

Midocean University

Faculty of Management

Department/Specialization: Public Health Management

Assessing the Impact of Digital Transformation on Project

Success: Evidence from Saudi Organizations

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3 Chapter 3: Research Methodology

3.1 Introduction

The research method used to explore the effect of digital transformation on the success of projects in Saudi organizations is described. It explains the research design, methodology, data collection processes, sampling method, research instruments and research analysis techniques that were used to achieve the purpose of the study. The methodological framework has been developed carefully to guarantee the reliability, validity and overall rigor of the research results.

Driven by the vision of 2030's technological focus, innovation and organizational efficiency, digital transformation has become a strategic priority for organizations in Saudi Arabia. With the growing adoption of digital technologies like cloud computing, artificial intelligence, enterprise systems, and data analytics in organizations, it is becoming more critical to understand their impact on project performance factors such as efficiency, cost management, quality, and timely delivery.

The main purpose of this research is to evaluate the correlation between digital transformation and project success and the elements such as technological capabilities, digital skills, organizational readiness, and innovation practices. The research aims to answer the question to what extent does digital transformation directly affect the project outcomes or does it influence them indirectly through organizational processes and capabilities.

In order to accomplish these goals, a quantitative research approach has been adopted because it would enable the variables to be measured systematically and the relationships between them to be statistically analyzed. This method allows the researcher to obtain information from a wide range of professionals employed in Saudi organizations and can yield findings that can be generalized and reflect the actual practice of organizations in the real world.

The chapter justifies the selected research methods through aligning the methods to the research questions and hypotheses of Chapter 1. The systematic data gathering and comprehensive analytical approach used in this study guarantee the scientific validity and

relevance of the results for organizations aiming to improve project success by implementing digital transformation projects.

In general, this chapter will lay the groundwork for the empirical investigation, offering a clear and structured roadmap for the way the investigation will be conducted, data collected and analyzed, and the conclusions drawn.

3.2 Operational definitions for research variables

The operational definitions of research variables will be presented. Operational definitions of research variables will be presented

This section provides the operational definitions of the study's important variables. The operational definitions provide a precise description of each variable in terms of how it is conceptualized, measured, and used in the research instrument. It helps to make the variables measurable, which leads to accuracy, consistency, and a test of hypotheses empirically. The variables of this study refer to independent variable, dependent variable and moderating variable as shown in the proposed research model.

Access to new technologies is affecting independence across the country.

3.2.1 Independent Variable: Digital Transformation.

Conceptual Definition:

Digital transformation is the process of using digital technologies to improve the efficiency, innovation and overall performance of an organisation's processes, operations and strategies. It includes integration of technologies like cloud computing, artificial intelligence, big data analytics, digital communication tools, and enterprise systems to enhance business processes and decision-making.

Operational Definition:

This study used the concept of digital transformation to denote the level of usage and adoption of digital technology in project management and in the operation of the organization for organizations in Saudi Arabia.

Survey items are used to measure the variable by assessing:

- The use of digital tools and platforms (cloud systems, project management software, etc.)
- The automation level of a project's execution.
- Digital communication and collaboration tools are used.
- Incorporation of cutting-edge technologies like AI and data analytics into projects
- How effective they feel digital systems are in enhancing project performance

The responses are obtained by a 5-point Likert scale from “Strongly Agree” to “Strongly Disagree.”

3.2.2 Dependent Variable: Project Success.

Conceptual Definition:

Project success is defined as how well a project meets its predetermined expectations within the specified parameters of time, cost, quality and satisfaction of stakeholders. It indicates how well and efficiently the project has been carried out.

Operational Definition:

The success of projects is considered a project's performance achieved through the degree of meeting the goals of the project as a result of the digital transformation initiatives in Saudi organizations in this study.

This includes measurable outcomes such as:

- Completion of projects within the specified time frame
- Following budget guidelines
- Project deliverables meet the required standards.
- The quality of project deliverables is adequate.
- The goal of any project is to achieve its objectives.
- The purpose of any project is to meet its goals.

- Appropriate time management

The variable is assessed using the survey items in which respondents fill in their perceptions of the outcomes of the project on a 5-point Likert scale.

3.2.3 Moderating variable.

Conceptual Definition:

Organizational readiness is the degree of readiness of the organization to embrace and foster digital transformation. It contains leadership support, resources, culture and technological change.

Operational Definition:

The organizational readiness in this study is defined by the degree of readiness of Saudi organizations in digital transformation and embedding it in project management.

This variable will be measured by the following statements:

- Support and buy-in from management for digital transformation projects
- Availability of financial and technological resources
- Employee training and development in digital skills;
- An organization's culture with respect to innovation and change.
- Willingness to use new online technology and computer systems

Responses are gathered via a 5-point scale, and analyzed to examine if organizational readiness positively or negatively impacts the connection between digital transformation and project success.

3.2.4 Control Variables

This study also uses control variables to control for demographic and organizational differences in respondents. These variables help to make sure that the results are not affected by other things.

Control variables are:

- Age
- Gender
- Job role
- Years of experience

Type of organization (Public or Private sector)

These are variables obtained from categorical data which are used for segmenting and comparative analysis.

Measurement Scale

This study has been conducted by using a 5 point Likert scale for all the variables as follows:

Strongly Agree = 5

Agree = 4

Neutral = 3

Disagree = 2

Strongly Disagree = 1

This allow standardization of measurement approach which can facilitate statistical analysis such as correlation and regression.

3.3 Research design (research onion)

A research design is the general plan or structure that directs the data collection, analysis and interpretation of data to solve the research problem and answer the research questions. As this research aimed to evaluate the consequences of digital transformation on the success of projects, quantitative, cross-sectional research was followed.

A quantitative approach could be used, because it can measure relationships between variables with numerical data and statistical analysis. The design allows the researcher to analyze the trends, compare the answers of various organizational and demographic groups, and analyze the strength of the association between the research variables, such as digital transformation, project success, organizational readiness, and digital skills.

In this study they are using survey-based approach with structured questionnaire which was made online as the data collection tool. This approach can be effective for engaging a wide range of experts and professionals in Saudi organizations effectively. The study instrument consists of the items measuring operational variables of the study in the form of Likert scale with the level of adoption of digital transformation, project performance outcomes and moderating factors (organizational readiness, employee digital skills).

In addition, the research design is cross-sectional, that is, the data are gathered at one time. This will enable the study to reflect the state of the current professional practice, perception and experiences on the role of digital transformation and its impact on project success. While cross-sectional studies cannot provide cause and effect relationships, they can be useful in determining patterns, relationships, and possible predictors in the research model.

Demographic and organizational factors, including age, gender, job role, years of experience and organization type (public sector/private sector) have also been included in the design to explore whether they contribute to the relationship between digital transformation and project

success. This will aid in the comprehension of the impact of organizational environments and workforce factors on digital transformation implementation and effectiveness.

In general, the chosen research design provides methodological rigor, efficiency in data collection, and meaningful statistical analysis. It helps to accomplish the purpose of the study, i.e., to assess the impact of digital transformation on achieving project success in Saudi organizations, and it also offers a solid base for empirical research.

3.4 Research population & Sampling methods and technique

The research population is the group of individuals that is studied. The research population is the population under investigation.

This section describes the kinds of subjects used and how the data needed was obtained. A clear sampling strategy makes sure that the data gathered is suitable, applicable and relevant to the study.

3.4.1 Study Population

The study population includes professionals in organizations and companies from all over Saudi Arabia who are engaged in project management and digital transformation programs. This includes the workforce of public and private sector bodies, including those in industries like information technology, construction, healthcare, finance and engineering, all of which rely on digital transformation in their projects.

The following are examples of people included in the population:

- Project managers
- Team leaders
- IT professionals
- Engineer

These participants are chosen as they are directly involved in the project activities and are likely to have hands-on experience with digital tools, systems, and transformation processes within their organization.

To ensure meaningful and relevant responses to these questions, only professionals with relevant experience in project environments are included in the study. Those who do not have any experience with digital systems or project management processes are not included and might not be able to deliver solid inputs when it comes to digital transformation's influence on project success.

3.4.2 Sampling Method

This study uses non-probability convenience sampling techniques because of the limited time period and resources in a survey. The advantage of this is that the researcher can get the data from the accessible respondents who are willing to participate.

The questionnaire is sent out via digital channels including:

- LinkedIn professional networks
- Use of email communication between organisations
- Online professional groups and forums

It is in line with the nature of the study, as the digital transformation is closely connected with online platforms and technologically engaged professionals.

3.4.3 Sample Size

In this study, the sample size is determined as about 100-150 people. Within this range, the numbers can be used for quantitative research, and can be used easily for statistical analysis such as correlation and regression testing.

This sample size is adequate to:

- Relate Dx to project success and find patterns or relationships.
- Carry out descriptive and inferential statistics
- Compare and contrast between demographic and organizational groups

Although a larger sample size would provide more generalizability, this group is sufficient for this scope, time limits and academic level of research.

3.4.4 Sampling Technique Justification

There are several reasons why the convenience sampling method and the specific sample size chosen is appropriate:

- The research is based on an Online questionnaire, and Digital sampling allows rapid and efficient access to the respondents from various organizations in Saudi Arabia.
- Saudi Arabia is highly digitalized, with a high adoption rate among professionals, which makes it more likely to get relevant and informed answers and feedback about digital transformation.
- Convenience sampling helps overcome the practical limitations of the study and captures important information about the success of the project and about digital transformation practices.
- The selected sample size is adequate to perform the statistical analyses and establish meaningful relationships among the variables without sacrificing feasibility of the study.

In general, the sampling method will allow the study to collect the necessary information from a group of participants who know about the issue, which will increase the reliability and applicability of the study results.

3.5 Data collection method

This section discusses the methods used in the data collection process for this study. The research is quantitative and cross-sectional, and data collection is based on a structured questionnaire, which is a tool that has been specially created to measure the variables of the study: digital transformation, project success, organizational readiness and digital skills.

The study adopted an online data collection approach, as it is more efficient, accessible, and reaches various organizations in Saudi Arabia

3.5.1 Instrument of Data Collection

The instrument of data collection is a handout. The Handout is the instrument of data collection.

A structured online questionnaire with closed ended questions is the key instrument used in this study. The questionnaire aims to gather perceptions, experiences, and evaluations about digital transformation and its effect on the success of projects.

The questionnaire includes:

- Numerical questions (number of years, number of employees, number of days, hours, etc.)

There are four main dimensions measured by a 5 point Likert scale:

1. Digital Transformation
2. Project Success
3. Organizational Readiness
4. Digital Skills

The Likert scale ranges from:

Strongly Agree 1 – Agree 2 – Neutral 3 – Disagree 4 – Strongly Disagree 5

In this way, the respondent can mark how much they agree with each statement, and quantitative data that can be analysed statistically can be collected.

3.5.2 Mode of Distribution

The questionnaire was sent by email and was sent to the following electronic platforms:

- LinkedIn professional networks
- Communicate via email, inside the organization.
- Online professional and academic organizations

The platforms were chosen due to their ability to give direct access to professionals in Saudi organisations as well as to make data collection efficient. Furthermore, the digital platforms are consistent with the type of the study since it is about digital transformation in organizational contexts.

3.5.3 Rationale for Online Data Collection

This online questionnaire approach is warranted for a number of reasons:

1. In Saudi Arabia, a high level of digital adoption helps professionals across all industries be able to access the digital world.
2. Online Surveys let you gather data quickly and at the lowest cost, especially when the sample size is in the range of 100-150 respondents.
3. This allows the respondents to fill in the questionnaire easily and anonymously, thus ensuring a truthful and objective answer.
4. The digital format is appropriate for the research context because the study is about organisations that use digital technologies in their operations and project management practice.

3.5.4 Data Collection Period

The data were gathered during a determined period, wherein the questionnaire link was up and could be reached by users. Time was allowed for the participants to fill out the survey at their own pace, resulting in a higher response rate and higher quality data.

3.5.5 Ethical Considerations

The following measures were taken to preserve the ethical integrity throughout the research process:

- Participation was voluntary and none at all was forced.
- Before filling out the questionnaire, the purpose of the study was explained to the respondents.
- None of the personal or identifiable information was collected.
- All responses were anonymous and confidential, and only used for academic purposes.

These are measures to ensure that the study adheres to the ethical standards of research and that the rights and privacy of all participants are protected.

3.6 Types of data

Primary data are used in this study, and there is no secondary data source used. The type of data being collected is carefully chosen to align with the quantitative research methodology and to capture the correlation between digital transformation and project success in Saudi organizations.

3.6.1 Primary Data

The information gathered for this study directly from the respondents is known as primary data. The data in this research were primary data obtained by using a structured online questionnaire sent to the professionals in Saudi organizations.

The main data consists of:

a. Demographic Data

These are 'categorical' data that describe the characteristics of the participants, such as:

- Age
- Gender
- Job role
- Years of experience
- Private or public sector organisation.

These factors can be used to help identify differences in perceptions and responses of different groups of professionals, and to better understand the effects of digital transformation on project success in different contexts.

b. Quantitative Likert-Scale Data

This type of data captures respondents' perceptions, attitudes and experiences with digital transformation and project success. It contains all the key dimensions of the study:

1. Digital Transformation
2. Project Success
3. Organizational Readiness
4. Digital Skills

These dimensions are measured on a 5-point Likert scale and the data is ordinal, and can be statistically analyzed.

3.6.2 Students' Knowledge of Data Collection Methods

The study gathers two types of quantitative data, namely:

a. Categorical Data (Nominal and Ordinal)

This sort of data is used for demographic variables like job role, gender and the type of organization. These variables are used to categorise the respondents and to compare differences between the categories.

b. Numerical / Ordinal Data

This data is based on Likert scale responses reflecting to what extent they agree with statements on digital transformation and project success. These answers help the researcher to be able to:

- Run calculations of means and standard deviations.
- Perform correlation analysis
- Conduct regression analysis

Review the relationship between independent, dependent and moderating variables.

3.6.3 Provide reasons for data type.

For this study, using quantitative and qualitative data is suitable because of the following:

- It enables the testing of research hypotheses statistically.

- It allows objective responses to respondents' perceptions and experiences to be measured.
- It has the capacity to give a structured and comparable data that can be analysed through statistical tools like SPSS.
- It is congruent with the survey research design used in this study.

In general, the types of data chosen enable the research objectives to be well met and the results are reliable, measurable and can be analyzed empirically.

3.7 Statistical analysis procedures

Statistical analysis procedures indicate the analytical approach to the data gathered from the questionnaire and to test the research hypothesis. This study is quantitative, so numbers and categories of the answers given on a Likert-scale and demographic information are analyzed.

Depending on the level of analysis needed, the data were analyzed with the use of the Statistical Package for the Social Sciences (SPSS) and Microsoft Excel. The aim of the procedures is to condense respondent information, patterns to identify and how the relationships of the study variables, such as digital transformation, project success, organizational readiness, and digital skills are strong.

3.7.1 Data Preparation and Screening

There were several data preparation steps that had to be taken to ensure accuracy and consistency before the statistical analysis:

1. Data Cleaning:

All answers were carefully checked for completeness. Responses that were incomplete, duplicate, and/or invalid were excluded to ensure data quality.

2. Coding of Responses:

Responses given on a Likert scale were coded numerically as:

- Strongly Agree = 5

- Agree = 4
- Neutral = 3
- Disagree = 2
- Strongly Disagree = 1

This coding is used to make quantitative analysis and statistical computation.

3. Classification of Demographic Variables:

Demographic information, e.g., age, gender, job role, experience, was arranged in pre-defined groups for comparison and segmentation analysis.

3.7.2 Descriptive Statistics

Descriptive statistics were employed to present a general picture of the sample, and to summarize the characteristics of the sample and its perception.

The following measures were used:

- **Frequencies and Percentages:**

Applies to the demographic attributes of things like gender, age, job role, organization type, etc.

- **Mean and SD.**

Applied when summarizing responses on digital transformation, project success, readiness of the organisation and digital skills.

Descriptive statistics are used to provide a general overview of the data and identify patterns and trends.

3.7.3 Reliability Analysis

The internal consistency of the questionnaire was examined by Cronbach's alpha for reliability of each construct in this study.

The constructs include:

- Digital Transformation
- Project Success
- Organizational Readiness
- Digital Skills

Cronbach's alpha values between 0.70 and above are regarded as acceptable and denotes that the items of the questionnaire are measuring the variables that were intended.

3.7.4 Inferential Statistics

The relationships between variables and the research hypotheses were tested using inferential statistical techniques.

a. Correlation Analysis

Pearson's correlation coefficient was used to determine the strength and direction of relationships between variables, such as:

- This module contains a video where you will learn about digital transformation and project success.
- The readiness of organizations and the transformation into digital environments
- Using digital skills to achieve project success

This analysis can be used to determine if there is a statistically significant relationship between variables.

b. Regression Analysis

A multiple linear regression model was developed and analyzed to understand how the independent variable (DT) affects the dependent variable (project success).

To examine the impact of digital transformation on project success, other variables measured in the study that were found to be potentially moderating the relationship between digital transformation and project success were added to the regression model.

Regression Analysis can be used to find out:

- Digital transformation's power to predict.
- The significance of each variable
- The model's effectiveness overall.

c. Comparing with another group (if applicable)

The following statistical tests can be used to compare differences between the various demographic groups:

- Independent Samples t-test (Comparing Two Groups – for example, gender)
- One-way ANOVA (when comparing multiple groups – such as experience level or organisation type)

The tests allow determining if there are differences in the perception of both, digital transformation and project success, due to demographic factors.

3.7.5 Interpretation and Reporting

The final part was the interpretation of the statistical outcomes considering the following:

- Significance levels (p-values)
- Strength of correlations
- Regression coefficients
- Differences between groups

The findings were presented in tabular as well as graphical format for better clarity and understanding. The research goals and hypotheses were subsequently connected to the results to determine meaningful conclusions.

In general, these statistical methods guarantee systematic analysis of the data and the validity, reliability, and appropriateness of the results for supporting the conclusions for the study.

3.8 Summary

In this chapter, the research methodology used for this study was introduced, where it sought to evaluate the effect of digital transformation on project success in Saudi organizations. The chapter explained the research design, population and sampling methods, data collection procedures, types of data and data analysis techniques employed to meet the research objectives.

A quantitative, cross sectional research design was chosen as it would allow for the analysis of the relationship between digital transformation and project success to be measured using structured and measurable data. The study aimed to investigate the perception of professionals in Saudi organizations on the performance of the Saudi court system, so the data was collected by using a structured online questionnaire that was sent out via digital platforms.

The sampling strategy involved convenience sampling as well as an appropriate sample size; this enabled relevant information to be retrieved in an efficient way within the time frame of the study. The questionnaire items were developed on the basis of Likert scale items to assess various key variables including Digital transformation, Project success, OR readiness and Digital skills.

In addition, the chapter described the sorts of data gathered, such as demographic data, quantitative data, and explained why they are appropriate for statistical analysis. The statistical

tools, such as descriptive statistics, reliability analysis, the correlation procedure and the regression procedure, were described to illustrate the analysis and interpretation of the data.

Overall, the methodological approach used in this study is reliable, valid and consistent in the process of research. The analysis of the collected data and discussion of the findings based on the research objectives and hypotheses will be presented in the next chapter.

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