



Digital Transformation in Capital Construction Projects

A Case Study in the Digital Transformation of Saudi Arabia, Eastern Region

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التحول الرقمي في إدارة مشاريع البناء الحديثة
دراسة حالة التحول الرقمي في المملكة العربية السعودية المنطقة الشرقية
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الفصل الدراسي الأول

2024

Statistical Analysis

- Introduction.
- Characteristics of the study sample.
- Measuring the validity & reliability of the research tool.
- Descriptive analysis of study variables.
- Linear correlation coefficients between variables.
- Study hypothesis validity test results.
- Conclusion.

- Introduction:

This chapter deals with presenting the results of the field study that were statistically analyzed using the SPSS program, version 29. It includes descriptive statistics for the sample under study, testing the validity and reliability of the questionnaires used to collect the required data from the current study sample, testing the research hypotheses, and the suitability of the research model.

- Characteristics of the study sample:

The study sample was distributed according to gender, number of years of experience, educational level, and nature of work.

- Gender includes (Male, Female)
- Number of years of experience (1-5 / 6-10 / 11-15 / 16-20 / 21-25).
- Education level (Undergraduate, Postgraduate, Diploma, Bachelor, Master)
- Nature of work (Front Line management, Middle management, Top management, Other).

THE FOLLOWING TABLE, FIGURES AND PARAGRAPHS EXPLAIN THE CLASSIFICATION OF THE SAMPLE UNDER STUDY AS FOLLOWS:

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mali	27	90.0	90.0	90.0
	Femail	3	10.0	10.0	100.0
	Total	30	100.0	100.0	

Experience Years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5	8	26.7	26.7	26.7
	6-10	6	20.0	20.0	46.7
	11-15	5	16.7	16.7	63.3
	16-20	6	20.0	20.0	83.3
	21-25	5	16.7	16.7	100.0
	Total	30	100.0	100.0	

Degree

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undergraduate	1	3.3	3.3	3.3
	Postgraduate	15	50.0	50.0	53.3
	Diploma	9	30.0	30.0	83.3
	Bachelor	5	16.7	16.7	100.0
	Master				
	Total	30	100.0	100.0	

Level of Management

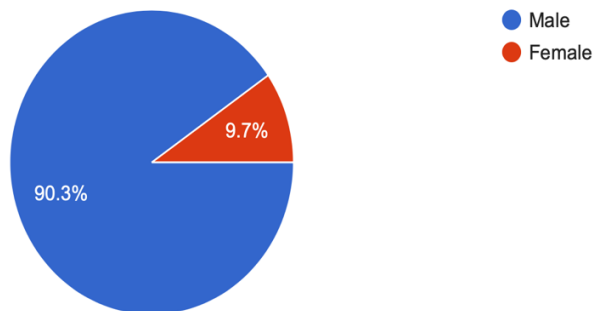
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Front Line management	8	26.7	26.7	26.7
	Middle management	7	23.3	23.3	50.0
	Top Management	2	6.7	6.7	56.7
	Other	13	43.3	43.3	100.0
	Total	30	100.0	100.0	

Number of Employees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Small Scale	4	13.3	13.3	13.3
	Medium Scale	7	23.3	23.3	36.7
	large Scale	18	60.0	60.0	96.7
	Other	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

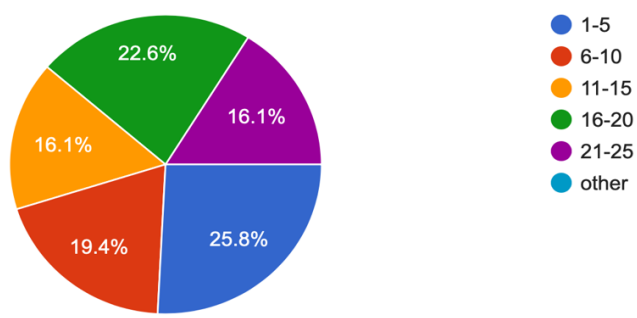
Gender

31 responses



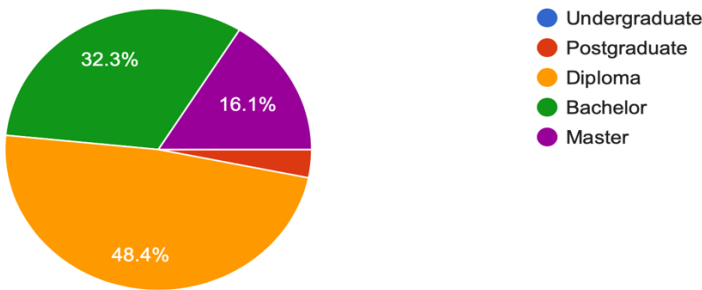
Experience Years

31 responses



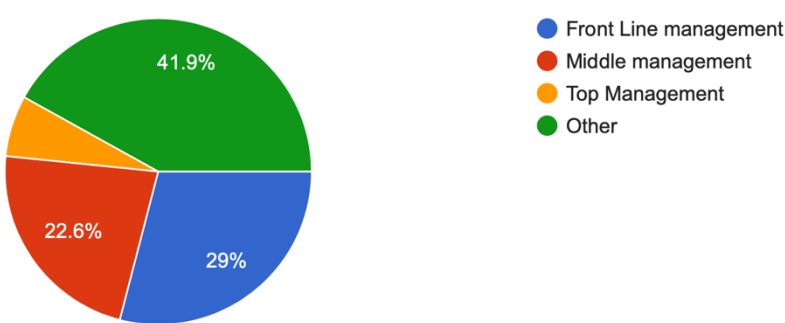
Degree

31 responses



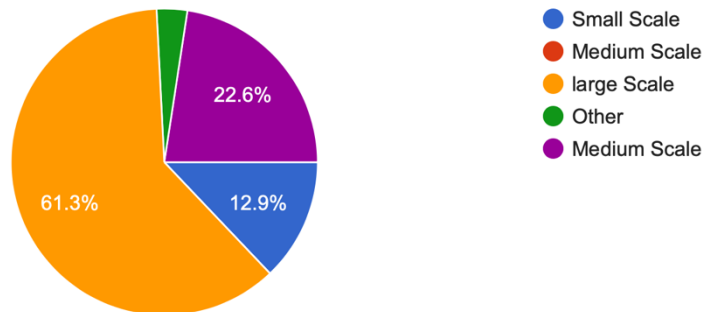
Level of Management

31 responses



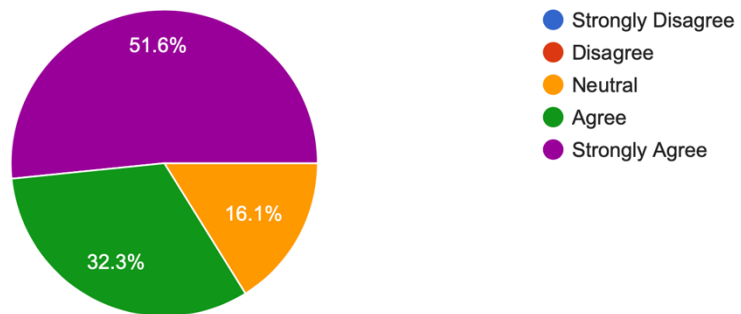
Number of Employees

31 responses



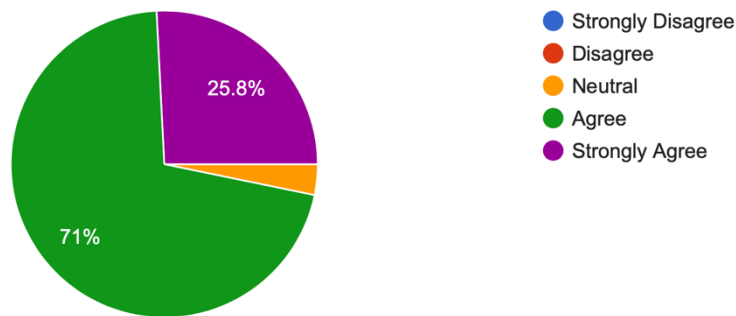
Adoption rate of specific digital tools.

31 responses



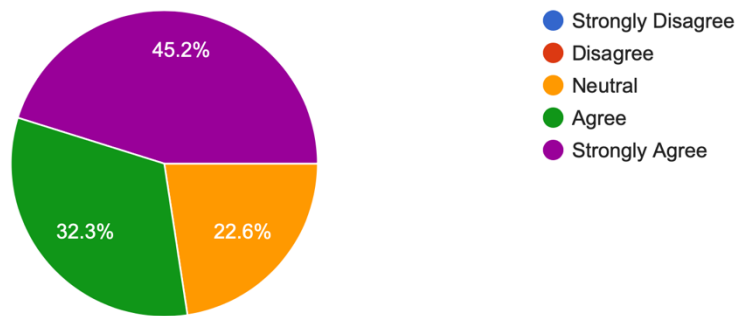
Leadership commitment to digital transformation.

31 responses



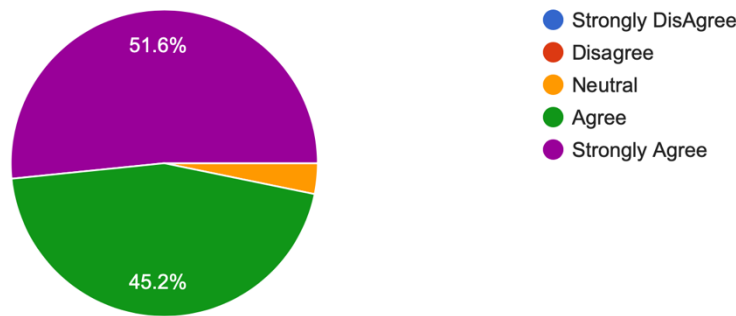
Organizational culture and openness to innovation

31 responses



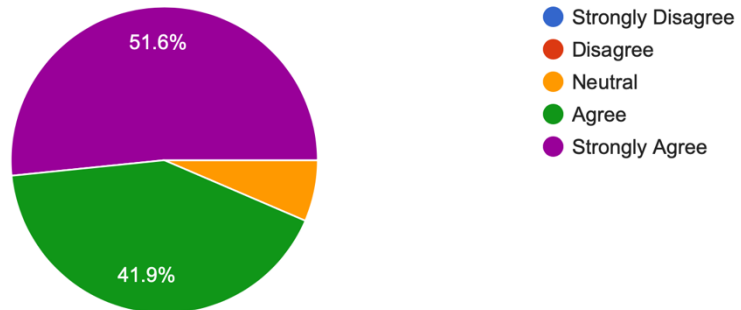
Workforce skills and training programs.

31 responses



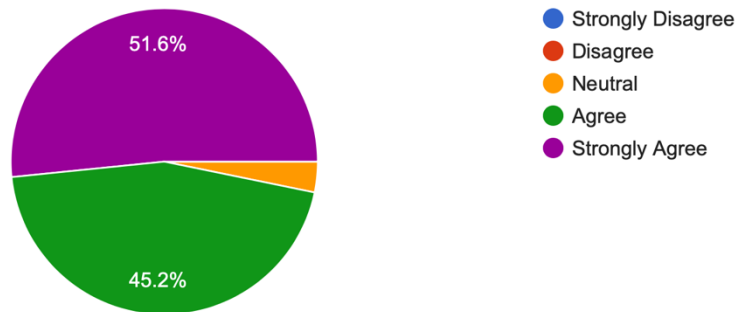
Effectiveness of integrating various digital tools and platforms.

31 responses



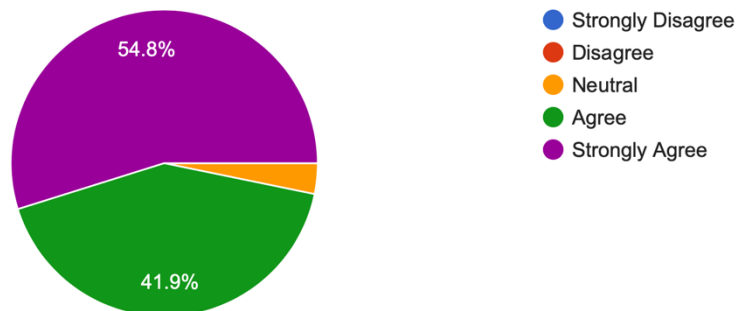
Interoperability and standardization efforts

31 responses



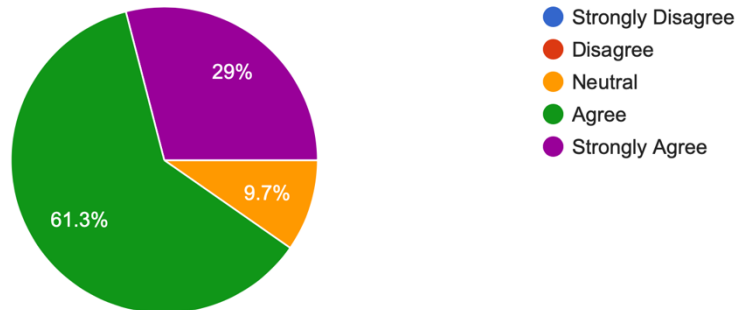
Improvement in construction quality and accuracy

31 responses



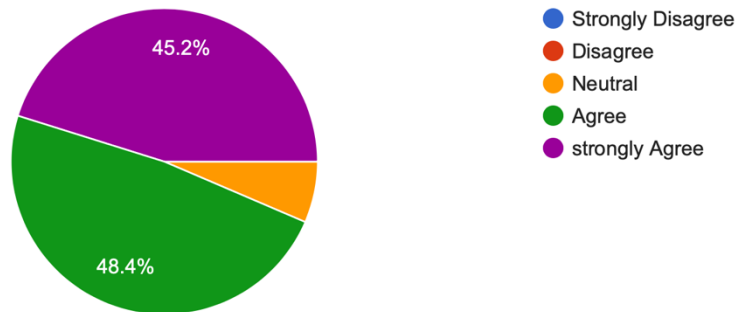
Reduction in defects and rework

31 responses



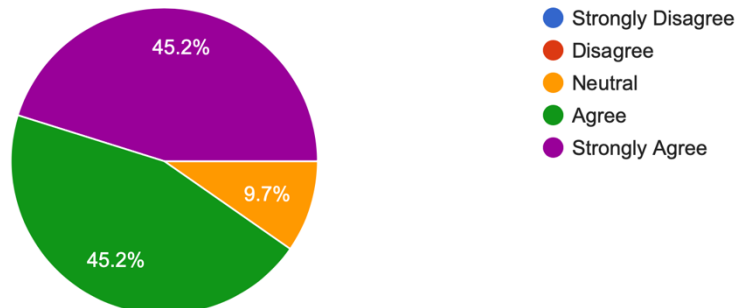
Level of innovation in construction methods and materials.

31 responses



Competitive advantage and market position

31 responses



KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.359
Bartlett's Test of Sphericity	Approx. Chi-Square	150.563
	df	105
	Sig.	.002

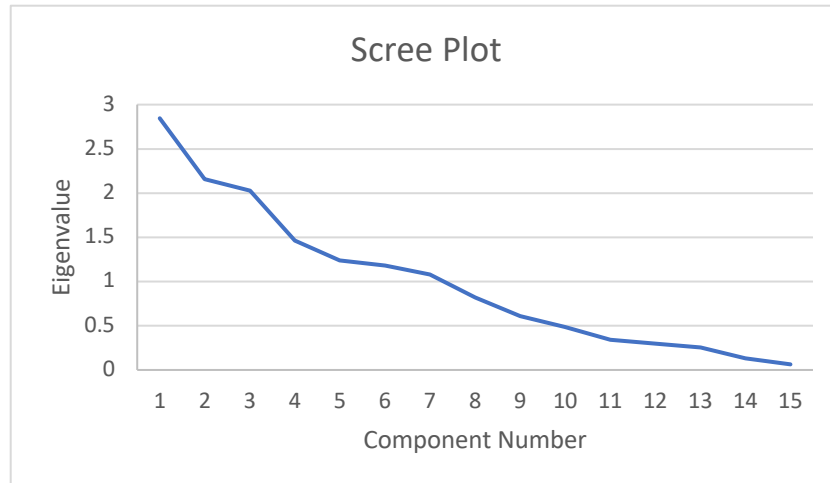
Exploratory factor analysis

	Component						
	1	2	3	4	5	6	7
@4	.857						
@1	-.782						
@4	.779						
@3		.824					
@3		.767					
@4			.815				
@5			.594				
@5				.438			
@1				.915			
@3					.875		
@5					.751		
@5						.813	
@4		.504					
@5						.534	
@4							.949

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.



Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.845	18.969	18.969	2.845	18.969	18.969	2.170	14.470	14.470
2	2.160	14.399	33.368	2.160	14.399	33.368	2.007	13.382	27.851
3	2.024	13.496	46.864	2.024	13.496	46.864	1.840	12.268	40.119
4	1.465	9.769	56.633	1.465	9.769	56.633	1.683	11.218	51.337
5	1.241	8.274	64.907	1.241	8.274	64.907	1.520	10.133	61.470
6	1.183	7.886	72.793	1.183	7.886	72.793	1.418	9.451	70.921
7	1.077	7.181	79.974	1.077	7.181	79.974	1.358	9.053	79.974
8	.820	5.465	85.439						
9	.610	4.065	89.504						
10	.486	3.237	92.741						
11	.339	2.263	95.004						
12	.301	2.006	97.010						
13	.255	1.698	98.708						
14	.130	.870	99.578						
15	.063	.422	100.000						

Extraction Method: Principal Component Analysis.

Item Statistics

	Mean	Std. Deviation	N
@1	1.10	.305	30
@4	2.80	1.472	30
@4	3.60	.814	30
@1	2.67	1.295	30
@3	2.53	.776	30
@3	4.40	.724	30
@4	4.23	.504	30
@5	4.20	.805	30
@5	4.47	.571	30
@5	4.43	.626	30
@4	4.50	.572	30
@5	4.50	.572	30
@3	4.23	.568	30
@4	4.40	.621	30
@5	4.33	.661	30

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.192	.322	15

Case Processing Summary

	N	%
Cases Valid	30	100.0
Excluded ^a	0	.0

Total	30	100.0
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a. Listwise deletion based on all variables in the procedure.

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
@1	55.30	11.045	.003	.817	.194
@4	53.60	9.559	-.064	.580	.290
@4	52.80	10.166	.061	.839	.178
@1	53.73	11.444	-.226	.734	.374
@3	53.87	10.326	.043	.435	.186
@3	52.00	10.414	.044	.718	.185
@4	52.17	11.247	-.105	.548	.225
@5	52.20	9.821	.134	.504	.145
@5	51.93	11.375	-.144	.418	.242
@5	51.97	10.240	.128	.590	.156
@4	51.90	9.955	.239	.518	.123
@5	51.90	9.955	.239	.522	.123
@3	52.17	9.385	.413	.688	.064
@4	52.00	9.310	.382	.529	.064
@5	52.07	9.789	.222	.531	.119