

Midocean University
College of Management
Master of Project Management



The impact of change management in airports on employee
performance in light of digital transformation: an applied study at
King Khalid International Airport in Riyadh.

Student Preparation:

Hanadi Mohamed Al-Degaither

Research Supervisors:

Dr. Alfaisal Abdelhameed Mohamed

Dr. Fayez Ali Jrad

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Keywords:

Digitalization, Airport Employees, Employee Productivity, Employee Satisfaction.

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List of terminology:

1- Digital Transformation: The integration of digital technology into all areas of a business, fundamentally changing how it operates and delivers value to customers.

2- Employee Performance: The effectiveness with which an employee fulfills their job responsibilities and contributes to organizational goals.

3- Resistance to Change: The behavioral response of individuals or groups that oppose or struggle against new changes.

4- Technology Adoption: The process by which individuals or organizations begin to use new technologies.

5- Performance Metrics: Standards used to measure employee performance and effectiveness, often including KPIs (Key Performance Indicator).

(Chapter1)

1- Introduction :

The term digitalization originates from the Latin word 'digitus,' meaning 'finger,' and is linked to concepts like 'number' and 'digit' in various European languages (Baloğlu, 2023). Digitalization represents a contemporary approach that has rapidly spread in our globalizing world, influenced by the industrial revolution, and affects nearly every aspect of life. This process is continuously evolving, moving through various stages, each introducing new ideas during a time marked by increased production and consumption (Baloğlu, 2023). In existing literature, digitalization is defined as transferring an organization's information and hardware into a virtual space by converting them into digital formats using electronic devices (Baloğlu, 2023). In today's business environment, digital transformation is viewed as an essential phenomenon that permeates all areas of an organization's operations and integrates digitalization into new management strategies. The benefits of digitalization are numerous, including improved access to information, faster production and workflow, secure information management and storage, and cost savings through digital storage solutions. However, like any new method, it comes with certain challenges, such as security issues, the risk of cybercrime, and new online threats. Nonetheless, it is expected that technology advancements will address these issues promptly (Üzmez & Büyükbeşe, 2021). The study of employee satisfaction began to take shape in the 1920s alongside the emergence of job satisfaction as an academic field. The Neoclassical management perspective of the 1930s and 1940s played a significant role in this evolution, earning acknowledgment in both organizational

practices and the academic literature. As a result, research in this area started to proliferate (Çabukel, 2008). These studies produced various definitions, which can generally be summarized as ‘a sense of happiness that enhances an employee’s commitment to their job and workplace’ or ‘the degree to which employees feel aligned with their work and environment’ (Korkmaz & Erdoğan, 2014). Findings from these studies suggest that employee satisfaction brings numerous advantages to employers, such as fostering organizational stability, boosting commitment, increasing motivation, and improving employee performance. Furthermore, it is crucial to recognize the mutual benefit between businesses and employees; a company’s operational effectiveness is directly linked to its capacity to offer rewarding and satisfying benefits to its workforce. Thus, employee satisfaction is a critical factor for both the business and its employees (Korkmaz & Erdoğan, 2014). Employee productivity is measured as a performance ratio, calculated based on the relationship between inputs and outputs. It can be conceptually defined as maximizing an employee’s performance to ensure sustainability at a level that benefits the organization the most (Özçelik & Kandemir, 2017). Key metrics for assessing employee productivity include performance, productivity itself, and the time taken to complete tasks. In the current business environment, there is a clear trend towards enhancing productivity to maintain a competitive advantage. Consequently, the focus on achieving low-cost, high-quality outcomes has become crucial for sustaining that competitive edge (Kıraç, 2024). Furthermore, these definitions influence one another within organizations. Increases in employee satisfaction typically lead to higher

productivity, while declines in satisfaction can result in decreased productivity. When employees feel satisfied, they often develop a sense of ownership toward the organization, which can positively influence productivity by encouraging them to find fulfillment in their work (Ulusoy & Tinar, 2017). Conversely, employee dissatisfaction can lead to a lack of enthusiasm for their work, diminished feelings of belonging to the organization, and a potential drop in performance. It is important to note that employee satisfaction can vary based on factors such as individual perspectives, motivation methods, and personality traits (Eceoğlu, 2020).

2- Study problem:

This research focuses on how practices in change management affect employee performance amid the digital transformation happening at King Khalid International Airport in Riyadh.

Key Issues Defining the Research Focus:

1. Readiness for Change in the Organization.

For successful digital transformation, airports must have strong organizational readiness, which includes clear communication, teamwork, necessary skills, and a supportive culture. When readiness is lacking, progress can be delayed, and the implementation of new technologies may not go smoothly, which can hurt employee performance.

2. Employees Resistance and Adaptation.

The shift to digital processes requires quick adjustments from employees. Common obstacles such as reluctance to embrace change, inadequate training, and a shortage of incentives can adversely affect motivation, engagement, and overall performance.

3. Specific Challenges at King Khalid International Airport.

This study aims to uncover the unique challenges and possible improvements for employees at King Khalid International Airport, focusing on how customized change management approaches can lessen negative effects and boost positive results during the digital transformation.

The Fundamental Research Question:

How do change management practices influence employee performance during digital transformation at King Khalid International Airport in Riyadh?

3-Sub-Questions:

- 1-** How advanced is the digital technology used by airport staff?
- 2-** Does the use of digital tools influence how productive and satisfied employees are?
- 3-** Are there differences in the digital transformation based on different categories?

4- Study Significance :

The study of change management at airports in the light of digital transformation and its impact on employee performance is very important especially in the context of King Khalid international airport. This study is critical in understanding how to effectively digitize airport operations without compromising employee performance and organizational performance.

Promoting the digital transformation and competition of airports

Airport operations are being impacted by digital transformation, which would not only require enabling technology, but also organizational preparedness, including clarity, collaboration, capabilities, and culture.

Academic research that leads to better understanding the effectiveness of change management in driving innovation, operational performance effectiveness and competitive position of the airlines as airports in an everchanging industry.

5- Study primary objective:

The main goal of this research is to highlight how important digitalization is for the growth of King Khalid International Airport, just like in other industries. The study also seeks to explore how digitalization affects employee satisfaction and productivity. The key aims of this research center around the uncertainties related to these main goals.

- 1-How much airport staff resist the move to digital processes.
- 2-The level of trust employees have in digital solutions.
- 3-Employees' feelings about digital tools.
- 4-Whether the company is digitally advanced enough.
- 5- How digitalization affects the workers.
- 6- How well employees embrace digital changes.
- 7-The effect of digital technology on employee productivity.

6- Research Hypotheses:

To assess this impact, three hypotheses were created. They are summarized below:

H1: Increased digitalization at airports leads to higher employee productivity.

H2: There is a relationship where employee satisfaction affects the connection between digitalization and productivity.

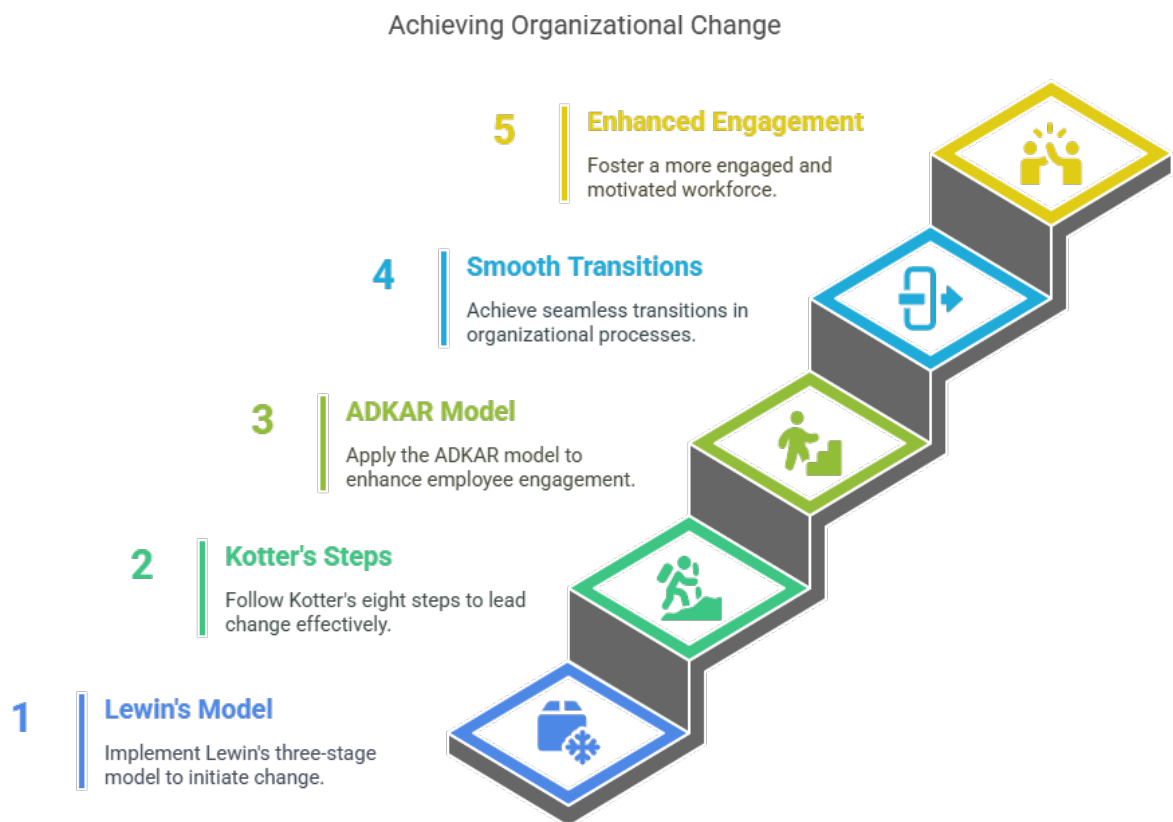
H3: The research suggests that demographics influence the levels of employee satisfaction, productivity, and views on the digitalization process.

7- Change management theory:

Theories of change management offer a systematic way to guide people, teams, and organizations as they move from their current situation to a preferred future. One well-known model in this area is Kurt Lewin's Change Management Model, which includes three main phases: unfreezing, changing, and refreezing. This framework underlines the importance of preparing staff for

transformation, executing the change effectively, and integrating new practices into the organizational culture. Additionally, John Kotter's Eight Steps for Leading Change highlights creating urgency, forming a guiding coalition, and embedding new methods within the organization's culture, showcasing the role of leadership in successful change efforts. Another vital theory is the ADKAR Model, which identifies five outcomes necessary for individuals to navigate change successfully: Awareness, Desire, Knowledge, Ability, and Reinforcement. This model emphasizes the individual's point of view in change management, making sure employees are not just informed but also encouraged to accept changes. For airports like King Khalid Airport in Riyadh, these theories can greatly affect how workers adapt to digital advancements, leading to smoother transitions and better overall performance. By utilizing these theoretical concepts, airport management can create customized plans that resonate with their staff, ensuring that technological upgrades not only change procedures but also motivate and empower employees to build resilience and adaptability in a continually evolving environment.

Figure (1- 1) Change management theory:



Made with  Napkin

8- Chapter 2 (Literature Review) :

8- Introduction :

The landscape of airport operations worldwide is changing as digital transformation, powered by automation, artificial intelligence, and biometrics, improves efficiency, security, and the overall experience for travelers. King Khalid International Airport (KKIA) is embracing these technologies as part of Saudi Vision 2030, making it a significant player in aviation. However, to truly succeed in digital transformation, it is essential to implement more than just technological improvements. Effective management of change is necessary to help employees adapt, reduce disruptions, and maintain productivity. Research consistently shows that a well-structured approach to change management—incorporating training, communication, leadership support, and employee participation—is crucial for minimizing resistance and enhancing workforce output during periods of digital change. This section synthesizes key literature, pinpoints existing gaps, and sets the stage for exploring how change management influences employee performance at KKIA. The results will prove useful for academic inquiries and practical applications related to digital transformation in airports.

9- Independent Variable:

(digital transformation)

In existing literature, digitalization is defined as transferring an organization's information and hardware into a virtual space by converting them into digital formats using electronic devices (Baloğlu, 2023). In today's business environment, digital transformation is viewed as an essential phenomenon that permeates all areas of an organization's operations and integrates digitalization into new management strategies.

10- Dependent Variable:

(employee performance)

Findings from these studies suggest that employee satisfaction brings numerous advantages to employers, such as fostering organizational stability, boosting commitment, increasing motivation, and improving employee performance. Furthermore, it is crucial to recognize the mutual benefit between businesses and employees; a company's operational effectiveness is directly linked to its capacity to offer rewarding and satisfying benefits to its workforce. Thus, employee satisfaction is a critical factor for both the business and its employees.

11- Literature Review:

1- Halpern, N., Mwesiumo, D., Suau-Sanchez, P., Budd, T., & Bråthen, S. (2020). Ready for digital transformation? The effect of Organisational readiness, innovation, airport size and ownership on digital change at airports. *Journal of Air Transport Management*, 90, 101949 - 101949.

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- 10-** Suwannapirom, C., & Pranee, S. (2023). A structural equation model of organizational performance of airports of Thailand public company limited. *SSRN Electronic Journal*.
<https://doi.org/10.2139/ssrn.4606755>.

12- Comparison between studies:

While methodologies and contexts differ, these studies consistently find that organizational readiness, innovation, and effective change management are essential for leveraging digital transformation to improve employee performance in airports. Digital transformation also enhances the impact of HR strategies, underscoring the need for integrated approach.

Matrix of the Impact of change Management on employee performance (table 1):

Change Management Aspect	Effect on Employee Performance
Organizational Structure	Strong positive impact; improves service quality and performance.
Leadership Change	Significant positive effect; boosts engagement and performance.
Technological Change	Moderate positive effect; enhances efficiency if well-managed.
Work Culture & Involvement	Positive effect; increases morale and retention.
Communication & Support	Reduces resistance, increases satisfaction.

13- theoretical framework:

This research is based on three main theoretical views that shed light on how digital transformation, change management, and employee performance are connected:

1- Lewin's Change Management Model (1951):

- Involves the Unfreeze-Change-Refreeze steps.
- Details phases of how organizations adapt.

2- Kotter's 8-Step Change Model (1996):

- Offers a practical approach for implementing change.
- Highlights urgency, building support, and creating a vision.

3-Technology Acceptance Model (TAM) - Davis (1989):

- Looks at how useful and easy technology seems.
- Forecasts how people will adopt new technology.

These models assist in understanding:

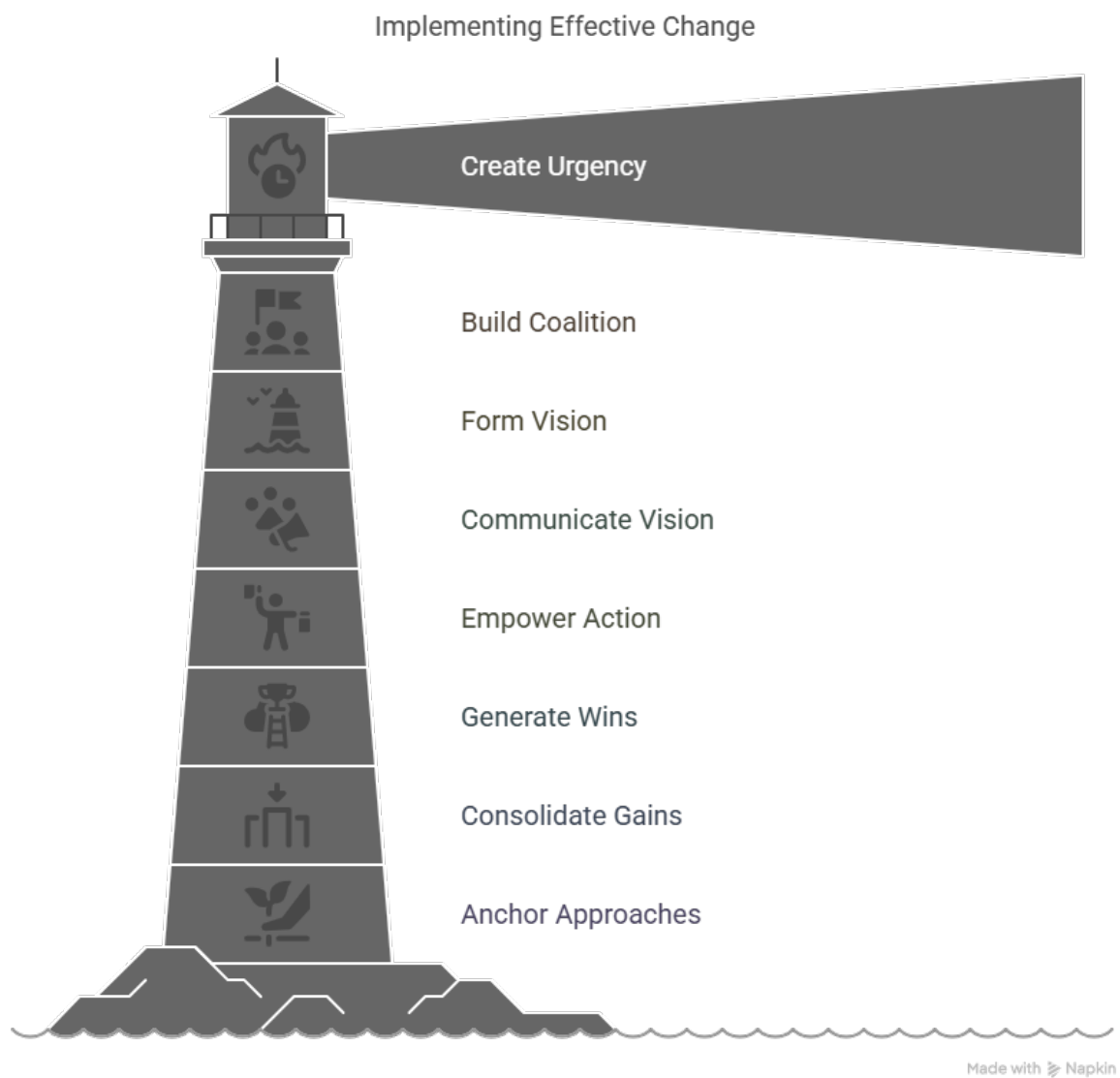
The way KKIA handles digital transformation

The factors that affect how employees adopt technology

The importance of leadership in carrying out changes

The methods for maintaining improvements in performance.

Figure (1-2) theoretical framework:



14- Chapter 3 (Research Methodology):

14- Introduction:

This research, a quantitative method is applied within a practical, cross-sectional framework to achieve a structured and measurable analysis of data. The approach details important aspects such as the target group, sampling methods, tools for data gathering, and analysis techniques, which support both reliability and validity. Through the use of organized methods, this study seeks to deliver objective and broadly applicable results regarding the topic being explored.

15- Study Methodology:

This research is a practical, cross-sectional project. The study used a quantitative approach, which is detailed in the methodology section, including information on the population, sample, tools for data collection, and the analysis of the data.

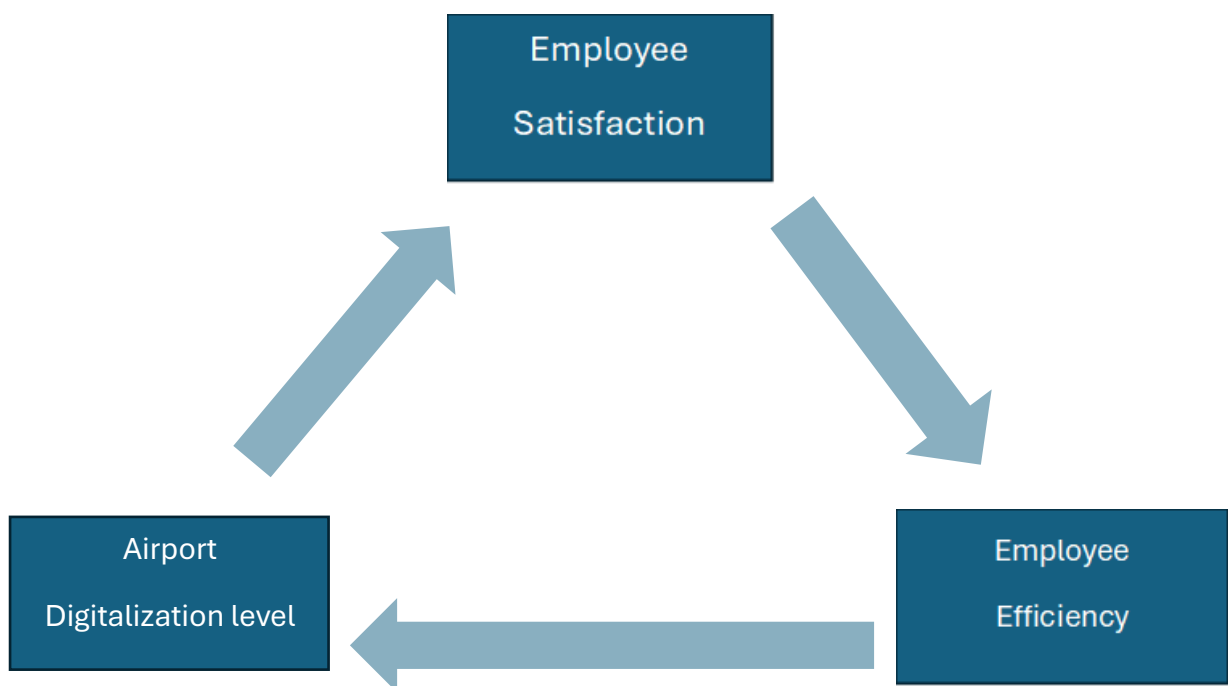


Figure (1-3) Research Model:

16- Study Population :

The group being studied will include workers at King Khalid International Airport (KKIA) in Riyadh, Saudi Arabia, who are impacted by digital transformation efforts, either directly or indirectly. This group may encompass:

- 1-** Operational Workers (such as those in ground handling, security, and customer service)
- 2-** Technical and IT Personnel (like individuals overseeing digital systems, automation, AI, and data analysis)
- 3-** Administrative and Management Teams (including HR, finance, and operations managers)
- 4-** Support Personnel (such as maintenance and logistics staff)

To gain thorough insights, the sample might be divided according to departments, job functions, and degrees of digital adoption.

Data Collection Sources:

To achieve the study objectives the researcher relied on two types of sources in collecting data and information, as follows:

A-Secondary sources: These are data previously collected by another researchr, and relying on them is often less costly and time-consuming, such as books and related publications, scientific journals, and published research

B-Primary sources: These are data collected for the first time from a specific community for the research project. Relying on rhem often requires sufficient effort, time, and more detail than secondary sources because they lead to more accurate and realistic information, such as questionnaites.

These sources are collected for study purposes from university theses and available websites.

The method of collecting primary-data relies on a questionnaire designed by the researcher to collect quantitative data related to subject of the study.

17- Study sample :

Location of the Study: King Khalid International Airport (KKIA) in Riyadh

Participants: Between 300 and 400 employees

Sampling Technique: Stratified random sampling

Main Categories: Departments: Operations, Security, Information Technology, Customer Service, Administration, and

Management

Experience Levels: Less than 2 years, 2 to 5 years, 5 to 10 years, More than 10 years

Digital Adoption Types: Early adopters, regular users, and resistant users

Methods of Data Collection: Surveys (quantitative) Interviews (involving 15-20 employees, 10-15 managers, and 5-8 executives) Focus Groups (4-6 groups, each with 8-10 participants) .

Study Tool:

We will use the questionnaire as a tool for collecting data for the study, as it is the most appropriate scientific research tool that is consistent with the study data and achieves its objectives of obtaining information. The questionnaire is also considered one of common methods for obtaining facts and collecting data from existing conditions and methods. This study depends on the methodology followed, the study objectives and question, the time allowed, and available financial capabilities. It was concluded that the most appropriate tool and achieving the objectives of this study is the “questionnaire”.

18- Study Limitations:

Investigating how change management affects employee performance during the digital transformation at King Khalid International Airport (KKIA) in Riyadh faces several limitations:

1. **Narrow Focus:** This research concentrates solely on KKIA, which may hinder the applicability of its results to other airports that operate under different cultural, technological, or operational conditions.
2. **Limited Data Availability:** Obtaining complete employee performance information or sensitive operational statistics can be challenging, which could restrict the depth of the analysis performed.
3. **Bias in Feedback:** Using surveys or interviews for gathering employee opinions can lead to bias, as individuals may interpret the effectiveness of change management subjectively.
4. **Time Limitations:** The research might only reflect a specific period, therefore it might overlook the long-term effects or ongoing consequences of digital transformation efforts.
5. **Cultural Influences:** The distinct cultural and organizational landscape of Saudi Arabia may shape how employees react to change, making it tough to compare with findings from other countries.
6. **Inconsistent Technology Adoption:** Variations in how quickly or which digital technologies are embraced at KKIA could impact the reliability of the research outcomes.

19- Statistical Analysis Method:

Collecting data is essential, but analyzing the gathered information is crucial to extract meaningful conclusions. In this study, the Statistical Package for the Social Sciences (SPSS), specifically version 28, was used to analyze the collected data.

A descriptive analysis was conducted to characterize the sample, providing deeper insights into the demographic profile, preferences, and other relevant characteristics of the participants. This helps researchers understand the composition of the study population.

Validity and reliability tests are critical to ensuring the accuracy and consistency of the collected data. Construct validity was assessed using Exploratory Factor Analysis (EFA) to determine whether the research instrument measures what it intends to measure. Reliability was evaluated using Cronbach's Alpha to assess the internal consistency and stability of the responses over time.

20- Chapter 4 (Practical Study):

20- Introduction :

This chapter presents the empirical results of the study, which investigates the impact of change management practices on employee performance during digital transformation at King Khalid International Airport (KKIA) in Riyadh. The analysis was conducted using SPSS (Version 28) and includes descriptive statistics, correlation analysis, regression analysis, and tests of differences between groups. The aim is to empirically answer the study's main question and sub-questions while testing the validity of its hypotheses.

21- Data Analysis:

Descriptive Analysis of the Study Sample:

Descriptive statistics were conducted to identify the characteristics of the respondents, including age, education level, marital status, gender, and department. A total of 69 employees participated in the study.

The demographic results indicate the following:

- The largest age group was 26–35 years (29%).
- 53.6% were male, while 46.4% were female.
- The highest educational representation was among Diploma and Bachelor's degree holders (37.6%).
- Participants represented various departments: Passenger Services, Screening Security, IT, Operations, Baggage Handling, and Administrative Units.

These results confirm that the sample is diverse and adequately represents different operational and administrative units at KKIA.

Demographic Findings (table 2)

		Q1			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25 years or less	9	13.0	13.0	13.0
	26 - 35 years	20	29.0	29.0	42.0
	3	21	30.4	30.4	72.5
	4	19	27.5	27.5	100.0
	Total	69	100.0	100.0	

Q2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Secondary	33	47.8	47.8	47.8
	Secondary	2	2.9	2.9	50.7
	Diploma	13	18.8	18.8	69.6
	University	13	18.8	18.8	88.4
	5	8	11.6	11.6	100.0
	Total	69	100.0	100.0	

Q3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	44	63.8	63.8	63.8
	Married	19	27.5	27.5	91.3
	Divorced	6	8.7	8.7	100.0
	Total	69	100.0	100.0	

Q4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	37	53.6	53.6	53.6
	Female	32	46.4	46.4	100.0
	Total	69	100.0	100.0	

Q5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Passenger Services	7	10.1	10.1	10.1
	Security Screening	1	1.4	1.4	11.6
	Management / Supervision	19	27.5	27.5	39.1
	Passenger check-in Officer	1	1.4	1.4	40.6
	Operations / Airside	3	4.3	4.3	44.9
	Coordination	2	2.9	2.9	47.8
	Information Technology (IT)	8	11.6	11.6	59.4
	9	28	40.6	40.6	100.0
	Total	69	100.0	100.0	

Correlation Analysis (Pearson Correlation):

To answer the second research question — Does the use of digital tools influence how productive and satisfied employees are? — Pearson correlation analysis was conducted between the dimensions of digital transformation (A–D) and employee performance indicators (E–H).

The analysis revealed that:

The analysis revealed that:

- All major dimensions of digital transformation show a **positive and statistically significant correlation** with employee productivity, satisfaction, and effectiveness (Sig < 0.05).
- This means that increased use of digital systems (biometric tools, automation, real-time data, digital coordination) is strongly associated with improved workflow, reduced errors, faster task completion, and higher satisfaction.

These results support **Hypothesis H1** and **Hypothesis H2**, confirming that digital transformation plays a major role in enhancing employee performance.

Regression Analysis:

Regression analysis was performed to examine the predictive power of digital transformation on employee performance. The dependent variable was H4 (Employee Performance), while the independent variables included selected items from constructs A, B, C, and D.

Key Results:

- $R = .818$ indicates a strong positive relationship.
- $R^2 = .669$ shows that digital transformation explains 66.9% of the variation in employee performance.
- The regression model is statistically significant (Sig = .000).

Significant Predictors:

The following variables demonstrated significant influence on employee performance (Sig < .05):

- B3 – Efficiency of digital systems
- C2 – Improved workflow through digital tools
- C3 – Reduction of errors through automation
- D4 – Use of digital dashboards for better decision-making

These findings demonstrate that employee performance improves when digital tools enhance accuracy, efficiency, and real-time responsiveness.

Regression Model Summary (table 3)

Model Summary:

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.818 ^a	.669	.567	.617

a. Predictors: (Constant), D4, B4, A4, A1, C4, D1, B2, B3, A3, C1, D2, D3, C3, B1, A2, C2

ANOVA for Regression (table 4)

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.961	16	2.498	6.567	<.001 ^b
	Residual	19.778	52	.380		
	Total	59.739	68			

a. Dependent Variable: H4

b. Predictors: (Constant), D4, B4, A4, A1, C4, D1, B2, B3, A3, C1, D2, D3, C3, B1, A2, C2

Coefficients (table 5)

Table: Coefficients:

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.729	.668		-2.586	.013
	A1	.080	.155	.066	.518	.607
	A2	.040	.156	.035	.259	.797
	A3	-.077	.128	-.070	-.598	.553
	A4	-.058	.122	-.050	-.481	.633
	B1	.035	.147	.031	.241	.810
	B2	-.100	.109	-.094	-.917	.363
	B3	.293	.146	.236	2.008	.050
	B4	.168	.115	.160	1.467	.148
	C1	.038	.125	.038	.304	.762
	C2	-.321	.142	-.347	-2.258	.028
	C3	.320	.139	.286	2.293	.026
	C4	.114	.130	.112	.877	.385
	D1	.128	.136	.098	.942	.351
	D2	.224	.116	.210	1.938	.058
	D3	.193	.135	.171	1.434	.158
	D4	.283	.089	.303	3.190	.002

a. Dependent Variable: H4

Differences Between Groups (One-Way ANOVA + Tukey Test)

To answer the third research question — Are there differences in digital transformation based on different categories? — One-Way ANOVA was conducted across demographic groups.

Results:

- Significant differences were found across several digital transformation and performance variables (Sig < 0.05).
- The Tukey post-hoc test further indicated that groups with **higher agreement** about the effectiveness of digital transformation also exhibited **higher levels of satisfaction and productivity**.

This finding supports **Hypothesis H3**, confirming that demographic differences influence perceptions of technology adoption and performance outcomes.

22- Research Finding and Discussion:

The quantitative findings align strongly with existing literature and highlight the central role of effective change management in supporting digital transformation within airport environments.

1- Advancement of Digital Technology (Sub-Question 1)

The results indicate that KKIA employees widely use digital systems such as biometric verification, self-service kiosks, automation tools, and real-time data dashboards. This reflects high digital readiness and aligns with findings from Halpern (2020), which emphasize the need for organizational readiness and innovation.

2- Influence on Productivity and Satisfaction (Sub-Question 2)

Correlation and regression analyses confirmed that digital tools significantly improve productivity, reduce errors, and enhance satisfaction. These findings agree with Shao et al. (2022), who

noted the importance of leadership support and digital capability in improving employee digital performance.

3- Differences Across Categories (Sub-Question 3)

The ANOVA results show significant differences between employee categories in their adoption of digital tools. This supports Klein (2024), who found that employee acceptance of transformation varies based on role, age, and digital competence.

Overall Interpretation:

The results demonstrate that:

- Digital transformation is not purely a technical upgrade; it is a people-centered transformation.
- Successful digital transformation requires effective communication, training, and leadership engagement.
- Employee satisfaction acts as a bridge that strengthens the link between digital adoption and performance.

Conclusion:

This study concludes that digital transformation has a strong, positive, and significant impact on employee performance at King Khalid International Airport. The findings show that:

- Digital tools enhance task speed, reduce manual work, increase accuracy, and support better decisions.
- Change management practices — especially communication, training, and leadership support — are essential for ensuring employee readiness and reducing resistance.
- Employee satisfaction plays a mediating role, improving the effect of digital transformation on performance.
- Differences between employee groups highlight the need for targeted support and tailored training programs.

Overall, KKIA demonstrates strong progress toward achieving effective digital transformation, but continuous investment in

human capital remains essential for sustaining these improvements.

23- Research Recommendations:

Based on the findings, the study recommends:

1. Strengthening Change Management Practices

- Develop clear strategic plans for digital transitions.
- Improve transparency and communication during system updates.

2. Enhancing Digital Training

- Provide continuous hands-on training for all staff levels.
- Establish internal digital learning platforms.

3. Leadership Engagement

- Encourage leaders to model digital tool usage.
- Involve supervisors in monitoring adoption challenges.

4. Improving System Integration

- Ensure smooth interoperability between digital systems.
- Regularly update digital tools to match global airport standards.

5. Supporting Employee Differences

- Provide tailored training for older employees and non-technical roles.
- Offer additional support to departments with low digital readiness.

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25- Appendixes;

ANOVA Result (table 6)

NOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13.485	3	4.495	6.317	<.001
Within Groups	46.254	65	.712		
Total	59.739	68			
Between Groups	9.127	3	3.042	4.804	.004
Within Groups	41.163	65	.633		
Total	50.290	68			
Between Groups	13.501	3	4.500	5.104	.003
Within Groups	57.310	65	.882		
Total	70.812	68			
Between Groups	8.004	3	2.668	3.449	.022
Within Groups	50.286	65	.774		
Total	58.290	68			
Between Groups	7.899	3	2.633	3.788	.014
Within Groups	45.174	65	.695		
Total	53.072	68			
Between Groups	17.385	3	5.795	12.374	<.001
Within Groups	30.441	65	.468		
Total	47.826	68			
Between Groups	6.054	3	2.018	2.300	.085
Within Groups	57.019	65	.877		
Total	63.072	68			
Between Groups	14.027	3	4.676	6.197	<.001
Within Groups	49.045	65	.755		
Total	63.072	68			
Between Groups	11.079	3	3.693	4.348	.007
Within Groups	55.211	65	.849		
Total	66.290	68			
Between Groups	12.492	3	4.164	4.828	.004
Within Groups	56.059	65	.862		
Total	68.551	68			
Between Groups	8.453	3	2.818	4.378	.007
Within Groups	41.837	65	.644		
Total	50.290	68			
Between Groups	12.284	3	4.095	7.650	<.001
Within Groups	34.789	65	.535		
Total	47.072	68			
Between Groups	1.078	3	.359	.500	.683
Within Groups	46.690	65	.718		
Total	47.768	68			
Between Groups	8.394	3	2.798	4.602	.006
Within Groups	39.519	65	.608		
Total	47.913	68			

Between Groups	13.144	3	4.381	7.000	<.001
Within Groups	40.682	65	.626		
Total	53.826	68			
Between Groups	16.576	3	5.525	9.351	<.001
Within Groups	38.409	65	.591		
Total	54.986	68			

Correlation (table 7)

		A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4	E1	E2	E3	E4	F1	F2	
A1	Pearson	1	.65	.27	.17	.19	.21	.08	.24	.34	.21	.28	.20	.36	.18	.31	.31	.53	.44	.36	.14	.45	.32	
	Correlati on		3***	8*	6	1	0	9	0*	7**	1	7*	9	8**	4	9**	9**	3***	9***	9**	6	5***	5**	
	Sig. (2- tailed)		<.0 01	.02 1	.14 9	.11 6	.08 3	.46 9	.04 7	.00 4	.08 2	.01 7	.08 5	.00 2	.12 9	.00 7	.00 8	<.0 01	<.0 01	.00 2	.23 1	<.0 01	.00 6	
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
A2	Pearson	.653	1	.45	.31	.43	.39	.32	.34	.31	.35	.31	.30	.27	.19	.42	.28	.44	.29	.35	.30	.54	.32	
	Correlati on	***		9***	9**	8***	9***	3**	7**	6**	9**	1**	9**	1*	4	0***	5*	7***	8*	6**	1*	1***	1**	
	Sig. (2- tailed)	<.0 01		<.0 01	.00 8	<.0 01	<.0 01	.00 7	.00 3	.00 8	.00 2	.00 9	.01 0	.02 4	.11 1	<.0 01	.01 8	<.0 01	.01 3	.00 3	.01 2	<.0 01	.00 7	
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
A3	Pearson	.278	.45	1	.44	.48	.38	.21	.37	.23	.42	.38	.21	.26	.40	.43	.35	.34	.34	.14	.46	.30	.36	
	Correlati on	*	9***		0***	3***	6**		9	1**	9*	8***	4**	0	4*	3***	4***	5**	7**	5**	5	0***	5*	9**
	Sig. (2- tailed)	.021	<.0 01		<.0 01	<.0 01	.00 1	.07 1	.00 2	.04 8	<.0 01	.00 1	.08 4	.02 8	<.0 01	<.0 01	.00 3	.00 4	.00 4	.23 6	<.0 01	.01 1	.00 2	
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
A4	Pearson	.176	.31	.44	1	.53	.42	.20	.18	.22	.30	.22	.22	.29	.21	.46	.27	.22	.20	.07	.28	.12	.24	
	Correlati on		9**	0***		3***	3***		2	5	0	9**	5	9	5*	5	9***	2*	6	0	7	3*	6	3*
	Sig. (2- tailed)	.149	.00 8	<.0 01		<.0 01	<.0 01	.09 6	.12 7	.07 0	.01 0	.06 3	.05 9	.01 4	.07 6	<.0 01	.02 4	.06 2	.09 9	.53 1	.01 8	.30 3	.04 4	
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
B1	Pearson	.191	.43	.48	.53	1	.50	.35	.43	.45	.45	.46	.50	.38	.40	.53	.29	.11	.23	.13	.48	.31	.29	
	Correlati on		8***	3***	3***		5***	8**	6***	7***	3***	9***	7***	1**	7***	4***	5*	7	1	7	2***	2**	5*	
	Sig. (2- tailed)	.116	<.0 01	<.0 01	<.0 01		<.0 01	.00 3	<.0 01	<.0 01	<.0 01	<.0 01	<.0 01	.00 1	<.0 01	<.0 01	.01 4	.33 7	.05 6	.26 3	<.0 01	.00 9	.01 4	
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
B2	Pearson	.210	.39	.38	.42	.50	1	.23	.11	.32	.33	.31	.33	.29	.29	.34	.30	.29	.10	.09	.18	.16	.18	
	Correlati on		9***	6**	3***	5***		9*	4	2**	0**	5**	7**	0*	9*	0**	5*	8*	1	0	3	7	8	
	Sig. (2- tailed)	.083	<.0 01	.00 1	<.0 01	<.0 01		.04 8	.35 1	.00 7	.00 6	.00 8	.00 5	.01 6	.01 3	.00 4	.01 1	.01 3	.40 9	.46 3	.13 3	.16 9	.12 2	
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
B3	Pearson	.089	.32	.21	.20	.35	.23	1	.44	.41	.59	.34	.28	.30	.23	.32	.26	.28	.27	.22	.26	.36	.41	
	Correlati on		3**	9	2	8**	9*		1***	7***	9***	2**	2*	4*	6	7**	3*	4*	7*	9	3*	5**	2***	
	Sig. (2- tailed)	.469	.00 7	.07 1	.09 6	.00 3	.04 8		<.0 01	<.0 01	<.0 01	.00 4	.01 9	.01 1	.05 1	.00 6	.02 9	.01 8	.02 1	.05 8	.02 9	.00 2	<.0 01	
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	

34	Pearson	.240	.34	.37	.18	.43	.11	.44	1	.37	.43	.47	.34	.26	.41	.39	.14	.12	.23	.21	.21	.31	.31
	Correlati	*	7**	1**	5	6***	4	1***		3**	9***	5***	5**	0*	6***	8***	5	8	6	0	4	3**	7**
	on																						
	Sig. (2-	.047	.00	.00	.12	<.0	.35	<.0		.00	<.0	<.0	.00	.03	<.0	<.0	.23	.29	.05	.08	.07	.00	.00
	tailed)		3	2	7	01	1	01		2	01	01	4	1	01	01	5	5	0	4	7	9	8
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
31	Pearson	.347	.31	.23	.22	.45	.32	.41	.37	1	.57	.54	.40	.39	.19	.19	.19	.22	.26	.26	.22	.36	.28
	Correlati	**	6**	9*	0	7***	2**	7***	3**		7***	5***	9***	1***	6	0	1	9	9*	7*	7	3**	0*
	on																						
	Sig. (2-	.004	.00	.04	.07	<.0	.00	<.0	.00		<.0	<.0	<.0	<.0	.10	.11	.11	.05	.02	.02	.06	.00	.02
	tailed)		8	8	0	01	7	01	2		01	01	01	01	6	9	7	9	6	7	1	2	0
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
32	Pearson	.211	.35	.42	.30	.45	.33	.59	.43	.57	1	.62	.55	.18	.31	.50	.28	.41	.46	.25	.43	.31	.43
	Correlati		9**	8***	9**	3***	0**	9***	9***	7***		5***	4***	8	6**	6***	6*	9***	8***	3*	1***	0**	1***
	on																						
	Sig. (2-	.082	.00	<.0	.01	<.0	.00	<.0	<.0	<.0		<.0	<.0	.12	.00	<.0	.01	<.0	<.0	.03	<.0	.01	<.0
	tailed)		2	01	0	01	6	01	01	01		01	01	3	8	01	7	01	01	6	01	0	01
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
33	Pearson	.287	.31	.38	.22	.46	.31	.34	.47	.54	.62	1	.61	.32	.39	.37	.16	.29	.38	.22	.40	.45	.48
	Correlati	*	1**	4**	5	9***	5**	2**	5***	5***	5***		8***	6**	3***	9**	5	4*	5**	4	3***	3***	8***
	on																						
	Sig. (2-	.017	.00	.00	.06	<.0	.00	.00	<.0	<.0	<.0		<.0	.00	<.0	.00	.17	.01	.00	.06	<.0	<.0	<.0
	tailed)		9	1	3	01	8	4	01	01	01		01	6	01	1	6	4	1	5	01	01	01
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
34	Pearson	.209	.30	.21	.22	.50	.33	.28	.34	.40	.55	.61	1	.30	.51	.42	.22	.44	.25	.12	.52	.21	.31
	Correlati		9**	0	9	7***	7**	2*	5**	9***	4***	8***		0*	4***	0***	1	6***	4*	5	4***	2	7**
	on																						
	Sig. (2-	.085	.01	.08	.05	<.0	.00	.01	.00	<.0	<.0	<.0		.01	<.0	<.0	.06	<.0	.03	.30	<.0	.08	.00
	tailed)		0	4	9	01	5	9	4	01	01	01		2	01	01	8	01	5	7	01	1	8
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
01	Pearson	.368	.27	.26	.29	.38	.29	.30	.26	.39	.18	.32	.30	1	.23	.36	.26	.39	.33	.26	.35	.52	.27
	Correlati	**	1*	4*	5*	1**	0*	4*	0*	1***	8	6**	0*		7	5**	7*	0***	1**	6*	7**	2***	4*
	on																						
	Sig. (2-	.002	.02	.02	.01	.00	.01	.01	.03	<.0	.12	.00	.01		.05	.00	.02	<.0	.00	.02	.00	<.0	.02
	tailed)		4	8	4	1	6	1	1	01	3	6	2		0	2	6	01	5	7	3	01	3
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
02	Pearson	.184	.19	.40	.21	.40	.29	.23	.41	.19	.31	.39	.51	.23	1	.32	.30	.31	.27	.21	.38	.25	.39
	Correlati		4	3***	5	7***	9*	6	6***	6	6**	3***	4***	7		0**	9**	7**	5*	6	5**	3*	2***
	on																						
	Sig. (2-	.129	.11	<.0	.07	<.0	.01	.05	<.0	.10	.00	<.0	<.0	.05		.00	.01	.00	.02	.07	.00	.03	<.0
	tailed)		1	01	6	01	3	1	01	6	8	01	01	0		7	0	8	2	4	1	6	01
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69

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03	Pearson	.319	.42	.43	.46	.53	.34	.32	.39	.19	.50	.37	.42	.36	.32	1	.35	.37	.44	.23	.36	.30	.41
	Correlati on	**	0***	4***	9***	4***	0**	7**	8***	0	6***	9**	0***	5**	0**		5**	4**	0***	6	0**	0*	6***
	Sig. (2- tailed)	.007	<.0 01	<.0 01	<.0 01	<.0 01	.00 4	.00 6	<.0 01	.11 9	<.0 01	.00 1	<.0 01	.00 2	.00 7		.00 3	.00 2	<.0 01	.05 1	.00 2	.01 2	<.0 01
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
04	Pearson	.319	.28	.35	.27	.29	.30	.26	.14	.19	.28	.16	.22	.26	.30	.35	1	.25	.33	.17	.23	.30	.39
	Correlati on	**	5*	5**	2*	5*	5*	3*	5	1	6*	5	1	7*	9**	5**		9*	1**	1	8*	3*	9***
	Sig. (2- tailed)	.008	.01 8	.00 3	.02 4	.01 4	.01 1	.02 9	.23 5	.11 7	.01 7	.17 6	.06 8	.02 6	.01 0	.00 3		.03 1	.00 5	.16 0	.04 9	.01 1	<.0 01
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
01	Pearson	.533	.44	.34	.22	.11	.29	.28	.12	.22	.41	.29	.44	.39	.31	.37	.25	1	.45	.32	.37	.39	.37
	Correlati on	***	7***	7**	6	7	8*	4*	8	9	9***	4*	6***	0***	7**	4**	9*		7***	8**	0**	1***	6**
	Sig. (2- tailed)	<.0 01	<.0 01	.00 4	.06 2	.33 7	.01 3	.01 8	.29 5	.05 9	<.0 01	.01 4	<.0 01	<.0 01	.00 8	.00 2	.03 1		<.0 01	.00 6	.00 2	<.0 01	.00 1
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
02	Pearson	.449	.29	.34	.20	.23	.10	.27	.23	.26	.46	.38	.25	.33	.27	.44	.33	.45	1	.52	.30	.39	.53
	Correlati on	***	8*	5**	0	1	1	7*	6	9*	8***	5**	4*	1**	5*	0***	1**	7***		1***	5*	6***	7***
	Sig. (2- tailed)	<.0 01	.01 3	.00 4	.09 9	.05 6	.40 9	.02 1	.05 0	.02 6	<.0 01	.00 1	.03 5	.00 5	.02 2	<.0 01	.00 5	<.0 01		<.0 01	.01 1	<.0 01	<.0 01
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
03	Pearson	.369	.35	.14	.07	.13	.09	.22	.21	.26	.25	.22	.12	.26	.21	.23	.17	.32	.52	1	.19	.45	.43
	Correlati on	**	6**	5	7	7	0	9	0	7*	3*	4	5	6*	6	6	1	8**	1***		4	5***	2***
	Sig. (2- tailed)	.002	.00 3	.23 6	.53 1	.26 3	.46 3	.05 8	.08 4	.02 7	.03 6	.06 5	.30 7	.02 7	.07 4	.05 1	.16 0	.00 6	<.0 01		.10 9	<.0 01	<.0 01
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
04	Pearson	.146	.30	.46	.28	.48	.18	.26	.21	.22	.43	.40	.52	.35	.38	.36	.23	.37	.30	.19	1	.41	.24
	Correlati on		1*	0***	3*	2***	3	3*	4	7	1***	3***	4***	7**	5**	0**	8*	0**	5*	4		2***	6**
	Sig. (2- tailed)	.231	.01 2	<.0 01	.01 8	<.0 01	.13 3	.02 9	.07 7	.06 1	<.0 01	<.0 01	<.0 01	.00 3	.00 1	.00 2	.04 9	.00 2	.01 1	.10 9		<.0 01	.04 1
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
01	Pearson	.455	.54	.30	.12	.31	.16	.36	.31	.36	.31	.45	.21	.52	.25	.30	.30	.39	.39	.45	.41	1	.49
	Correlati on	***	1***	5*	6	2**	7	5**	3**	3**	0**	3***	2	2***	3*	0*	3*	1***	6***	5***	2***		6***
	Sig. (2- tailed)	<.0 01	<.0 01	.01 1	.30 3	.00 9	.16 9	.00 2	.00 9	.00 2	.01 0	<.0 01	.08 1	<.0 01	.03 6	.01 2	.01 1	<.0 01	<.0 01	<.0 01	<.0 01		<.0 01
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	

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F2	Pearson Correlation	.325**	.321**	.369**	.243*	.295*	.188	.412***	.317**	.280*	.431***	.488***	.317**	.274*	.392***	.416***	.399***	.376**	.537***	.432***	.246*	.496***	.1
	Sig. (2-tailed)	.006	.007	.002	.044	.014	.122	<.001	.008	.020	<.001	<.001	.008	.023	<.001	<.001	<.001	.001	<.001	<.001	.041	<.001	
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
F3	Pearson Correlation	.425***	.443***	.208	.322**	.166	.209	.329**	.191	.428***	.529***	.450***	.456***	.286*	.282*	.338**	.405***	.469***	.565***	.467***	.301*	.449***	.579***
	Sig. (2-tailed)	<.001	<.001	.086	.007	.172	.085	.006	.116	<.001	<.001	<.001	<.001	.017	.019	.004	<.001	<.001	<.001	<.001	.012	<.001	<.001
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
F4	Pearson Correlation	.265*	.345**	.360**	.163	.317**	.174	.642***	.365**	.353**	.540***	.434***	.515***	.354**	.449***	.450***	.391***	.578***	.386**	.333*	.330**	.379**	.699***
	Sig. (2-tailed)	.028	.004	.002	.181	.008	.153	<.001	.002	.003	<.001	<.001	<.001	.003	<.001	<.001	<.001	<.001	.001	.005	.006	.001	<.001
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
S	Pearson Correlation	.353**	.353**	.245*	.243*	.361**	.179	.478***	.459***	.313**	.403***	.464***	.348**	.430***	.340**	.425**	.262*	.457***	.394***	.411**	.319**	.625***	.624***
	Sig. (2-tailed)	.003	.003	.042	.044	.002	.141	<.001	<.001	.009	<.001	<.001	.003	<.001	.004	<.001	.030	<.001	<.001	<.001	.007	<.001	<.001
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
S	Pearson Correlation	.294*	.277*	.174	.339**	.435***	.075	.336**	.356**	.363**	.418***	.519***	.348**	.282*	.149	.351**	.247*	.287*	.377**	.248*	.210	.460**	.482***
	Sig. (2-tailed)	.014	.021	.154	.004	<.001	.539	.005	.003	.002	<.001	<.001	.003	.019	.222	.003	.041	.017	.001	.040	.083	<.001	<.001
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
S	Pearson Correlation	.590***	.491***	.263*	.323**	.309**	.187	.225	.290*	.304*	.186	.388**	.117	.449***	.172	.340**	.264*	.465***	.312**	.176	.240*	.547***	.345**
	Sig. (2-tailed)	<.001	<.001	.029	.007	.010	.124	.064	.016	.011	.127	.00	.337	<.001	.157	.004	.028	<.001	.009	.148	.047	<.001	.004
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
S	Pearson Correlation	.385**	.281*	.443***	.412***	.534***	.290*	.300*	.332**	.395***	.472***	.545***	.326**	.399***	.389***	.543***	.452***	.368**	.448***	.310*	.328**	.402**	.661***
	Sig. (2-tailed)	.001	.019	<.001	<.001	<.001	.016	.012	.005	<.001	<.001	<.001	.006	<.001	<.001	<.001	<.001	.002	<.001	.010	.006	<.001	<.001
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69

	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
#1	Pearson	.302	.29	.21	.26	.29	.24	.38	.18	.29	.14	.15	.12	.32	.20	.17	.57	.27	.21	.15	.17	.48	.43
	Correlati on	*	8*	2	6*	3*	7*	3**	8	4*	9	0	2	1**	1	6	7***	9*	3	5	2	0***	0***
	Sig. (2- tailed)	.012	.013	.080	.027	.015	.041	.001	.122	.014	.221	.218	.318	.007	.097	.147	<.001	.020	.079	.202	.158	<.001	<.001
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
#12	Pearson	.351	.34	.29	.15	.26	.12	.31	.12	.32	.34	.30	.36	.25	.41	.17	.52	.41	.53	.17	.48	.41	.38
	Correlati on	**	2**	5*	0	5*	6	0**	1	9**	8**	9**	3**	4*	3***	8	2***	3***	1***	2	2***	6***	6**
	Sig. (2- tailed)	.003	.004	.014	.219	.028	.300	.009	.320	.006	.003	.010	.002	.035	<.001	.144	<.001	<.001	<.001	.157	<.001	<.001	.001
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
#13	Pearson	.369	.34	.30	.37	.41	.16	.34	.33	.40	.43	.42	.53	.34	.41	.35	.51	.45	.47	.26	.45	.39	.46
	Correlati on	**	3**	9**	3**	8***	9	4**	7**	8***	1***	7***	9***	6**	1***	4**	8***	2***	9***	9*	0***	3***	3***
	Sig. (2- tailed)	.002	.004	.010	.002	<.001	.166	.004	.005	<.001	<.001	<.001	<.001	.004	<.001	.003	<.001	<.001	<.001	.025	<.001	<.001	<.001
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
#14	Pearson	.378	.37	.31	.22	.46	.24	.43	.52	.35	.34	.52	.49	.46	.53	.47	.49	.29	.37	.34	.26	.51	.61
	Correlati on	**	4**	8**	4	0***	3*	9***	1***	7**	9**	2***	3***	6***	7***	6***	3***	3*	1**	4**	5*	4***	2***
	Sig. (2- tailed)	.001	.002	.008	.064	<.001	.044	<.001	<.001	.003	.003	<.001	<.001	<.001	<.001	<.001	<.001	.015	.002	.004	.028	<.001	<.001
	N	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69

Tukey Post-Hoc Results (table 8)

Multiple Comparisons:

Upper Bound	Confidence Interval Lower Bound	Sig.	Std. Error	Mean Difference (I-J)	(J) A1	(I) A1	Dependent Variable
							H4
	-.43	-3.85	.008	.648	-2.136*	Neutral	Disagree
	-.62	-3.85	.003	.614	-2.235*	Agree	
	-.99	-4.28	<.001	.623	-2.636*	Strongly Agree	
	3.85	.43	.008	.648	2.136*	Disagree	Neutral
	.67	-.87	.987	.293	-.099	Agree	
	.32	-1.32	.383	.312	-.500	Strongly Agree	
	3.85	.62	.003	.614	2.235*	Disagree	Agree
	.87	-.67	.987	.293	.099	Neutral	
	.21	-1.01	.313	.231	-.401	Strongly Agree	
	4.28	.99	<.001	.623	2.636*	Disagree	Strongly
	1.32	-.32	.383	.312	.500	Neutral	Agree
	1.01	-.21	.313	.231	.401	Agree	
	.07	-3.16	.065	.612	-1.545	Neutral	Disagree
	-.21	-3.26	.020	.579	-1.735*	Agree	
	-.54	-3.64	.004	.588	-2.091*	Strongly Agree	
	3.16	-.07	.065	.612	1.545	Disagree	Neutral
	.54	-.92	.901	.276	-.190	Agree	
	.23	-1.32	.257	.294	-.545	Strongly Agree	
	3.26	.21	.020	.579	1.735*	Disagree	Agree
	.92	-.54	.901	.276	.190	Neutral	
	.22	-.93	.367	.218	-.356	Strongly Agree	
	3.64	.54	.004	.588	2.091*	Disagree	Strongly
	1.32	-.23	.257	.294	.545	Neutral	Agree
	.93	-.22	.367	.218	.356	Agree	
	.04	-3.77	.057	.722	-1.864	Neutral	Disagree
	-.55	-4.15	.005	.683	-2.353*	Agree	
	-.67	-4.33	.003	.693	-2.500*	Strongly Agree	
	3.77	-.04	.057	.722	1.864	Disagree	Neutral
	.37	-1.35	.442	.326	-.489	Agree	
	.28	-1.55	.266	.347	-.636	Strongly Agree	
	4.15	.55	.005	.683	2.353*	Disagree	Agree
	1.35	-.37	.442	.326	.489	Neutral	
	.53	-.82	.940	.257	-.147	Strongly Agree	
	4.33	.67	.003	.693	2.500*	Disagree	Strongly
	1.55	-.28	.266	.347	.636	Neutral	Agree
	.82	-.53	.940	.257	.147	Agree	
	.24	-3.33	.112	.676	-1.545	Neutral	Disagree
	-.11	-3.48	.033	.640	-1.794*	Agree	
	-.29	-3.71	.016	.650	-2.000*	Strongly Agree	
	3.33	-.24	.112	.676	1.545	Disagree	Neutral

.56	-1.05	.847	.305	-.249	Agree	
.40	-1.31	.504	.325	-.455	Strongly Agree	
3.48	.11	.033	.640	1.794*	Disagree	Agree
1.05	-.56	.847	.305	.249	Neutral	
.43	-.84	.828	.241	-.206	Strongly Agree	
3.71	.29	.016	.650	2.000*	Disagree	Strongly
1.31	-.40	.504	.325	.455	Neutral	Agree
.84	-.43	.828	.241	.206	Agree	
1.33	-2.05	.941	.641	-.364	Neutral	Disagree
.75	-2.45	.500	.607	-.853	Agree	
.35	-2.90	.175	.616	-1.273	Strongly Agree	
2.05	-1.33	.941	.641	.364	Disagree	Neutral
.27	-1.25	.336	.289	-.489	Agree	
-.10	-1.72	.022	.308	-.909*	Strongly Agree	
2.45	-.75	.500	.607	.853	Disagree	Agree
1.25	-.27	.336	.289	.489	Neutral	
.18	-1.02	.264	.228	-.420	Strongly Agree	
2.90	-.35	.175	.616	1.273	Disagree	Strongly
1.72	.10	.022	.308	.909*	Neutral	Agree
1.02	-.18	.264	.228	.420	Agree	
.11	-2.66	.083	.526	-1.273	Neutral	Disagree
-.51	-3.14	.003	.498	-1.824*	Agree	
-1.08	-3.74	<.001	.505	-2.409*	Strongly Agree	
2.66	-.11	.083	.526	1.273	Disagree	Neutral
.08	-1.18	.104	.237	-.551	Agree	
-.47	-1.80	<.001	.253	-1.136*	Strongly Agree	
3.14	.51	.003	.498	1.824*	Disagree	Agree
1.18	-.08	.104	.237	.551	Neutral	
-.09	-1.08	.014	.187	-.586*	Strongly Agree	
3.74	1.08	<.001	.505	2.409*	Disagree	Strongly
1.80	.47	<.001	.253	1.136*	Neutral	Agree
1.08	.09	.014	.187	.586*	Agree	
1.53	-2.26	.958	.720	-.364	Neutral	Disagree
.86	-2.74	.516	.681	-.941	Agree	
.69	-2.96	.362	.692	-1.136	Strongly Agree	
2.26	-1.53	.958	.720	.364	Disagree	Neutral
.28	-1.43	.293	.325	-.578	Agree	
.14	-1.68	.125	.346	-.773	Strongly Agree	
2.74	-.86	.516	.681	.941	Disagree	Agree
1.43	-.28	.293	.325	.578	Neutral	
.48	-.87	.871	.256	-.195	Strongly Agree	

2.96	-.69	.362	.692	1.136	Disagree	Strongly Agree	G1
1.68	-.14	.125	.346	.773	Neutral	Agree	
.87	-.48	.871	.256	.195	Agree		
-.28	-3.81	.016	.668	-2.045*	Neutral	Disagree	
-.83	-4.17	.001	.632	-2.500*	Agree		
-.90	-4.28	<.001	.642	-2.591*	Strongly Agree		
3.81	.28	.016	.668	2.045*	Disagree	Neutral	
.34	-1.25	.438	.301	-.455	Agree		
.30	-1.39	.332	.321	-.545	Strongly Agree		
4.17	.83	.001	.632	2.500*	Disagree	Agree	
1.25	-.34	.438	.301	.455	Neutral		
.54	-.72	.981	.238	-.091	Strongly Agree		
4.28	.90	<.001	.642	2.591*	Disagree	Strongly Agree	
1.39	-.30	.332	.321	.545	Neutral	Agree	
.72	-.54	.981	.238	.091	Agree		
.41	-3.32	.180	.708	-1.455	Neutral	Disagree	F4
-.35	-3.89	.013	.671	-2.118*	Agree		
-.16	-3.75	.028	.681	-1.955*	Strongly Agree		
3.32	-.41	.180	.708	1.455	Disagree	Neutral	
.18	-1.51	.172	.320	-.663	Agree		
.40	-1.40	.462	.340	-.500	Strongly Agree		
3.89	.35	.013	.671	2.118*	Disagree	Agree	
1.51	-.18	.172	.320	.663	Neutral		
.83	-.50	.916	.252	.163	Strongly Agree		
3.75	.16	.028	.681	1.955*	Disagree	Strongly Agree	
1.40	-.40	.462	.340	.500	Neutral	Agree	
.50	-.83	.916	.252	-.163	Agree		
1.20	-2.56	.775	.714	-.682	Neutral	Disagree	F3
.49	-3.08	.232	.676	-1.294	Agree		
.04	-3.58	.057	.686	-1.773	Strongly Agree		
2.56	-1.20	.775	.714	.682	Disagree	Neutral	
.24	-1.46	.238	.322	-.612	Agree		
-.19	-2.00	.012	.343	-1.091*	Strongly Agree		
3.08	-.49	.232	.676	1.294	Disagree	Agree	
1.46	-.24	.238	.322	.612	Neutral		
.19	-1.15	.245	.254	-.479	Strongly Agree		
3.58	-.04	.057	.686	1.773	Disagree	Strongly Agree	
2.00	.19	.012	.343	1.091*	Neutral	Agree	
1.15	-.19	.245	.254	.479	Agree		
.94	-2.31	.687	.617	-.682	Neutral	Disagree	F2

.10	-2.98	.075	.584	-1.441	Agree	
.15	-2.97	.092	.593	-1.409	Strongly Agree	
2.31	-.94	.687	.617	.682	Disagree	Neutral
-.03	-1.49	.040	.278	-.759*	Agree	
.05	-1.51	.077	.296	-.727	Strongly Agree	
2.98	-.10	.075	.584	1.441	Disagree	Agree
1.49	.03	.040	.278	.759*	Neutral	
.61	-.55	.999	.220	.032	Strongly Agree	
2.97	-.15	.092	.593	1.409	Disagree	Strongly
1.51	-.05	.077	.296	.727	Neutral	Agree
.55	-.61	.999	.220	-.032	Agree	
.12	-2.85	.082	.562	-1.364	Neutral	Disagree
-.57	-3.37	.002	.532	-1.971*	Agree	
-.76	-3.61	<.001	.540	-2.182*	Strongly Agree	
2.85	-.12	.082	.562	1.364	Disagree	Neutral
.06	-1.28	.089	.254	-.607	Agree	
-.11	-1.53	.018	.270	-.818*	Strongly Agree	
3.37	.57	.002	.532	1.971*	Disagree	Agree
1.28	-.06	.089	.254	.607	Neutral	
.32	-.74	.718	.200	-.211	Strongly Agree	
3.61	.76	<.001	.540	2.182*	Disagree	Strongly
1.53	.11	.018	.270	.818*	Neutral	Agree
.74	-.32	.718	.200	.211	Agree	
1.40	-2.04	.961	.652	-.318	Neutral	Disagree
1.21	-2.04	.909	.617	-.412	Agree	
1.06	-2.24	.781	.626	-.591	Strongly Agree	
2.04	-1.40	.961	.652	.318	Disagree	Neutral
.68	-.87	.989	.294	-.094	Agree	
.55	-1.10	.820	.313	-.273	Strongly Agree	
2.04	-1.21	.909	.617	.412	Disagree	Agree
.87	-.68	.989	.294	.094	Neutral	
.43	-.79	.867	.232	-.179	Strongly Agree	
2.24	-1.06	.781	.626	.591	Disagree	Strongly
1.10	-.55	.820	.313	.273	Neutral	Agree
.79	-.43	.867	.232	.179	Agree	
.81	-2.35	.573	.599	-.773	Neutral	Disagree
.05	-2.94	.063	.567	-1.441	Agree	
-.03	-3.06	.045	.576	-1.545*	Strongly Agree	
2.35	-.81	.573	.599	.773	Disagree	Neutral
.04	-1.38	.074	.270	-.668	Agree	
-.01	-1.53	.045	.288	-.773*	Strongly Agree	

2.94	-.05	.063	.567	1.441	Disagree	Agree	E2
1.38	-.04	.074	.270	.668	Neutral		
.46	-.67	.961	.213	-.104	Strongly Agree		
3.06	.03	.045	.576	1.545*	Disagree	Strongly	
1.53	.01	.045	.288	.773*	Neutral	Agree	
.67	-.46	.961	.213	.104	Agree		
1.01	-2.19	.766	.608	-.591	Neutral	Disagree	E1
.02	-3.02	.054	.576	-1.500	Agree		
-.14	-3.22	.027	.584	-1.682*	Strongly Agree		
2.19	-1.01	.766	.608	.591	Disagree	Neutral	
-.19	-1.63	.008	.274	-.909*	Agree		
-.32	-1.86	.002	.292	-1.091*	Strongly Agree		
3.02	-.02	.054	.576	1.500	Disagree	Agree	
1.63	.19	.008	.274	.909*	Neutral		
.39	-.75	.835	.216	-.182	Strongly Agree		
3.22	.14	.027	.584	1.682*	Disagree	Strongly	
1.86	.32	.002	.292	1.091*	Neutral	Agree	
.75	-.39	.835	.216	.182	Agree		
1.47	-1.65	.999	.591	-.091	Neutral	Disagree	
.47	-2.47	.288	.559	-1.000	Agree		
.00	-3.00	.049	.568	-1.500*	Strongly Agree		
1.65	-1.47	.999	.591	.091	Disagree	Neutral	
-.21	-1.61	.006	.267	-.909*	Agree		
-.66	-2.16	<.001	.284	-1.409*	Strongly Agree		
2.47	-.47	.288	.559	1.000	Disagree	Agree	
1.61	.21	.006	.267	.909*	Neutral		
.05	-1.05	.092	.210	-.500	Strongly Agree		
3.00	.00	.049	.568	1.500*	Disagree	Strongly	
2.16	.66	<.001	.284	1.409*	Neutral	Agree	
1.05	-.05	.092	.210	.500	Agree		

The mean difference is significant at the 0.05 level.

26- Questionnaire:

Dear Respondent,

I am a Master's candidate (Management) at the University of Midocean Currently, I to examine the This study aimsam conducting a study titled " The impact of change management in airports on employee performance in light of digital transformation: an applied study at King Khalid International Airport in Riyadh.

I would like to request your cooperation to answer this questionnaire. Any information obtained will be kept confidential and only used for academic purposes. Your cooperation is highly appreciated.

Thank you in advance for agreeing to participate in this study. If you have any questions, please do not hesitate to contact my honorable supervisor, Associate Professor Dr. Alfaisal Abdelhameed Mohamed, or myself Hanadi Mohamed Al-Degaither (Master Candidate).

Demographic Finding:

Please put a check mark (✓) in the box that applies to your case:

1-Age:

25 years or less ()

46 years or more ()

26 - 35 years ()

36-45 years ()

2- Educational level:

Below Secondary ()	Secondary ()
Diploma ()	University ()
Postgraduate Studies ()	

3- Marital Status:

Single ()	Married ()
Divorced ()	

4- Gender:

Male ()	Female ()
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5- Current Department / Work Unit at King Khalid International Airport:

Passenger Services ()	Security Screening ()
Management / Supervision ()	Baggage Handling ()
Passenger check-in Officer ()	Operations / Airside
Coordination ()	
Information Technology (IT) ()	Administration / HR /
Finance ()	
Other: _____	

1-Digital Transformation in Airport:

Implantation of digital tools – including biometric technology, self-service kiosks, automation and big data – to transform airport operations for optimizing efficiency, enhancing security and passenger services and increasing the intelligence of decisions made.

Survey axes, their operational definitions, and their items.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	5	4	3	2	1
1-Implementation of Core Digital Tools: The degree to which employees use key digital technologies—such as biometric systems, self-service kiosks, automation (smart gates, robotics), and big data platforms—in their daily work activities.					
Employees know how to use the digital tools in their job and feel confident using them.					
They can easily get the digital tools they need whenever they need them.					
They regularly use biometric systems (like fingerprint or face recognition) at work.					

Employees use automated tools (like smart gates or robotic assistants) as part of them daily work.					
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Survey axes, their operational definitions, and their Items.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	5	4	3	2	1

2-Optimization of Operational Efficiency:
The perceived improvement in workflow speed, reduction in manual tasks, minimization of errors, and overall streamlining of airport operations as a result of digital tool integration.

Digital tools (kiosks, automation, software) have made them daily tasks faster to complete.					
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They now spend less time on repetitive or manual tasks (data entry, paper forms) compared to before digital systems were introduced.					
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Using digital systems has helped reduce mistakes in passenger information, baggage records, or scheduling.					
Them team's daily work flows more smoothly and is better coordinated thanks to digital tools.					

Survey axes, their operational definitions, and their Items.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	5	4	3	2	1

3- Enhancement of Security and Passenger Services:

The degree to which digital transformation has strengthened security accuracy (faster threat detection, identity verification) and improved passenger experience (shorter queues, amooother journeys, personalized services).

Wait times at check-in, security, or boarding are shorter now because of digital tools.					
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Security checks feel safer and more reliable thanks to digital tools.					
Digital systems help spot potential security risks faster than before.					
Checking IDs (like with facial recognition or e-passports) feels accurate and trustworthy.					

Survey axes, their operational definitions, and their items.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	5	4	3	2	1

4-Intelligence of Decision-Making:

The extent to which real-time data, predictive analytics, and digital dashboards are used by staff or management to make informed, timely, and proactive operational decisions.

The team uses live information (like flight status or passenger numbers) to make decisions each day.					
Digital screens or systems help supervisors react quickly when things go					

wrong (like delays or crowding)					
They use forecasts (like how many passengers or bags to expect) to prepare resources before they're needed.					
Managers make better decisions today because they have better digital data tools.					

2- Change Management in Airport:

The extent to which employees at King Khalid International Airport perceive that the airport's leadership effectively plans, communicates, supports, and implements organizational changes—particularly those related to digital transformation—through structured practices.

Survey axes, their operational, and their items.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	5	4	3	2	1

1-Strategic Planning and Clarity of Change Goals

The degree to which employees perceive that airport leadership has clearly defined the objectives, scope, and roadmap of digital transformation initiatives before implementation, ensuring alignment with organizational needs.

Employees understand what the digital transformation is trying to achieve.

They know exactly which parts of my work or the airport will be affected by this digital change.

There's a simple, step-by-step plan for how this digital change will happen.

This digital change fits with where the airport wants to be in the future.

Survey axes, their operational definitions, and their items.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

5

4

3

2

1

2- Effective Communication of Chang:

The extent to which leadership consistently and transparently shares information about the reasons for digital change, expected impacts, timelines, and progress—using multiple channels and in a timely manner.

Employees get updates about the digital change before decisions are finalized.

The Leadership clearly explains why they're making this digital change.					
They understand how this digital change will affect them day-to-day job.					
Leadership use different channels (email, meetings, posters) to keep the informed about the change.					
Survey axes, their operational definitions, and their items.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	5	4	3	2	1
3- Provision of Training and Adaptive Support: They availability and quality of resources-such as hands on training, user guides, technical assistance, and transition time provided to help employees develop the skills and confidence needed to use new digital systems.					
They received Hands-on training when the new system was introduced.					
The employees could easily get help from IT or the helpdesk whenever					

The training they got was useful and matched what they actually do in them daily job.					
They feel confident using the new digital tools in them role today.					
Survey axes, their operational definitions, and their items.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	5	4	3	2	1
4- Leadership Engagement and Ongoing Support: The visible commitment, encouragement, and active involvement of managers in guiding, supporting, and empowering their teams to achieve goals, sustain motivation, and foster continuous improvement.					
Employees can see that top managers are actively involved in bringing in the new digital systems.					
Them immediate supervisor uses the digital tools themselves- or shows us how to use them.					
Them Leaders clearly explain whay they'er making these changes					
54					

and introducing new systems.					
The manager tells them exactly what,s expected of them during this transition.					

27- Abstract:

While technology has significantly benefited humanity since the beginning of industrialization, it is crucial for it to keep innovating and adapting to stay relevant amid changing conditions. The rise of digitalization, driven by these technological advances, has led to heightened competition across various industries. In such a fiercely competitive landscape, it is vital for professionals to have a deep understanding of the latest technologies, apply them effectively, and help employees integrate these innovations. This is necessary for executing tasks well in the King Khalid International Airport sector, as well as in other fields. The process of digitalization is especially important for the air transportation industry and beyond. Consequently, this research examines how King Khalid Airport employees approach digitalization. Additionally, the study explores how digitalization affects employee productivity and satisfaction within airport. To evaluate this impact, the research used the Digital Transformation Readiness Survey scale from the Center for Creative Leadership-Corporate Leaders and other scales that assess employee productivity and satisfaction. It sought to determine the effect of demographic factors on productivity,

satisfaction, and levels of digitalization among employees. The study's findings showed a partially significant effect. Regression analysis results indicated that the extent of digitalization significantly affects employee productivity. Moreover, it was found that employee satisfaction plays a crucial role in linking employee productivity with the digitalization process.

