



Article

The Strategic Perspective on the Relationship Between Digital Maturity and High-Reliability Healthcare Organizations

Akeel Nadhim Mohammed¹, Dr . Tariq Kadhim²

1,2. College of Administration and Economics/University of Sumer

*Correspondence: Akeel767@gmail.com¹, tshlaga@uos.edu.iq²

Abstract: This study used a descriptive-analytical technique to evaluate the degrees of digital maturity and high-reliability organization principles in the Dhi Qar Health Directorate and investigated the impact of digital maturity on improving high-reliability organizations in healthcare institutions. A questionnaire was used to gather information from 106 administrative leaders and staff members, and SPSS was used for analysis. With a moderate-to-high degree of digital maturity and a moderate level of high-reliability organization implementation, the results showed a considerable positive impact of digital maturity on high-reliability organizations. Digital strategy and market competency were the next most important factors, after people, expertise, and capabilities. To improve dependability, stability, and organizational performance, the study suggests bolstering digital maturity practices, innovation, continuous learning, digital culture, and technology infrastructure.

Citation: Akeel, N.M & Dr. Tariq K.. The Strategic Perspective on the Relationship Between Digital Maturity and High-Reliability Healthcare Organizations. American Journal of Economics and Business Management 2026, 9(7), 258-276.

Received: 10th Apr 2026

Revised: 11th May 2026

Accepted: 11th Jun 2026

Published: 09th Jul 2026



Copyright: © 2026 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: Digital Maturity, High-Reliability Organizations, Organizational Performance, Digital Transformation, Operational Excellence.

1. Introduction

Organizations are facing increasing problems in adjusting to the digital environment while preserving operational stability and reliability, especially in complex and sensitive situations, given the rapid advancements in technology and digital transformation. Digital maturity and the efficient use of technology to improve performance and control hazards are becoming increasingly important for organizational success.

Simultaneously, a managerial paradigm known as High-Reliability Organizations (HROs) has arisen that emphasizes effective operations, mistake reduction, ongoing learning, and quick problem solving in high-risk contexts. Therefore, the purpose of this study is to investigate how digital maturity affects HROs and how it improves operational dependability and organizational flexibility in the face of technological change. The research examines theoretical and methodological frameworks, data analysis, and hypothesis testing to provide results and conclusions that support improved organizational performance and reliability.

2. Research Problem

The challenge for high-reliability firms is to strike a balance between operational stability and dependability and digital transformation. Although digital technologies increase productivity and accuracy, they may also pose new hazards. This raises concerns

about how digital maturity might facilitate technological change adaptability without sacrificing dependability.

Accordingly, the main question that this study seeks to answer, and which represents the research problem, is as follows:

“Does digital maturity influence the enhancement of the characteristics of high-reliability organizations within the environment of public institutions?”

Several sub-questions emerge from this main question:

- What is the level of digital maturity in the Dhi Qar Health Directorate?
- To what extent are the principles of high-reliability organizations applied in the Dhi Qar Health Directorate?
- What is the level of impact of digital maturity on enhancing the characteristics of high-reliability organizations in the investigated institution?

3. Research Importance

In light of the increasing growth in the use of digital technologies within organizations and the associated challenges related to maintaining operational stability and reliability, particularly in complex and sensitive environments, this research is significant because it addresses a contemporary topic represented by digital maturity and its connection to high-reliability organizations.

1. The study contributes to clarifying the importance of digital maturity and its role in enhancing the ability of high-reliability organizations to adapt to technological transformations and reduce operational errors.
2. It provides a scientific and practical framework that explains the relationship between digital maturity and organizational reliability, thereby supporting performance improvement and increasing the efficiency of organizational processes.
3. The findings of the study assist administrative leaders in developing their digital practices and building a more stable, flexible organizational environment capable of facing risks and rapid technological changes.

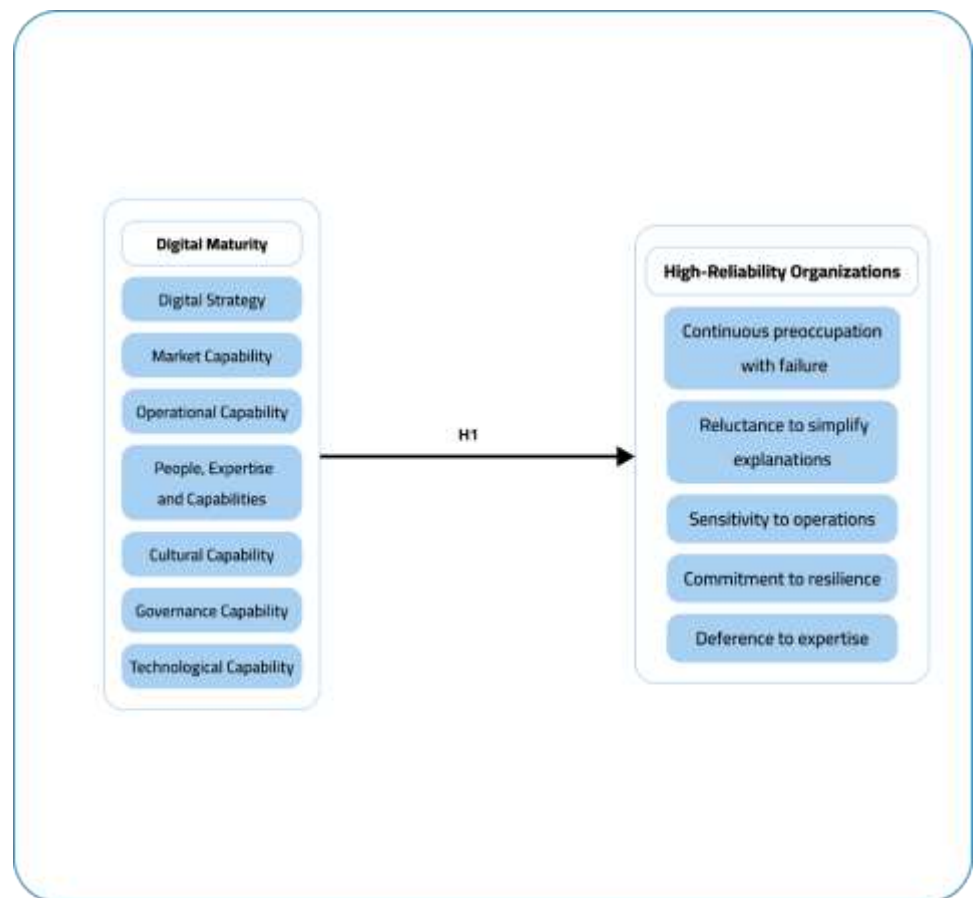
Research Aims

The research aims to achieve a set of objectives that can be summarized as follows:

1. To identify the level of digital maturity in the investigated organization by diagnosing the extent of adoption and integration of digital technologies within organizational processes and activities.
2. To gauge the degree of availability of high-reliability organizational traits by evaluating the organization's capacity to control risks, minimize errors, and preserve operational stability.
3. To analyze the nature of the relationship and impact between digital maturity and high-reliability organizations, and to clarify the role of digital maturity in enhancing organizational reliability and improving performance in complex work environments.

Research Plans

Figure 1. Hypothetical Research Model.



Research Hypothesis

Main Hypothesis : There is a direct effect of digital maturity on high-reliability organizations. This hypothesis is divided into several sub-hypotheses:

1. There is a direct effect of the digital strategy dimension on high-reliability organizations.
2. There is a direct effect of the market capability dimension on high-reliability organizations.
3. There is a direct effect of the operational capability dimension on high-reliability organizations.
4. There is a direct effect of the people, expertise, and capabilities dimension on high-reliability organizations.
5. There is a direct effect of the cultural capability dimension on high-reliability organizations.
6. There is a direct effect of the governance capability dimension on high-reliability organizations.
7. There is a direct effect of the technological capability dimension on high-reliability organizations.
8. There is a direct effect of the combined dimensions of digital maturity on high-reliability organizations.

Dimensions and search metrics

Table 1. Measurement Model of Research Variables and Their Dimensions.

Approved Scale	Variables	
	Sub Dimensions	Main Variables
[1]	Digital Strategy	Digital Maturity
	Market Capability	
	Operational Capability	
	People, Expertise and Capabilities	
	Cultural Capability	
	Governance Capability	
	Technological Capability	
[2]	Continuous preoccupation with failure	High-Reliability Organizations
	Reluctance to simplify explanations	
	Sensitivity to operations	
	Commitment to resilience	
	Deference to expertise	

Research Population and Sample

Three institutions from the Dhi Qar Health Directorate were included in the study, which was carried out in many establishments that demand a high degree of accuracy and dependability in performance. The significance of their involvement in delivering healthcare services and their growing reliance on digital technologies for managing organizational activities and operational procedures led to the selection of these institutions. They were also picked because their staff members and administrative officials are able to evaluate the degree of digital maturity and the degree to which they exhibit the traits of high-reliability companies.

All 106 respondents who made up the research sample were given the questionnaire in order to get precise data that reflected the study variables and aided in determining the linkages of influence between digital maturity and high-reliability organizations.

Digital Maturity

Digital maturity refers to the organization's ability and readiness to respond to technological developments, adopt and apply innovative digital technologies, and integrate them into its strategies, operations, and organizational culture in ways that create value, enhance performance and competitiveness, and support adaptation to continuous digital transformation efforts through the effective utilization of both technological and human capabilities [3]. It is also viewed as the organization's ability to create value through investment in digital tools and human resources [4], its willingness and capability to employ innovative technologies to maintain its competitive position [5], and the extent of its acquired capability to adapt to ongoing digital changes and transformation initiatives [6]. The researcher defines digital maturity as the level of advancement achieved by an organization in integrating digital technologies into its strategies, operations, and organizational culture, reflecting its ability to adapt effectively to digital transformation in a way that enhances strategic objectives, competitive advantage, and operational reliability.

Dimensions of Digital Maturity

Assessing digital maturity is essential for evaluating readiness for digital transformation, especially in healthcare institutions. The study adopted the [1] framework due to its suitability and comprehensive coverage of digital maturity dimensions: digital

strategy, market capability, people, expertise and capabilities, cultural capability, governance capability, and technological capability. The leadership capability dimension was excluded because leadership was examined separately as an independent variable.

1. Digital Strategy:

Digital strategy refers to the competitive actions through which organizations leverage digital technologies to achieve competitive advantage and support long-term objectives. It combines strategic stability with flexibility to adapt to rapid environmental changes, making it a dynamic and essential component of digital maturity that enables organizations to translate their digital vision into effective decisions in a changing digital environment [7].

2. Market Capability:

Market capability is a key dimension of digital maturity that reflects an organization's ability to act as a trusted digital partner by providing integrated and flexible communication channels aligned with customer needs and behaviors. It enables interaction through multiple digital platforms, ensuring a seamless customer experience across online and offline environments. This capability strengthens customer trust, enhances competitiveness, and improves responsiveness to stakeholder expectations in an increasingly digital environment [8].

3. Operational Capability:

Operational capability is a core function of organizations focused on delivering high-quality goods and services by efficiently utilizing resources such as materials, labor, finance, and information to create value-added outputs. Within digital transformation, it is enhanced through the adoption of digital technologies, improved information flow, and greater integration across organizational units, resulting in increased flexibility, reduced waste, and improved responsiveness to environmental changes. This makes it a key component of digital maturity and organizational competitiveness in dynamic environments [9].

4. People, Expertise, and Capabilities:

Digital culture and human capabilities are essential for accelerating digital transformation, requiring continuous employee development, upgrading digital skills, and identifying competency gaps to align with evolving technological demands. Organizations must empower employees with digital awareness and clear transformation goals, while leadership plays a key role in guiding change and supporting technology adoption. Involving digitally skilled talent further enhances innovation and workforce readiness. Overall, investing in human capabilities strengthens flexibility, innovation, and adaptability, making it a central pillar of digital maturity [10].

5. Cultural Capability:

Digital culture is a key factor in enabling readiness for digital transformation through the continuous adoption of technological innovations that reshape communication and interaction patterns. It promotes openness to new ideas, supports innovative practices, and enhances dynamic thinking aligned with digital realities. It also facilitates the integration of modern technologies and improves knowledge exchange and creativity, making it a vital framework for innovation and adaptation to deep digital transformations [11].

6. Governance Capability:

Digital governance is essential for effective digital transformation through establishing clear structures such as committees and supervisory bodies to guide initiatives and monitor progress. It includes developing policies and procedures that define responsibilities, manage risks, and regulate digital processes. Governance also improves data quality and supports accurate decision-making, while enhancing transparency, accountability, coordination, and alignment with strategic objectives.

Accordingly, it is a key pillar of digital maturity that ensures the effective and sustainable use of technology and data [10].

7. Technological Capability:

Digital integration in production processes is essential for improving operational efficiency and performance by reducing time, effort, and waste while increasing productivity and output quality. It enables real-time data collection and analysis for early detection of disruptions and inefficiencies, and supports intelligent solutions that reduce downtime and enhance flexibility. This creates a more responsive and adaptive production environment, making digital technologies a key driver of efficiency and stability[12].

High-Reliability Organizations:

High-reliability organizations (HROs) are defined as organizations that achieve consistently safe and failure-free performance while operating complex and high-risk systems and maintaining effective responsiveness under high demand [13]. They are also viewed as organizations that enhance safety through structured classification and environmental interpretation to develop accurate operational models [14], and as organizations that sustain strong safety performance over long periods in hazardous environments [15]. In addition, they operate under continuous risk while minimizing errors and ensuring reliable decision-making and sustainable quality [16]. The researcher defines HROs as organizations that maintain stable, reliable performance in complex and high-risk environments where errors are unacceptable, while effectively managing risks, adapting to change, and ensuring continuous high-quality service delivery.

Dimensions of High-Reliability Organizations:

High-reliability organizations are based on five core principles that ensure stable performance in high-risk environments, divided into anticipation and containment. Anticipation focuses on early detection of potential failures through continuous attention to error, avoiding simplification of incidents, and maintaining strong operational awareness to enable early intervention and prevention. Containment emphasizes effective response after events occur through flexibility and respect for expertise, enabling rapid adaptation and informed decision-making during crises. Together, these principles create a balance between prevention and response, allowing organizations to manage disruptions and maintain operational stability [17].

First: The First Group – Anticipation Principles:

1. Continuous Preoccupation with Failure:

High-reliability organizations avoid complacency by maintaining continuous vigilance and rejecting the assumption of immunity from error. They treat small deviations as learning opportunities to prevent larger failures, recognizing that major incidents often result from accumulated minor problems. Accordingly, they promote a preventive culture based on constant risk awareness and proactive learning to ensure continuous readiness to prevent failures [18].

2. Reluctance to Simplify Interpretations:

The principle of reluctance to simplify promotes a mindful culture in high-reliability organizations by continuously questioning assumptions and avoiding oversimplified explanations. It encourages analyzing problems from multiple perspectives to understand complex relationships in work processes, enabling the detection of hidden patterns and early warning signals. This supports better decision-making and helps prevent unexpected events [19].

3. Sensitivity to Operations:

Hierarchical structures can undermine this principle by creating long communication chains that delay error reporting and timely corrective actions. Fear of blame further reduces transparency, increasing the risk of minor issues escalating into major failures.

Therefore, strengthening trust and open communication is essential to enhance operational awareness and ensure early detection of problems before they become serious [20].

Second: The Second Group – Containment Principles:

1. Commitment to Flexibility:

When facing unexpected errors, high-reliability organizations respond in a controlled manner aimed at restoring stability rather than reacting impulsively. This reflects organizational flexibility in quickly recovering from disruptions, managing their impacts, and preventing escalation. Errors are also treated as learning opportunities to improve performance and strengthen future preparedness [21].

2. Respect for Expertise:

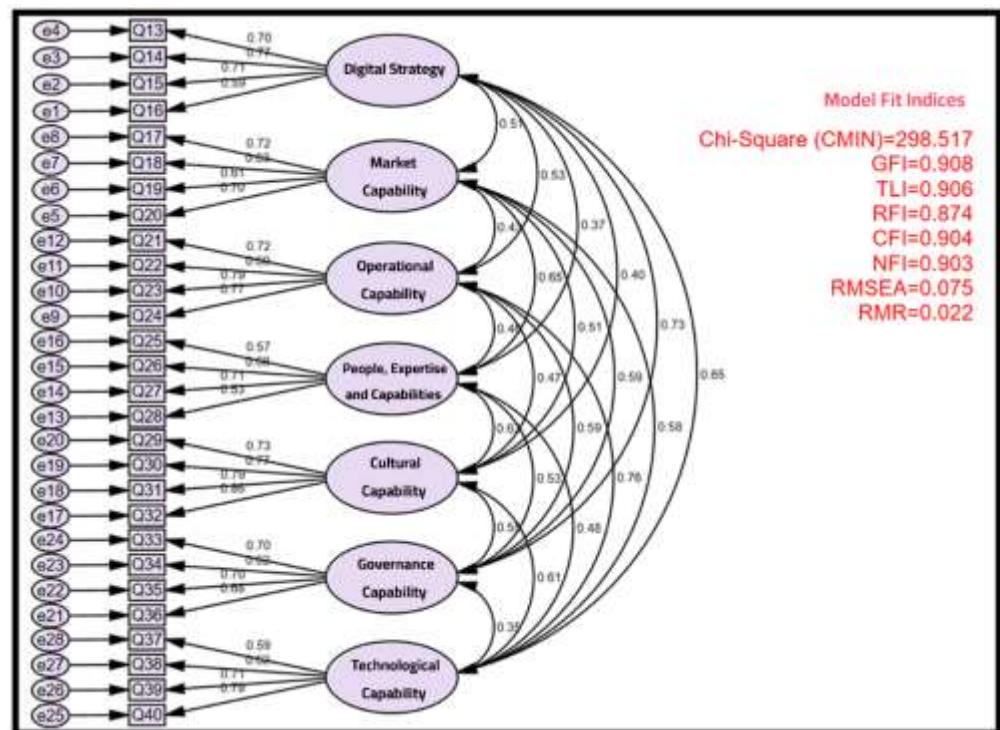
Respect for expertise is a key principle of high-reliability organizations that shifts decision-making to those with the most relevant knowledge during critical situations. While maintaining formal hierarchy in normal conditions, they temporarily prioritize expertise over position in crises to ensure faster and more effective responses. This balance between structure and expert-led decision-making helps maintain stability and address problems efficiently [22].

Confirmatory Factor Analysis

- Confirmatory Factor Analysis of the Digital Maturity Variable

Figure (2) presents the digital maturity model after conducting Confirmatory Factor Analysis (CFA), showing that the items appropriately represent its dimensions, including digital strategy, market capability, operational capability, people, expertise and capabilities, cultural capability, governance capability, and technological capability. The factor loadings were within acceptable statistical limits, confirming the construct validity of the variable.

Figure 2. Model of the Digital Maturity Variable after Confirmatory Factor Analysis.

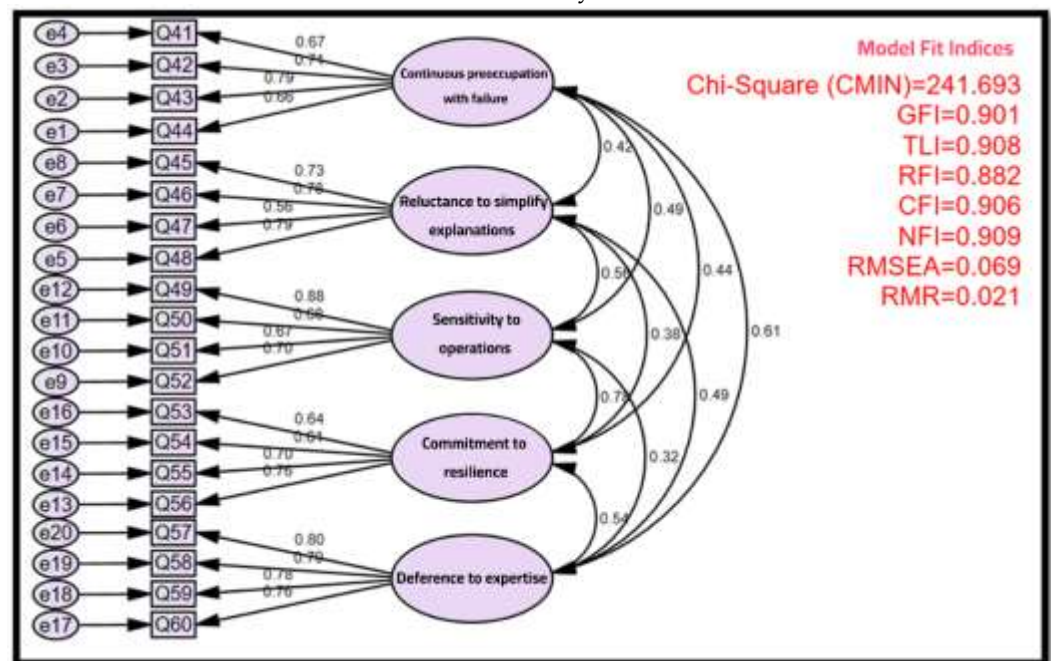


- As shown in the figure, correlations exist between the sub-dimensions within acceptable limits, indicating a logical relationship among the dimensions of digital maturity and strengthening the coherence of its conceptual structure.

Confirmatory Factor Analysis of the High-Reliability Organizations Variable

Figure (3) presents the CFA model of the High-Reliability Organizations variable, showing that the items appropriately represent its dimensions: continuous preoccupation with failure, reluctance to simplify explanations, sensitivity to operations, commitment to flexibility, and deference to expertise. The factor loadings were within acceptable limits, confirming the construct validity of the variable.

Figure 3. Model of the High Reliability Organizations Variable after Confirmatory Factor Analysis.



The figure shows acceptable correlations between the sub-dimensions, indicating logical consistency within the construct. Accordingly, the High-Reliability Organizations model demonstrates good construct validity and is suitable for statistical analysis and hypothesis testing.

Normality Test of the Study Variables

- Normality Test of the Digital Maturity Variable:

Normality was tested using the Kolmogorov–Smirnov and Shapiro–Wilk tests, and the results indicated significance values above 0.05, confirming that the data are normally distributed. Therefore, parametric statistical methods can be applied in hypothesis testing.

Table 2. Normal Distribution Test for the Digital Maturity Variable.

Significance	Sample	Z	Test
0.136	106	0.077	Kolmogorov-Smirnov
0.052	106	0.976	Shapiro-Wilk

Source: Prepared by the researcher based on the outputs of SPSS V.26 software.

The table shows that the significance values for digital maturity are above 0.05, indicating a normal distribution and a balanced response pattern. This supports the use of parametric statistical methods for analysis and hypothesis testing.

- Normality Test of the High-Reliability Organizations Variable

Normality was tested using the Kolmogorov–Smirnov and Shapiro–Wilk tests, and the results showed significance values above 0.05, indicating a normal distribution. Accordingly, parametric methods are suitable for hypothesis testing.

Table 3. Normality Test for the High Reliability Organizations Variable.

Significance	Sample	Z	Test
0.083	106	0.081	Kolmogorov-Smirnov
0.460	106	0.988	Shapiro-Wilk

Source: Prepared by the researcher based on the outputs of SPSS V.26 software.

Descriptive Analysis of the Study Variables

- Descriptive Analysis of the Digital Maturity Variable:

The results indicate that digital maturity is at a moderate level tending toward high, with a mean of 3.377, standard deviation of 0.499, coefficient of variation of 14.78%, and relative importance of 67.54%. This reflects a relatively good level of digital transformation adoption and a positive direction toward improving operational and strategic efficiency. The low coefficient of variation indicates consistency among respondents. Overall, the findings suggest progress in digital maturity, with the need for further improvement in technological and cultural aspects to enhance transformation and performance.

Table 4. Description and Analysis of the Dimensions of the Digital Maturity Variable.

Relative Importance	Coefficient of Variation	Standard Deviation	Mean	Text	Coding
66.27%	19.81%	0.657	3.314	Digital Strategy	1
69.53%	19.91%	0.692	3.476	Market Capability	2
67.22%	22.89%	0.769	3.361	Operational Capability	3
67.22%	20.61%	0.693	3.361	People, Expertise and Capabilities	4
66.46%	26.99%	0.897	3.323	Cultural Capability	5
70.33%	19.90%	0.700	3.517	Governance Capability	6
65.75%	19.96%	0.656	3.288	Technological Capability	7
67.54%	14.78%	0.499	3.377	Digital Maturity	

Source: Prepared by the researcher based on the outputs of SPSS V.26 and Microsoft Excel 2021.

- Descriptive Analysis of the High-Reliability Organizations Variable

The results show that the High-Reliability Organizations variable is at a moderate level, with a mean of 3.159, standard deviation of 0.647, coefficient of variation of 20.48%, and relative importance of 63.18%, indicating a medium adoption of high-reliability practices. The findings reflect the organization's ability to manage risks and respond to unexpected events with operational awareness and error reduction efforts, while also showing a need for further improvement in organizational flexibility and knowledge sharing. Overall, the organization provides a suitable foundation for enhancing high-reliability capabilities and performance efficiency.

Table 5. Description and Analysis of the Dimensions of the High Reliability Organizations Variable.

Relative Importance	Coefficient of Variation	Standard Deviation	Mean	Text	Coding
62.74%	27.15%	0.852	3.137	Continuous preoccupation with failure	1
64.25%	25.97%	0.834	3.212	Reluctance to simplify explanations	2
62.45%	26.91%	0.840	3.123	Sensitivity to operations	3
62.41%	25.70%	0.802	3.120	Commitment to resilience	4
64.06%	23.82%	0.763	3.203	Deference to expertise	5
63.18%	20.48%	0.647	3.159	High-Reliability Organizations	

Source: Prepared by the researcher based on the outputs of SPSS V.26 and Microsoft Excel 2021.

Analysis of the Impact of Digital Maturity on High-Reliability Organizations

The regression results show a constant value of (-0.258) and a regression coefficient of (1.012), indicating that a one-unit increase in digital maturity increases high-reliability

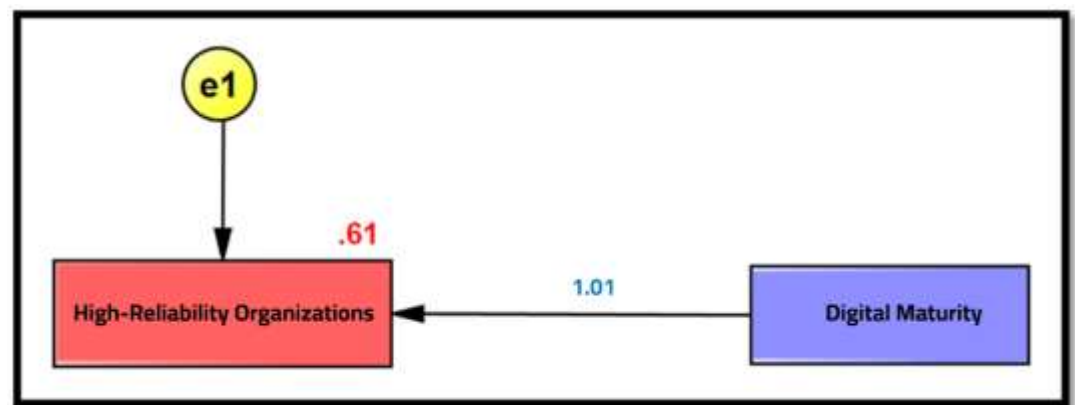
organizations by 1.012. The model is significant, as the F-value (162.451) exceeds the tabulated value with a significance level of 0.000 (< 0.05), supporting the acceptance of the second main hypothesis. The coefficient of determination ($R^2 = 0.610$) indicates that digital maturity explains 61% of the variance in high-reliability organizations, while 39% is attributed to other factors outside the model.

Table 6. Results of the Test of the Effect of Digital Maturity on High Reliability Organizations

Sig	Significance Level	T Calculated	F Calculated	R ²	Coefficient Value β	Constant Value α	Dependent Variable	Independent Variable
Significant	0.000	12.746	162.451	0.610	1.012	-0.258	High-Reliability Organizations	Digital Maturity

Source: Prepared by the researcher based on the outputs of SPSS V.26 software.

Figure 4. Effect of Digital Maturity on High Reliability Organizations.



Source: Prepared by the researcher based on the outputs of AMOS software.

- **Testing the First Sub-Hypothesis, which states that there is a direct effect of the digital strategy dimension on high-reliability organizations.**

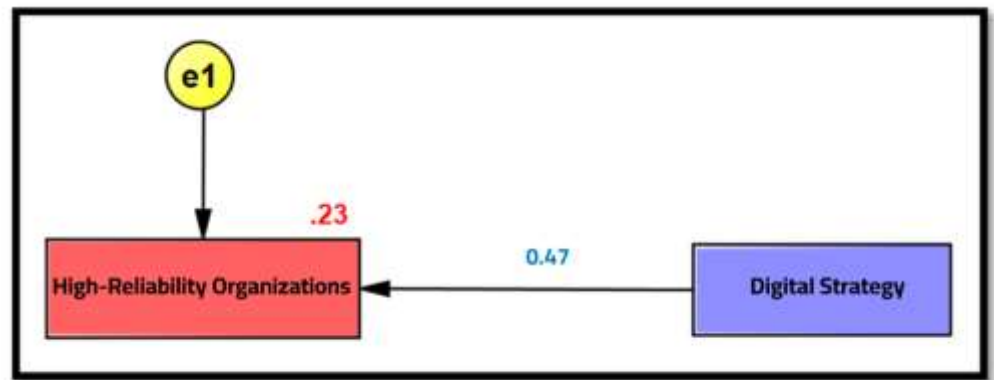
The regression results show a constant value of (1.591) and a regression coefficient of (0.473), indicating that a one-unit increase in digital strategy leads to an increase of 0.473 in high-reliability organizations. The model is significant, as the F-value (31.172) exceeds the tabulated value with a significance level of 0.000 (< 0.05), supporting the acceptance of the first sub-hypothesis. The coefficient of determination ($R^2 = 0.231$) indicates that digital strategy explains 23.1% of the variance in high-reliability organizations, while 76.9% is attributed to other factors outside the model.

Table 7. Results of the Test of the Effect of Digital Strategy on High Reliability Organizations.

Sig	Significance Level	T Calculated	F Calculated	R ²	Coefficient Value β	Constant Value α	Dependent Variable	Independent Variable
Significant	0.000	5.583	31.172	0.231	0.473	1.591	High-Reliability Organizations	Digital Strategy

Source: Prepared by the researcher based on the outputs of SPSS V.26 software.

Figure 5. Effect of Digital Strategy on High Reliability Organizations.



Source: Prepared by the researcher based on the outputs of AMOS software.

- **Testing the Second Sub-Hypothesis, which states that there is a direct effect of the market capability dimension on high-reliability organizations.**

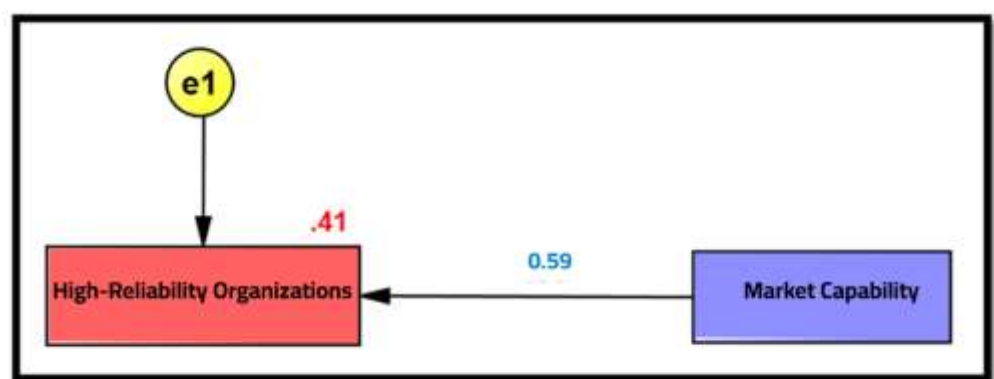
The regression results show a constant value of (1.085) and a regression coefficient of (0.597), indicating that a one-unit increase in market capability leads to an increase of 0.597 in high-reliability organizations. The model is significant, as the F-value (71.585) exceeds the tabulated value with a significance level of 0.000 (< 0.05), supporting the acceptance of the second sub-hypothesis. The coefficient of determination ($R^2 = 0.408$) indicates that market capability explains 40.8% of the variance in high-reliability organizations, while 59.2% is attributed to other factors outside the model.

Table 8. Results of the Test of the Effect of Market Capability on High Reliability Organizations.

Sig	Significance Level	T Calculated	F Calculated	R ²	Coefficient Value β	Constant Value α	Dependent Variable	Independent Variable
Significant	0.000	8.461	71.585	0.408	0.597	1.085	High-Reliability Organizations	Market Capability

Source: Prepared by the researcher based on the outputs of SPSS V.26 software.

Figure 6. Effect of Market Capability on High Reliability Organizations.



Source: Prepared by the researcher based on the outputs of AMOS software.

- **Testing the Third Sub-Hypothesis, which states that there is a direct effect of the operational capability dimension on high-reliability organizations.**

The regression results show a constant value of (1.564) and a regression coefficient of (0.475), indicating that a one-unit increase in operational capability leads to an increase of 0.475 in high-reliability organizations. The model is significant, as the F-value (48.636) exceeds the tabulated value with a significance level of 0.000 (< 0.05), supporting the

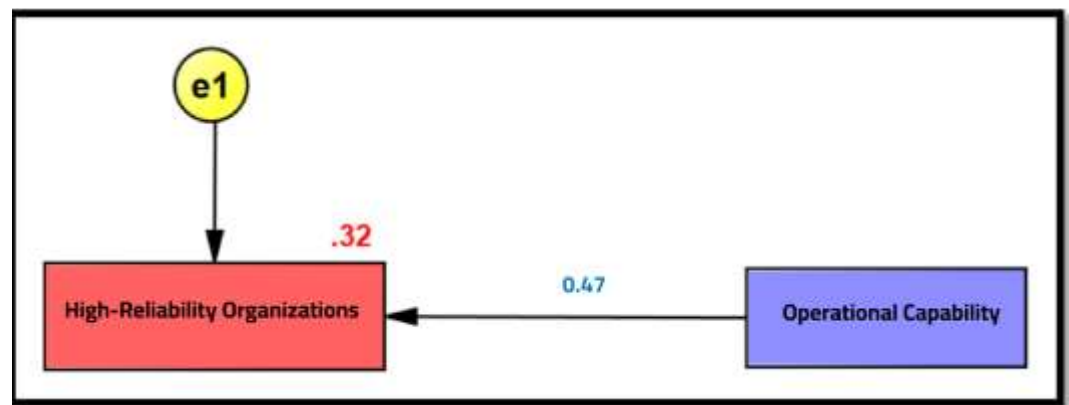
acceptance of the third sub-hypothesis. The coefficient of determination ($R^2 = 0.319$) indicates that operational capability explains 31.9% of the variance in high-reliability organizations, while 68.1% is attributed to other factors outside the model.

Table 9. Results of the Test of the Effect of Operational Capability on High Reliability Organizations.

Sig	Significance Level	T Calculated	F Calculated	R ²	Coefficient Value β	Constant Value α	Dependent Variable	Independent Variable
Significant	0.000	6.974	48.636	0.319	0.475	1.564	High-Reliability Organizations	Operational Capability

Source: Prepared by the researcher based on the outputs of SPSS V.26 software.

Figure 7. Effect of Operational Capability on High Reliability Organizations.



Source: Prepared by the researcher based on the outputs of AMOS software.

- **Testing the Fourth Sub-Hypothesis, which states that there is a direct effect of the people, expertise, and capabilities dimension on high-reliability organizations.**

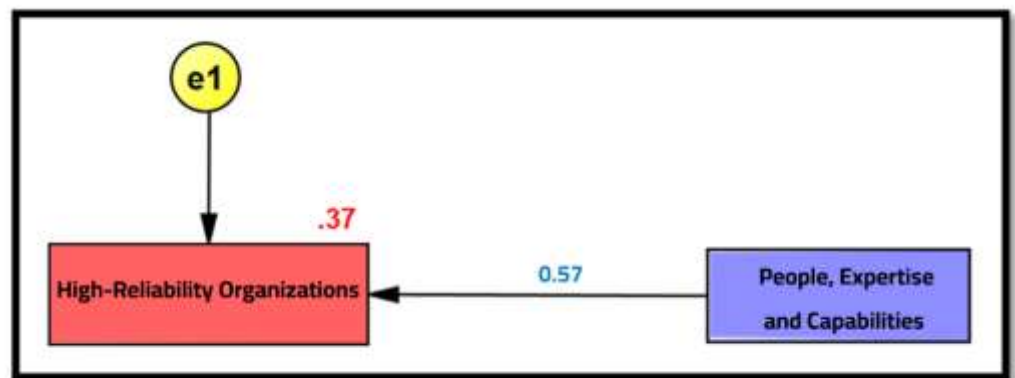
The regression results show a constant value of (1.243) and a regression coefficient of (0.570), indicating that a one-unit increase in the people, expertise, and capabilities dimension leads to an increase of 0.570 in high-reliability organizations. The model is significant, as the F-value (61.756) exceeds the tabulated value with a significance level of 0.000 (< 0.05), supporting the acceptance of the fourth sub-hypothesis. The coefficient of determination ($R^2 = 0.373$) indicates that this dimension explains 37.3% of the variance in high-reliability organizations, while 62.7% is attributed to other factors outside the model.

Table 10. Results of the Test of the Effect of People, Expertise, and Capabilities on High Reliability Organizations.

Sig	Significance Level	T Calculated	F Calculated	R ²	Coefficient Value β	Constant Value α	Dependent Variable	Independent Variable
Significant	0.000	7.858	61.756	0.373	0.570	1.243	High-Reliability Organizations	People, Expertise and Capabilities

Source: Prepared by the researcher based on the outputs of SPSS V.26 software

Figure 8. Effect of People, Expertise, and Capabilities on High Reliability Organizations.



Source: Prepared by the researcher based on the outputs of AMOS software.

- **Testing the Fifth Sub-Hypothesis, which states that there is a direct effect of the cultural capability dimension on high-reliability organizations.**

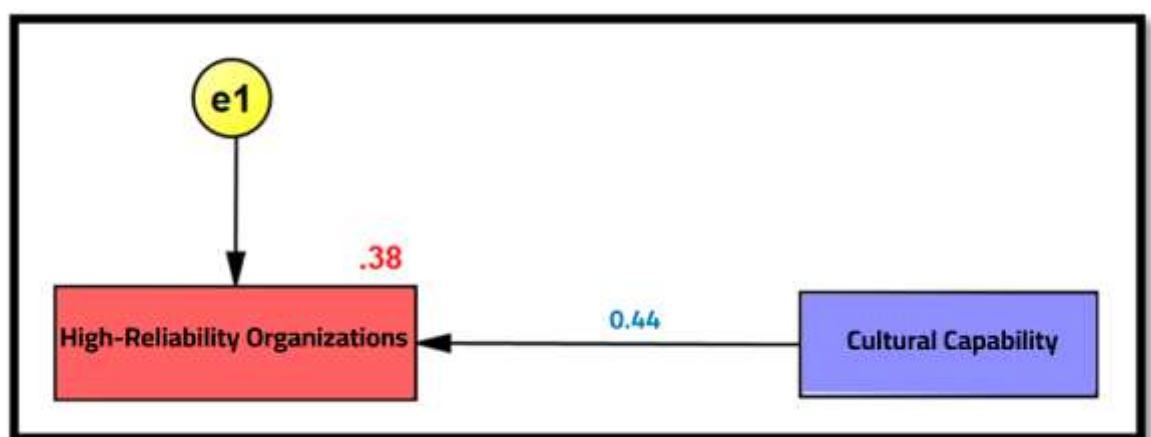
The regression results show a constant value of (1.689) and a regression coefficient of (0.442), indicating that a one-unit increase in cultural capability leads to an increase of 0.442 in high-reliability organizations. The model is significant, as the F-value (62.696) exceeds the tabulated value with a significance level of 0.000 (< 0.05), supporting the acceptance of the fifth sub-hypothesis. The coefficient of determination ($R^2 = 0.376$) indicates that cultural capability explains 37.6% of the variance in high-reliability organizations, while 62.4% is attributed to other factors outside the model.

Table 11. Results of the Test of the Effect of Cultural Capability on High Reliability Organizations

Sig	Significance Level	T Calculated	F Calculated	R ²	Coefficient Value β	Constant Value α	Dependent Variable	Independent Variable
Significant	0.000	7.918	62.696	0.376	0.442	1.689	High-Reliability Organizations	Cultural Capability

Source: Prepared by the researcher based on the outputs of SPSS V.26 software

Figure 9. Effect of Cultural Capability on High Reliability Organizations



Source: Prepared by the researcher based on the outputs of AMOS software.

- **Testing the Sixth Sub-Hypothesis, which states that there is a direct effect of the governance capability dimension on high-reliability organizations.**

The regression results show a constant value of (1.881) and a regression coefficient of (0.363), indicating that a one-unit increase in governance capability leads to an increase of

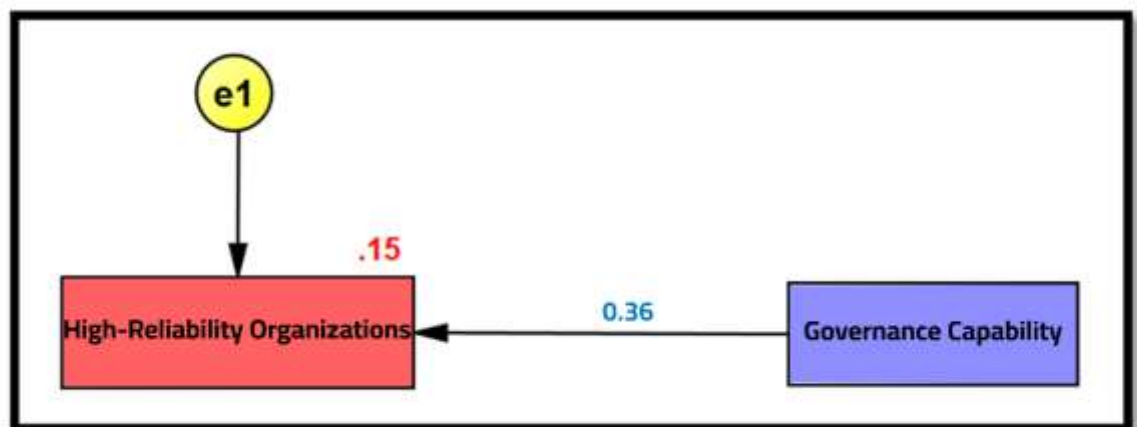
0.363 in high-reliability organizations. The model is significant, as the F-value (19.011) exceeds the tabulated value with a significance level of 0.000 (< 0.05), supporting the acceptance of the sixth sub-hypothesis. The coefficient of determination ($R^2 = 0.155$) indicates that governance capability explains 15.5% of the variance in high-reliability organizations, while 84.5% is attributed to other factors outside the model.

Table 12. Results of the Test of the Effect of Governance Capability on High Reliability Organizations.

Sig	Significance Level	T Calculated	F Calculated	R ²	Coefficient Value β	Constant Value α	Dependent Variable	Independent Variable
Significant	0.000	4.360	19.011	0.155	0.363	1.881	High-Reliability Organizations	Governance Capability

Source: Prepared by the researcher based on the outputs of SPSS V.26 software.

Figure 10. Effect of Governance Capability on High Reliability Organizations



Source: Prepared by the researcher based on the outputs of AMOS software.

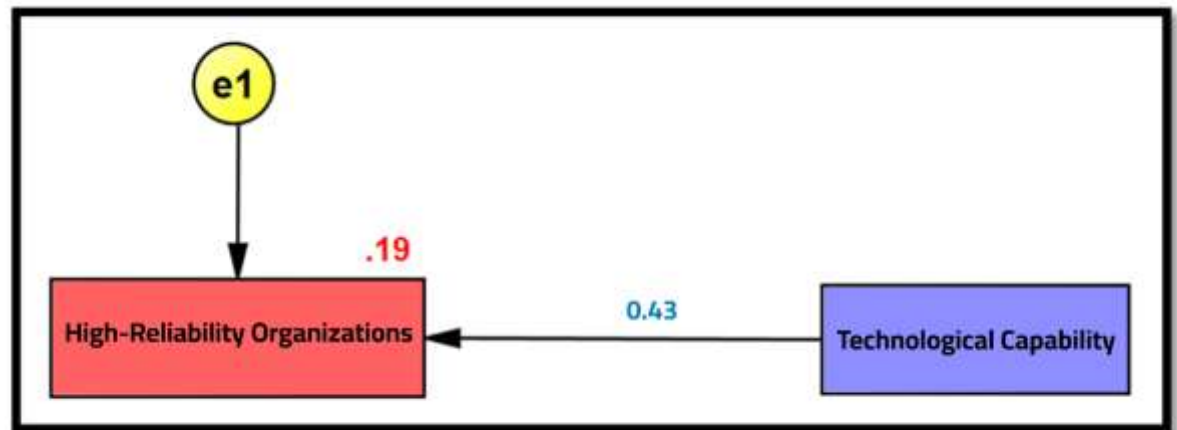
- **Testing the Seventh Sub-Hypothesis, which states that there is a direct effect of the technological capability dimension on high-reliability organizations.**

The regression results show a constant value of (1.730) and a regression coefficient of (0.435), indicating that a one-unit increase in technological capability leads to an increase of 0.435 in high-reliability organizations. The model is significant, as the F-value (25.088) exceeds the tabulated value with a significance level of 0.000 (< 0.05), supporting the acceptance of the seventh sub-hypothesis. The coefficient of determination ($R^2 = 0.194$) indicates that technological capability explains 19.4% of the variance in high-reliability organizations, while 80.6% is attributed to other factors outside the model.

Table 13. Results of the Test of the Effect of Technological Capability on High Reliability Organizations.

Sig	Significance Level	T Calculated	F Calculated	R ²	Coefficient Value β	Constant Value α	Dependent Variable	Independent Variable
Significant	0.000	5.009	25.088	0.194	0.435	1.730	High-Reliability Organizations	Technological Capability

Source: Prepared by the researcher based on the outputs of SPSS V.26 software

Figure 11. Effect of Technological Capability on High Reliability Organizations.

Source: Prepared by the researcher based on the outputs of AMOS software.

- **Testing the Eighth Sub-Hypothesis, which states that there is an effect of Digital Maturity dimensions (digital strategy, market capability, operational capability, people, expertise and capabilities, cultural capability, governance capability, and technological capability) on high-reliability organizations.**

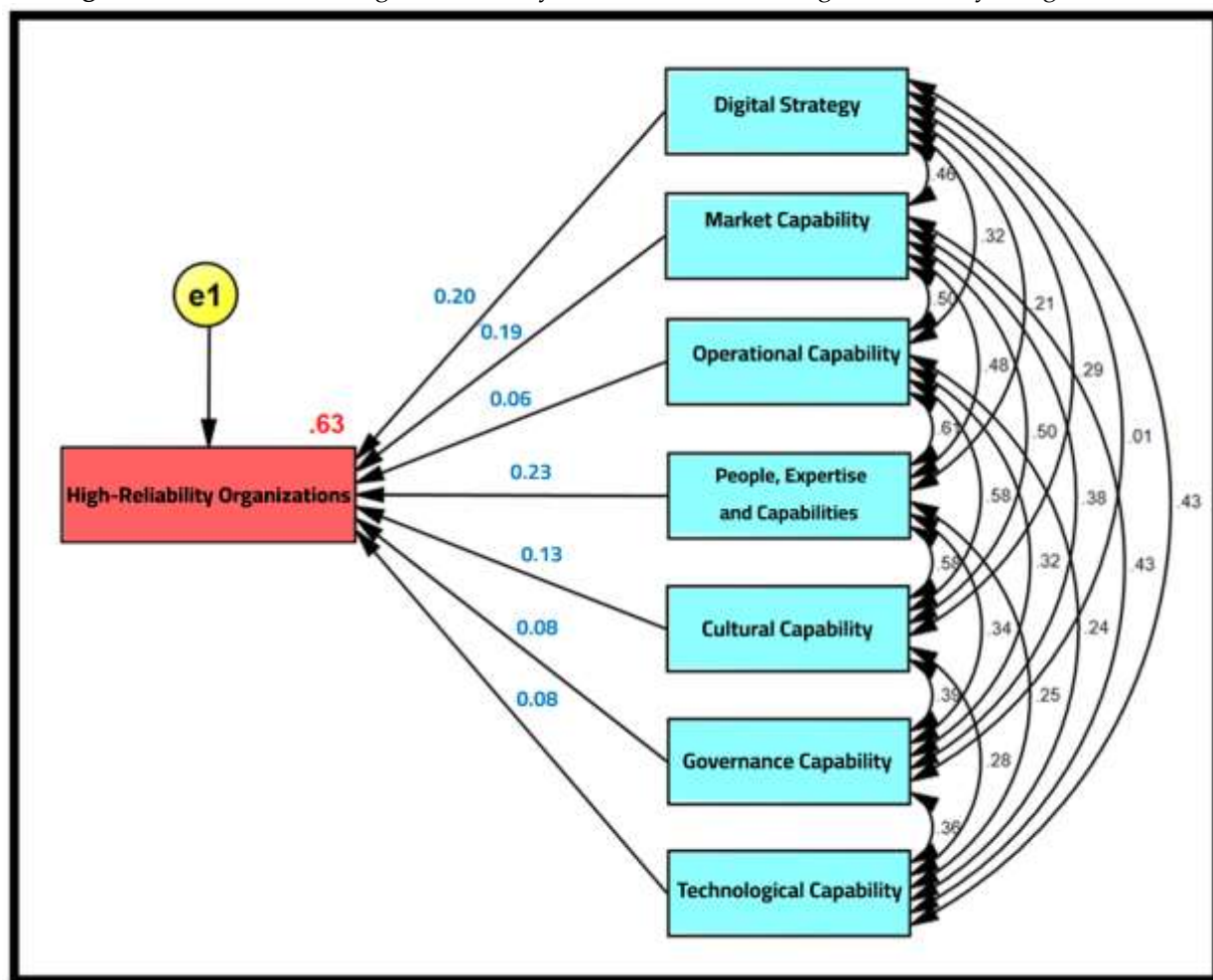
The regression results indicate that people, expertise, and capabilities had the strongest effect on high-reliability organizations, followed by digital strategy, market capability, and cultural capability. The model was statistically significant ($F = 23.571$, $Sig = 0.000$), supporting the eighth sub-hypothesis. The dimensions collectively explained 62.7% of the variance in high-reliability organizations ($R^2 = 0.627$). Significant effects were found for people, expertise, and capabilities, digital strategy, market capability, and cultural capability, while operational, governance, and technological capabilities showed no significant effects.

Table 14. Results of the Test of the Effect of Organizational Capability Dimensions on High Reliability Organizations.

Sig	Significance Level	T Calculated	F Calculated	R ²	Coefficient Value β	Constant Value α	Dependent Variable
Significant	0.008	2.709			0.207		Digital Strategy
Significant	0.015	2.488			0.197		Market Capability
Non-significant	0.380	0.882			0.064		Operational Capability
Significant	0.004	2.987	23.571	0.627	0.237	-0.275	High-Reliability Organizations
Significant	0.025	2.280			0.139		People, Expertise and Capabilities
Non-significant	0.225	1.222			0.085		Cultural Capability
Non-significant	0.231	1.205			0.089		Governance Capability
Non-significant							Technological Capability

Source: Prepared by the researcher based on the outputs of SPSS V.26 software.

Figure 12. Effect of Digital Maturity Dimensions on High Reliability Organizations.



Source: Prepared by the researcher based on the outputs of AMOS software.

4. Methodology

This study employed a quantitative descriptive-analytical research design to examine the influence of digital maturity on the implementation of High-Reliability Organizations (HROs) within the Dhi Qar Health Directorate. The research focused on evaluating the current level of digital maturity and assessing its contribution to enhancing organizational reliability in healthcare institutions. The study population consisted of administrative leaders and employees working in the Dhi Qar Health Directorate. A total of 106 valid responses were collected using a structured questionnaire designed to measure the dimensions of digital maturity and HRO principles. The questionnaire items were adapted from previously validated instruments reported in the literature and measured using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including means and standard deviations, were used to determine the levels of digital maturity and HRO implementation. Inferential statistical analyses, including correlation and regression analysis, were conducted to examine the relationship and the effect of digital maturity on high-reliability organizations. Statistical significance was evaluated at a confidence level of 95% ($p < 0.05$).

5. Results

The descriptive analysis indicated that the Dhi Qar Health Directorate demonstrated a moderate-to-high level of digital maturity, while the implementation of High-Reliability

Organization principles was at a moderate level. Among the digital maturity dimensions, people, expertise, and capabilities achieved the highest mean scores, reflecting the importance of human competencies in supporting digital transformation initiatives. Digital strategy and market competency also showed relatively high levels of implementation, whereas technological infrastructure and digital culture exhibited opportunities for further improvement. Regression analysis revealed that digital maturity had a statistically significant positive effect on High-Reliability Organizations. The findings suggest that improvements in digital maturity contribute directly to enhancing organizational reliability, operational efficiency, and institutional resilience. The statistical results confirmed that organizations with higher digital maturity are better positioned to implement HRO principles effectively.

6. Discussion

The findings demonstrate that digital maturity is a critical determinant of organizational reliability within healthcare institutions. The significant influence of digital maturity on High-Reliability Organizations supports the growing body of literature emphasizing that digital transformation extends beyond technology adoption and requires organizational capabilities, leadership commitment, and continuous learning. The prominence of the people, expertise, and capabilities dimension indicates that successful digital transformation depends largely on human resources capable of adapting to technological change. This finding reinforces previous research suggesting that employee competencies and digital skills are fundamental drivers of organizational resilience and sustainable performance. Furthermore, the importance of digital strategy and market competency highlights the necessity of aligning digital initiatives with organizational objectives and environmental demands. Healthcare organizations that invest in strategic digital planning and continuously develop their workforce are more likely to improve patient safety, operational excellence, and service quality. Based on these findings, healthcare institutions should prioritize strengthening digital culture, expanding technological infrastructure, promoting continuous innovation, and investing in employee capability development. These initiatives will enhance organizational reliability and improve the ability of healthcare organizations to respond effectively to future challenges.

7. Conclusions

3. The results show a moderate-to-high level of digital maturity adoption within the organization across all its dimensions, indicating an acceptable digital foundation that can be further developed and enhanced in the future.
4. The results show a moderate level of application of high-reliability organization principles, indicating efforts to reduce errors and improve responses to risks and unexpected events, but with a need for further support and development.
5. The statistical analysis results confirmed a direct and significant positive effect of digital maturity on high-reliability organizations, as increasing the level of digital maturity contributes to enhancing organizational reliability and improving the organization's ability to manage risks more efficiently.
6. The results showed that people, expertise, and capabilities had the strongest influence on high-reliability organizations, followed by digital strategy and market capability, highlighting the importance of human resources and digital expertise in enhancing organizational reliability.
7. The study showed that the combined dimensions of digital maturity significantly enhance high-reliability organizations, highlighting the importance of integrating strategic, organizational, technological, and

cultural dimensions to build a stable and reliable organizational environment.

8. The results indicated that digital maturity explains a large proportion of the variance in high-reliability organizations, while the remaining proportion is attributed to other organizational and environmental factors not included in the research model.

The study revealed that digital maturity enhances adaptability to technological change, improves decision-making quality, and reduces operational errors, thereby supporting greater organizational stability and reliability.

REFERENCES

- [1] M. Rossmann, "Digital Maturity: Conceptualization and Measurement Model," 2019.
- [2] P. Mitchell et al., "High-Reliability Organizations: Principles and Measurement Framework," 2023.
- [3] P. S. E. Din, "The role of digital organizational culture in organizational development in light of digital transformation adoption in Egypt," 2023, doi: 10.21608/AJA.2023.173954.1353.
- [4] C. N. Pedrini and G. F. Frederico, "Information technology maturity evaluation in a large Brazilian cosmetics industry," *International Journal of Business Administration*, vol. 9, p. 15, 2018.
- [5] I. Balaban, N. B. Redjep, and M. K. Calopa, "The analysis of digital maturity of schools in Croatia," *International Journal of Emerging Technologies in Learning*, vol. 13, no. 6, pp. 4–15, 2018.
- [6] G. Salviotti, A. Gaur, and F. Pennarola, "Strategic factors enabling digital maturity: An extended survey," in *Proceedings of the 13th Mediterranean Conference on Information Systems (MCIS)*, 2019, pp. 1–13.
- [7] T. A. Gileva, M. P. Galimova, A. V. Babkin, and M. E. Gorshenina, "Strategic management of industrial enterprise digital maturity in a global economic space of the ecosystem economy," in *IOP Conference Series: Earth and Environmental Science*, vol. 816, no. 1, Art. no. 012022, 2021.
- [8] C. Anderson and W. Ellerby, *Digital Maturity Model: Achieving Digital Maturity to Drive Growth*. Deloitte, 2018.
- [9] S. J. Skripak, A. Cortes, A. R. Walz, R. Parsons, and G. Walton, *Fundamentals of Business*. Blacksburg, VA, USA: VT Publishing, 2018.
- [10] P. K. Salume, M. W. Barbosa, M. R. Pinto, and P. R. Sousa, "Key dimensions of digital maturity: A study with retail sector companies in Brazil," *RAM. Revista de Administração Mackenzie*, vol. 22, no. 6, 2021, doi: 10.1590/1678-6971/eram210071.
- [11] T. Reisberger, P. Reisberger, L. Copuš, P. Madzik, and L. Falát, "The linkage between digital transformation and organizational culture: Novel machine learning literature review based on latent Dirichlet allocation," *Journal of the Knowledge Economy*, vol. 16, no. 1, pp. 2082–2118, 2024, doi: 10.1007/s13132-024-02027-3.
- [12] V. V. Beshpalova, O. A. Polyanskaya, A. A. Lipinskaya, A. V. Gryazkin, and I. A. Kazi, "Digital technologies in forestry," in *IOP Conference Series: Earth and Environmental Science*, vol. 806, no. 1, Art. no. 012008, 2021.
- [13] T. R. LaPorte and P. M. Consolini, "Working in practice but not in theory: Theoretical challenges of high reliability organizations," *Journal of Public Administration Research and Theory*, vol. 1, no. 1, pp. 19–48, 1991.
- [14] D. van Stralen, S. D. McKay, and T. A. Mercer, "High-reliability organizing (HRO): Objectivity and the loss of subjectivity," *Neonatology Today*, vol. 19, no. 2, pp. 65–70, 2024.
- [15] C. Lekka and C. Sugden, "The successes and challenges of implementing high reliability principles: A case study of a UK oil refinery," *Process Safety and Environmental Protection*, vol. 89, no. 6, pp. 443–451, Nov. 2011.
- [16] A. K. Al Nizami (Bani-Mustafa), "The relevance of High Reliability Theory (HRT) to reliability-seeking organizations (RSOs)," Ph.D. dissertation, University of Colorado Denver, Denver, CO, USA, 2011.
- [17] A. Alibage, "Achieving high reliability organizations using fuzzy cognitive maps: The case of offshore oil and gas," M.S. thesis, Portland State University, Portland, OR, USA, 2020, doi: 10.15760/etd.7478.

-
- [18] A. Hopkins, The Problem of Defining High Reliability Organizations, Working Paper No. 51. National Research Centre for Occupational Health and Safety Regulation, The Australian National University, Jan. 2007.
- [19] F. M. Alazemi, "Exploring educational leadership practices of collective mindfulness and organizational conditions in Veradale School District," Ph.D. dissertation, Department of Educational Leadership, Washington State University, Pullman, WA, USA, 2019.
- [20] E. Tekel and E. Karadag, "School bullying, school mindfulness and school academic performance: A structural equation modelling study," *Journal of Psychologists and Counsellors in Schools*, vol. 30, no. 2, pp. 1–17, 2019.
- [21] M. T. Ludwig, "A sustained culture of safety in a high reliability organization: A Delphi study of the United States Navy Submarine Force," Ph.D. dissertation, School of Business, Northcentral University, La Jolla, CA, USA, 2021.
- [22] J. L. Wood, "High reliability schools: A systematic review of school mindfulness," *Literature Reviews in Education and Human Services*, vol. 1, no. 2, pp. 1–22, 2022.