

The Impact of Digitalization on the Growth of Small Businesses in Aden (Field Study: In the Emdad Company, Aden)

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DOI: <https://doi.org/10.5281/zenodo.22060055>

Article History	Abstract
Original Research Article	<i>This study investigates the impact of digitalization—digital infrastructure, skills, and tools—on small-business growth at Emdad Company in Aden, Yemen. Using 60 valid questionnaires were analyzed with SPSS 26, the findings show a significant positive impact of digitalization on customer satisfaction, financial, and operational performance, with digital skills having the strongest influence. The study recommends investing in digital skills, infrastructure, and automation.</i> Keywords: Digitalization, Growth, Small Businesses, Aden, Yemen, Emdad Company.
Received: 24-06-2026	
Accepted: 26-07-2026	
Published: 22-08-2026	
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Introduction

Digitalization is a key driver of business transformation, offering Yemeni small businesses with opportunities to improve efficiency, market reach, and competitiveness through digital tools. Using Emdad Company in Aden as a case study, this study examines the factors, barriers, and effects of digitalization on financial, operational, and customer performance.

Problem Statement

The study examines the impact of Digitalization—Digital Infrastructure, Digital Skills, and Digital Tools—on the Growth of Emdad Company in Yemen, measured through Customer Satisfaction, Financial Performance, and Operational Performance.

Main Question:

What is the impact of Digitalization on the Growth of Emdad Company in Yemen?

Sub-Questions:

1. To what extent do Digital Infrastructure, Digital Skills, and Digital Tools influence Emdad Company's Growth?
2. What is the current level of Digitalization adoption at Emdad Company?
3. How do Digital Infrastructure, Skills, and Tools affect Customer Satisfaction, Financial Performance, and Operational Performance?
4. Do demographic and organizational characteristics significantly influence perceptions of Digitalization and Growth?

Study Significance

Scientific Significance

This study fills a research gap on digitalization in Yemen by examining its role in improving small-business performance, resilience, market access, and customer engagement. It contributes theoretical and practical

insights for researchers, policymakers, and development organizations and provides a foundation for future research on digitalization and economic development.

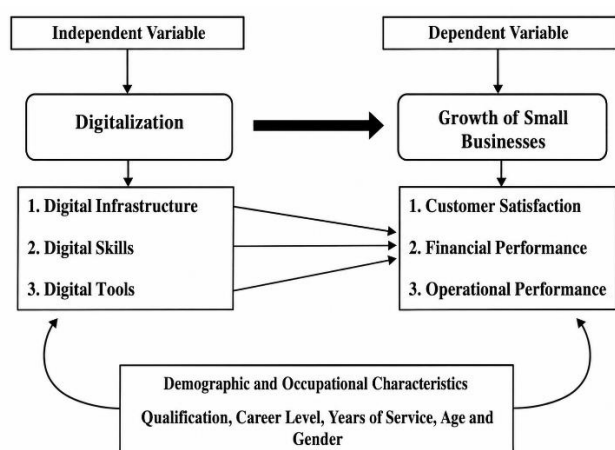
Practical Significance

The small businesses are more popular than big one and affect the economy more. But they face challenges like lack of funding, using technology can reduce these challenges. This study shows how entrepreneurs used Digital Tools in their business so that others can learn and do as them. The outcomes of this study may generate steps from the government to start digital practices in many sectors.

Study Objectives

The study aims to examine the impact of Digitalization on Emdad Company's growth by assessing digital infrastructure, skills, and tools; measuring customer, financial, and operational performance; identifying factors and barriers affecting digital adoption; and proposing strategies for sustainable business growth in Yemen.

Conceptual framework



The Independent Variable:

Digitalization: Digitalization refers to the use of digital technologies in small businesses to improve processes, customer interaction, and productivity, helping SMEs in Yemen overcome business barriers and achieve sustainable growth.

The Dependent Variable:

Growth: It is a positive increase in sales, profit, market share, customer satisfaction and other measures.

Study Hypotheses

H₀₁: (Null Hypothesis): The study tests whether Digitalization (Digital Infrastructure, Digital Skills, and Digital Tools) significantly affects Business Growth (Customer Satisfaction, Financial Performance, and Operational Performance) at Emdad Company, and whether growth perceptions differ by gender, age, qualification, career level, and years of service. The null hypotheses assume no significant effects or differences,

while the alternative hypotheses assume significant positive effects or differences at $\alpha \leq .05$.

Study Methodology

The study employed a quantitative approach, using questionnaires to assess Digitalization and Business Growth among Emdad Company employees in Aden in 2026. Data were analyzed using SPSS 26, applying descriptive statistics (frequencies, means, and standard deviations) and inferential statistics (correlation and regression) to examine the relationship between Digitalization and Growth.

Literature Review

Brennan and Kreiss (2016) found that Digitalization transforms organizational structures, communication, and value creation, enhancing flexibility, information flow, and operational efficiency. Their findings highlight the potential of Digital Tools to help small businesses improve performance, reduce delays, and expand market reach.

Vial (2019) found that Digital Transformation positively influences organizational performance by strengthening digital capabilities, innovation, efficiency, and competitive advantage. The review concluded that firms with strong digital infrastructure, readiness, and leadership achieve better performance and adaptability, supporting the potential of Digitalization to enhance sustainable growth in small businesses such as Emdad Company.

Gatignon and Xuereb (2019) found that Digitalization significantly improves firm competitiveness, productivity, innovation, and market expansion. The study emphasized that Digital Skills, Digital Tools, and strong infrastructure are critical for enabling SMEs to improve efficiency and achieve sustainable Growth, particularly in developing economies.

Digitalization in Aden

Yemen's digital environment is developing but constrained by limited internet penetration, infrastructure challenges, and regulatory restrictions. Growing connectivity, improved electricity supply, and expanding licensed digital-payment services are creating opportunities for e-commerce, although cash-on-delivery and social-media-based commerce remain dominant. These developments provide emerging opportunities for small businesses such as Emdad to expand digital operations and market reach.

The Relationship Between Digitalization and the Growth of Small Businesses

The literature generally confirms a positive relationship between Digitalization and small-business Growth. Digital technologies improve financial performance through efficiency and cost reduction, customer satisfaction through

better communication and service, and operational performance through automation and improved coordination. Digitalization also promotes innovation, competitiveness, and long-term sustainability, although its effectiveness depends on infrastructure, digital skills, and supportive policies.

Introduction of The Study Population

Company Profile

Emdad Company, established in Aden in 2017, specializes in café products, equipment, and professional training. It has expanded through international partnerships, digital communication, and branches in Sana'a and Mukalla. The company aims to become Yemen's leading café-supply provider by delivering internationally standardized products, efficient digital services, and specialized training while supporting the sustainable development of the local café industry.

Study Methodology

The study adopts a descriptive-analytical methodology to examine the impact of Digital Infrastructure, Digital Skills, and Digital Tools on the Growth of Emdad Company. Data were collected through a structured questionnaire and analyzed using SPSS, with demographic characteristics included to support interpretation and hypothesis testing.

Study Population

The study population consists of all the employees working in Emdad Company in Aden totaling (70) employees across various departments & organizational levels, (although the surveys received and valid for analysis are 60).

Study Sample

A census sampling method was used due to the small population size. Of 70 questionnaires distributed, 65 were returned, and 5 incomplete or inconsistent responses were excluded, leaving 60 valid questionnaires for SPSS analysis, representing an 85.7% valid response rate.

Table 3-1 Distribution of Questionnaires and Final Response Rate

No.	Description	No.	Percentage (%)
1	Distributed Questionnaires (Targeted Population)	70	100%
2	Retrieved Questionnaires	65	92.9%
3	Excluded Questionnaires (Incomplete and Invalid)	5	7.1%
4	Final analyzed Sample (Net Response Rated)	60	85.7%

Sources of Data Collection

To achieve the objectives of the study, two main sources of information were relied upon:

Primary Sources

The study used a structured questionnaire as the main primary-data collection tool, developed from previous studies and validated instruments. Its validity and reliability were assessed statistically to ensure accurate and reliable data for testing the study hypotheses and achieving its objectives.

Secondary Sources

Secondary data were obtained from books, scientific references, journals, articles, and reports to develop the theoretical framework, conceptual model, and review previous studies on Digitalization, small-business development, and organizational growth.

The questionnaire comprised four sections: a title page explaining the study, demographic and occupational information, the Digitalization variable with 15 items across three dimensions, and the Growth variable with 15 items across three dimensions. Each dimension contained five statements, covering Digital Infrastructure, Digital

Skills, Digital Tools, Customer Satisfaction, Financial Performance, and Operational Performance.

Statistical Analysis Methods Employed

To achieve the objectives of the study and analyze the collected field data, the Statistical Package for Social Sciences (SPSS, Version 26) was utilized. The statistical techniques employed to answer the study questions and test the hypotheses are divided into three main categories:

Reliability and Validity Tests

1. To ensure the accuracy and consistency of the study tool, the following tests will be applied: **Construct and discriminant validity:** To confirm that each questionnaire item measures its intended construct.
2. **Pearson correlation coefficient:** To assess the internal consistency of each item with its corresponding dimension.
3. **Cronbach's Alpha:** To evaluate the questionnaire's reliability and internal consistency.

Descriptive Statistical Methods

1. **Frequencies and percentages:** To describe the demographic and occupational characteristics of the study sample.

2. **Arithmetic means:** To determine the overall level of respondents' agreement with the questionnaire items.
3. **Standard deviations:** To measure the extent of variation in respondents' responses around the mean.

Inferential (Analytical) Statistical Methods

The study used simple and multiple regression to assess the individual and combined effects of Digitalization dimensions on Growth, while t-tests examined gender-based differences and one-way ANOVA tested differences across qualification, career level, years of service, and age.

Testing the Validity and Reliability of The Study Tool

After designing the initial questionnaire, and before distributing it to the respondents, the study tool will be tested to ensure that it has acceptable indicators of validity and reliability. This process will ensure that the questionnaire measures what it is intended to measure, that it includes all necessary study variables for analysis, and that its items are clear and understandable to all respondents.

Construct Validity of The Study Tool (Statistical Validity)

Pearson correlation coefficients were used to assess construct validity and internal consistency by examining correlations between individual items and their respective dimensions, dimensions and their overall variables, and the main study variables.

Table 3-2 Pearson Correlation Coefficients for Internal Consistency of the Tool

Independent Variable: Digitalization			Dependent Variable: Growth		
Statement	Pearson Correlation (Between Statement and Dimension)	Sig. (2-tailed)	Statement	Pearson Correlation (Between Statement and Dimension)	Sig. (2-tailed)
Dimension: 1- Digital Infrastructure			Dimension: 1- Customer Satisfaction		
1	.713**	.000	1	.795**	.000
2	.715**	.000	2	.803**	.000
3	.757**	.000	3	.742**	.000
4	.570**	.000	4	.801**	.000
5	.630**	.000	5	.798**	.000
Between Dimension and IV	.795**	.000	Between Dimension and DV	.943**	.000
Dimension: 2- Digital Skills			Dimension: 2- Financial Performance		
1	.666**	.000	1	.751**	.000
2	.640**	.000	2	.679**	.000
3	.557**	.000	3	.788**	.000
4	.696**	.000	4	.710**	.000
5	.724**	.000	5	.762**	.000
Between Dimension and IV	.917**	.000	Between Dimension and DV	.907**	.000
Dimension: 3- Digital Tools			Dimension: 3- Operational Performance		
1	.805**	.000	1	.747**	.000
2	.719**	.000	2	.768**	.000
3	.732**	.000	3	.771**	.000
4	.702**	.000	4	.769**	.000
5	.779**	.000	5	.792**	.000
Between Dimension and IV	.860**	.000	Between Dimension and DV	.937**	.000
The Correlation Between Independent (IV) and Dependent Variables (DV)				.764**	.000

Note. N = 60; **Correlation is significant at the 0.01 level (2-tailed).

The results demonstrate **strong construct validity**, with significant item–dimension correlations (.557–.805) and strong sub-dimension–variable correlations (.795–.943). Digitalization also shows a strong positive correlation with Growth ($r = .764, p < .01$), confirming a robust relationship between the study variables.

Reliability Analysis (Cronbach's Alpha)

To measure the internal consistency and reliability of the scale, Cronbach's Alpha coefficients were calculated for each sub-dimension individually, for each main variable, and for the comprehensive questionnaire tool.

Table 3-3 *Reliability Analysis of the Questionnaire Using Cronbach Alpha*

Independent Variable: Digitalization		Dependent Variable: Growth	
Statement	Cronbach Alpha	Statement	Cronbach Alpha
Dimension: 1- Digital Infrastructure		Dimension: 1- Customer Satisfaction	
1	.653 (If Item Deleted)	1	.808 (If Item Deleted)
2	.642 (If Item Deleted)	2	.807 (If Item Deleted)
3	.627 (If Item Deleted)	3	.834 (If Item Deleted)
4	.696 (If Item Deleted)	4	.810 (If Item Deleted)
5	.675 (If Item Deleted)	5	.810 (If Item Deleted)
Total Dimension	.709	Total Dimension	.845
Dimension: 2- Digital Skills		Dimension: 2- Financial Performance	
1	.607 (If Item Deleted)	1	.742(If Item Deleted)
2	.637 (If Item Deleted)	2	.763 (If Item Deleted)
3	.673 (If Item Deleted)	3	.722 (If Item Deleted)
4	.584 (If Item Deleted)	4	.770 (If Item Deleted)
5	.562 (If Item Deleted)	5	.730 (If Item Deleted)
Total Dimension	.665	Total Dimension	.786
Dimension: 3- Digital Tools		Dimension: 3- Operational Performance	
1	.741 (If Item Deleted)	1	.800 (If Item Deleted)
2	.780 (If Item Deleted)	2	.793 (If Item Deleted)
3	.770 (If Item Deleted)	3	.795 (If Item Deleted)
4	.779 (If Item Deleted)	4	.795 (If Item Deleted)
5	.753 (If Item Deleted)	5	.784 (If Item Deleted)
Total Dimension	.803	Total Dimension	.828
Total Independent Variable		Total Dependent Variable	
.870		.930	
Total Tool			.943

The results confirm high reliability of the research instrument, with Cronbach's Alpha values ranging from .665 to .845 across sub-dimensions, while the main variables recorded .870 and .930. The overall scale achieved an excellent reliability coefficient of .943, confirming strong internal consistency and suitability for statistical analysis.

Presenting, Analyzing, and Discussing the Results of The Study

The analysis followed a systematic process: expert validation, pre-testing, Pearson correlation, and Cronbach's Alpha were used to establish the questionnaire's validity and reliability. The final data were then analyzed using demographic statistics, means, standard deviations, and regression analysis to examine the impact of Digitalization on Growth and test the study hypotheses.

Characteristics of the Study Population

Distribution of Sample with Gender

Table 4-1 Distribution of the Sample According to Gender

Gender	Frequency	Percentage	Rank
Male	52	86.7%	1
Female	8	13.3%	2
Total	60	100%	

The sample was predominantly male, with 52 respondents (86.7%) compared with 8 females (13.3%). This disparity may reflect the structure of Yemen's labor market and the predominance of males in operational, field, and full-time positions within service and logistics companies such as Emdad.

Distribution of Sample by Age groups

Table 4-2 Distribution of the Sample According to Age Group

Age	Frequency	Percentage	Rank
25 – 34	28	46.7%	1
35 – 44	19	31.7%	2
Under 25	8	13.3%	3
45 and above	5	8.3%	4
Total	60	100%	

The sample is predominantly composed of **young and middle-aged employees**, with 46.7% aged 25–34 and 31.7% aged 35–44. This concentration suggests a workforce with strong potential for **digital adaptability**, as employees in these age groups are generally well positioned to acquire digital skills and use digital tools to support organizational growth.

Distribution of Sample with Qualification

Table 4-3 Distribution of the Sample According to Qualification

Qualification	Frequency	Percentage	Rank
Bachelor	36	60%	1
Diploma	12	20%	2
Postgraduate	12	20%	2
High School	0	0%	3
Total	60	100%	

The sample is highly educated, with 60% holding bachelor's degrees and 20% each holding diplomas or postgraduate qualifications. This indicates a qualified workforce capable of understanding and effectively assessing Digitalization and its impact on business growth.

Distribution of Sample with Career Level

Table 4-4 Distribution of the Sample According to Career Level

Career Level	Frequency	Percentage	Rank
Employee	48	80%	1
Department Manager	12	20%	2
Total	60	100%	

The sample consists mainly of employees (80%), while department managers represent 20%. This distribution reflects Emdad Company's organizational structure and provides both operational and managerial perspectives, strengthening the credibility of responses regarding Digitalization and Business Growth.

Distribution of Sample with Years of Service at Work

Table 4-5 Distribution of the Sample According to Years of Service at Work

Years of Service	Frequency	Percentage	Rank
From 5 - 10 years	38	63.3%	1
Less than 5 years	22	36.7%	2
From 11 - 15 years	0	0%	3
16 Years and over	0	0%	3
Total	60	100%	

The sample includes 63.3% of employees with 5–10 years of service and 36.7% with less than 5 years. This distribution reflects Emdad Company's establishment in 2017 and indicates a relatively experienced yet adaptable workforce capable of assessing Digitalization and its impact on Growth.

Presentation and Discussion of Results

The study assessed Digitalization and Business Growth using a five-point Likert scale from 1 (Very Low) to 5 (Very High). The hypothetical mean was 3, while the response-level intervals were determined by dividing the total range (4) into five equal categories of 0.80.

Table 4-6 shows the Range of the Arithmetic Average and the Corresponding Degree of Approval

How to Calculate Verbal Grade		
If the average	Verbal estimate	Judgment
Less than 1.8	Very weak	Rejected
From 1.8 and less than 2.6	Weak	
From 2.6 and less than 3.4	Average	
From 3.4 and below 4.2	High	Acceptable
From 4.2 to 5	Very High	

Each dimension was evaluated against the hypothetical mean of 3. Mean scores ≥ 3 indicate satisfactory Digitalization or Growth, while scores < 3 indicate unsatisfactory performance and a need for improvement.

Presentation and Discussion of the Independent Variable: Digitalization

This section presents the descriptive analysis of Digitalization at Emdad Company across three dimensions: Digital Infrastructure, Digital Skills, and Digital Tools. It evaluates means, standard deviations, relative importance, and one-sample *t*-tests to determine the overall level of Digitalization.

Descriptive Analyses of Digital Infrastructure Dimension

Table 4-7 Descriptive Statistics and One-Sample t-test Results for the Digital Infrastructure Dimension

No.	Statements	Mean	Std. Deviation	Relative Importance	T-Test	Sig. (2-tailed)	Rank	Degree
5	The company's digital infrastructure is scalable & easily integrates with new technology or external platforms to meet changing business needs	4.15	0.54	83%	16.286	.000	1	High
1	The company's digital infrastructure (internet, servers, and network systems) is reliable and consistently supports daily operations	4.15	0.68	83%	13.012	.000	2	High
3	The company's cybersecurity measures effectively minimize data breaches & risks	4.15	0.70	83%	12.566	.000	3	High
4	The company invests sufficiently in maintaining and improving its digital infrastructure	4.06	0.51	81.2%	16.000	.000	4	High
2	The company utilizes current industry-standard digital tools, including software, hardware, and cloud services	4.03	0.63	80.6%	12.567	.000	5	High
1	Digital Infrastructure	4.11	0.423	82.2%	20.291	.000	1	High

Note, $N = 60$; $df = 59$; Test Value = 3; $p < .05$.

Digital Infrastructure at Emdad Company is highly available, with a mean of 4.11 (82.2%), significantly exceeding the hypothetical mean ($t = 20.291$, $p < .001$). The highest-rated aspect was infrastructure scalability and integration (4.15), while industry-standard digital tools ranked lowest (4.03), indicating strong infrastructure across all assessed areas.

Descriptive Analyses of Digital Skills Dimension

Table 4-8 Descriptive Statistics and One-Sample t-test Results for the Digital Skills Dimension

No.	Statements	Mean	Std. Deviation	Relative Importance	T-Test	Sig. (2-tailed)	Rank	Degree
1	Employees possess the technical proficiency required to meet their job descriptions	4.15	0.68	83%	13.012	.000	1	High
3	Employees quickly adapt to new digital tools and technologies introduced in the workplace	4.11	0.69	82.2%	12.515	.000	2	High
5	Employees are capable of troubleshooting basic digital issues and independently finding solutions using available digital resources	4.10	0.62	82%	13.530	.000	3	High
2	The company provides adequate training to help employees improve their digital competencies	4.00	0.73	80%	10.518	.000	4	High
4	The company's level of digital literacy is sufficient to prevent delays in daily workflows	3.96	0.66	79.2%	11.294	.000	5	High
2	Digital Skills	4.06	0.44	81.2%	18.528	.000	2	High

Note, $N = 60$; $df = 59$; Test Value = 3; $p < .05$.

Digital Skills are highly established at Emdad Company, with a mean of 4.06 (81.2%), significantly above the hypothetical mean ($t = 18.528, p < .001$). Employees' technical proficiency ranked highest (4.15), while digital literacy sufficient to prevent operational delays ranked lowest (3.96), confirming strong digital competency overall.

Descriptive Analyses of Digital Tools Dimension

Table 4-9 Descriptive Statistics and One-Sample *t*-test Results for the Digital Tools Dimension

No.	Statements	Mean	Std. Deviation	Relative Importance	T-Test	Sig. (2-tailed)	Rank	Degree
1	The digital tools used in the company effectively support employees in completing their tasks	4.11	0.73	82.2%	11.711	.000	1	High
4	The company regularly updates or upgrades its digital tools to keep up with modern requirements	4.00	0.63	80%	12.145	.000	2	High
2	The company provides access to the necessary digital tools required for efficient work	4.00	0.71	80%	10.863	.000	3	High
5	The digital tools used by the company facilitate effective communication & collaboration between different departments & teams	3.98	0.72	79.6%	10.511	.000	4	High
3	The digital tools in use are user-friendly and easy for employees to adopt and require minimal technical assistance	3.95	0.67	79%	10.908	.000	5	High
3	Digital Tools	4.01	0.52	80.2%	14.970	.000	3	High

Note, $N = 60$; $df = 59$; Test Value = 3; $p < .05$.

Digital Tools are highly established at Emdad Company, with a mean of 4.01 (80.2%), significantly exceeding the hypothetical mean ($t = 14.970, p < .001$). Tools effectively support employees' tasks (4.11), while user-friendliness ranked lowest (3.95), confirming strong availability and practical effectiveness overall.

Descriptive Analyses of the Independent Variable (Digitalization)

Table 4-10 Descriptive Statistics and One-Sample *t*-test Results for the Overall Independent Variable (Digitalization)

No.	Dimensions of Digitalization	Mean	Std. Deviation	Relative Importance	T-Test	Sig.	Rank	Degree
1	Digital Infrastructure	4.11	0.42	82.2%	20.291	.000	1	High
2	Digital Skills	4.06	0.44	81.2%	18.528	.000	2	High
3	Digital Tools	4.01	0.52	80.2%	14.970	.000	3	High
1	Digitalization	4.06	0.39	81.2%	20.649	.000	2	High

Note, $N = 60$; $df = 59$; Test Value = 3; $p < .05$.

Overall, Digitalization at Emdad Company is highly established, with a mean of 4.06 (81.2%), significantly above the hypothetical mean ($t = 20.649, p < .001$). Digital Infrastructure ranked first (4.11), followed by Digital Skills (4.06) and Digital Tools (4.01), indicating a strong and balanced level of digitalization across the company.

Presentation and Discussion of the Dependent Variable: Growth

Descriptive Analyses of Customer Satisfaction Dimension

Table 4-11 Descriptive Statistics and One-Sample t-test Results for the Customer Satisfaction Dimension

No.	Statements	Mean	Std. Deviation	Relative Importance	T-Test	Sig. (2-tailed)	Rank	Degree
2	Our company responds to customer inquiries and issues in a timely and effective manner	4.20	0.68	84%	13.590	.000	1	High
5	Our customers show a high level of loyalty and frequently return to purchase our products or services	4.18	0.700	83.6%	13.078	.000	2	High
4	Customers are likely to recommend our company to others based on their experience	4.15	0.708	83%	12.566	.000	3	High
1	Our customers are satisfied with the overall quality of the products or services The researchers provide	4.11	0.61	82.2%	14.106	.000	4	High
3	Customers feel that they receive good value for the price they pay	4.00	0.71	80%	10.863	.000	5	High
1	Customer Satisfaction	4.13	0.53	82.6%	16.256	.000	1	High

Note, $N = 60$; $df = 59$; Test Value = 3; $p < .05$.

Customer Satisfaction is highly realized at Emdad Company, with a mean of 4.13 (82.6%), significantly above the hypothetical mean ($t = 16.256$, $p < .001$). Timely and effective responses to customer inquiries ranked highest (4.20), while perceived value for price ranked lowest (4.00), confirming consistently high customer satisfaction.

Descriptive Analyses of Financial Performance Dimension

Table 4-12 Descriptive Statistics and One-Sample t-test Results for the Financial Performance Dimension

No.	Statements	Mean	Std. Deviation	Relative Importance	T-Test	Sig. (2-tailed)	Rank	Degree
1	The company has achieved steady growth in revenue over recent periods	4.20	0.70	84%	13.123	.000	1	High
2	The company efficiency manages its costs and operating expenses	4.15	0.60	83%	14.705	.000	2	High
4	The company's financial resources are sufficient to support its ongoing operations and future investments	4.08	0.74	81.6%	11.292	.000	3	High
5	The company has successfully increased its market share compared to its competitors in recent periods	4.06	0.66	81.2%	12.511	.000	4	High
3	The company maintains a strong level of profitability compared to its goals or industry standards	3.98	0.62	79.6%	12.204	.000	5	High
2	Financial Performance	4.09	0.49	81.8%	17.267	.000	2	High

Note, $N = 60$; $df = 59$; Test Value = 3; $p < .05$.

Financial Performance is high at Emdad Company, with a mean of **4.09 (81.8%)**, significantly exceeding the hypothetical mean ($t = 17.267, p < .001$). Revenue growth ranked highest (**4.20**), while profitability relative to targets or industry standards ranked lowest (**3.98**), confirming strong overall financial performance.

Descriptive Analyses of Operational Performance Dimension

Table 4-13 Descriptive Statistics and One-Sample t-test Results for the Operational Performance Dimension

Note, N = 60; df = 59; Test Value = 3; $p < .05$.

No.	Statements	Mean	Std. Deviation	Relative Importance	T-Test	Sig. (2-tailed)	Rank	Degree
3	The company consistently meets production and service targets	4.16	0.717	83.2%	12.603	.000	1	High
5	The company regularly optimizes its operational processes to improve speed and reduce waste	4.15	0.70	83%	12.566	.000	2	High
1	The company's operations run efficiently with no delays or disruptions	4.11	0.66	82.2%	12.984	.000	3	High
2	Resources (equipment, materials, and labor) are used effectively to support daily operations	4.00	0.68	80%	11.244	.000	4	High
4	Operational processes are well-organized and contribute to overall productivity	4.00	0.713	80%	10.863	.000	5	High
3	Operational Performance	4.08	0.53	81.6%	15.649	.000	3	High

Operational Performance is highly realized at Emdad Company, with a mean of 4.08 (81.6%), significantly above the hypothetical mean ($t = 15.649, p < .001$). Meeting service targets ranked highest (4.16), while process organization and productivity ranked lowest (4.00), confirming strong overall operational efficiency.

Descriptive Analyses of the Dependent Variable (Growth)

Table 4-14 Descriptive Statistics and One-Sample t-test Results for the Overall Dependent Variable (Growth)

No.	Dimensions of Growth	Mean	Std. Deviation	Relative Importance	T-Test	Sig.	Rank	Degree
1	Customer Satisfaction	4.13	0.53	82.6%	16.256	.000	1	High
2	Financial Performance	4.09	0.49	81.8%	17.267	.000	2	High
3	Operational Performance	4.08	0.53	81.6%	15.649	.000	3	High
2	Growth	4.10	0.48	82%	17.605	.000	1	High

Note, N = 60; df = 59; Test Value = 3; $p < .05$.

Overall, Business Growth at Emdad Company is highly realized, with a mean of 4.10 (82%), significantly above the hypothetical mean ($t = 17.605, p < .001$). Customer Satisfaction ranked first (4.13), followed by Operational Performance (4.08) and Financial Performance (4.04), indicating strong and balanced organizational growth.

Results of Hypotheses

H.1.1: (Sub Hypothesis): There exists a statistically significant impact of Digital Infrastructure on the Growth of Emdad Company in Yemen at the level of significance of ($\alpha \leq .05$).

Table 4-15 Simple Linear Regression Results for the Impact of Digital Infrastructure on Growth

Independent Variable	Model	B	Std. Error	R	R Square	T	Sig.	F	Sig.
Digital Infrastructure	(Constant)	1.351	0.505	.584 ^a	.341	2.676	.010	30.050	.000 ^b
	Digital Infrastructure	0.670	0.122			5.482	.000		

Note. N = 60; Dependent Variable: Growth; $p < .05$.

Regression Equation: $Y = 1.351 + 0.670X$; Durbin-Watson = 2.393

Digital Infrastructure has a significant positive impact on Growth at Emdad Company. The model explains 34.1% of growth variance ($R^2 = .341$), with a significant regression effect ($F = 30.050$, $p < .001$; $B = .670$, $t = 5.482$). Thus, H.0.1.1 is rejected and H.1.1 is supported.

H.1.2: (Sub Hypothesis): There exists a statistically significant impact of Digital Skills on the Growth of Emdad Company in Yemen at the level of significance of ($\alpha \leq .05$).

Table 4-16 Simple Linear Regression Results for the Impact of Digital Skills on Growth

Independent Variable	Model	B	Std. Error	R	R Square	T	Sig.	F	Sig.
Digital Skills	(Constant)	1.051	.424	.689 ^a	.475	2.478	.016	52.409	.000 ^b
	Digital Skills	0.751	.104			7.239	.000		

Note. N = 60; Dependent Variable: Growth; $p < .05$.

Regression Equation: $Y = 1.051 + 0.751X$; Durbin-Watson = 2.122

Digital Skills have a strong and significant positive impact on Growth at Emdad Company. They explain **47.5% of the variance** in Growth ($R^2 = .475$), with a significant regression model ($F = 52.409$, $p < .001$; $B = .751$, $t = 7.239$). Thus, **H.0.1.2 is rejected and H.1.2 is supported.**

H.1.3: (Sub Hypothesis): There exists a statistically significant impact of **Digital Tools** on the Growth of Emdad Company in Yemen at the level of significance of ($\alpha \leq .05$).

Table 4-17 Simple Linear Regression Results for the Impact of Digital Tools on Growth

Independent Variable	Model	B	Std. Error	R	R Square	T	Sig.	F	Sig.
Digital Tools	(Constant)	1.549	.359	.685 ^a	.470	4.308	.000	51.407	.000 ^b
	Digital Tools	0.637	.089			7.170	.000		

Note. N = 60; Dependent Variable: Growth; $p < .05$.

Regression Equation: $Y = 1.549 + 0.637X$; Durbin-Watson = 1.943

Digital Tools have a strong and significant positive impact on Growth at Emdad Company. They explain 47.0% of the variance in Growth ($R^2 = .470$), with a significant regression model ($F = 51.407$, $p < .001$; $B = .637$, $t = 7.170$). Thus, H.0.1.3 is rejected and H.1.3 is supported.

H.1: (Alternative Hypothesis): There exists a statistically significant positive impact at the level of significance of ($\alpha \leq .05$) of Digitalization and its constituent dimensions (Digital Infrastructure, Digital Skills and Digital Tools) on the Growth and its respective dimensions (Customer Satisfaction, Financial Performance and Operational Performance) of Emdad Company in Yemen.

Table 4-18 Simple Linear Regression Results for the Impact of Digitalization on Growth

Independent Variable	Model	B	Std. Error	R	R Square	T	Sig.	F	Sig.
Digitalization	(Constant)	0.321	.422	.764 ^a	.583	0.760	.450	81.211	.000 ^b
	Digitalization	0.931	.103			9.012	.000		

Note. N = 60; Dependent Variable: Growth; $p < .05$.

Regression Equation: $Y = 0.321 + 0.931X$. Durbin-Watson = 2.067

Digitalization has a strong and significant positive impact on Growth at Emdad Company. It explains 58.3% of the variance in Growth ($R^2 = .583$), with a significant regression model ($F = 81.211$, $p < .001$; $B = .931$, $t = 9.012$). Thus, H.0.1 is rejected and H.1 is supported.

Table 4-19 Multiple Linear Regression Results for the Impact of Digitalization on Growth

Independent Variable	Model	B	Std. Error	Beta (β)	T	Sig.	Tolerance	VIF
Digitalization Dimensions	(Constant)	0.373	.442		0.845	.402		
	Digital Infrastructure	0.282	.131	.246	2.152	.036	.563	1.776
	Digital Skills	0.258	.159	.237	1.628	.109	.348	2.870
	Digital Tools	0.379	.114	.408	3.338	.002	.495	2.019

Note. N = 60; Dependent Variable: Growth; $R = .766^a$; $R^2 = .587$; $F = 26.490$; Sig. = .000;

Durbin-Watson = 2.019; $p < .05$. Regression Equation: $Y = 0.373 + 0.282X_1 + 0.258X_2 + 0.379X_3$

The multiple regression model shows that the three Digitalization dimensions jointly explain 58.7% of Growth variance ($R^2 = .587$, $F = 26.490$, $p < .001$). Digital Tools were the strongest significant predictor ($\beta = .408$), followed by Digital Infrastructure ($\beta = .246$), while Digital Skills were not significant when all dimensions were modeled simultaneously ($p = .109$). Thus, H.0.1 is rejected and H.1 is supported, with no serious multicollinearity detected.

H.2: (Alternative Hypothesis): There exists a statistically significant differences at the level of significance of ($\alpha \leq .05$) between the answers of the study sample members toward the Growth of Emdad Company in Yemen attributable to demographic characteristics (Qualification, Career Level Years of Service at Work, Age and Gender).

H.2.1: (Sub Hypothesis): There exists a statistically significant differences at the level of ($\alpha \leq .05$) between the answers of the study sample members toward the growth of Emdad Company in Yemen attributable to Gender.

Table 4-20 Independent-Samples T-Test Results for Differences in Study Variables Based on Gender

Variables	Gender	Mean	Std. Deviation	t- Value	Sig. (2-tailed)	Decision
Digitalization	Male	4.10	0.387	2.053	.045	Significant Differences
	Female	3.80	0.393			
Growth	Male	4.16	0.439	2.717	.009	Significant Differences
	Female	3.69	0.596			

The results show significant gender-based differences in perceptions of both Digitalization and Growth. Male respondents reported higher mean scores for Digitalization (4.10 vs. 3.80; $p = .045$) and Growth (4.16 vs. 3.69; $p = .009$). Therefore, **H.0.2.1 is rejected**, indicating significant differences by gender.

H.2.2: (Sub Hypothesis): There exists a statistically significant differences at the level of ($\alpha \leq .05$) between the answers of the study sample members toward the growth of Emdad Company in Yemen attributable to Age.

Table 4-21 *One-Way ANOVA Results for Perceptions of Digitalization and Growth Based on Age*

Variable	Sources of Variance	Sum of Squares	df	Mean Square	F	Sig.
Digitalization	Between Groups	2.048	3	0.683	5.224	.001
	Within Groups	7.319	56	0.131		
	Total	9.368	59			
Growth	Between Groups	1.438	3	0.479	2.149	.104
	Within Groups	12.494	56	0.223		
	Total	13.932	59			

The ANOVA results show significant age-based differences in Digitalization perceptions ($F = 5.224, p = .001$), so **H.0.2.2 is rejected** for Digitalization. However, no significant differences were found in Growth perceptions ($F = 2.149, p = .104$), so the corresponding null hypothesis is **accepted**.

H.2.3: (Sub Hypothesis): There exists a statistically significant differences at the level of ($\alpha \leq .05$) between the answers of the study sample members toward the growth of Emdad Company in Yemen attributable to Qualifications.

Table 4-22 *One-Way ANOVA Results for Perceptions of Digitalization and Growth Based on Qualification*

Variable	Sources of Variance	Sum of Squares	df	Mean Square	F	Sig.
Digitalization	Between Groups	0.111	2	0.056	0.343	.711
	Within Groups	9.256	57	0.162		
	Total	9.368	59			
Growth	Between Groups	0.021	2	0.010	0.043	.958
	Within Groups	13.911	57	0.244		
	Total	13.932	59			

The ANOVA results show no significant differences in perceptions of Digitalization ($F = .343, p = .711$) or Growth ($F = .043, p = .958$) based on educational qualification. Therefore, **H.0.2.3 is accepted**, indicating that qualification does not significantly influence respondents' perceptions.

H.2.4: (Sub Hypothesis): There exists a statistically significant differences at the level of ($\alpha \leq .05$) between the answers of the study sample members toward the growth of Emdad Company in Yemen attributable to Career Level.

Table 4-23 *Independent-Samples T-Test Results for Differences in Study Variables Based on Career Level.*

Variables	Career Level	Mean	Std. Deviation	t- Value	Sig. (2-tailed)	Decision
Digitalization	Employee	4.10	0.395	1.540	.129	No Differences
	Manager	3.90	0.391			
Growth	Employee	4.16	0.446	1.891	.064	No Differences
	Manager	3.87	0.586			

The results show no significant differences in perceptions of Digitalization ($t = 1.540, p = .129$) or Growth ($t = 1.891, p = .064$) based on career level. Therefore, **H.0.2.4 is accepted**, indicating that employees and department managers have statistically similar perceptions.

H.2.5: (Sub Hypothesis): There exists a statistically significant differences at the level of ($\alpha \leq .05$) between the answers of the study sample members toward the growth of Emdad Company in Yemen attributable to **Years of Service at Work**.

Table 4-24 Independent-Samples T-Test Results for Differences in Study Variables Based on Years of Service at Work

Variables	Years of Service at Work	Mean	Std. Deviation	t- Value	Sig. (2-tailed)	Decision
Digitalization	Less than 5 Years	3.91	0.46	-2.110	.042	Significant Differences
	From 5 – 10 Years	4.14	0.33			
Growth	Less than 5 Years	3.90	0.55	-2.320	.026	Significant Differences
	From 5 – 10 Years	4.21	0.40			

The results show significant differences based on years of service. Employees with 5–10 years of service reported higher perceptions of Digitalization (4.14 vs. 3.91, $p = .042$) and Growth (4.21 vs. 3.90, $p = .026$). Therefore, **H.0.2.5 is rejected**, indicating that longer tenure is associated with more positive perceptions of Digitalization and Growth.

Summary, Conclusions and Recommendations

Summary of Empirical Findings

Based on the comprehensive statistical processing of data gathered from Emdad Company's workforce, the empirical findings are summarized as follows:

- Demographic Differential Dynamics (Gender):** The independent-samples t-test revealed statistically significant gender differences in perceptions of both Digitalization ($p = .045$) and Corporate Growth ($p = .009$), with male employees reporting higher mean scores than female employees.
- Demographic Differential Dynamics (Years of Service):** Length of service significantly influenced perceptions of Digitalization and Growth, with significant differences for Digitalization ($p = .042$) and Growth ($p = .026$). Employees with 5–10 years of service reported more favorable perceptions than those with less than 5 years of service.
- Demographic Differential Dynamics (Career Level):** Conversely, organizational hierarchy did not play a role in altering employee viewpoints. The t-test confirmed no statistically significant differences ($p > .05$) between regular employees and department managers regarding the execution of Digitalization or its Growth implications.

Conclusions

In light of the aforementioned statistical results, several fundamental conclusions were articulated:

- The Human and Experience Capital in Digital Transition:** Digitalization represents a socio-technical transformation rather than merely technological adoption. Longer-tenured employees (5–10 years) perceive Digitalization more positively, likely due to their deeper organizational knowledge, while newer employees face both onboarding and digital adaptation challenges.
- Gender Digital Divide in the Yemeni Private Sector:** The gender-based disparity may indicate differences in access to digital tools, training opportunities, or job assignments. To maximize business growth, Emdad Company should ensure equitable digital access, training, and empowerment for all employees, regardless of gender.
- Unified Strategic Vision Across Hierarchy:** The absence of significant perceptual differences between department managers and employees indicates strong organizational alignment, with both groups recognizing Digitalization as essential for improving operational performance, supporting growth, and sustaining the company in Yemen's challenging economic environment.

Recommendations

Based on the drawn conclusions, the following strategic recommendations are extended to the executive management of Emdad Company:

- Implement digital onboarding programs** for newly recruited employees to strengthen digital literacy and accelerate productivity.
- Bridge the gender digital gap** by ensuring equal access to digital tools, technical training, and digital projects.
- Leverage experienced employees** (5–10 years of service) as Digital Transformation Mentors to transfer knowledge and support newer staff.

4. **Sustain investment in digital infrastructure and tools** to maintain operational efficiency and competitiveness.
5. **Automate demand forecasting** by integrating an advanced forecasting module into the existing Onyx Pro ERP system to improve inventory planning and supply-chain resilience.
6. **Accelerate the e-commerce application launch** to expand B2B/B2C transactions, market reach, and business growth.
7. **Expand digital training and media content** through the planned YouTube channel, using the Aden training studio to produce educational, product, and promotional content.

Suggestions for Future Research

To build upon the contributions of this research, the following avenues are proposed for future academic works:

1. **Comparative studies:** Examine multiple SMEs across different sectors and regions in Yemen to generalize the impact of Digitalization on business Growth.
2. **Longitudinal studies:** Track Digitalization and business Growth over time to assess their long-term effects on business resilience and sustainability.
3. **Mediating and moderating factors:** Investigate variables such as organizational culture, financial constraints, and leadership style to better explain the Digitalization–Growth relationship.

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