

# The Impact of Information Reliability and Cloud Computing Efficiency on Website Design and E-Commerce Business in Thailand

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**Abstract:** The security and reliability of cloud computing services continue to be major concerns that hinder their widespread adoption. This study explores how information reliability and cloud computing efficiency influence website design and e-commerce business development decisions on cloud computing. The researchers distributed 379 questionnaires to determine the sample size, resulting in a 46.50% response rate of 46.50% with 186 participants. Various statistical tests, including the t-test, the f-test (ANOVA and MANOVA), multiple correlation analysis and multiple regression analysis, are used to analyse the collected data. The results of the study show a positive correlation and influence between the reliability of information, specifically in terms of confidentiality, stability and verifiability and the decision to design and develop websites. Furthermore, the efficiency of cloud computing, particularly in communication and processing, demonstrates a positive relationship and impact on website design and development. These findings highlight the importance for e-commerce business leaders to understand the importance of information reliability and cloud computing efficiency. Recognizing these factors can enhance their competitive advantage in the e-commerce industry and foster consistent and sustainable growth. Research also highlights the contribution of cloud technology and security to increasing confidence in the development of e-commerce businesses.

**Keywords:** Cloud Computing, Information Reliability, Efficiency of Cloud, Website Design, E-Commerce

## Introduction

The emergence of cloud computing has transformed the e-commerce landscape, enabling enterprises to reduce software and hardware investment and cut the costs of enterprise construction and maintenance by swiftly deploying cloud configuration and using on-demand payment models. Cloud computing provides a flexible and scalable IT management model, allowing businesses to adapt their IT resources to changing needs without physical installations. Utilize virtualization to support business applications and minimize IT investment by selecting technologies from cloud service providers. This approach is widely used by various companies to serve a large customer base across multiple devices, with applications in cloud CRM, ERP, web hosting, accounting

and warehouse management systems (Almarabeh and Majdalawi, 2019).

The integration of cloud computing profoundly impacts an organization's IT framework, including network architecture, software development, data handling and storage resource allocation. It also transforms the organization's IT infrastructure, allowing companies to improve operational efficiency and reduce capital expenditures on IT assets (Senarathna *et al.*, 2018). The emergence of cloud computing has made it possible to realize e-commerce at low cost and also brought new communication modes such as initiative and user care into e-commerce. However, the complexity and dynamics of cloud computing have introduced new challenges for enterprises building e-commerce platforms based on

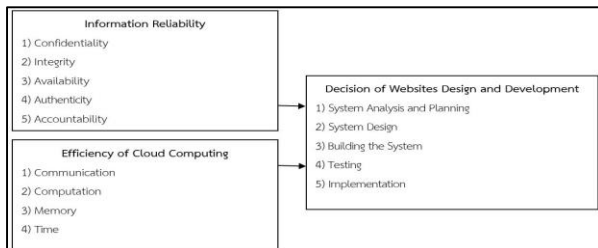
cloud computing. Its security problems also bring new risks to e-commerce enterprises. The influence of risk on relationships in cloud computing has not been thoroughly explored and understood (Hodosi *et al.*, 2021). This research gap has left a significant area unexamined, potentially hindering a comprehensive understanding of how risk factors impact the dynamics within cloud computing environments.

This study assessed the reliability and security that influence the adoption of cloud computing, to reduce IT resource expenses for e-commerce firms in Thailand. The findings will offer crucial information to entrepreneurs in developing IT-driven strategies that cater to their target audience, thus boosting their market competitiveness. The literature review section highlighted the significance of three main areas pertinent to this study information reliability, the efficiency of cloud computing and website design and development decision-making.

This study aims to assess the reliability of information and the effectiveness of cloud computing in the development of e-commerce websites. The CIA triad framework is used to assess information reliability, considering confidentiality, integrity and availability. Cloud computing is examined for its ability to provide scalability, cost-effectiveness and flexibility while ensuring system reliability and security. The conceptual research model, presented in Fig. 1, illustrates the relationship between these constructs and includes variables such as system performance, data privacy and user satisfaction. The goal is to gain a comprehensive understanding of the factors influencing the reliability and efficiency of e-commerce websites and to provide guidance for decision-making in their development.

### Information Reliability

In this study, the CIA security triad, a globally acknowledged model in information security, is used to gauge safety and reliability. The CIA acronym stands for confidentiality, integrity and availability, three core principles that form the bedrock of information security and steer the development of an organization's security policies and procedures (Kidd, 2020). The CIA security triad consists of three fundamental functions.



**Fig. 1:** The conceptual framework models

1. Confidentiality, essential to protect sensitive data from unauthorized access, covers the protection of data at rest, in transit and during usage. Encryption, access controls and data masking are common techniques to ensure confidentiality
2. Integrity, critical to maintaining unaltered information despite unauthorized actions, defends against unauthorized modification, deletion, or addition of data. Digital signatures, message authentication codes and data hashing are prevalent methods used to preserve integrity
3. Availability, the key to ensuring that information and systems are accessible to authorized users when needed, protects against denial-of-service attacks and ensures that systems are resilient and can endure failures. Load balance, redundancy and disaster recovery planning are standard techniques for maintaining availability

Security professionals understand that computer security extends beyond the CIA triad. ISO-7498-2 introduces additional attributes for computer security:

1. Authenticity, essential to verify that information and communication originate from a trusted source, defends against impersonation, spoofing and other forms of identity fraud. Authentication, digital certificates and biometric identification are common techniques for asserting authenticity
2. Accountability, necessary to ensure that a party cannot deny initiating or receiving a message or transaction, protects against message tampering and replay attacks. Digital signatures, message authentication codes and timestamps are common techniques for establishing nonrepudiation. As detailed previously, this security framework was used in this study to evaluate data trustworthiness throughout the creation of a cloud computing website

### Cloud Computing Efficiency

Previous studies typically assess cloud-computing performance using four key aspects: Communication, computation, memory and time (Hu *et al.*, 2012; Othman *et al.*, 2013; Shao *et al.*, 2013). First, communication is a critical factor in determining the efficiency of cloud computing, involving the evaluation of data transfer rates within internal services, across different cloud platforms, or between external users and cloud services. Effective communication ensures smooth data exchange, promotes productive collaboration and improves overall performance. Second, computation refers to data processing and operations within cloud systems. The ability to perform computations efficiently is essential for delivering optimal results and meeting user expectations. By leveraging the computational

capabilities of cloud platforms, tasks can be executed quickly and accurately, thus boosting efficiency. Third, memory in cloud computing is designed for temporary data storage, particularly when sourced from slower-access hard disks. By managing memory effectively, cloud systems can quickly access and retrieve data, minimizing delays and maximizing performance. Efficient memory management is crucial for smooth operations and reduced processing time. Lastly, time management is vital to the efficiency of cloud computing. The ability to complete tasks within set time frames is the key to the success of any project. Efficient time management ensures the timely completion of work, allows effective resource allocation and helps achieve project goals. Finished tasks on time improved overall efficiency and contributed to project success.

In summary, the efficiency of cloud computing can be encapsulated into four main components: Communication, computation, memory and time management. By focusing on these areas, organizations can tap into the full potential of cloud computing, ensuring smooth operations, peak performance and successful project outcomes.

#### *Website Design and Development Decision*

The Software Development Lifecycle (SDLC) serves as a blueprint in the software industry for the conceptualization, design and delivery of software products that are high quality, reliable, cost-effective and timely (Tsai *et al.*, 1997). There are several SDLC process models, including waterfall, iterative, spiral, big bang and agile models. Each SDLC process encompasses a unique set of activities aimed at the development of software products (Shylesh, 2017). In this study, an iterative model was used to evaluate decisions related to website design and development for e-commerce in the context of cloud computing.

Decisions about website design and development can be segmented into several stages based on the iterative model. The initial stage is system analysis and planning, which involves evaluating the system requirements and defining the roles and responsibilities of the involved personnel. This stage helps identify the specific tasks and functions that the system will execute. The next stage, system design, focuses on formulating the actual system design. This encompasses the design of various components such as the product advertisement system, buyer contact feature, membership functionality, sales portal system, monetary calculation system, inventory system, etc., with the goal of creating a system that effectively fulfills the desired functionalities. Once the design is approved, the system is constructed according to the plan developed in the previous stage. This involves implementing the design and building of the

system according to the responsibilities assigned to the involved personnel.

Upon completion of the system, it undergoes comprehensive testing to verify its functionality and identify any bugs or issues that need rectification. This testing process is vital for identifying and correcting any defects, thereby enhancing the system's performance. The system's inspection and evaluation can be performed by an external organization or an internal team, which may be better equipped to detect potential weaknesses. The final stage, implementation, involves the system's installation and the subsequent maintenance needed to ensure its seamless operation. This includes regular checks and updates to ensure that the system is operating correctly and achieving the intended objectives. In summary, the decision-making process for website design and development can be broken down into several stages: System analysis and planning, system design, system building, testing and implementation. Each stage plays a critical role in the successful development and deployment of a functional website system. In this study, the impact of evaluating all four stages on decision-making about website design and development was considered.

#### *Hypothesis*

Information reliability and cloud computing efficiency have a positive relationship and impact on the decision on website design and development:

- H<sub>1</sub>: The reliability of information in the confidentiality aspect is related to and affects the decision on website design and development
- H<sub>2</sub>: The reliability of information in the aspect of integrity is related to and affects the decision on website design and development
- H<sub>3</sub>: Information reliability in the aspect of availability is related to and affects the decision on website design and development
- H<sub>4</sub>: The reliability of information in the aspect of authenticity is related to and affects the decision of website design and development
- H<sub>5</sub>: Information reliability in the accountability aspect is related to and affects the decision on website design and development
- H<sub>6</sub>: The efficiency of cloud computing in the communication aspect is related to and affects the decision on website design and development
- H<sub>7</sub>: The efficiency of cloud computing in the aspect of computation is related to and affects the decision on website design and development
- H<sub>8</sub>: Cloud computing efficiency in the aspect of memory is related to and affects the decision of website design and development
- H<sub>9</sub>: The efficiency of cloud computing in the aspect of processing time is related to and affects the decision on website design and development

## Materials and Methods

### Process and Methods for Sample Selection

The study analyzed 27,946 e-commerce executives in Thailand using a stratified random sampling method. This involved classifying executives by location, determining the sample group based on proportion and then conducting random sampling. Through the lottery method, 379 questionnaires based on the Krejcie and Morgan (1970) table were sent and 186 complete and accurate sets were received, resulting in a response rate of 46.50%. Aaker *et al.* (2001) suggest that a response rate over 20% is generally acceptable, indicating that the collected data are sufficient for effective analysis.

### Measurement of Variable Characteristics

This study examined two main independent variables, information reliability and efficiency of cloud computing. The reliability variable can be classified into five aspects based on the CIA security triad framework as follows:

1. Confidentiality, which involves the use of cloud computing systems to protect secure and private information
2. Data Integrity, which focuses on preventing data alteration and ensuring information accuracy
3. Data availability, which involves providing convenient, fast and accurate data services to customers
4. Authenticity, which verifies the user identity and prevents data leaks
5. Accountability, which includes auditing, tracking data usage, detecting and preventing intrusions and taking legal action

The efficiency variable used to evaluate cloud computing performance can be categorized into four aspects as follows:

1. Communication, which focuses on convenient and fast data transmission between departments
2. Computation, which ensures accurate data linkage
3. Memory, which provides sufficient storage space for data
4. Processing time, which covers the speed of displaying images, text and other data

The SDLC model was used to evaluate decisions related to website design and development for e-commerce in the context of cloud computing. Based on this model, the design and development of websites can be considered as a dependent variable that can be divided into five aspects:

1. System analysis and planning, which aims to achieve predetermined objectives

2. System design, which involves organizing the layout of the website
3. Building the system, which includes controlling device access and data
4. Testing, which ensures accurate data linkage to target destinations
5. Implementation involves providing clear and user-friendly documentation and user manuals

### Quality of Tools

The researcher's reliability test, utilizing the item-total correlation technique, yielded discriminant power values ranging from 0.503-0.794. These results were echoed in the domains of cloud computing efficiency and website design and development, with discriminant power values between 0.533-0.875 and 0.512-0.863 respectively. This aligns with the acceptable threshold (Nunnally and Bernstein, 1994) of 0.40.

Discriminant power is a statistical metric that gauges how well a variable or set of variables can differentiate between distinct groups. It is commonly applied in discriminant analysis, a technique used to categorize observations into predefined classes. This study utilized Cronbach's alpha to evaluate internal consistency, with alpha coefficients ranging from 0.739-0.794 overall and 0.766-0.894 for cloud computing efficiency specifically. The acceptable alpha values indicate robust internal reliability across the research instruments. By computing discriminant power and alpha, the analysis demonstrates the variables aptly distinguish groups and the scales exhibit adequate inter-item correlations.

For website design and development decisions, the alpha coefficient ranged from 0.765-0.887. This exceeds (Nunnally and Bernstein, 1994) recommended reliability threshold of 0.70, further affirming the tool's quality and suitability for data collection within sample groups.

### Research Statistics

This study used multiple regression analysis to examine the influence of information reliability and cloud computing on the decision to design and develop e-commerce businesses in Thailand. The equation is as follows:

$$DWT = \beta_0 + \beta_1 COT + \beta_2 INT + \beta_3 AVT + \beta_4 AUT + \beta_5 ACT$$
$$DWT = \beta_0 + \beta_1 CMT + \beta_2 CPT + \beta_3 MET + \beta_4 TIT \quad (1)$$

The reliability variable consists of four aspects as described in the measurement of variable characteristics section. The four aspects used in the equation are as follows:

- COT* : Confidentiality associated with cloud computing usage  
*INT* : Integrity of the data utilized  
*AVT* : Availability of data in the cloud  
*AUT* : Accuracy of the user identity

**ACT** : The measure of responsibility

The efficiency of cloud computing variable consists of four aspects, which are defined as follows:

**CMT**: Communication between the data and the department

**CPT** : Quality of connectivity

**MET**: Data storage capacity

**TIT** : Processing time

The dependent variable is the decision of website design and development, which is defined as DWT.

## Results and Discussion

Previous studies have focused on cloud computing and e-commerce satisfaction. Researchers found that user-friendliness of the web platform is a crucial criterion for end consumers, especially since most applications migrate to the cloud (Lula *et al.*, 2021). In terms of security, e-commerce satisfaction is significantly influenced by security and the availability of various e-payment methods (Khalid *et al.*, 2018). Additionally, the quality of cloud service is an important aspect of the success of any global business, which affects the decision to develop e-commerce on cloud computing (Agarwal and Dhingra, 2023).

This study investigates the impact of data reliability and cloud computing efficiency on decision-making in the design and development of websites for e-commerce businesses in Thailand. Additionally, it examines the relationship and effects of data credibility and cloud computing efficiency on these decisions. Thai e-commerce leaders prioritize information reliability, focusing on confidentiality, integrity, availability, authenticity and accountability, which is consistent with research showing a positive correlation between perceived security and both the usefulness and adoption of cloud computing. Despite security risks, there is a strong intention to integrate cloud computing, which is seen to be effective across communication, computation, memory and processing time domains. Furthermore, Thai e-commerce executives emphasize the importance of systematic decision-making in the design and development of websites, particularly in the stages of analysis/planning, design, testing and implementation. The research findings are as follows.

Table 1 illustrates that Thai e-commerce executives place high importance on information reliability, focusing on confidentiality, integrity, availability, authenticity and accountability. These findings support hypotheses H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub>, H<sub>4</sub> and H<sub>5</sub>, suggesting that the reliability of information across these five variables influences and shapes decisions on website design and development. This is consistent with the findings of Hassan *et al.* (2022), who discovered a robust positive correlation between perceived security, argument quality, source credibility and perceived usefulness. Their study also

highlighted significant relationships between perceived usefulness and both the attitude towards and intention to adopt cloud computing, as well as between the attitude towards cloud computing and the intention to adopt it. Despite security risks, this study suggests that Thai e-commerce businesses have a strong intention to incorporate cloud computing.

Table 2 confirms the widespread belief in the effectiveness of cloud computing in several aspects, including communication, computation, storage and processing speed. It showcases the efficiency of cloud technology, illustrating its broad acceptance and application in multiple sectors. These results corroborate hypotheses H<sub>6</sub>, H<sub>7</sub>, H<sub>8</sub> and H<sub>9</sub>, which propose that the efficiency of cloud computing is related to and influences decisions in website design and development.

Table 3 illustrates that executives in Thailand's e-commerce sector have firm views on the decision-making procedures for website design and development. Specifically, they underscore the importance of system analysis/planning, system design, system testing and implementation. The table further highlights that these executives place a high value on the decision-making process for website design and development, with a focus on key aspects such as system analysis/planning, system design, system testing and implementation.

**Table 1:** The opinion on the reliability of information

Information reliability	$\bar{x}$	S.D.	Opinion level
Confidentiality (COT)	4.09	0.51	High*
Integrity (INT)	3.91	0.75	High*
Availability (AVT)	3.99	0.69	High*
Authenticity (AUT)	4.00	0.66	High*
Accountability (ACT)	3.73	0.80	High*
Overall	3.95	0.36	High*

\*  $\bar{x} = 3.51-4.50$  means that the level of opinion is high

**Table 2:** The opinion on the efficiency of cloud computing

Information reliability	$\bar{x}$	S.D.	Opinion level
Communication (CMT)	4.42	0.48	High*
Computation (CPT)	3.58	0.85	High*
Memory (MET)	3.77	0.65	High*
Processing time (TIT)	3.55	0.83	High*
Overall	3.83	0.57	High*

\*  $\bar{x} = 3.51-4.50$  means that the level of opinion is high

**Table 3:** The opinion on the decision of website design and development

Information reliability	$\bar{x}$	S.D.	Opinion level
System analysis/planning	3.94	0.56	High*
System design	4.27	0.50	High*
Building system	4.28	0.37	High*
Testing	4.14	0.38	High*
Implementation	4.02	0.35	High*
Overall	3.83	0.57	High*

\*  $\bar{x} = 3.51-4.50$  means that the level of opinion is high

The study investigates the relationship between various independent variables and their impact on website design and development decisions. Tables 4 and 6 reveal the interconnections between these variables, suggesting potential multi-collinearity. Table 5 shows that confidentiality and accountability significantly influence these decisions. Furthermore, Table 7 highlights the crucial role of computational efficiency in cloud computing in the decision-making process for website design and development. Table 4, the researchers examine the interconnections between independent variables within each aspect and express concerns about multicollinearity. To evaluate this, they calculated the Variance Inflation Factors (VIFs) to gauge the extent of multicollinearity among the independent variables. The VIFs for the variables associated with information reliability range from 1.071-1.676, all below the threshold of 10. This suggests that while there is a relationship between the independent variables, it is not statistically significant (Black, 2010).

Table 5 displays the results concerning the reliability of information on Confidentiality (COT) and Accountability (ACT) and their impact on the comprehensive decisions for website design and Development (DWT). These findings suggest a positive and statistically significant relationship between COT, ACT and DWT at a 0.05 level, leading to the acceptance of hypotheses 1-5. However, no correlation was identified between Integrity (INT), Availability (AVT), Authenticity (AUT) and the overall DWT decisions.

**Table 4:** Correlation analysis of data reliability with decision

Variable	DWT	Confidentiality (COT)	Integrity (INT)	Availability (AVT)	Authenticity (AUT)	Accountability (ACT)	VIFs
$\bar{x}$	4.13	4.090	3.9100	3.9900	4.0000	3.7300	-
S.D.	0.22	0.510	0.7500	0.6900	0.6600	0.8000	-
DWT	-	0.200*	0.0690	0.1100	0.1470*	0.3960	-
Confidentiality (COT)		-	-0.193*	-0.1440	-0.1660*	-0.0180	1.071
Integrity (INT)			-	0.6070*	0.0980	-0.0360	1.676
Availability (AVT)				-	0.0120	0.0590	1.636
Availability (AVT)					-	0.5220*	1.468
Authenticity (AUT)						-	1.433

\*Statistically significant at the level of 0

**Table 5:** Testing the relationship of regression coefficients with the decision on website design and development

Information reliability	The decision of website design and development overall				
	Regression coefficient	Standard error	t	p-value	
Constant ( $\alpha$ )	3.1930	0.190	16.7810	<0.00010	
COT	0.0950	0.029	3.3230	0.00100	
INT	0.0280	0.025	1.1360	0.25700	
AVT	0.0190	0.026	0.7070	0.48100	
AUT	-0.0150	0.026	-0.5890	0.55600	
ACT	0.1140	0.021	5.3790	<0.00010	

F = 10.112 p<0.0001 Adj R<sup>2</sup> = 0.198; \*Statistically significant at the level of 0.05

Table 6 presents the interrelationships among the independent variables within each aspect, posing potential issues of multicollinearity. To address this, the researchers evaluated the Variance Inflation Factors (VIFs) to gauge the degree of multicollinearity among the independent variables influencing cloud computing efficiency. The VIF values for these variables fluctuated between 1.386 and 2.549, all under the threshold of 10. This indicates that while there is a relationship among the independent variables, it is not statistically significant (Black, 2010). From Table 7, it can be inferred that cloud computing efficiency, particularly in terms of Computation (CPT), plays a significant and positive role in the overall decision-making process related to Website Design and Development (DWT). This relationship was found to be statistically significant at a 0.05 level, leading to the acceptance of hypothesis 7. However, it is important to note that other factors such as Communication (CMT), Memory (MET) and processing Time (TIT) were not found to be correlated with the overall decision-making process of Website Design and development (DWT). In other words, these factors did not have a significant impact on the decisions made in this context. Thus, the findings in Table 7 underscore the importance of considering the efficiency of cloud computing, specifically in terms of computation, when making decisions regarding website design and development. This information can be valuable to professionals seeking to optimize their processes and improve overall efficiency in the field.

**Table 6:** Correlation analysis of cloud computing efficiency with overall website design and development decisions

Variable	DWT	Communication (CMT)	Computation (CPT)	Memory (MET)	Processing time (TIT)	VIFs
$\bar{x}$	4.13	4.420	3.580	3.770	3.550	-
S.D.	0.22	0.480	0.850	0.650	0.830	-
DWT	-	0.356*	0.465*	0.288*	0.380*	-
Communication (CMT)		-	0.605*	0.344*	0.556*	1.658
Computation (CPT)			-	0.513*	0.716*	2.549
Memory (MET)				-	0.453*	1.386
Processing time (TIT)					-	2.198

\*Statistically significant at the level of 0.05

**Table 7:** Examination of the relationship of the regression coefficient with the website design and development decisions of e-commerce business executives in Thailand overall

Cloud Computing Efficiency	The decision of website design and development overall			
	Regression coefficient	Standard error	t	p-value
Constant ( <i>a</i> )	3.499	0.143	24.4480*	<0.00010
Communication (CMT)	0.047	0.038	1.2380	0.21700
Computation (CPT)	0.084	0.027	3.1710*	0.00200
Memory (MET)	0.018	0.026	0.7210	0.47200
Processing time (TIT)	0.016	0.025	0.6240	0.53300

F = 13.482 p<0.0001 Adj R<sup>2</sup> = 0.213; \*Statistically significant at the level of 0.05

This study examines the impact of information reliability and cloud computing efficiency on decision-making in website design and development in the Thai e-commerce industry. Executives prioritize system analysis, design, testing and implementation. The study finds a positive relationship between confidentiality, accountability and decision-making, but no correlation with integrity, availability and authenticity. Multicollinearity concerns are raised but not statistically significant. Cloud computing efficiency, particularly in computation, plays a significant and positive role in decision-making. Factors such as communication, memory and processing time do not significantly influence decisions. These findings can help professionals improve efficiency in website design and development.

### Research Contribution

Thailand's e-commerce sector has experienced significant growth in the last three years, a surge largely attributed to the COVID-19 pandemic that emerged in 2020 (E-commerce in Thailand, 2023). This growth has been propelled by the adoption of cloud computing, which has provided businesses with unprecedented flexibility and convenience, among other advantages. A notable benefit is the reduction in costs, as cloud providers typically offer a pay-per-use subscription model that eliminates the expense of unused data storage and reduces the need for large initial investments in infrastructure. Cloud computing also guarantees automatic updates for software, bolstering the confidence of businesses and investors looking to expand e-commerce through this

technology, potentially transforming Thailand's digital market landscape.

For Thai e-commerce businesses to improve their security and remain competitive, leaders should focus on three essential strategies. Initially, they must prioritize the confidentiality of information to reduce the risk of theft and boost trust, utilizing tools such as encryption and secure storage systems to ensure access is restricted to authorized personnel only. Second, it is imperative to ensure the authenticity of information by implementing robust systems that define clear rules and access conditions, preventing unauthorized use and bolstering both the security and the credibility of the organization. Lastly, acknowledging the value of reliable information and the efficiency offered by cloud computing is vital. Cloud computing allows companies to enhance their market position by streamlining operations, optimizing data management and gaining a competitive advantage.

The benefits of cloud computing are extensive, offering scalability, cost savings and adaptability. It enables real-time data access and sharing, expediting decision-making processes and improving customer service quality. Additionally, it serves as a secure and reliable foundation for data storage and management, minimizing the risks associated with data loss or breaches.

The study concludes that Thai e-commerce leaders should prioritize safeguarding information confidentiality and authenticity while leveraging cloud computing's efficiency. By focusing on these key areas, they can ensure the dependability, trustworthiness and overall success of their online marketplaces.

## Conclusion

The study examined how information reliability and cloud computing efficiency affect decision-making in Thai e-commerce. The findings revealed a positive link between confidentiality, accountability and decision-making, but no correlation with integrity, availability and authenticity. Cloud computing efficiency, particularly in computation, played a crucial and positive role in decision-making. Communication, memory and processing time were found to have no significant effect on decision-making. These results can serve as guidelines for practitioners to develop and improve their e-commerce strategy. Research has limitations, particularly related to the sample. First, the sample consists of 379 Thai executive e-commerce companies located in different regions and have different product sales. Therefore, caution should be exercised when generalizing these research findings. Second, this research does not cover all types of e-commerce, focusing only on the B2C e-commerce business. Lastly, this research used the CIA security triad and SDLC to examine reliability and decision-making with the development of B2C e-commerce development; therefore, some types of e-commerce business were not included in this research. The results of this study have several practical implications for the website design of Thai e-commerce companies. The government should advocate for the effective use of technological tools and reliable e-commerce platforms and establish robust upstream links for e-commerce transactions within the country. Future research could explore how the efficiency of the e-commerce ecosystem in Thailand impacts the country's business landscape.

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## Author's Contributions

**Charuay Savithi:** Provided substantial support, shaped the article, and conducted a thorough review of the

final manuscript. Additionally, assumed a supervisory role throughout the project.

**Arisaphat Suttidee:** Assumed primary responsibility for ideating and developing the concept, formulating a research plan, devising the methodology, collecting and analyzing data, evaluating performance, and writing the article.

## Ethics

This study constitutes a substantial and novel contribution to the scholarly community. It is original work that has neither been submitted nor published elsewhere. The authors have thoroughly examined and complied with all the prerequisites for this article and have adhered to the ethical standards of research. Participants received a data privacy and consent form prior to completing the survey. The Institutional Review Board (IRB) of Mahasarakham University has provided ethical approval for the conduct of this study.

## Data Availability

Data supporting the findings of this study can be requested from the corresponding author by email at arisaphat.s@msu.ac.th. The purpose of providing the data is to evaluate the reliability of information and the efficiency of cloud computing in the decision-making process for website design and e-commerce business development in Thailand, while also maintaining the privacy of business executives and companies.

## Conflicts of Interest

The authors declare that there are no conflicts of interest in this study. However, a potential conflict can arise as the company used the findings of this study to compete in the e-commerce industry in Thailand.

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