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Developing the Readiness and Success Model for Information System Implementation in the Indonesian Equestrian Industry

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Abstract

This research is dedicated to examining the integration of the technology readiness model into the information system (IS) success model, particularly within the nuanced framework of evaluating readiness and success factors for integrating information systems in the distinctive context of the equestrian industry in Indonesia. Echoing the evolutionary patterns observed in numerous information systems studies, the development of IS models typically involves the strategic adoption, combination, and adaptation of existing models. In alignment with this trend, our research efforts to construct a comprehensive model rooted in the principles of input-process-output logic, drawing inspiration from prevalent process and causal models within the domain of information systems success. The resulting model exhibits a sophisticated structure, encompassing 12 variables and 63 indicators that intricately capture the relationships between variables through the formation of 30 links. As the research progresses into the implementation stage, the model undergoes further refinement, culminating in the creation of a detailed assessment instrument. Despite potential limitations related to the assumptions and researchers' perspectives inherent in model development studies, these efforts make significant contributions to the theoretical landscape by introducing novel models that enrich the understanding of IS success. Furthermore, this research emphasizes the significance of transparency throughout the entire process, spanning from model development to the proposed model and the instruments used for data collection. This emphasis on transparency not only bolsters the scientific rigor of this research but also holds practical implications for future studies focusing on the readiness and success of implementing information systems in the equestrian industry in Indonesia. The findings from this research are expected to offer crucial insights and guidance for the development and enhancement of information systems in this unique and specific domain, contributing to both theoretical and practical advancements in the field.

Keywords: Factor Influencing, Information System, Development Model, Equestrian Industry, Indonesia.

1. Introduction

Indonesia's Equestrian industry, with all its uniqueness and potential, plays a key role in the country's sports and entertainment sector [1], [2]. The successful implementation of information systems (IS) has been a major concern in recent years [3], [4]. Digital transformation has penetrated various sectors, including the sports industry, where information systems play an important role in improving efficiency, effectiveness, and quality of services [5], [6]. However, the implementation of IS does not always go smoothly and requires careful evaluation related to its readiness and success factors. The TRI 2.0 model is a framework used to understand the factors influencing the success of Information System (IS) implementation [7]. This model has been developed in conjunction with the advancement of science and technology. In this study, the TRI 2.0 model is adopted as one of the frameworks that contribute to providing a comprehensive foundation. The model incorporates aspects such as trust, social influence, and the quality standard ISO/IEC 25010:2023 as additional variables. By utilizing the TRI 2.0 model, the research aims to formulate a comprehensive perspective on the success factors of IS implementation [8], [9].

Research in this field shows that previous models are often adopted, combined, and adapted to develop new models appropriate to the context and purpose of the study [1] – [5]. The development of an IS model becomes essential to understand the complexity of the factors involved in IS implementation, including psychological, technical, and social

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factors. In the context of the Equestrian industry, where interactions between people, technology, and the social environment play a role, a deep understanding of IS readiness and successful implementation is crucial [6], [7].

In this study, we aim to clarify the connection between technological readiness criteria and the success of implementing information systems (IS) in the Indonesian equine sports industry. By incorporating well-established models like TRI 2.0 and the IS success model, and introducing variables such as confidence, social influence, and ISO/IEC 25010:2023, our goal is to address existing challenges and offer a more comprehensive understanding of the factors influencing successful IS implementation in this industry.

To achieve this objective, two overarching research questions have been formulated to guide our investigation. The first question explores the relationship between technological readiness factors and the successful implementation of IS in the equine sports industry. The second question delves into the integration of the technological readiness model and the IS success model within the specific context of the equine sports industry. This research holds the potential to deepen our understanding of the intricate dynamics between technological readiness factors and success in IS implementation within the unique environment of the equine sports industry in Indonesia.

The paper follows a structured format, beginning with an introduction to the research program and its objectives. Subsequently, the literature review provides insights into the theoretical foundations and related research, followed by an explanation of the research methodology. The study's results and their analysis are thoroughly discussed, concluding with summaries of the findings and their implications.

2. Literature Review

Along with the development of the world of information technology, the implementation of information systems (IS) has become a major concern in various industries, including the horse sports industry in Indonesia [17], [18]. Although the implementation of IS has great potential benefits, success in implementing these systems is not always easy. Before achieving these benefits, the first challenge that must be faced is the successful implementation of IS itself. In other words, before an organization can enjoy the benefits offered by the IS, such as increased efficiency or better decision-making, it is crucial to overcome this challenge and ensure that the IS is implemented successfully and functions as desired in the context of the equestrian industry in Indonesia [19]–[21]. This success has a significant impact, as failures in implementation not only impact financial losses but can also affect the business continuity of the system owner [8].

In the context of evaluating successful IS implementation, many factors need to be considered. Several studies on the success of information systems [6], [9]–[12] have identified success criteria related to efficiency, effectiveness, user satisfaction, and fulfillment of requirements. However, it often happens that although the system has been successfully developed technically, the expected benefits are not achieved according to the original plan [13], [14]. For example, in the context of information systems integration within the equestrian industry, an understanding of integration and the factors affecting it becomes an important initial stage [29]. The concept of systems integration may also involve an exchange between the terms "information systems" and "information technology" [22]. In addition, information systems integration is not only limited to technical aspects but also involves autonomy, diversity, and distribution of business functions within equestrian organizations [30].

To answer this complex challenge of IS implementation, many studies have developed various models and theories. Some of the models used in this study include the TRI 2.0 model, the IS success model, and the addition of three variables, namely trust, social influence, and conformance to ISO/IEC 25010:2023 quality standard.

In the context of this research, ISO/IEC 25010:2023 is used as a quality standard that can be integrated into the research variables. This standard covers various software quality characteristics, such as reliability, efficiency, security, and user satisfaction [31], [32]. By incorporating ISO/IEC 25010:2023 as a variable, this research aims to evaluate the extent to which the implementation of information systems (IS) in the horse sports industry in Indonesia meets the established quality standards. In this context, the research may determine the extent to which IS in the industry complies with or fulfills the quality characteristics described in ISO/IEC 25010:2023. The use of this quality standard can provide a more comprehensive view of the success of IS implementation, considering aspects such as functionality, performance, and security. It is important to note that this research not only considers factors from specific models but

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also integrates industry quality standards to gain a more holistic understanding of the success of IS implementation in the context of the horse sports industry. These models are often adopted, combined, and adapted to create a framework appropriate to the research context [9], [17]–[21]. Beyond exploring various models, this study primarily aims to assess the readiness and successful implementation of information systems (IS) in the Indonesian horse sports industry. Through a nuanced examination of the intricate relationships among factors influencing IS implementation, this research strives to make a substantial contribution to comprehending and establishing best practices for addressing the challenges associated with IS implementation in the context of the equine sports industry.

3. Research Method

The first stage is conducting a literature review by reading relevant literature related to the case study in this research. Next is the development of the model, in which the adopted model is based on four system readiness variables, namely: optimism (OPT), innovativeness (INV), discomfort (DCF), and insecurity (ISC) which were adopted from [22], I added 1 system readiness variable, namely social influence (SIF) adopted from [23]. And combining it with the five variables of the IS success model from [24], namely: information quality (INQ), system quality (SYQ), service quality (SVQ), user satisfaction (USF), and integration system success (ISS). In the process stage, system quality testing uses standardization from ISO/IEC 25010:2023 comprising the nine quality characteristics: Functional Suitability, Performance Efficiency, Compatibility, Interaction Capability, Reliability, Security, Maintainability, Flexibility, and Safety [25]. And in the process stage, I added 1 variable, namely trust (TRS) which was adopted from [26].

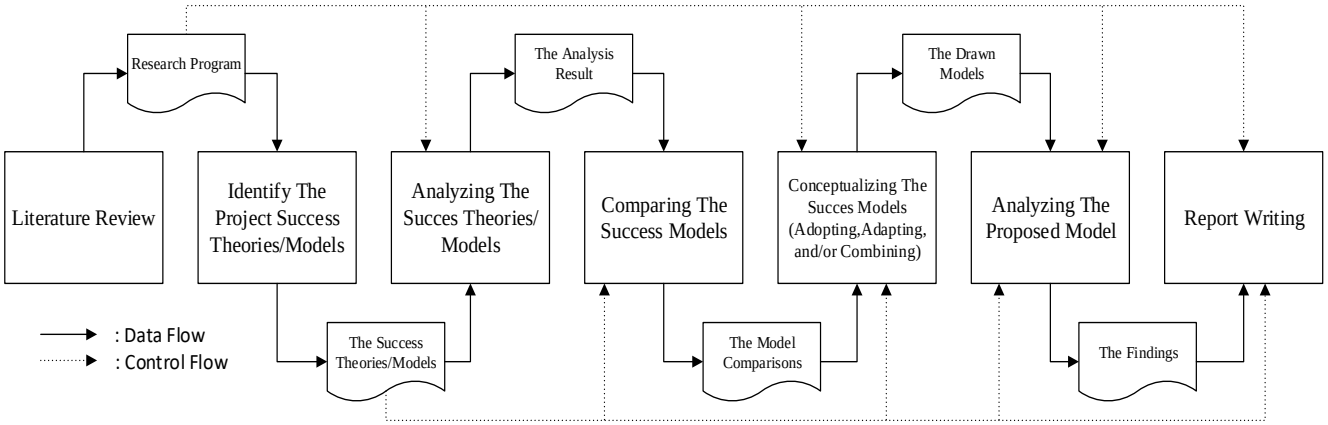

Figure 1. Research Design

The research process unfolds in several key stages. It commences with the development of the research design, progressing to the crafting of instruments, specifically the design of questionnaires. Subsequently, the focus shifts to data collection, encompassing decisions on the study's population and sample size. Following the collection of data, thorough analysis and discussion ensue, culminating in the interpretation of results. Ultimately, the research findings are used to draw conclusions, and recommendations for future research are encapsulated in a comprehensive research report.

Table 1. List of the theories and basic models

List of the Theorist and Basic Models	Reference
Information Processing Theory	[37], [38]
IS Success Models	[10], [11], [13], [15], [22], [23], [27], [39]–[41]
Technology Readiness Model	[7], [11]–[14], [38], [41]–[43]
Professional and Causal models of a model	[23], [33]–[35], [38], [41], [43], [44]

4. Result and Discussion

Research on the readiness and success of information system implementation in the Indonesian equestrian industry has been carried out through the adoption of a comprehensive model. This model integrates the TRI 2.0 model, the IS

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success model, and three additional variables: trust, social influence, and ISO/IEC 25010:2023 quality standards. By combining these elements, the integrated model offers a thorough framework for evaluating the diverse factors that play a role in the successful implementation of information systems within the distinctive context of the equestrian industry.

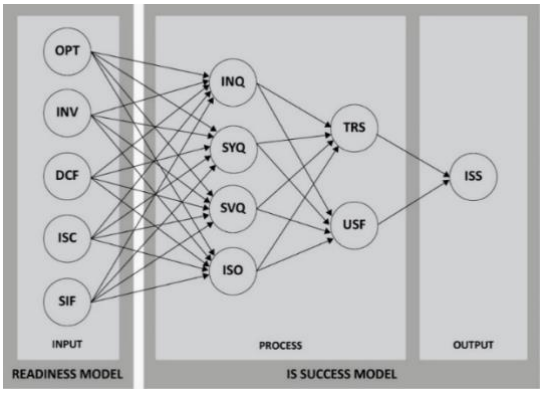

Figure 2. ISO/IEC Quality Control

The readiness aspect in this model is built on four system readiness variables: optimism (OPT), innovation (INV), discomfort (DCF), and insecurity (ISC) [22]. To enrich this aspect, a new variable, social influence (SIF), has been added, referring to the work of Oduor, Alahäivälä, and Oinas-Kukkonen [33], which recognizes the influence of external social factors on system readiness. This integration is designed to capture the complex relationships between individual optimism, innovation, discomfort, insecurity, and external social influences in the context of equestrian industry.

Furthermore, extending the model, the success aspects of IS include five variables: information quality (INQ), system quality (SYQ), service quality (SVQ), user satisfaction (USF), and system integration success (ISS) [31]. These dimensions ensure that the success of information system implementation is assessed in various dimensions, including information quality, the system itself, services provided, user satisfaction, and overall system integration success.

At the process stage, system quality assessment uses the renowned ISO/IEC 25010:2023 standard, covering nine quality characteristics: Functional Suitability, Performance Efficiency, Compatibility, Interaction Capability, Reliability, Security, Maintainability, Flexibility, and Safety [25]. This standard approach ensures a comprehensive evaluation of the technical aspects of the implemented information system. Furthermore, the integration of trust variables (TRS) from the work of Dorodchi, Abedi, and Cukic [32] emphasizes the importance of trust as an important component in the system quality assessment process.

Table 2. Explanation of Research Variables [22]-[26]

Variable	Definition
OPT	A positive view of technology and a belief in greater control, flexibility, and efficiency in human life.
INV	Tendency to be a pioneer, leader, or opinion shaper in the use of technology.
DCF	Perception of a lack of control over technology and a sense of pressure in using it.
ISC	Disbelief in technology and skepticism about the ability to use it correctly.
SIF	Focusing on how individuals are influenced by others in decision-making regarding the use of technology.
INQ	The extent to which the generated information consistently meets user requirements and expectations.
SYQ	The level to describe the quality of content owned by the information system.
SVQ	The level to assess how well the service quality is provided to the users.

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ISO	International standard used to evaluate software quality, ISO/IEC 25010:2023
TRS	Refers to an individual's belief or trust in the reliability, integrity, and capability of the information system to meet their needs and expectations.
USF	User satisfaction in using the information system.
ISS	Achievement of the information system based on development planning.

Table 3. Explanation of Research Indicators [38], [41], [45]–[47]

Indicators	Definition
Easiness (OPT1)	The level is related to the system's ability to provide freedom from obstacles, difficulties, and problems.
Connectivity (OPT2)	Level related to the system's ability to successfully connect with other systems.
Efficiency (OPT3)	Level is related to the system's achievement in producing output compared to the resources required to achieve the output.
Effectiveness (OPT4)	Level related to the system's ability to achieve intended usage.
Productivity (OPT5)	Level related to the system's support in producing output compared to the resources needed to produce the output.
Problem Solving (INV1)	Level related to the system's support in finding solutions to problems.
Independence (INV2)	Level related to the system's ability to support users without control or influence.
Challenge (INV3)	Level related to the system's support in successfully handling or achieving something in difficult situations or problems.
Stimulation (INV4)	Level related to the system's support in promoting the occurrence, development, or improvement of something.
Competitiveness (INV5)	Level related to the system's ability to support users to be more successful than their competitors.
Complexity (DCF1)	Level related to confusing or difficult-to-understand system features.
Difficulty (DCF2)	Level related to the system's conditions that are not easily operable.
Dependence (DCF3)	Level related to the system's conditions that require others to operate it.
Lack of Support (DCF4)	Level related to systems that lack or have insufficient support in their operation.
Inappropriateness (DCF5)	Level related to inappropriate conditions.
Failure (ISC1)	Level related to the possibility of the system becoming unpleasant or presenting potential dangers.
Threat (ISC2)	Level related to system situations that may cause danger or loss.
Reducing Interaction (ISC3)	Level related to the implementation of the system, reducing human interaction in size, quantity, and importance.
Distraction (ISC4)	Level related to using the system that requires more attention and hinders people from focusing on other things.
Incredulity (ISC5)	Level related to doubts about the use of the system.

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Social Norms (SIF1)	Influence of social norms within a group or society affecting individual behavior.
Peer Influence (SIF2)	Influence of peers or others who play a significant role in influencing an individual's attitudes, beliefs, and behavior toward using information systems.
Recommendations and Testimonials (SIF3)	Influence of recommendations and testimonials from others regarding the use of information systems.
Expert Influence (SIF4)	Influence of individuals considered experts or professionals in the field of information systems.
Social Media Influence (SIF5)	Influence of interactions and information obtained through social media.
Accuracy (INQ1)	The level of appropriateness of the information generated.
Timeliness (INQ2)	The accuracy level of the IS information processing process within the planned timeframe.
Completeness (INQ3)	The level of integrity of information generated by IS without missing parts.
Consistency (INQ4)	The likelihood of IS to consistently display the same information in operation, services, maintenance, or quality.
Relevance (INQ5)	The level of relevance of the information generated by IS to the discussed subject.
Ease Of Use (SYQ1)	The level of freedom of IS from obstacles, difficulties, and problems during its use.
Maintainability (SYQ2)	The level related to the ease of IS in training.
Response Time (SYQ3)	The time it takes for IS to respond to user commands.
Functionality (SYQ4)	The level related to IS's ability to operate according to planned requirements.
Safety (SYQ5)	IS's immunity to attacks, hazards, or unexpected damage.
Responsiveness (SVQ1)	IS's reaction level to serve its users in the appropriate manner, time, and situation.
Flexibility (SVQ2)	IS's level of adaptation to serve its users according to the requested requirements.
Security (SVQ3)	The level related to the overall security of the integrated IS to serve users safely from attacks, hazards, or unexpected damage.
Functionality (SVQ4)	The level related to the coverage of IS services according to functional requirements.
Extension (SVQ5)	The level related to the coverage of additional IS services beyond functional requirements.
Functional Suitability (ISO1)	The system's output meets user needs and is accurate.
Performance Efficiency (ISO2)	Fast system response and timely results.
Compatibility (ISO3)	Good integration with existing systems and hardware.
Interaction Capability (ISO4)	User interface that is easily understood and intuitive.
Reliability (ISO5)	Consistent and stable operation in daily activities.
Security (ISO6)	Compliance with security policies to protect data integrity and confidentiality.
Maintainability (ISO7)	Modular software structure for easy maintenance.
Flexibility (ISO8)	Ability to adapt to changes in needs, context, and environment.
Safety (ISO9)	Ability to avoid hazardous situations, with risk identification, fail-safe mechanisms, and potential danger warnings.

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Security Trust (TRS1)	Trust in the information system to protect users' data and information from unauthorized access, leaks, or misuse.
Integrity Trust (TRS2)	Trust in the authenticity, integrity, and accuracy of data and information provided by the information system.
Reliability Trust (TRS3)	Trust in the information system's ability to provide consistent, reliable, and reliable performance in processing data and providing accurate output.
Competence Trust (TRS4)	Trust in the information system's ability to perform its tasks and functions as promised.
Responsiveness Trust (TRS5)	Trust in the information system's ability to respond to user needs and requests quickly, both in terms of response time and response quality.
Efficiency (USF1)	User satisfaction level with IS is based on the system's achievement in producing output compared to the resources required to achieve the output.
Effectivity (USF2)	User satisfaction level with IS is related to the system's ability to meet user needs in achieving goals.
Flexibility (USF3)	User satisfaction level with IS is related to the system's adaptability to requested requirements.
Overall Satisfaction (USF4)	User satisfaction level with IS is related to the sufficiency of the overall system aspects.
IS Efficiency (ISS1)	Level related to the comparison of IS output value and the resources required to achieve the output.
IS Effectivity (ISS2)	Level related to the system's ability to meet user needs in achieving goals.
User Satisfaction (ISS3)	The extent to which IS can help users create value for their businesses.
Productivity Improvement (ISS4)	Level related to the system's support in enhancing output compared to the resources needed to produce the output.
Competitive Advantage (ISS5)	Level related to the advantageous position of integrated IS users to compete in the business competition.

Table 4. Explanation of Research Indicators [38], [41], [45]–[47]

Indicators	Statement
Easiness (OPT1)	The system is free from constraints, difficulties, and problems.
Connectivity (OPT2)	The system can easily connect with other systems.
Efficiency (OPT3)	The system operates with minimal resources.
Effectiveness (OPT4)	The system operates with maximum results.
Productivity (OPT5)	The system operates efficiently and effectively.
Problem Solving (INV1)	The system is a tool for solving problems for users.
Independence (INV2)	The system helps users to be free from control or influence.
Challenge (INV3)	The system supports users to achieve goals in difficult situations or problems.
Stimulation (INV4)	The system encourages users to achieve goals.

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Competitiveness (INV5)	The system supports users to be more successful than their competitors.
Complexity (DCF1)	The system confuses users in its operation.
Difficulty (DCF2)	The system is difficult to operate.
Dependence (DCF3)	The system cannot be operated freely.
Lack of Support (DCF4)	The system is operated without adequate operational support.
Inappropriateness (DCF5)	The system is not in line with its implementation plan.
Failure (ISC1)	The system is not successfully operated as per the implementation plan.
Threat (ISC2)	The system is in a situation that can cause danger or risk.
Reducing Interaction (ISC3)	The system makes users less interactive.
Distraction (ISC4)	The system distracts users from important matters.
Incredulity (ISC5)	The system is doubted in its use.
Social Norms (SIF1)	Need to follow norms within the group related to the use of information systems.
Peer Influence (SIF2)	Inclined to use information systems because many peers also use them.
Recommendations And Testimonials (SIF3)	Inclined to use information systems after hearing positive testimonials from others.
Expert Influence (SIF4)	Inclined to follow recommendations and expert opinions in choosing and using information systems.
Social Media Influence (SIF5)	Information and interactions obtained through social media influence attitudes and perceptions toward the use of information systems.
Accuracy (INQ1)	Information is generated accurately.
Timeliness (INQ2)	Information is generated on time.
Completeness (INQ3)	Information is generated completely.
Consistency (INQ4)	Information is generated consistently during system operations.
Relevance (INQ5)	Information is generated according to user needs.
Ease Of Use (SYQ1)	The system is easy to use.
Maintainability (SYQ2)	The system is easy to maintain.
Response Time (SYQ3)	The system responds quickly to given commands.
Functionality (SYQ4)	The system is capable of executing all planned functions.
Safety (SYQ5)	The system is safe to use.
Responsiveness (SVQ1)	The system provides fast services.
Flexibility (SVQ2)	The system provides flexible services according to user situations.
Security (SVQ3)	The system provides secure services.
Functionality (SVQ4)	The system provides services according to functional requirements.

Extension (SVQ5)	The system provides services beyond the required functions.
Functional Suitability (ISO1)	The system's output meets user needs and is accurate.
Performance Efficiency (ISO2)	The system responds quickly, providing timely results.
Compatibility (ISO3)	The system integrates well with existing hardware.
Interaction Capability (ISO4)	The system's user interface is easily understood and intuitive.
Reliability (ISO5)	The system operates consistently and stably in daily activities.
Security (ISO6)	The system complies with security policies to protect data integrity and confidentiality.
Maintainability (ISO7)	Modular system structure for easy maintenance.
Flexibility (ISO8)	The system can adapt to changes in needs, context, and environment.
Safety (ISO9)	The system can avoid hazardous situations, with risk identification, fail-safe mechanisms, and potential danger warnings.
Security Trust (TRS1)	Confident that this system protects my data and information from unauthorized access.
Integrity Trust (TRS2)	Confident that the data and information provided by this system are authentic and intact.
Reliability Trust (TRS3)	Confident that this system provides consistent and reliable performance.
Competence Trust (TRS4)	Confident that this system has the necessary abilities to perform tasks and functions well.
Responsiveness Trust (TRS5)	Confident that this system will respond to my needs and requests quickly and efficiently.
Efficiency (USF1)	Users are satisfied with the system's efficiency.
Effectivity (USF2)	Users are satisfied with the system's effectiveness.
Flexibility (USF3)	Users are satisfied with the system's flexibility.
Overall Satisfaction (USF4)	Users are satisfied with the system's performance.
IS Efficiency (ISS1)	The system improves the efficiency of the learning process.
IS Effectivity (ISS2)	The system enhances the effectiveness of the learning process.
User Satisfaction (ISS3)	Overall, the system enhances user satisfaction in the learning process.
Productivity Improvement (ISS4)	The system enhances institutional productivity.
Competitive Advantage (ISS5)	The system provides a competitive advantage for institutions.

This study presents a comprehensive framework for assessing the readiness and effective implementation of information systems in the Indonesian equestrian industry. The model adopts a holistic approach, combining variables like readiness, IS success, system quality, and trust, along with factors such as social influence and adherence to the ISO/IEC 25010:2023 standard. By encompassing these elements, the model offers a nuanced understanding of the various factors influencing the adoption and successful implementation of information systems in the distinctive context of the equestrian industry. The integration of these diverse elements enhances the model's ability to clarify the

intricate dynamics at play, providing valuable insights for stakeholders seeking to navigate challenges and optimize the benefits associated with information system adoption in this unique industry setting.

5. Conclusion

Within the equestrian industry in Indonesia, this research has delineated an exhaustive framework for assessing the preparedness and triumph of information system implementation. The employed model amalgamates the TRI 2.0 concept, the IS success model, and incorporates supplementary variables such as trust, social influence, and ISO/IEC 25010:2023 quality standards. Basing itself on these models, this study successfully summarizes the important dimensions that influence the adoption and success of information systems in the equestrian industry.

In the aspect of system readiness, this model adapts the variables that define optimism (OPT), innovation (INV), discomfort (DCF), and insecurity (ISC) from the work of Parasuraman and Colby [1]. It also found the addition of one system readiness variable, namely social influence (SIF), which refers to the research of Oduor, Alahäivälä, and Oinas-Kukkonen [33], which recognizes the impact of social factors on the level of system readiness. Furthermore, the success dimension of information systems is refined by combining five variables from the IS success [31], which include information quality (INQ), system quality (SYQ), service quality (SVQ), user satisfaction (USF), and system integration success (ISS).

The system quality testing process refers to the ISO/IEC 25010:2023 standard which involves nine quality characteristics: Functional Suitability, Performance Efficiency, Compatibility, Interaction Capability, Reliability, Security, Maintainability, Flexibility, and Safety). This research also enriches the process stage with the addition of one variable, namely trust (TRS), adopted from the results of research by Dorodchi, Abedi, and Cukic [32], highlighting the central role of trust in determining the success of information systems.

By combining these elements, this study provides a more comprehensive view of the factors influencing the successful implementation of information systems in the equestrian industry in Indonesia. It is hoped that the findings from this study will provide important guidance for the development and improvement of information systems in this particular and unique domain.

6. Declarations

6.1. Author Contributions

Conceptualization: A.S., N.A.Y., and A.S.; Methodology: N.A.Y.; Software: A.S.; Validation: A.S., N.A.Y., and A.S.; Formal Analysis: A.S., N.A.Y., and A.S.; Investigation: A.S.; Resources: N.A.Y.; Data Curation: N.A.Y.; Writing Original Draft Preparation: A.S., A.S.; Writing Review and Editing: A.S., A.S.; Visualization: A.S.; All authors have read and agreed to the published version of the manuscript.

6.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

6.3. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

6.4. Institutional Review Board Statement

Not applicable.

6.5. Informed Consent Statement

Not applicable.

6.6. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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