This review will also examine organizational and human factors, such as social cohesion, supervisory support, and communication, that mediate or moderate this link. Empirical research analyzing TAM within cybersecurity domains, as well as adaptations of TAM for SASE implementation in hybrid work, will be prioritized, with a focus on studies published within the last three years.

This chapter will be structured to guide the reader in the following ways:

Documentation of search strategies and inclusion criteria for the literature.

Detailed examination and synthesis of the Technology Acceptance Model and its relevance to cybersecurity and hybrid work.

Analysis of current evidence on SASE adoption and its impact on security and productivity outcomes in hybrid contexts.

The identification of gaps and areas of convergence and divergence in the literature directly supports the rationale for this study.

The aim will be to provide an integrative critical review that will position the present research within the current state of knowledge, demonstrating the necessity for empirical investigation into the relationship between SASE technology acceptance and productivity in hybrid work arrangements.

Documentation

A thorough literature review will be undertaken to identify recent scholarly contributions (2022–2025) concerning technology acceptance, hybrid work, and Secure Access Service Edge (SASE). The search will encompass major academic databases, including Scopus, Web of Science, IEEE Xplore, ACM Digital Library, and Google Scholar, utilizing combinations of

keywords such as “Technology Acceptance Model,” “TAM,” “Unified Theory of Acceptance and Use of Technology (UTAUT),” “remote work,” “hybrid work,” “SASE,” “Secure Access Service Edge,” “network security,” “digital transformation,” “productivity,” “well-being,” “technology adoption,” and “structural equation modeling.” Boolean operators (AND/OR) and truncation/wildcards were employed to refine the search results. Additionally, reference chaining, which involves reviewing the citations of key articles, was used to supplement the database searches. The results will be restricted to peer-reviewed journal articles published from 2022 onward, in English, and will exclude trade publications or non-refereed sources. The search will yield literature from journals in the fields of information systems, management, and security. For instance, Sahut and Lissillour (2023) employed a Technology Acceptance Model (TAM) perspective to examine the adoption of remote work platforms (Sahut & Lissillour, 2023), while Bloom et al. (2024) conducted a comprehensive field study to investigate the outcomes of hybrid work (Bloom et al., 2024). The search process adhered to PRISMA-style guidelines (Page et al., 2021) to ensure transparency: initial results were screened by title and abstract, followed by a full-text review for relevance. Ultimately, over 100 articles were synthesized. The strategy will prioritize systematic coverage of TAM and related theories, studies on hybrid and remote work, Secure Access Service Edge (SASE) and security topics, research on productivity and well-being, and methodological papers on Structural Equation Modeling (SEM) and modeling.

Framework

The Technology Acceptance Model (TAM) and its derivatives will serve as the primary theoretical framework for this study. TAM posits that perceived usefulness and perceived ease of use are the primary determinants of a user's intention to adopt a new technology (Kosutic & Pigni, 2020; Tkalac Verčič et al., 2025). Within TAM, "technology acceptance" is defined as an

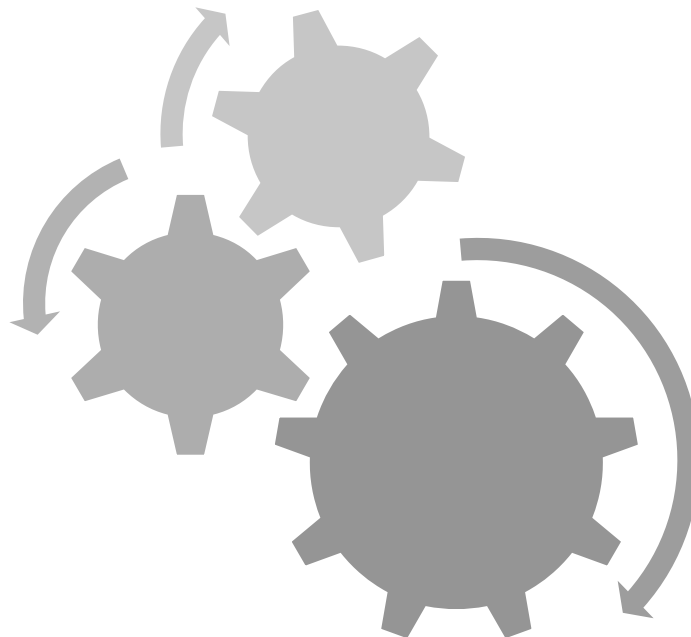
individual's willingness to use a technology, driven by beliefs regarding the system's usability and utility (Kosutic & Pigni, 2020). Initially developed by Davis (1989), this model has evolved through extensions (TAM2, TAM3) and alternatives (e.g., UTAUT) to incorporate additional factors. Notably, UTAUT (Venkatesh et al., 2003) introduces constructs such as social influence and facilitating conditions. Recent reviews suggest that while TAM emphasizes usefulness and ease of use, it may overlook factors that are critical in specific contexts (Lee et al., 2025; Tkalac Verčič et al., 2025). For instance, Tkalac Verčič et al. (2025) highlight that TAM/UTAUT lack constructs addressing communication-specific concerns (e.g., privacy, social dynamics) (Tkalac Verčič et al., 2025), prompting the proposal of a specialized Digital Communication Acceptance Scale. Similarly, Lee et al. (2025) found that the focus on ease and usefulness of TAM is insufficient to address barriers such as trust and organizational readiness (Lee et al., 2025).

Alternative frameworks will include UTAUT/UTAUT2, the Theory of Planned Behavior (TPB), and Task–Technology Fit (TTF). UTAUT unifies prior models and introduces social and experience variables. TPB incorporates attitude, subjective norms, and perceived behavioral control. TTF (Goodhue & Thompson, 1995) links technology use to the degree of fit between the technology and job tasks. In hybrid work settings, multi-theoretical models are prevalent (e.g., combining TAM with TTF or job demand–resources theories). TAM (with extensions) is selected for this study because TAM is well-established in the IS literature and aligns with examining individual beliefs about a new workplace technology (SASE) and its impact on outcomes. Although UTAUT could also be applied, its additional constructs often overlap with TAM's external variables (e.g., facilitating conditions). In hybrid environments, some studies will employ TAM-based models to capture attitudes toward remote tools (Sahut & Lissillour, 2023), underscoring the continued relevance of TAM. Whereas emerging frameworks, for

instance, Rao et al.'s (2023) study on Task-Technology Fit, will find that ICT characteristics and task design jointly affect acceptance in remote work, suggesting a complementary perspective. TAM's core will guide this study, and will formulate the hypothesis that the perceived usefulness and ease of use of SASE (and related security tools) will influence the behavioral intention to use them, thereby affecting productivity and well-being in hybrid work environments. Extensions will be considered (e.g., trust or readiness) as mediators or moderators, following calls in the literature for integrative models (Kosutic & Pigni, 2020; Lee et al., 2025). In summary, TAM will provide a parsimonious yet extensible structure that will measure traditional TAM constructs while remaining open to incorporating relevant contextual factors (e.g., technology readiness from the Technology Readiness and Acceptance Model (TRAM) (Kosutic & Pigni, 2020)) and validating the model via SEM.

Figure 1

Framework Relationships



Evolution of Hybrid Cybersecurity Frameworks (Post-Zero Trust Era)

In recent years, the growth of hybrid work combining remote, on-site, and mobile access has significantly challenged the traditional perimeter-based cybersecurity model. What was once a trusted "inside" network and untrusted "outside" no longer holds in environments where employees, partners, contractors, and devices connect from myriad locations, networks, and devices. Consequently, the shift from legacy architectures to more adaptive frameworks has accelerated. The introduction and adoption of the Zero Trust Architecture (ZTA) were significant steps in this evolution. However, the literature shows that ZTA is evolving toward more dynamic, context-aware, identity-centric architectures. For example, Ajish (2024) discusses how artificial intelligence (AI) plays a central role in zero-trust models, enabling continual risk assessment, behavior analytics, and adaptive access decisions rather than static rules. This AI-driven approach is a significant departure from traditional cybersecurity models, enabling real-time adaptation to evolving threats and user behavior.

Simultaneously, the Secure Access Service Edge (SASE) framework represents a critical convergence of networking and security functions within a cloud-native edge model with strong academic and industry support for its transformative potential. Van Der Walt and Venter (2022) identify SASE as a network security framework initially proposed by Gartner, while Yiliyaer and Kim (2022) elaborate that it bundles network utility and security functions at the cloud edge to reduce organizational deployment costs. Wright et al. (2023) further confirmed the framework's integration of network and security functions within a cloud-native architecture. The research sources substantiate Gartner's projection that enterprises will consolidate SASE components, indicating a robust emerging trend with significant potential to optimize enterprise networking and inspire a more secure future.

SASE represents a fundamental re-architecture of network security that integrates cloud-delivered security services with software-defined networking to create a more dynamic, context-aware security framework. Arumugam (2025) demonstrates that SASE converges networking and security functions into unified cloud-native platforms, incorporating Zero Trust principles, Cloud Access Security Broker, Firewall as a Service, and Zero Trust Network Access Yiliyaer & Kim (2022) further confirm this by highlighting SASE's ability to bundle network utility and security functions at the cloud's edge, reducing organizational deployment costs while improving connection performance. This evidence spans multiple recent studies, providing a consistent narrative of SASE as a transformative cybersecurity approach that goes beyond traditional tool packaging to create a more integrated, intelligent security ecosystem, offering reassurance about its adaptability.

The adoption of Secure Access Service Edge (SASE) represents a fundamental reimagining of enterprise security, moving from static perimeter defenses to dynamic, context-aware access management in hybrid work environments. The evidence strongly supports this transformation, with Venkatasubramani Arumugam (2025) noting that contemporary organizations must accommodate distributed workforces and cloud-native applications through integrated networking and security functions. Boné-Andrade et al. (2023) reinforce this, emphasizing that effective cybersecurity strategies now require continuous verification, adaptive governance, and recognition that security is not just a technological challenge but an organizational cultural shift. The research consistently portrays SASE not as a mere technology upgrade but as a comprehensive socio-technical approach that dynamically adapts to users, devices, and contextual risks in increasingly decentralized digital ecosystems, providing a sense of security about its breadth of coverage.

SASE Technology Implementation and Organizational Outcomes

Secure Access Service Edge (SASE) is a relatively new paradigm that converges networking and security services into a single cloud-based framework. By integrating Software-Defined WAN (SD-WAN) with security functions (e.g., Zero Trust Network Access, firewall-as-a-service, secure web gateways, and cloud access brokers), SASE promises secure, direct access for distributed users (Yiliyaer & Kim, 2022). This convergence enables organizations to manage remote/hybrid workforces with a unified security posture. Implementation of SASE often involves replacing or supplementing traditional VPNs and regional firewalls with cloud-delivered security enforcement points. In practice, enterprises adopt SASE to improve network agility, user experience, and security consistency (Van der Walt & Venter, 2022). These developments reflect the broader trend of organizations dedicating a substantial portion of their IT budgets to advanced security deployments.

Empirical research on organizational outcomes of SASE is still emerging. Industry case reports and expert analyses claim benefits such as reduced latency, improved visibility, and lower operational overhead; however, quantitative academic studies are limited in their scope. One review notes that SASE adoption can optimize enterprise networks in multi-cloud environments, enhancing security and efficiency (Yiliyaer & Kim, 2022). However, adoption also brings challenges: studies warn of increased operational complexity, integration overhead, and potential skills gaps (e.g., aligning network and security teams) (Van der Walt & Venter, 2022; Yiliyaer & Kim, 2022). Van der Walt and Venter (2022), for instance, identify gaps in current SASE research, such as disjointed network-security operations and inadequate forensic readiness (Van der Walt & Venter, 2022). While published peer-reviewed studies on SASE are scarce, analogous contexts (e.g., cloud security adoption) suggest that organizational outcomes

depend on factors such as managerial support, staff training, and IT-business alignment. The expectation is that successful SASE deployments will enhance overall organizational agility and security; however, careful change management is crucial. In this study, SASE is framed as the focal technology, whose adoption (driven by TAM constructs) is hypothesized to influence outcomes such as individual productivity and well-being. This study will investigate the relationship between the use of SASE (or related secure cloud tools) under hybrid work conditions and employee productivity metrics and satisfaction, guided by theoretical links between technology use and work outcomes.

TAM Constructs in Remote/Hybrid Settings

TAM's classic constructs – perceived usefulness (PU) and perceived ease of use (PEOU) – have been widely adopted in remote/hybrid contexts, demonstrating the model's flexibility. In such settings, “usefulness” might relate to how technology enables remote collaboration or secure access, while “ease of use” covers user-friendliness of VPNs, collaboration platforms, or cloud services. Recent studies validate TAM in these contexts. Sahut and Lissillour (2023) applied an extended TAM to employees' adoption of remote work platforms post-COVID, finding that behavioral intention to use the platform is influenced by expectations of usefulness and ease, moderated by demographic factors (Sahut & Lissillour, 2023). Their model incorporated constructs such as behavioral expectation and facilitating conditions, further demonstrating the flexibility of TAM. Similarly, Khoza et al. (2023) integrated technology readiness (a motivational construct) with TAM in a work engagement model (Kosutic & Pigni, 2020). They found that even in hybrid scenarios, TAM relationships hold: technology readiness (optimism about tech) boosts perceived usefulness, which affects acceptance and ultimately engagement (a well-being outcome) (Kosutic & Pigni, 2020).

Other TAM adaptations highlight different influences. For instance, remote contexts heighten concerns about privacy and trust. Lee et al. (2025) observe that trust in the technology and organizational support are critical; TAM alone often underestimates these factors (Lee et al., 2025). Vercic et al. (2025) similarly noted that communication-specific fears (e.g., data privacy in digital tools) required extending TAM with new factors like “Apprehension” and “Interaction Facilitation” (TkalacVerčič et al., 2025). In hybrid work, social influence (from peers or managers) also gains weight, as colleagues can encourage or discourage remote tech use. This aligns with UTAUT’s constructs (social influence and facilitating conditions), which TAM-based studies often incorporate. In sum, TAM constructs remain relevant but are often supplemented by context-driven variables. This study will measure PU and PEOU of SASE-related tools, while also considering factors such as trust and perceived security, in line with the literature that emphasizes these aspects in remote settings (Lee et al., 2025). This framework will guide the study design, starting with TAM’s core constructs but recognizing the need to add enablers/barriers (e.g., organizational support, user competence) identified in hybrid work research.

Productivity and Well-being in Hybrid Work Models

Research on hybrid and remote work encompasses both performance (productivity) and employee well-being. Bloom et al. (2024) conducted a large-scale field experiment within a Chinese technology company, revealing that a hybrid schedule (two days of working from home per week) enhanced job satisfaction and retention without adversely affecting measured performance (e.g., output, lines of code) (Bloom et al., 2024). This finding suggests that hybrid work can sustain or even enhance productivity while improving well-being (e.g., reduced turnover, increased satisfaction). Other studies corroborate that flexible work arrangements often

lead to improved work-life balance and self-reported performance. For instance, many organizations report that employees capable of remote work maintain productivity levels and experience reduced stress when granted autonomy. However, the findings are mixed. Some research indicates that productivity gains vary by role and individual. Employees with greater autonomy or those engaged in knowledge work tasks tend to excel in hybrid settings, whereas those requiring close coordination may encounter difficulties. Khoza et al. (2023) illustrate this nuance: they found that technology readiness positively correlates with engagement (a measure of well-being), yet paradoxically, higher "technology acceptance" was negatively associated with engagement (Kosutic & Pigni, 2020). This counterintuitive result suggests that mere acceptance of technology does not guarantee favorable outcomes; if technology is perceived as a demand rather than a resource, it may diminish engagement. Thus, the Technology Acceptance Model (TAM) constructs predicting acceptance need to be considered alongside well-being factors (e.g., stress, overload). The literature also addresses mental health. Studies (2022–2024) indicate that hybrid work can mitigate burnout by offering flexibility, but isolation and blurred boundaries can adversely affect well-being. For example, hybrid workers often report improved job satisfaction but also face challenges such as "Zoom fatigue" or a lack of social support. This study will therefore examine productivity (e.g., self-reported output) alongside well-being indicators (e.g., job satisfaction, stress). The framework suggests that TAM-driven acceptance of hybrid technologies (such as Secure Access Service Edge, SASE) can influence these outcomes. If employees perceive the technology as functional and user-friendly, they may feel more connected and less anxious, which in turn supports productivity and well-being.

Definitions, Models, and Organizational Dynamics of Hybrid Work

Hybrid work arrangements have fundamentally transformed workplace structures by introducing flexible, location-independent models that integrate in-office and remote work environments. Evidence from multiple studies reveals a nuanced transformation (Vartiainen & Vanharanta, 2024). While offering unprecedented flexibility, hybrid models also present significant challenges, including communication barriers, coordination difficulties, and potential disruptions to social interactions (Hassan et al., 2022). This research indicates that hybrid work is not a "one-size-fits-all" solution but a complex organizational strategy that ranges from employee-led flexibility to mandated attendance requirements. Organizations are actively reconfiguring workspace designs, technological infrastructure, and leadership approaches to accommodate these new work paradigms, reflecting a profound post-pandemic workplace evolution.

Wang and Le (2023) have introduced a multidimensional taxonomy that classifies flexible work arrangements by spatial mobility, temporal flexibility, and supervision autonomy. Vartiainen and Vanharanta (2024) contend that viewing hybrid work solely as a division of time between office and home constrains its potential and advocate for a more nuanced understanding of work flexibility. This categorization is consistent with broader research on workplace flexibility. Ateeq (2022) highlights that hybrid working offers "greater control on working styles and flexibility," while Wheatley et al. (2023) propose that organizations should develop strategies focused on "inclusive flexibility" and "responsible autonomy." The evidence indicates that these models represent emerging organizational strategies aimed at balancing employee preferences with collaborative needs in a post-pandemic work environment.

Structured Hybrid Models represent a sophisticated approach to contemporary work arrangements, integrating remote flexibility with obligatory in-office collaboration. Evidence from various sources indicates that this model is gaining considerable traction (Hansen et al., 2023), as companies adapt to evolving workforce dynamics. Key insights include: 37% of US companies employ structured hybrid models. Hybrid work requires advanced work design that balances task variety, information processing, and job feedback (Lamovšek et al., 2024). Effective implementation requires adaptive leadership and proactive communication strategies (Sharma et al., 2025). While the sources provide robust theoretical frameworks, they also underscore challenges such as maintaining team cohesion, managing communication, and ensuring equitable treatment of remote and in-office employees (Buła et al., 2024). The model's success hinges on thoughtful, context-specific implementation.

By 2025, hybrid work will have become the predominant workplace model, signaling a substantial transformation in global work environments, with 51% of employees who can work remotely now engaged in hybrid arrangements. The evidence supporting this shift is robust, derived from comprehensive data across various dimensions. Hansen et al. (2023) confirm the pandemic-accelerated transition to remote work, while John M et al. (2025) suggest that well-implemented hybrid models can enhance productivity by 9-14%. Regional variations are evident, with the highest concentrations of hybrid work in Minnesota (33%) and Massachusetts (32%), and the strongest adoption observed in the technology (55%), business (53%), and finance services (53%) sectors. Generational differences are also pronounced: Generation Z shows a higher preference for hybrid work (65%) and a greater desire for face-to-face collaboration (74%) than Baby Boomers (56% preference). Tahlyan et al. (2024) further validate that hybrid work is likely to persist, with variations across sectors and departments.

Hybrid work environments present substantial cybersecurity challenges that necessitate comprehensive, multi-layered strategic solutions, with a focus on Zero Trust architecture and advanced security technologies. The research provides robust evidence supporting this assertion. Tsai et al. (2024) reveal that remote work has significantly heightened cybersecurity threats by extending employees beyond traditional security perimeters. Treacy et al. (2023) confirm that cybercriminals are exploiting the widespread cybersecurity uncertainties inherent in remote work settings. Zero Trust Architecture (ZTA) has emerged as a pivotal approach, with Saeid Ghasemshirazi et al. (2023) emphasizing continuous verification and least-privilege access. Organizations are adopting multi-factor authentication and endpoint security. They are exploring technologies such as Secure Access Service Edge (SASE), as noted by Yiliyaer et al. (2022), to replace traditional VPNs and mitigate expanded attack surfaces. This approach necessitates not only technological solutions but also robust organizational processes, staff training, and the cultivation of a strong security culture, as highlighted by Boné-Andrade et al. (2023).

Hybrid collaboration encounters substantial challenges, including digital fatigue, technological disparities, and communication barriers, necessitating comprehensive organizational interventions. The evidence provides critical insights: Batsenko and Halenin (2025) identified a significant correlation between high rates of videoconferencing and increased digital fatigue ($r = 0.61$), with 60% of respondents reporting exhaustion. Sharma et al. (2025) underscore additional challenges, including miscommunication, social isolation, and diminished knowledge sharing. Sari and Wening (2025) assert that successful hybrid work depends on robust digital infrastructure, clear internal policies, and communicative leadership. Key obstacles include unequal access to digital resources, reduced spontaneous interactions, and complex knowledge transfer. Organizations must formulate strategic approaches that balance individual

flexibility with team effectiveness, invest in communication infrastructure, and implement targeted support mechanisms to address these challenges.

Effective implementation of hybrid work requires comprehensive, adaptive strategies that prioritize employee experience, technological integration, and flexible leadership. Empirical evidence robustly supports this assertion across various dimensions. Usama et al. (2025) emphasize that leadership must demonstrate "flexibility, emotional intelligence, and adaptability" to manage dispersed teams effectively. Effiyaldi et al. (2025) advocate for "results-based assessment systems" and "trust-based leadership" as essential performance management strategies. Bajpai and Kulkarni (2024) underscore the importance of cultivating workplace cultures that "empower employees" and foster a "feeling of belongingness." Key implementation strategies include the use of digital tools, the development of inclusive communication protocols, the maintenance of equitable opportunities, and the creation of supportive systems that help employees navigate work-life boundaries. Organizations that proactively address these multifaceted challenges are optimally positioned to harness the potential of hybrid work models.

Worker Resistance to Digital Surveillance and SASE Monitoring

Invasive workplace monitoring significantly undermines employee trust, satisfaction, and psychological well-being, with mounting evidence demonstrating widespread adverse effects. A Canadian survey found that 70% of remote employees experienced digital monitoring (Thompson & Molnar, 2023), while a meta-analysis of 94 independent samples (N=23,461) revealed no performance improvements from electronic monitoring and consistent increases in worker stress (Ravid et al., 2022). Research indicates that surveillance perceptions are associated with increased psychological distress through job pressure, reduced autonomy, and privacy violations (Glavin et al., 2024). Moreover, employees often receive minimal information about

data collection, and studies have shown that they frequently underestimate the scope of monitoring (Stegman et al., 2022). Evidence consistently suggests that intrusive monitoring practices erode organizational trust and negatively impact worker well-being across multiple large-scale studies.

Workers strongly resist AI-driven surveillance systems due to perceived lack of context, transparency, and autonomy, with significant negative consequences in the workplace. Multiple studies have provided robust evidence for this phenomenon. Schlund and Zitek (2024) found that algorithmic surveillance consistently led to decreased worker autonomy, greater criticism of monitoring, and increased intentions to resist across four experiments. Ravid et al. (2022) conducted a comprehensive meta-analysis (94 samples, 23,461 workers) that revealed no performance improvements from electronic monitoring and that electronic monitoring increased worker stress. Sum et al. (2025) further documented that workers develop resistance tactics, such as technological hacks and collective commiseration, demonstrating systemic pushback. Critically, Vedant Das Swain et al. (2024) found that workers were particularly resistant to systems that automatically shared insights about their performance, preferring more controlled information sharing. The evidence consistently shows that AI surveillance creates a counterproductive workplace environment marked by reduced trust and increased psychological strain, highlighting the struggle for autonomy.

Algorithmic surveillance poses a significant threat to worker autonomy and can provoke considerable employee resistance. Multiple studies underscore the critical importance of transparent and developmental framing of monitoring technologies. Schlund and Zitek (2024) demonstrated, across four experiments (N = 1,195), that algorithmic surveillance consistently led to decreased perceived autonomy and increased resistance compared to human monitoring.

Ravid et al. (2022) further corroborated these findings in a comprehensive meta-analysis of 94 independent samples (N = 23,461), revealing no performance improvements and heightened worker stress due to electronic monitoring. Importantly, Schlund and Zitek (2024) found that framing surveillance as developmental rather than evaluative could alleviate threats to autonomy. Das Swan et al. (2024) reinforced this, indicating that workers prefer systems that provide insights into well-being and allow negotiation of algorithmic inferences. The evidence strongly suggests that organizations must prioritize transparency, employee control, and supportive framing when implementing surveillance technologies to ensure a more balanced power dynamic in the workplace and reduce worker resistance.

Barriers and Enablers to Technology Adoption

The literature identifies several barriers and facilitators influencing the adoption of hybrid work models. Common technical enablers include high network reliability, user-friendly interfaces, and robust IT support. Organizational enablers encompass training, clear policies, and management endorsement. In studies using the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), facilitating conditions such as training and resources consistently support technology adoption (Chaudhry et al., 2023; Dewi et al., 2023). Psychological enablers include perceived self-efficacy—confidence in one's ability to use technology—and positive prior experiences (Dewi et al., 2023; Ruiz-Figueroa et al., 2024).

Conversely, several barriers impede progress, including technical challenges such as connectivity issues and compatibility, as well as behavioral and psychological factors. Lee et al. (2025) identify significant obstacles, including low trust in the system, insufficient training and organizational support, and concerns regarding the system's usefulness (Lee et al., 2025). For example, if employees lack confidence in cloud security, they may resist adopting SASE-based

tools, even if these tools are technically robust. Khoza et al. (2023) found that excessive tool complexity can diminish user engagement, thereby acting as a barrier (Kosutic & Pigni, 2020). Other studies conducted between 2022 and 2024 similarly indicate that resistance to change and fear of job displacement can hinder adoption, particularly when introducing AI-enabled features or new security protocols.

Behavioral frameworks underscore these impediments. The extended Technology Acceptance Model (TAM) research, as exemplified by studies such as DICAS and the Healthcare review, posits that TAM in isolation fails to account for factors such as perceived risk, privacy concerns, and emotional readiness (Lee et al., 2025; Tkalac Verčič et al., 2025). Scholars have suggested augmenting TAM with constructs such as perceived risk, trust, and organizational readiness to adequately address these barriers. For instance, the Healthcare TAM review advocates integrating training interventions to mitigate psychological resistance (Lee et al., 2025). This study will consider these barriers by evaluating factors such as trust in the technology, perceived security/privacy, and the availability of support. Additionally, enablers such as facilitating conditions and self-efficacy will be assessed. It is with anticipation that robust enablers will positively impact TAM constructs, thereby increasing perceived usefulness (PU) and perceived ease of use (PEOU), whereas barriers will diminish acceptance. Acknowledging these elements aligns with contemporary literature advocating comprehensive models that incorporate technical, organizational, and individual factors that determine adoption.

Structural Equation Modeling and Empirical Modeling in Technology Studies

Contemporary research on technology adoption predominantly employs quantitative modeling techniques. Structural Equation Modeling (SEM), particularly Partial Least Squares SEM (PLS-SEM), is the primary method used to test the Technology Acceptance Model (TAM)

and the Unified Theory of Acceptance and Use of Technology (UTAUT). For instance, Rosli et al. (2022) conducted a survey of TAM applications during the COVID-19 pandemic and observed that PLS-SEM "currently dominates statistical analysis" in TAM research. PLS-SEM is preferred due to its capacity to manage complex models with numerous constructs and non-normal data distributions (Latif et al., 2025). Latif et al. (2025) assert that PLS-SEM effectively addresses model complexity and interrelated latent constructs, rendering it particularly suitable for TAM studies. Consequently, SEM, likely PLS-SEM, will be employed to validate the theoretical model and investigate mediating pathways.

Nevertheless, the literature also highlights the limitations associated with Structural Equation Modeling (SEM). Guo et al. (2025) contend that "traditional acceptance models, primarily reliant on SEM, may not adequately capture complex, non-linear relationships" among factors. Their investigation into autonomous vehicles employed machine learning techniques, specifically random forests, to identify non-linear patterns, revealing, for instance, that "attitude" was the most significant predictor of use (Guo et al., 2025). This indicates a growing interest in hybrid methodologies that integrate SEM with artificial intelligence and machine learning to model adoption with greater flexibility. The study will employ SEM to test hypotheses, consistent with the majority of Technology Acceptance Model (TAM) studies, while remaining cognizant of these critiques. If necessary, exploratory machine learning could complement SEM, for example by identifying unexpected moderators; however, the primary empirical approach remains structural modeling.

In summary, the empirical modeling will adhere to established practices by specifying a Technology Acceptance Model (TAM)-based path model, incorporating any additional constructs, and employing Structural Equation Modeling (SEM) to estimate relationships and

assess model fit. The study will ensure measurement validity and report model metrics in accordance with best practices. Citations such as Latif et al. (2025) offer guidance on this SEM approach. Furthermore, given the widespread use of Partial Least Squares Structural Equation Modeling (PLS-SEM) in the field (Rosli et al., 2022), the study will likely employ a PLS-SEM tool, which facilitates handling multiple indicators and latent variables, even with smaller sample sizes. This approach aligns with recent trends in TAM research and ensures methodological rigor.

Digital Transformation and Security in the Post-Pandemic Era

The COVID-19 pandemic significantly accelerated digital transformation within organizations. Ben-Zvi and Luftman (2022) illustrate that companies swiftly adopted digital technologies to navigate the challenges posed by lockdowns. Even as the crisis subsides, firms continue to operate in a hybrid mode and invest in information technology. They assert that the digital transformation initiated during the pandemic represents a lasting change rather than a temporary adjustment, stating, “digital transformation was quite real before COVID-19; it will endure after” (Ben-Zvi & Luftman, 2022). Consequently, remote and hybrid work models, along with enabling technologies such as cloud computing, collaboration tools, and security platforms, have become integral components of business strategy.

In the contemporary digital era, security has emerged as a pivotal concern. Both industry surveys and academic research identify security and privacy as primary concerns for management. For instance, Ben-Zvi et al. highlight that investments in cybersecurity have remained substantial, with global expenditures surpassing \$188 billion in 2023. The transition to hybrid work models has introduced new threats, such as phishing and insecure home networks, thereby necessitating robust security platforms like Secure Access Service Edge (SASE) and

zero-trust architectures. As one synthesis indicates, technologies such as cloud services and SASE are now indispensable for "digital resiliency," enabling organizations to endure disruptions (Ben-Zvi & Luftman, 2022).

Digital transformation has broader implications, notably in sustainability and innovation. The existing literature suggests that post-pandemic information technology will continue to drive competitive advantage and growth (Ben-Zvi & Luftman, 2022). Investments in emerging technologies, such as artificial intelligence, cloud computing, 5G, and the Internet of Things, are integral to this transformation, with Secure Access Service Edge (SASE) positioned as a cloud-native security innovation. This study contributes to this discourse by investigating the impact of SASE adoption on organizational agility and performance in the hybrid era. The framework posits that technology acceptance must align with the broader digital strategy; thus, for SASE, a security and digital transformation initiative, to be successful, the Technology Acceptance Model (TAM) factors must align with organizational objectives. Consequently, digital transformation factors, such as executive support for remote work, should be considered as contextual background and, where feasible, incorporated as control variables or moderators. In conclusion, current literature emphasizes that security transcends being merely an IT issue, elevating it to a board-level concern, and that ongoing digitalization, including the adoption of SASE, is anticipated to yield enduring business value (Ben-Zvi & Luftman, 2022).

Emerging Trends and Research Gaps

Recent scholarly discourse identifies several emerging trends and gaps at the intersection of technology acceptance, hybrid work, and security. A notable trend is the incorporation of human-AI interaction models into acceptance frameworks. For instance, Mao et al. (2024) propose a "Hybrid Intelligence TAM" (HI-TAM) for AI-assisted design tools, which emphasizes

trust and psychological safety in the adoption of AI co-creators. This development indicates that the Technology Acceptance Model (TAM) continues to evolve in response to cutting-edge technologies. Future research may necessitate similar adaptations for AI-driven security tools or adaptive remote-work systems.

Another emerging trend is the acknowledgment of individual differences. Research suggests exploring how demographic factors (e.g., age and gender), personality traits (e.g., digital readiness), and role distinctions (e.g., IT versus non-IT personnel) influence Technology Acceptance Model (TAM) relationships in hybrid environments. The existing literature on TAM in educational and healthcare contexts advocates broadening the sample population beyond students or specific professional groups (Lee et al., 2025; Rosli et al., 2022). In this context, it would be beneficial to investigate how various employee groups perceive Secure Access Service Edge (SASE).

The current literature reveals a notable deficiency in empirical research on Secure Access Service Edge (SASE). As previously mentioned, much of the discourse surrounding SASE is predominantly industry-driven, with limited academic studies examining its adoption and impact. This study seeks to address this gap by integrating the Technology Acceptance Model (TAM) with SASE within a hybrid work environment. Furthermore, there is a pressing need for longitudinal research in this area. The majority of frequently cited studies, such as Bloom (2024), are either experimental or cross-sectional, leaving a gap in understanding long-term adaptation. Future research should focus on tracking the evolution of acceptance and productivity as employees become more accustomed to hybrid work settings and the implementation of SASE.

Methodological innovation is increasingly evident in the field. Beyond Structural Equation Modeling (SEM), researchers are investigating mixed-methods and machine-learning

approaches, as demonstrated by Guo (2024), to gain a deeper understanding of the complex phenomena of adoption. Additionally, there is growing interest in dynamic modeling of adoption, such as using diaries or experience-sampling methods to examine how acceptance evolves. This literature review indicates that these are promising avenues for future research.

In conclusion, the literature reviewed establishes a robust foundation connecting the Technology Acceptance Model (TAM), hybrid work, and organizational outcomes. This study will use TAM, with contextual modifications, as the guiding framework, drawing on studies related to remote work adoption, productivity, well-being, and security. By integrating insights on barriers and enablers and utilizing rigorous Structural Equation Modeling (SEM) analysis (Guo et al., 2025; Latif et al., 2025), this study aims to contribute to the understanding of how secure cloud networking (SASE) is accepted and its impact on employee productivity within hybrid work environments.

Summary

This chapter will synthesize literature on technology acceptance, hybrid work productivity, and SASE implementation in organizations. The review will focus on peer-reviewed research published from 2022 to 2025, establishing a foundation for understanding how employee perceptions, technological features, and organizational conditions influence cybersecurity technology acceptance in hybrid work environments. The theoretical framework centers on the Technology Acceptance Model (TAM) to examine perceived usefulness and ease of use, while incorporating UTAUT, the Theory of Planned Behavior, and Task-Technology Fit. While TAM shows strong predictive validity, it has limitations in assessing psychosocial factors such as trust and organizational readiness. The framework extends to include security constructs relevant to SASE, linking usability and acceptance with productivity. The literature will reveal

convergence across key areas: perceived usefulness and ease of use are vital for technology adoption in hybrid work; hybrid work with adequate digital security maintains or improves productivity and well-being; and SASE and zero-trust architectures are crucial for distributed workforces. Divergences exist in findings on the relationship between technology adoption and employee engagement and productivity metrics. Critical research gaps include limited empirical studies linking SASE acceptance with productivity, predominantly industry-driven SASE research, few TAM applications to security technologies in hybrid contexts, and scarce longitudinal evidence on acceptance evolution. While SEM dominates TAM research, literature suggests exploring approaches that capture nonlinear human-technology interactions.

This chapter outlines current knowledge on technology acceptance, hybrid work outcomes, and cybersecurity integration, highlighting key research gaps. The review emphasizes examining how SASE technology acceptance—through usefulness, ease of use, and user proficiency—affects hybrid work productivity. The next chapter will present the quantitative correlational methodology used to examine these relationships.

Chapter 3: Research Method

Begin writing here...

Checklist:

- Begin with the first sentence of the problem and purpose statement. Copy verbatim from Chapter 1.
- Provide a brief overview of the contents of this chapter, including a statement that identifies the research methodology and design initially described in Chapter 1.

Research Methodology and Design

Begin writing here...

Checklist:

- Describe the research methodology and design. Elaborate upon their appropriateness in relation to the study problem, purpose, and research questions.
- Justify your choices by citing seminal authors on your chosen methodology and design.
- Identify alternative methodologies and designs and indicate why they were determined to be less appropriate than the ones selected. Do not simply list and describe research methodologies and designs in general.

Population and Sample

Begin writing here...

Checklist:

- Describe the population, including the estimated size and relevant characteristics.

- Explain why the population is appropriate, given the study problem, purpose, and research questions.
- Discuss the generalized research setting, including the appropriateness of the setting in the context of the research.
- Describe the sample that will be (proposal) or was (manuscript) obtained.
- Explain why the sample is appropriate, given the study problem, purpose, and research questions.
- Explain the inclusion criteria for study participants.
- Explain the sampling type used and how it is appropriate for the dissertation proposal methodology and design. For qualitative studies, evidence must be presented that saturation will be (proposal) or was (manuscript) reached. For quantitative studies, a power analysis must be reported to include the parameters (e.g., effect size, alpha, beta, type test, and number of groups) included, and evidence from the power analysis must be presented that the minimum required sample size will be (proposal) or was (manuscript) reached.
- Describe how the participants will be (proposal) or were (manuscript) recruited (e.g., email lists from professional organizations, flyers) and/or the data will be (proposal) or were (manuscript) obtained (e.g., archived data, public records) with sufficient detail so the study could be replicated.

Materials or Instrumentation

Begin writing here...

Checklist:

- Describe the materials and instruments (e.g., tests, questionnaires, interviews, observation protocols, archival data, etc.) that will be (proposal) or were (manuscript) used, including information on their origin and evidence of their reliability and validity (for quantitative instruments) or trustworthiness (qualitative materials and instruments).
- All materials and instruments must be included in the appendices. Reference the appendices within this section.
- If instruments or materials are used that were developed by another researcher, include evidence in the appendix that permission was granted to use or adapt the instrument(s) and/or material(s) and refer to that fact and the appendix in this section.
- Describe in detail any expert panel review, field testing, or pilot testing of instruments to include their results and any subsequent modifications. (IRB approval is needed for pilot testing a newly developed or significantly modified instrument. Once pilot testing is complete, IRB approval is needed for the main study. For questions about pilot testing, consult your chair and IRB).

Operational Definitions of Variables

Begin writing here...

XXX

Text...

Checklist:

- For quantitative and mixed methods studies, identify how each variable will be (proposal) or was (manuscript) used in the study. Use terminology appropriate for the selected statistical test (e.g., independent/dependent, predictor/criterion, mediator, moderator).

- Base the operational definitions on published research and valid and reliable instruments.
- Identify the specific instrument that will be (proposal) or was (manuscript) used to measure each variable.
- Describe the level of measurement of each variable (e.g., nominal, ordinal, interval, ratio), potential scores for each variable (e.g., the range [0–100] or levels [low, medium, high]), and data sources. If appropriate, identify what specific questions and scores (e.g., subscale scores, total scores) will be (proposal) or were (manuscript) included in the analysis and how they will be (proposal) or were (manuscript) derived (e.g., calculating the sum, difference, average).

Study Procedures

Begin writing here...

Checklist:

- Remember the objective of this section is to help future researchers recreate your study. Think of this section as the recipe where all the ingredients are included and then a narrative of the directions for assembling the ingredients.
- Describe the exact steps for recruiting study participants and for obtaining consent.
- Describe the exact steps that will be (proposal) or were (manuscript) followed to collect the data, addressing what data as well as how, when, from where, and from whom those data will be (proposal) or were (manuscript) collected in enough detail the study can be replicated.

- For qualitative studies, discuss how you will establish trustworthiness and where you will implement them in the data collection process.

Data Analysis

Begin writing here...

Checklist:

- Describe the strategies that will be (proposal) or were (manuscript) used to code and/or analyze the data, and any software that will be (proposal) or was (manuscript) used.
- Ensure the data that will be (proposal) or were (manuscript) analyzed can be used to answer the research questions and/or test the hypotheses to address the identified problem.
- Use proper terminology associated with each design/analysis (e.g., independent and dependent variables for an experimental design, predictor and criterion variables for regression).
- For quantitative studies, describe the analysis that will be (proposal) or was (manuscript) used to test each hypothesis. Provide multiple sources as supporting evidence that the statistical tests chosen are appropriate, given the level of measurement, number of variables, and grouping of the variables. Explain the assumptions of your chosen statistical tests and how your data will meet these assumptions.
- For qualitative studies, describe how the data will be (proposal) or were (manuscript) processed and analyzed.

- Explain the role of the researcher in ensuring ethical assurances and trustworthiness (credibility, dependability, transferability, & confirmability) in the context of the data analysis process.
- For mixed methods studies, include all of the above.

Assumptions

Begin writing here...

Checklist:

- Define what an assumption is from the literature.
- Discuss your study's assumptions and the corresponding rationale underlying them.

Limitations

Begin writing here...

Checklist:

- Define what a limitation is from the literature.
- Describe the study limitations (any threats to internal and external validity as well as reliability for quantitative studies or trustworthiness for qualitative studies).
- Discuss the measures taken to mitigate these limitations.

Delimitations

Begin writing here...

Checklist:

- Define what a delimitation is from the literature.
- Describe the study delimitations along with the corresponding rationale underlying them.

- Explain how these research decisions relate to the existing literature and framework, problem statement, purpose statement, and research questions.

Ethical Assurances

Begin writing here...

Checklist:

- Confirm in a statement the study will (proposal) or did (manuscript) receive approval from the University's Institutional Review Board (IRB) before recruitment and data collection.
- Discuss the three major principles of The Belmont Report (Beneficence, Justice, and Respect for Persons) and demonstrate how your procedures address each principle.
- If there is any risk to participants, discuss the relevant ethical issues and how they will be (proposal) or were (manuscript) addressed.
- Describe how confidentiality or anonymity will be (proposal) or was (manuscript) achieved.
- Identify how the data will be (proposal) or were (manuscript) securely stored following IRB requirements.
- Describe the role of the researcher in the study. Discuss relevant issues, including biases as well as personal and professional experiences with the topic, problem, or context. Present the strategies that will be (proposal) or were (manuscript) used to prevent these biases and experiences from influencing the analysis or findings.
- In the dissertation manuscript only, include the IRB approval letter in an appendix.

Summary

Begin writing here...

Checklist:

- Summarize the key points presented in the chapter.
- Include a transition to the next chapter (no more than a sentence or two).
- Do not introduce any new information in your summary.

Chapter 4: Findings

Begin writing here...

Checklist:

- Begin with the first sentence of the problem and purpose statement. Copy verbatim from Chapter 1.
- Organize the entire chapter around the research questions/hypotheses.

XXX of the Data

Begin writing here...

Checklist:

- For qualitative studies, clearly identify how the trustworthiness of the data was established. Discuss credibility (e.g., triangulation, member checks), transferability (e.g., the extent to which the findings are transferable to other situations), dependability (e.g., an in-depth description of the methodology and design to allow the study to be repeated), and confirmability (e.g., the steps to ensure the data and findings are not due to participant and/or researcher bias).
- For quantitative studies, provide evidence of the psychometric soundness (i.e., adequate validity and reliability) of the instruments from the literature as well as in this study (as appropriate). Do not merely list and describe all the measures of validity and reliability.
- For quantitative studies, address the assumptions of the statistical test(s). Explain the extent to which the data complies with the assumptions of the statistical test(s) and identify any potential factors that might impact the interpretation of findings. Report any

violations to statistical assumptions and describe how they were managed as appropriate, including needed changes.

Mixed methods studies should include discussions of the trustworthiness of the data as well as validity and reliability.

Results

Begin writing here...

Checklist:

- Briefly discuss the overall study. Organize the presentation of the results by the research questions/hypotheses and then the content.
- Objectively report the results of the analysis without discussion, interpretation, or speculation.
- Provide an overview of the demographic information collected. It can be presented in a table. Ensure no potentially identifying information is reported.

Table 1

Participant Demographics

Participant	Role	Years of Experience	Education Level
Lindsay	Manager	11–15	Master's
Rae Ann	Staff Member	1–5	Bachelor's
Ann	Owner	11–15	Master's

Research Question 1/Hypothesis

Text...

Checklist

Report all the results (without discussion) salient to the research question/hypothesis.

Identify common themes or patterns.

Use tables and/or figures to report the results as appropriate.

For quantitative studies, report any additional descriptive information as appropriate.

Include relevant test statistics, *p* values, and effect sizes following APA requirements.

For qualitative studies, describe the steps taken to analyze the data to explain how the themes and categories were generated. Include thick descriptions of the participants' experiences. Provide a comprehensive and coherent reconstruction of the information obtained from all the participants.

For mixed methods studies, include all of the above.

Comparison of Results to the Literature Review

Begin writing here...

Checklist:

Compare the results in light of the existing research and framework (as discussed in Chapters 1 and 2). Briefly indicate the extent to which the results were consistent with existing research and theory.

Format this discussion by research question/hypothesis and then the content. Include citations from Chapter 2. No new literature should be introduced. If you refer to the literature in this section, it should be included in Chapter 2.

- Do not draw conclusions beyond what can be interpreted directly from the results.
- Devote approximately one to two pages to this section.

Summary

Begin writing here...

Checklist:

- Summarize the key points presented in the chapter.
- Include a transition to the next chapter (no more than a sentence or two).
- Do not introduce any new information in your summary.

Chapter 5: Discussion, Recommendations, and Study Summary

Begin writing here...

Checklist:

- Begin with the first sentence of the problem and purpose statement. Copy verbatim from Chapter 1.
- Provide a brief review of methodology, design, results, and limitations.
- Conclude with a brief overview of the chapter.

Discussion

Begin writing here...

Checklist:

- Organize the discussion around the major findings. Support all the conclusions with one or more findings from the study.
- Discuss any factors that might have influenced the interpretation of the results.
- Present the results in the context of the study by describing the extent to which they address the study problem and purpose and contribute to the existing literature and framework described in Chapter 2.
- Describe the extent to which the results are consistent with existing research and theory and provide potential explanations for unexpected or divergent results.
- Identify the most significant implications and consequences of the dissertation (whether positive and/or negative) to society/desired societal outcomes and distinguish probable from improbable implications.

- Emphasize what the results of the study mean with respect to previous research and either theory (PhD studies) or practice (applied studies) and how well the study addressed the research problem.

Recommendations for Practice

Begin writing here...

Checklist:

- Discuss recommendations for how the results of the study can be applied to practice and/or theory. Support all the recommendations with at least one finding from the study and frame them in the literature from Chapter 2. No new literature should be introduced. If you refer to the literature in this section, it should be included in Chapter 2.
- Do not overstate the applicability of the findings.

Recommendations for Future Research

Begin writing here...

Checklist:

- Based on the framework, findings, and implications, explain what future researchers might do to learn from and build upon this study. Justify these explanations.
- Discuss how future researchers can improve upon this study, given its limitations.
- Explain what the next logical step is in this line of research.

Study Summary

Begin writing here...

Checklist:

Provide a strong, concise conclusion to include a summary of the study, the problem addressed, and the importance of the study.

Present the “take-home message” of the entire study.

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Appendix A: XXX

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Include the IRB approval letter.

Appendix B: XXX

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