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Assessing the Impact of Digital Transformation on Project Success: Evidence from Saudi Organizations

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1. Chapter 1: Introduction

Note: Sections 1.1 through 1.3 were completed and submitted in Assignment #1. The sections below (1.4–1.10) constitute the new content submitted for Assignment #2.

1.4. Research Questions

The empirical investigation will be guided by four sub-questions identified from the previous discussion of the theoretical and practical gaps discussed in Section 1.2, the main research question will serve as the foundation for all four sub-questions:

1. How does the development and execution of a digital strategy impact project success outcomes (scope, cost, schedule, quality, and stakeholder satisfaction)?
2. The impact that adopting digital technologies – such as using the cloud, implementing artificial intelligence (AI), using a digital project management platform, etc. – has had on the performance of projects in Saudi Arabia.
3. To what extent does an organization's digital culture and capability to use digital technologies mediate the relationship between digital transformation dimensions and the success of a project?
4. How do characteristics of organizations and their environment (e.g., type of industry, size of organization, and alignment of organization with Vision 2030) moderate the effect of digital transformation on project success in Saudi Arabia?

1.5. Research Objectives

The purpose of this study is to evaluate the evidence related to the effect of digital transformation on project success in organizations in Saudi Arabia. The research will be conducted based on two main objectives, which are:

1. To explore the relationship between digital strategy development and project success in organizations in Saudi Arabia, using the Technology-Organization-Environment (TOE) framework (Tornatzky & Fleischer, 1990).
2. To evaluate the impact of the adoption of digital technologies on project performance indicators, such as scope compliance costs, time frames, and quality, in organizations in Saudi Arabia.
3. To explore the way that digital capabilities of organizations can assist in achieving project success through assisting with achieving digital transformation within an organization.
4. To investigate the impact of organizational characteristics and the environment (industry, size of the organization, alignment with Saudi Arabia's Vision 2030) on the relationship between digital transformation and project success.
5. Provide evidence-based recommendations for project managers, leadership, and policymakers in Saudi Arabia to maximize their digital transformation funding and thus improve project success rates.

.1.6. Research Hypotheses

According to the TOE framework (Tornatzky & Fleischer, 1990), the Resource Based View (Barney, 1991) and the research background's empirical literature review, the following hypotheses have been proposed:

H1: A digital strategy formulated will statistically significantly and positively affect project success in Saudi organizations.

H1a: A well-defined digital strategy will positively correlate with projects delivered on time.

H1b: A well-defined digital strategy will positively correlate with projects completed on budget.

H2: The use of digital technology within Saudi organizations has a positive influence upon the success of projects within those organisations.

H2a: The use of digital project management systems is related positively to the successful completion of projects within these Saudi Arabian organisations.

H2b: The use of artificial intelligence (AI) and data analytics tools has a positive correlation to the quality of completed projects within these Saudi Arabian organisations.

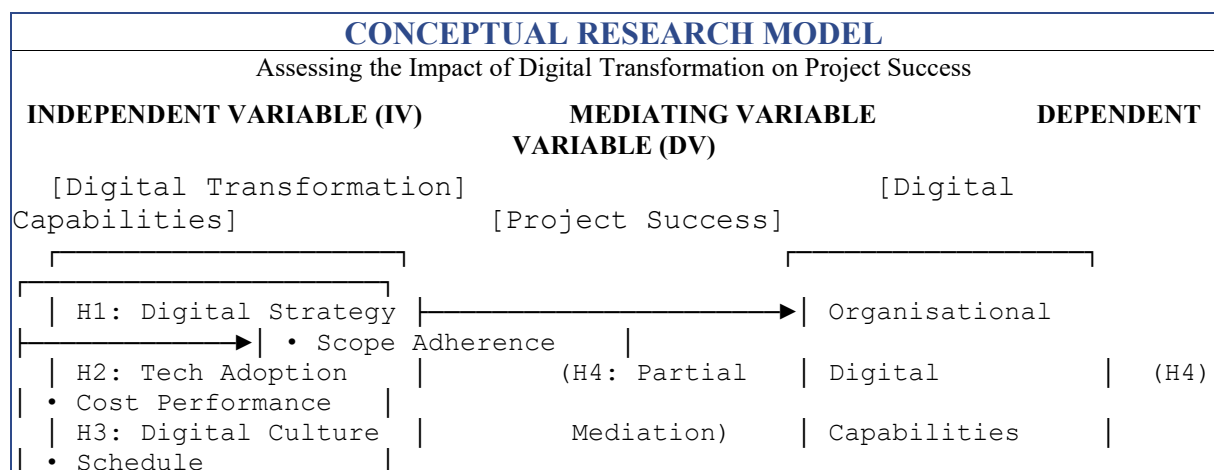
H3: The digital culture of an organisation positively influences how successful the projects are that are undertaken within these Saudi Arabian organisations.

H4: The digital capabilities of an organisation act as a partial mediator between the digital transformation (digital strategy + digital technology usage + digital culture) and the success achieved from the execution of a project in these Saudi Arabian organisations.

All of these hypotheses are in their alternative mode of the hypothesis. The appropriate hypotheses in their null state (H0: there is no significant relationship) will be tested through PLS-SEM bootstrapping method..

1.7. Research Model

The figure below represents the anticipated associations among the variables in this study. The independent variable, Digital Transformation, will be operationalized using three aspects: Digital Strategy (DS), Digital Technology Adoption (DTA), and Digital Culture (DC). The dependent variable, Project Success, will be assessed based on five different criteria: budget adherence; cost effectiveness; time effectiveness; quality; and level of stakeholder satisfaction (Shenhar & Dvir, 2007). Organizational Digital Capabilities (DCapabilities) will function as a mediating variable. Organizational & Environmental Context (OEC) will serve as a moderating variable. The proposed model will be based on the Theory of Constraints (TOC) and the Resource-based view (RBV).





According to the model above, there are four direct connections (H1, H2, and H3) from three elements of digital transformation to successful projects, one mediated connection (H4) through organizationally based digital capacity, and one moderated connection from the organizational and environmental context. These relationships will each be tested through empirically validated methods of testing PLS-SEM as recommended by Hair et al. (2019).

Suggested Industry / Organization for the Empirical Study

The empirical part of this research intends to target Saudi organizations active in the construction and infrastructure sector, specifically mega-project contractors, public utilities and government-affiliated development organizations that are aligned with Vision 2030. There are three main reasons why this sector is chosen. First, it is one of the most project-heavy sectors in the country, with some of its super-mega-projects being NEOM, the Red Sea Project, Diriyah Gate, and Qiddiya. Thus, the success of these projects is extremely important from a strategic viewpoint and can be measured from an empirical viewpoint. Second, it is going through a process of digital transformation, utilizing BIM, digital twin technology, IoT-based site monitoring and AI scheduling tools, which is highly relevant to the research independent variable (Eastman et al., 2018). Thirdly, the entities working in this particular field are overseen by the government on a straight-up basis. The entities are clearly tied into and required to comply with the Vision 2030 digital transformation objectives; thus, this area provides an ample institutional environment that theoretically fits within the TOE framework. Possible survey participants will include project management professionals that are employed in organisations that work in the opinion of the Saudi Contractors Authority (SCA), the National Housing Company (NHC), and the NEOM Company, as well as Employees of the Saudi Aramco Projects & Engineering Division. Additionally, all major EPC contractors that are registered with the Ministry of Municipal and Rural Affairs and Housing (MOMRAH) are also eligible to participate.

1.8. Research Methodology

A brief summary of the proposed research methodology is included in this section, while there is a detailed explanation of the research methodology in Chapter 3 of the final graduation project (Project 2).

Research Philosophy: A positivist philosophy is based upon the objective value neutral measurement of social phenomena through empirical observation and statistical testing (Saunders et al., 2019) that will be utilized for conducting this research.

Research Method: A deductive research method is used to test hypotheses based on the TOE (Technology-Organization-Environment) framework and the RBV (Resource-Based View) with primary quantitative data (Bryman, 2016).

Research Design: An explanatory cross-sectional survey will be designed to determine the direction and strength of relationships between digital transformation dimensions, digital capabilities, and project success.

Data Collection: Primary data will be collected through a cross-sectional online survey using a self-administered structured questionnaire. All variables will be measured using Likert-type items (1 = strongly disagree through 5 = strongly agree) adapted from previous studies in both digital transformation and project management.

Sampling & Target Population: The project's target population consists of project managers, program managers and senior project professionals working at organizations in Saudi Arabia who have hands on experience implementing Digital Project. To achieve the target sample size between 150-200 respondents, both purposive and snowball sampling will be employed. This size will provide adequate statistical power (PLS-SEM) according to Hair et al. (2019).

Data Analysis: Descriptive statistics will be calculated using the IBM SPSS software package (v. 26). Hypothesis tests, mediation, and moderation analyses will be conducted using Partial Least Squares Structural Equation Modelling analysis (PLS-SEM) with the SmartPLS software package (v. 4). Reliability will be evaluated via Cronbach's Alpha and composite reliability while validity will be determined using AVE indices and discriminant validity.

1.9. Scope of The Study

Dimensional limitations of the study are systematically applied across four dimensions: Subject Scope: The study only examines how digital transformation impacts project success, excluding examination of wider organization-level financial outcomes related to digital transformation and digital transformation as a strategy at the firm level; Geographical Scope: The scope of the study is limited to organizations within the Kingdom of Saudi Arabia; Sectoral Scope: Project-Sector: The research utilizes a focus on sectors that are heavily involved in project-currently active in implementation of Vision 2030, including, but not limited to construction, ICT/Telecommunications, Energy, and Government Services; Temporal Scope: This study utilizes a cross-sectional design, making it impossible to examine the long-term dynamics of digital transformation; Exclusions to target population include only those project management professionals that possess direct, significant and verifiable knowledge/experience conducting digitally enabled projects in the target population.

1.10. The Suggested Project Structure

The entirety of a graduation project will be composed of 5 chapters in which each chapter, will follow this structure:

Chapter 1: Introduction - Sets up the research, context, problem statement, significance of the research, research questions, objectives of the research, hypotheses, conceptual model, methodology, research scope, project structure. It provides the basis for the entire research.

Chapter 2: Literature Review - Provides a thorough critique of the independent variable (digital transformation and its attributes), the dependent variable (project success and how to measure success) and the empirical research that connects them. This chapter will discuss theoretical foundations for its connection (TOE and RBV) and address research gaps that still exist.

Chapter 3 - Research Methodology. This chapter describes in detail the research philosophy(), approach, design, data collection instrument, sampling strategy, ethical considerations and procedures for analysing the data() including the reliability and validity assessment of the data collected(), as well as the limitations.

Chapter 4 - Data Analysis and Findings. The findings of the analyses conducted will be presented in this chapter. The empirical results will include descriptive statistics(), analysis of the measurement model, and results and analysis of the structural model which will be used to test the hypotheses of the project (). These analyses will follow each of the research questions in a systematic manner.

Chapter 5 - Discussion, Conclusions and Recommendations. This chapter will discuss the findings of the research in relation to the existing literature and theoretical framework within which the project is operating. It will also provide detailed conclusions for each research question and identify possible limitations of the project. In addition to providing conclusions based on the research, recommendations will be provided that will be useful to practitioners and policy makers within the Kingdom of Saudi Arabia, along with future research directions.

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2. Chapter 2: Literature Review

Note: Chapter 2 (Literature Review) will be fully developed and submitted as Assignment #3 in Week 11. The sections below reflect the structure required by the project template.