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Midocean University Management College
Master of Project Management

The impact of applying digital transformation techniques on the quality of project management at the National Water Company in the Northern Sector.

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Summary.

Abstract: Digital transformation plays a pivotal role in enhancing operational efficiency and service quality within organizations. This study investigates the effects of digital technologies on project management quality at the National

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Water Company (NWC) in alignment with Saudi Arabia's Vision 2030. The following key points summarize the impact of digital transformation:

Enhanced Efficiency:

Utilizing digital systems accelerates operational processes, leading to increased productivity by reducing task completion time.

Improved Service Quality:

The application of digital technologies elevates the quality of services provided by the NWC, resulting in heightened customer satisfaction.

Flexibility and Adaptation:

Digital systems empower the NWC to swiftly respond to market changes and evolving requirements.

Data-Driven Decision Making:

Leveraging big data analytics enables informed and up-to-date decision-making.

Enhanced Communication and Collaboration:

Digital transformation fosters seamless communication and collaboration among work teams, facilitating efficient project goal attainment.

Considerations for Implementation:

Successful adoption of digital technologies necessitates the following prerequisites:

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- Advanced Infrastructure: Robust technological foundations are essential.
- Skilled Workforce: Qualified human resources proficient in digital tools.
- Strategic Vision: A clear strategy supporting innovation and continuous development.
- Strategic Insights: Investing in digital transformation is an investment in the NWC's future. It aligns with strategic goals and enhances competitiveness in the market.

  Practical Examples:

  Suhail Platform (Saudi Arabia): The Suhail platform exemplifies successful digital transformation through the integration of artificial intelligence technologies, resulting in a competitive advantage.

These examples underscore how modern technologies drive business improvement, foster economic growth, and enhance customer experiences.

Keywords: Application of digital transformation technologies - Saudi water sector - Quality of project management - Water and infrastructure companies - Saudi Vision 2030

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الملخص

تُظهر النتائج المستخلصة من الدراسات والتحليلات المتعلقة بتأثير التحول الرقمي على جودة إدارة المشاريع في شركة المياه الوطنية تحت رؤية ٢٠٣٠ أهمية كبيرة للتقنيات الرقمية في تحسين العمليات والخدماتت ويلخص الأثر كالتالي:

تحسين الكفاءة: استخدام الأنظمة الرقمية يُسهم في تسريع العمليات وزيادة الإنتاجية من خلال تقليل الوقت اللازم لإنجاز المهام.

تعزيز الجودة: تطبيق التقنيات الرقمية يُحسن من جودة الخدمات المقدمة ويُساعد في تحقيق مستوي عالي من رضا العملاء.

المرونة والتكيف: الأنظمة الرقمية تُمكن الشركة من التكيف مع التغيرات والمتطلبات الجديدة في السوق.

تحليل البيانات: جمع وتحليل البيانات الضخمة يمكن من اتخاذ قرارات مبنية على معلومات دقيقة ومُحدثة.

التواصل والتعاون: تقنيات التحول الرقمي تُسهل التواصل والتعاون بين فرق العمل، مما يُساعد في تحقيق أهداف المشاريع بكفاءة.

من الجدير بالذكر أن تطبيق هذه التقنيات يتطلب وجود بنية تحتية متقدمة، موارد بشرية مؤهلة، وإستراتيجية واضحة تُساند الابتكار والتطوير المستمر. وتُشير الدراسات إلى أن الاستثمار في التحول الرقمي يُعد استثمارًا في المستقبل حيث يُساهم في تحقيق الأهداف الاستراتيجية للشركة ويُعزز من قدرتها التنافسية في السوق.و تُعد التجارب العملية في مجال التحول الرقمي مصدرًا غنيًا للمعرفة والإلهام. بعض الأمثلة العملية:

استراتيجيات وتقنيات التحول الرقمي: يشير التحول الرقمي إلى عملية تبني الشركات والمؤسسات لتقنيات الإعلام والاتصالات الحديثة لتحسين عملياتها وخدماتها. يتضمن ذلك استخدام الذكاء الاصطناعي، الحوسبة السحابية، إنترنت الأشياء، والتحليلات الضخمة لتحسين كفاءة العمل.

متطلبات وخطوات التحول الرقمي: يتضمن مراحل متعددة تبدأ بتحليل الوضع الحالي وتحديد الأهداف، يليها التخطيط والتنفيذ، وأخيرًا قياس النتائج ومواجهة التحديات.

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تجارب سعودية مُلهمة : أثبتت منصة سهيل نجاحًا في التحول الرقمي من خلال تبني تقنيات الذكاء الاصطناعي لتحقيق ميزة تنافسية.

كلمات المفتاحية: تطبيق تقنيات التحول الرقمي - قطاع المياه السعودي - جودة إدارة المشاريع - شركات المياه والبنية التحتية - رؤية السعودية ٢٠٣٠.

الباحث

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Chapter One: The general framework of the study, which includes the introduction, problem, importance, objectives, questions, hypotheses, study methodology, and its limits.

Introduction.

In light of the industrial infrastructure development and aligned with the strategic vision of the Kingdom of Saudi Arabia for 2030, there is a necessity to construct substantial projects over the next decade. These endeavors aim to expand water and sanitation coverage by 2030. Traditional management methods are inadequate for such large-scale projects, which necessitate governance through digital transformation techniques, specifically Project Management Information Systems (PMIS). The application of PMIS facilitates the management of these projects as investment portfolios, ensuring output quality, minimizing waste, adhering to schedules, and optimizing resource utilization within the approved budget. Digital transformation's goal is to embed digital technologies across all organizational facets to enhance efficiency, quality, and customer satisfaction.

Digital Transformation Strategy This strategy serves as a methodology to restructure organizations, aiming to incorporate digital technologies comprehensively. It encompasses not only product improvement and expedited, high-quality delivery but also necessitates a cultural and procedural shift within the organization. The benefits of such a transformation include staying abreast of continuous developments, swift responsiveness, improved quality, better collaboration, and mitigated risks.

Developing a Digital Transformation Strategy To develop an effective digital transformation strategy, one must:

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- Assess the organization's current state, identifying strengths and weaknesses.
- Explore market opportunities.
- Articulate the organization's vision and objectives.
- Formulate a business plan detailing the necessary technology, teams, and budget.

Themes of Digital Transformation Strategy The strategy should address the imperative of adopting digital transformation technologies to remain adaptable to market shifts and consumer behaviors. It should promote flexibility and foster innovation, transitioning from mere projects to successful products.

Challenges in Digital Transformation Strategy The digital transformation strategy in project management may encounter several significant challenges:

- Altering the organizational culture.
- Securing necessary resources.
- Ensuring information security and privacy.
- Gaining buy-in from decision-makers.
- Adapting to rapid changes.

Organizations must devise thoughtful, integrated strategies to surmount these challenges and triumph in the digital transformation journey. Ultimately, the digital transformation strategy should be intrinsically linked to the organization's core objectives, requiring agility and innovation to thrive in the digital era.

Empirical Studies on Digital Transformation Several studies have examined the impact of digital transformation techniques on project management quality. For instance:

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1. A 2019 study on efficiency and cost improvement analyzed the effects of digital transformation tools on project management efficiency. Utilizing graphic analysis tools, the study estimated project completion times and costs, revealing that digital technologies can significantly reduce time expenditure and enhance efficiency.
2. A 2021 study on risk management improvement assessed the influence of digital transformation technologies on project risk management. Employing predictive models and risk analysis, the study demonstrated that digital transformation aids in more effective risk identification and management.

Conclusion Digital transformation substantially augments the role of project managers, offering new avenues for advancement and refinement in project management practices.

Study Problem:

The challenges associated with infrastructure and digital transformation in the Kingdom of Saudi Arabia are of paramount importance, particularly in view of Vision 2030's objective to catalyze a qualitative leap in diverse sectors. This study delineates the problem, synthesizes prior research findings, and articulates the contributions of the current investigation.

Challenges Identified: The study problem centers on the obstacles impeding the Kingdom's infrastructure, such as resource wastage, elevated costs, and project delivery delays. These challenges highlight the urgency of enhancing quality, productivity, efficiency, and life quality.

Findings from Previous Research: Preceding studies have posited that digital transformation is instrumental in mitigating these challenges. The significance

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of digital infrastructure investment and workforce digital proficiency development has been accentuated.

Contributions of the Current Study: The present study aims to offer actionable solutions to bolster project management quality and outcomes through digital transformation, concentrating on management, regulation, and surveillance techniques. It will also analyze the feasibility of integrating disparate projects to facilitate Vision 2030's objectives.

Problems Among the Study Population and Sample:The primary issue within the study population is the imperative to enhance process efficiency and minimize waste, necessitating a novel project management approach predicated on digital technologies.

Solutions Offered by the Current Study: The current study will proffer a digital transformation framework that is implementable in ongoing and future projects, which will aid in realizing the Kingdom's strategic ambitions and ameliorating overall performance. Digital transformation is deemed vital for achieving Saudi Arabia's Vision 2030, and by leveraging insights from antecedent studies, the Kingdom can surmount extant challenges and fulfill its aspirations for a more thriving and sustainable future.

Importance of the Study:

Scientific Importance:

- Enhancing Knowledge: The study enriches theoretical understanding of digital transformation technologies and their impact on project management improvement.
- Impact Analysis: It evaluates the influence of digital transformation on project management quality standards.

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- Literature Development: The study contributes novel insights about digital transformation in the context of national enterprises to the scientific literature.

Practical Importance:

- Improving Performance: It proposes methods to enhance project management quality via digital technology utilization.
- Decision Support: The study provides data and analysis to assist managerial decision-making concerning digital technology implementation.
- Enhancing Competitiveness: It aids in bolstering the National Water Company's market position by refining project management efficiency and effectiveness.
- Technical Proposal Development: The research devises a technical proposal that integrates quality, work scope, timing, budgeting, and optimal resource deployment throughout the research duration.

The findings indicate that digital transformation can significantly uplift project quality by curtailing waste, augmenting process efficiency, and enriching customer experiences. Additionally, digital transformation enables adaptability to swift market changes.

Objectives of the Study:

Primary Objective:

- To scrutinize and appraise the impact of digital transformation technology deployment on project management quality at the National

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Water Company in the Northern Sector, and to determine its contribution to Vision 2030's goals

Sub-Goals:

1. Identify key digital technologies that can impact the quality of project management.
2. Evaluate the relationship between digital transformation and quality standards in project management.
3. Explore the benefits that digital technologies can offer to improve operations and efficiency.
4. Develop proposals to integrate digital transformation into project management strategies.
5. Analyze the challenges that may arise during the implementation of digital transformation and propose solutions to overcome them.
6. Provide recommendations to the National Water Company to enhance project management quality through digital transformation.

This study aims to establish a framework that facilitates the integration of digital technologies with quality requirements in project management, thereby supporting the Kingdom of Saudi Arabia's 2030 vision of becoming an advanced digital society with a thriving economy.

Study Questions and Hypotheses.

Main Hypothesis:

Based on the study's questions and objectives, and considering the relationship between the variables:

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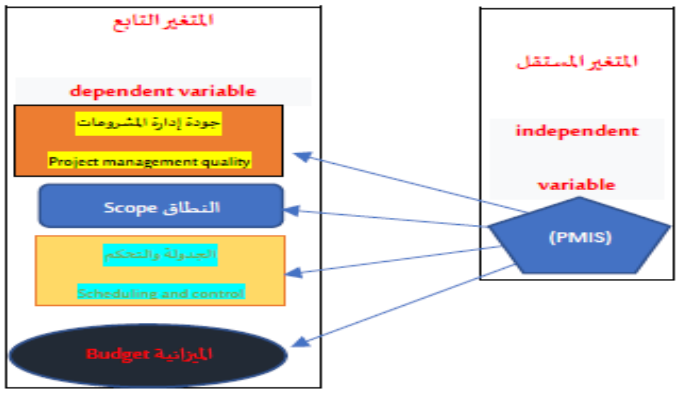
- Independent Variable: Digital transformation technologies and their relationship to the proposed dimensions for each variable.
- Dependent Variable: Quality of project management.

The main hypothesis posits: There is a statistically significant effect of applying digital transformation techniques on the quality of project management.

Sub-Hypotheses:

1. There is a statistically significant relationship between the application of digital transformation techniques and project management scope.
2. There is a statistically significant relationship between the application of digital transformation techniques and the project management schedule.
3. There is a statistically significant relationship between the application of digital transformation techniques and the project budget.



تطبيق (PMIS) على جودة إدارة المشاريع

1-1 Applying (PMIS) on Quality of Project Management

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Questions:

Main Question:

To what extent do applications of digital transformation technologies contribute to improving the quality of project management in the Kingdom of Saudi Arabia?

Sub-Questions:

1. What are the most important technologies currently utilized as an approved system in project management?
2. What is the impact of the ease of applying these techniques on the quality of project management?

Previous Studies:

- The impact of digital transformation on the quality of services in the Saudi government sector showed a statistically significant impact of digital transformation elements on service quality.
- Project management in digital transformation provided insights into analyzing requirements and opportunities to enhance project management.
- Digital transformation strategies and technologies discussed the development of strategies and their impact on quality and efficiency in organizations.
- A 2019 study on improving efficiency and cost used graphic analysis tools to assess the time and cost required to complete projects.
- A 2021 study on improving risk management utilized prediction and risk analysis models to estimate potential risks and their progression.

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These studies offer a comprehensive perspective on utilizing digital technologies to improve project management quality and increase efficiency and effectiveness across various sectors.

Methodology and Research Methods:

Study Tools and Data Collection Tools: The study will employ a statistical approach to the following topics:

- Information Gathering: Utilizing questionnaires, observations, and meetings.
- Sampling Method: Random cluster samples will be taken, and the questionnaire will be exploratory in nature.

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(الاستبيان الإستقصائي)
Questionary

هذا الاستبيان جزء تكميلي للدراسة الأكاديمية لرسالة الماجستير الخاصة بالباحث / سمير الهوساوي والتي هي بعنوان

أثر تطبيق تقنيات التحول الرقمي على جودة إدارة المشاريع بشركة المياه الوطنية في القطاع الشمالي

The impact of applying digital transformation techniques on the quality of project management in the National Water Company in the northern Cluster

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يرجى قراءة العبارات التالية وأختيارالاجابة المناسبة من وجهة نظرك ويأكد الباحث بأن جميع البيانات والمعلومات تنفذ بشكل سري وتستخدم لغرض البحث العلمي فقط. وهذا البحث العلمي يهدف الي تحسين جودة ادارة المشاريع ومخرجاتها ونظرا لما شهدته من اخفاقات واهدار الموارد والميز انيات وسوء جودة المشاريع وفشل الكثير منها لذلك ندرس تحسين جودة ادارة المشاريع ومخرجاتها.

يرجى قراءة كل عبارة من العبارات و اختيار الإجابة المناسبة من وجهة نظرك، ويؤكد الباحث بأن البيانات والمعلومات التي تقدمونها سرية وتستخدم لأغراض البحث العلمي فقط ، ويشكر الباحث مقدما حسن تعاونكم متمنياً لكم دوام التوفيق ،،،

الإسم؟

نص الإجابة القصير

المؤهل؟

- بكالريوس
- ماجستير
- دكتوراه

مجال العمل؟

- التصميم
- إشراف
- إدارة المشاريع
- تنفيذ

عدد سنوات الخبر؟

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5-4سنه
10-6سنه
15-11سنه
أكثر من 15سنه

المسمى الوظيفي؟

مدير تصميم
مدير مشروع
مدير مكتب فني
مهندس مشروع
أخرى

نوع المشروع؟

قطاع سكني
قطاع صناعي
قطاع بنية تحتية

ماهي قيمة مشروعك التعاقدية ؟

مليون ريال سعودي
مليون ريال سعودي
مليون ريال سعودي

مدى معرفتك بتطبيقات تقنيات التحول الرقمي واستخداماتها في تحسين جودة إدارة المشاريع؟

محترف
ممارس
مبتدأ
م بها ولم استخدمها
لا اعلم بها

في الجدول التالي، يرجى إعطاء قيمة لكل عنصر من العناصر المذكورة في الجدول التالي: (درجة الأهمية والتوافق على المقياس ليكرت الخماسي) حسب مدى أهمية هذا العنصر

العلاقة بين تطبيق تقنيات التحول الرقمي على جودة إدارة المشاريع

- مدى تأثير تطبيق تقنيات التحول الرقمي على إدارة نطاق المشروع.

ما مدى تأثير تطبيق تقنيات التحول الرقمي على إدارة نطاق المشروع	هام جدا	هام	محايد	غير هام	عديم الفائدة
التحسين المستمر على جميع العمليات والإجراءات المطلوبة لإدارة المشاريع					

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التو افق ما بين مخرجات المشروع طبقا لأهداف المشروع					
سهولة جمع المعلومات والبيانات ومعالجتها والتحقق من صحتها					

- مدى تأثير تطبيق تقنيات التحول الرقمي على إدارة جدولة المشروع

ما مدى تأثير تطبيق تقنيات التحول الرقمي على إدارة جدولة المشروع	هام جدا	هام	محايد	غيرهام	عديم الفائدة
دقة متابعة المشاريع بشكل دوري طبقا للخطط القائمة					
سهولة تطبيق الجدول الزمني (خط الاساس) بصورة و اقعية على المشروع					
وضع الخطط الوقائية والتحقق من صحتها قبل حدوث التعثر او التأخر في التسليم					
الالتزام بالجدول الزمني (خط الأساس) للمشاريع التي تحت التنفيذ					

- مدى تأثير تطبيق تقنيات التحول الرقمي على إدارة التكلفة

ما مدى تأثير تطبيق تقنيات التحول الرقمي على إدارة التكلفة	هام جدا	هام	محايد	غيرهام	عديم الفائدة
دقة تحديد التكلفة التقديرية للمشاريع أثناء مرحلة دراسات الجدوى					
تحقيق القيمة المكتسبة مقابل التكلفة وارضاء أصحاب المصلحة					
أن تكون التكلفة التقديرية للمشروع في حدود الميزانية المقترحة					

- مدى تأثير تطبيق تقنيات التحول الرقمي على جودة إدارة المشاريع

ما مدى تأثير تطبيق تقنيات التحول الرقمي على إدارة جودة إدارة المشاريع	هام جدا	هام	محايد	غيرهام	عديم الفائدة
التوظيف الأمثل لموارد المشروع وتقليل الهدر					
المحافظة على البيئة وإعادة التدوير					
التوازن ما بين تنفيذ الأعمال ومخرجاتها متو افقه مع أهداف المشروع					

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1-2 Questionary

Sample and Study Population:

The research was conducted with a sample of approximately 135 professionals specializing in water and sanitation project management at the National Water Company in the Northern Sector. The accessibility of the study sample was facilitated by my position as an engineer within the company, providing direct access to the participants required for this research. Statistical methods, specifically SPSS, were employed to validate the hypotheses.

Fields of Study:

- Human Determinants: Employees involved in project management at the National Water Company in the Northern Sector.
- Temporal Parameters: The study spans the early 21st century, from the year 2000 to 2022.
- Spatial Determinants: Project management practices within the National Water Company across the Kingdom of Saudi Arabia.

Chapter Two: Introduction and Definitions of Digital Transformation Technologies.

-

Digital Transformation: Digital transformation refers to the integration of digital technology into all business areas, fundamentally altering how organizations deliver value to customers. It involves adopting innovative digital technologies to facilitate cultural and operational changes that align with evolving customer demands. Examples include:

- Development of digital solutions such as mobile applications or e-commerce platforms.

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- Transition from local, computer-based infrastructure to cloud computing.
- Implementation of smart sensors to optimize operating costs.

Importance of Digital Transformation: The term 'digital transformation' encapsulates the adoption of new processes, skills, and technologies essential for maintaining competitiveness in the dynamic technological landscape. In the post-pandemic era, organizations must be capable of swiftly adapting to:

- Pressures of market entry periods.
- Unanticipated supply chain disruptions.
- Swift shifts in customer expectations.
- Adoption of digital transformation strategies is crucial for businesses to remain relevant.

Digital Transformation Technologies: Digital transformation encompasses a broad spectrum of technologies, including but not limited to applications, software, networking capabilities, artificial intelligence, machine learning, augmented and virtual reality, sensor technology, video analytics, cloud services, and more.

Chapter Three: Applications and Efficiency of Digital Transformation.

The significance of digital transformation has been recognized by many companies as a pivotal factor for achieving accelerated growth and enhanced profitability. The business landscape and project management methodologies have evolved substantially in the wake of digitization. To understand this transformation, it is imperative to address the prevalent question: Why has digital transformation become a paramount topic among corporations today?

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Digital experts and business leaders concur on the necessity of adopting more adaptable systems to bridge the gap between traditional office work and its digital equivalent. This need emerged in the aftermath of the Covid-19 pandemic, which redefined the business sector and introduced new concepts, such as ‘digitization.’ Digital transformation transcends the mere application of technology within an organization; it is a holistic program that influences internal operations and service delivery, streamlining processes to enhance efficiency and expedite service provision.

Digital transformation refers to the integration of digital technology into all areas of an institution, fundamentally changing how it operates and delivers value to its customers and stakeholders. This process encompasses the strategic adoption of technology to enhance operational efficiency and service provision. It involves the comprehensive application of digital solutions that support the institution’s workflow across various departments and its interactions with customers and the public. The aim is to augment service quality and streamline accessibility, thereby conserving time and resources. In the contemporary era, the imperative for digital transformation has intensified due to the swift advancements in information technology tools and their pervasive application in every facet of life, encompassing both public and private sector engagements, as well as personal affairs. Consequently, societal demand is mounting for institutions, organizations, and corporations to elevate their service standards and ensure availability across digital platforms.

Chapter Four: The Impact of Digital Transformation on Project Management Quality.

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The Advantages of Digital Transformation in Project Management.

The journey of digital transformation is complex and multifaceted. It necessitates a deliberate selection of digital tools that are congruent with the organizational culture and can significantly influence the company's trajectory and project management practices. It is imperative for chief executive officers (CEOs) and project managers to comprehend the digital transformation framework as a preliminary measure.

The formulation of a robust digital transformation strategy within an organization is pivotal. It establishes fundamental benchmarks, such as the objectives to be attained, and fosters enhancements in team performance and client satisfaction.

- **Cost Efficiency and Digital Transformation.**

Digital transformation enables enterprises to curtail expenses by streamlining operations, automating repetitive tasks, and leveraging data-driven insights. By embracing digital tools, organizations can achieve sustainable cost reductions without compromising productivity. Strategic selection of these tools is crucial for project managers seeking successful outcomes.

- **Data Enhancement and Decision-Makin**g

Accurate data collection lies at the heart of effective decision-making. Digitalization facilitates real-time data acquisition, enabling project managers to make informed choices. Timely access to essential information minimizes the risk of erroneous decisions and enhances overall project performance.

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- **The Role of Strategic Planning.**

Deb Gildersleeve, Chief Information Officer (CIO) at IDG, emphasizes the importance of aligning digital tools with strategic planning. In a recent research paper from IDG's Market Pulse series, Gildersleeve highlights the disparity between tool utilization and tailored work development. Organizations must move beyond transient upgrades and focus on sustained development that aligns with their unique project requirements.

- **Automation Revolution and Work Systems.**

The ongoing automation revolution presents both opportunities and challenges. A survey conducted by IDG reveals that 67% of respondents believe business professionals possess the capabilities to construct efficacious solutions. Specialized work systems, actively adapting to technological advancements, play a pivotal role in achieving project success.

- **Measuring Outcomes.**

Digital transformation tools empower CEOs and project managers to set precise objectives and measure progress accurately. From strategy formulation to outcome evaluation, these tools redefine project management practices. By allocating additional time for strategic planning, project managers can enhance outcome tracking and synthesize a comprehensive project landscape.

- **Conclusion.**

The contemporary digital paradigm necessitates a strategic approach to project management. As organizations embrace digital transformation, they

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must prioritize the selection of optimal tools, align them with dynamic work environments, and strive for measurable outcomes. TechTrade.Pro's influential article further underscores the transformative impact of digitalization on project management.

Artificial Intelligence's Role in Mitigating Risks During Digital Transformation.

The advent of the digital revolution has been pivotal in the business and commerce sectors, exerting an unparalleled influence on the expansion of organizations across various fields. A critical aspect of digital transformation within project management is its capacity to diminish risks, preserve the clarity of project objectives, and facilitate the analysis of real-time data. Consequently, project managers find external factors and potential risks less daunting than previously, owing to digital tools that enable meticulous tracking of project outcomes.

Real-time data updates, coupled with digital transformation driven by artificial intelligence tools, empower project managers to gain a lucid understanding, foresee potential risks, and mitigate them more effectively than in the past. Additionally, these tools aid in the visualization of information dashboards and the delineation of Key Performance Indicators (KPIs), allowing for preemptive measures in projects ahead of anticipated variances.

Techniques of Digital Transformation in Project Management:

- Project Management Information System (PMIS):PMIS is a concept within project management that denotes the systematic organization of information vital for the successful execution of projects. It encompasses an information system that employs both electronic and manual methods to gather, process, and disseminate information.

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Utilized by both senior and junior management, PMIS facilitates communication and supports all project phases, from initiation to closure.

- Control Schedule Process: This process is integral during the project execution phase and forms part of the project's monitoring and control processes. It enables the project manager to oversee the project's adherence to the planned schedule and manage the implementation of tasks according to the project schedule's baseline. The process extends from the execution phase to the project's completion.

  The Control Schedule Process assists the project manager in several key areas:

  - Assessing the project's current status and timeline.
  - Monitoring schedule performance and managing schedule modifications.

- Primavera Project Management Software

Primavera stands at the forefront of modern project planning and management applications, aiding organizations in overseeing projects via a dedicated institutional database. This database facilitates meticulous tracking of project progression across all levels of administration. With significant advancements in management sciences influencing project management, the paradigm has shifted towards enterprise management. In this framework, a project is perceived as an integral component of the organization's operations, interlinked with its other elements. This comprehensive approach empowers organizational decision-makers to render informed decisions grounded in clarity and precision. Moreover, it ensures optimal allocation and transfer of resources among the organization's projects through a cohesive system.

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The overarching aim of the Primavera software is to orchestrate and scrutinize the organization's projects and tasks, employing cutting-edge planning methodologies. It positions projects under stringent oversight and regulation, establishing Primavera as a pivotal contemporary instrument in the project management domain.

Field Study and Recommendations.

A field study constitutes a vital segment of scholarly inquiry, offering insights into the repercussions of digital transformation technologies on project management quality. Within the ambit of Saudi Arabia's Vision 2030, such a study might encompass:

- Current State Evaluation: Assessing the extent of digital transformation technology adoption in project management within the Kingdom.
- Impact Analysis: Gauging the enhancements these technologies contribute to operational efficiency and effectiveness.
- Challenges and Barriers: Identifying the impediments to technology deployment and strategies for their mitigation.
- Case Studies: Dissecting specific instances of digital transformation implementation in projects and their outcomes.
- Recommendations: Proposing measures to augment the integration of digital technologies, aligning with the objectives of Vision 2030.

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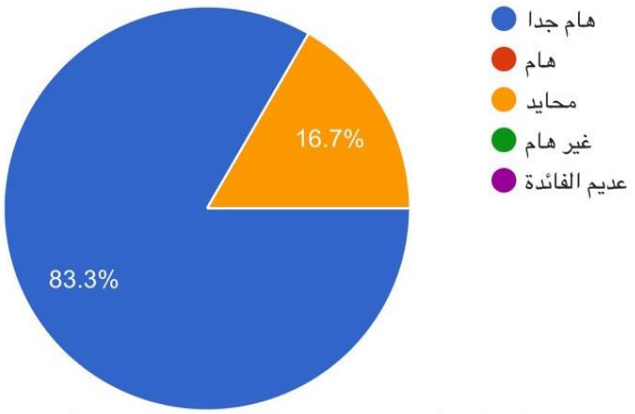

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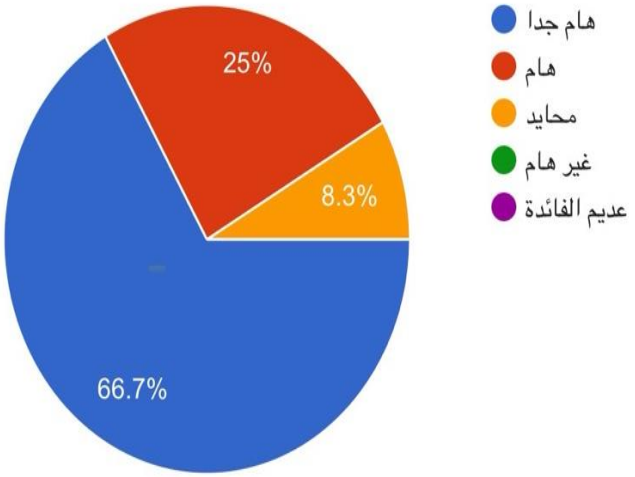

مامدى تاثير هذه التقنيات على ادارة نطاق المشروع(التحسين المستمر على جميع العمليات والإجراءات المطلوبة لإدارة المشاريع)

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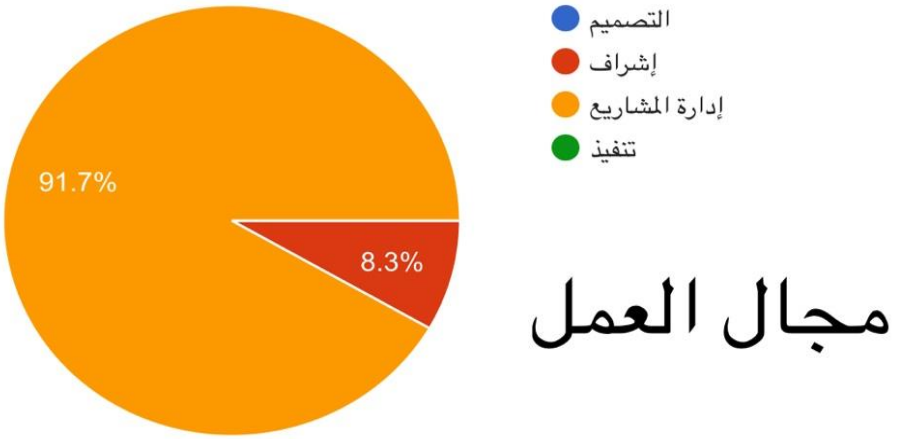

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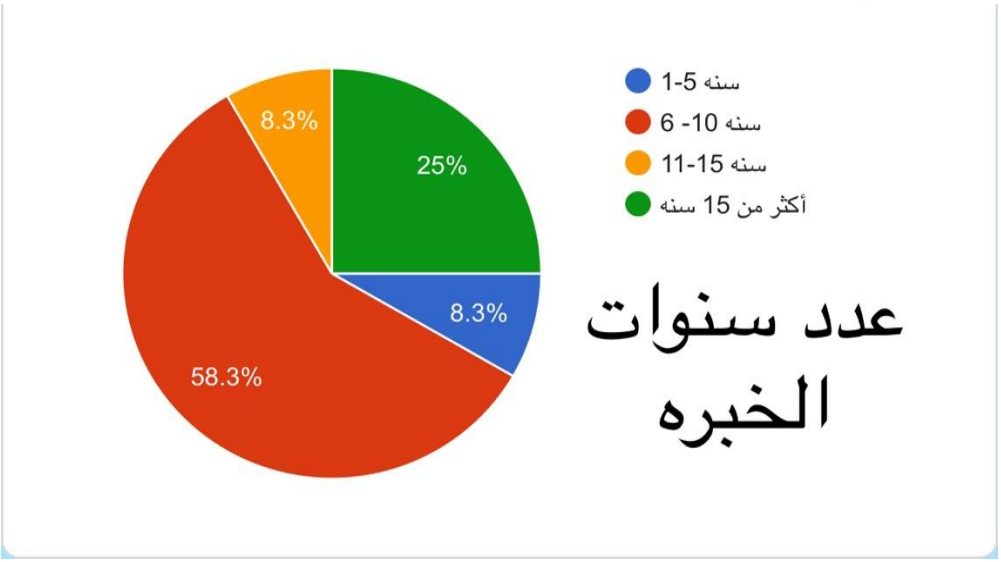

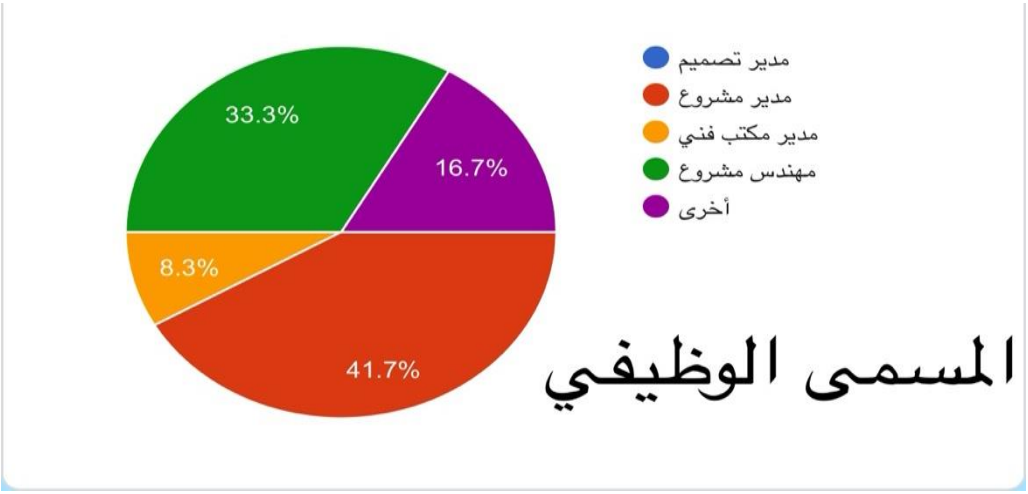

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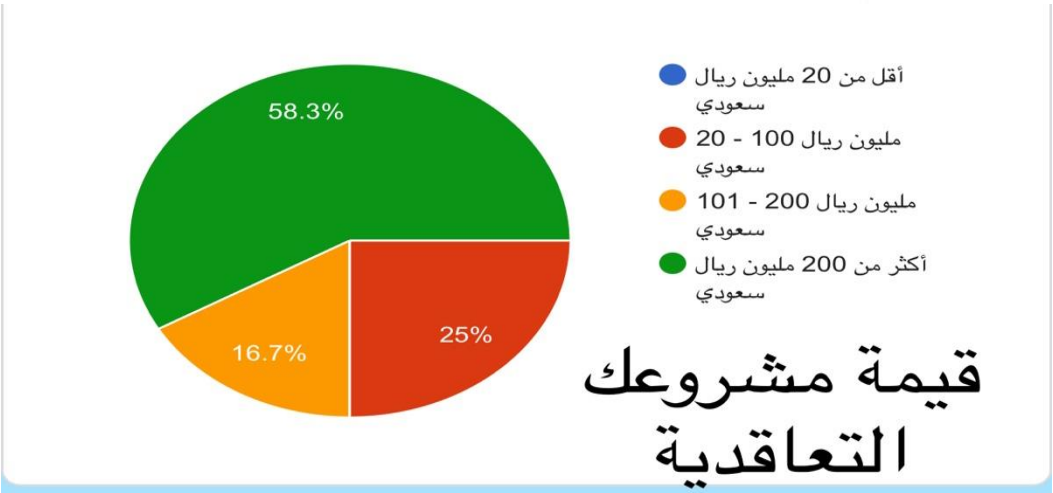

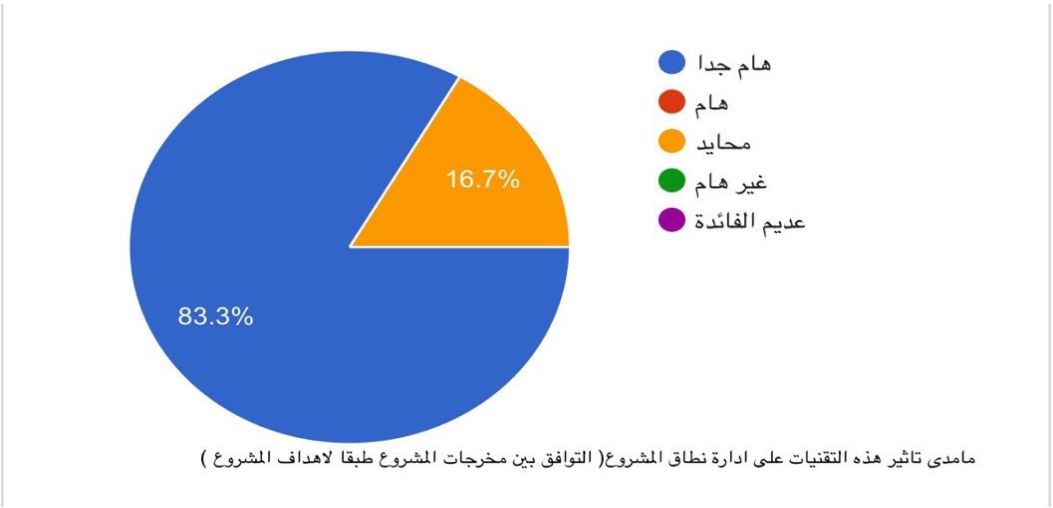

1-3 Some of Questionary Results

This investigation can guide policymakers and institutions towards optimal digital transformation strategies that elevate project management quality and bolster the Kingdom's strategic aspirations.

The study revealed a statistically significant correlation between the application of digital transformation techniques and the caliber of project management. Notably, these techniques significantly influence project scope, scheduling, and budgeting, culminating in superior quality deliverables.

Previous field inquiries have corroborated the affirmative impact of digital transformation technologies on infrastructure project management quality.

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One study demonstrated that digital transformation within auditing processes enhances efficiency and effectiveness, thereby positively influencing audit quality. Another research posited that employing tools like big data, blockchain, cloud computing, and artificial intelligence fosters improvements in audit efficiency and effectiveness, consequently elevating audit quality.

These findings underscore the criticality and urgency of integrating digital transformation techniques in infrastructure projects to realize improved outcomes and amplify project management quality. The studies advocate for the evolution of audit tools and procedures to be congruent with digital transformation and technological progress.

Enhancing Digital Transformation Effectiveness at the National Water Company: Recommendations for Vision 2030.

Abstract: This paper presents a suite of recommendations designed to augment the efficacy of digital transformation initiatives within the National Water Company, a governmental entity. These recommendations are poised to refine the quality of public services and foster constructive engagement between the corporation and the populace, thereby aligning with the objectives of Vision 2030.

Recommendations:

1. Infrastructure Development: Commitment to the modernization of technological infrastructure is paramount, ensuring compatibility with cutting-edge digital technologies.
2. Employee Training: Implementation of comprehensive training programs is essential to cultivate employees' proficiency in digital tools utilization.

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3. Cybersecurity Measures: Strengthening cybersecurity protocols is critical to safeguard data integrity and digital service platforms against cyber threats.
4. Big Data Analytics: Employing advanced analytics techniques is recommended to distill insights from data, thereby informing and enhancing decision-making processes.
5. Electronic Service Expansion: Broadening the array of electronic services is advised to streamline interactions between the ministry and citizens.
6. Strategic Technological Partnerships: Fostering collaborations with established technology firms can yield substantial benefits from their digital transformation acumen.
7. Cultural Innovation: Promoting an organizational culture that embraces innovation and adaptability is crucial for the successful assimilation of digital technologies.

This study investigates the ramifications of digital transformation initiatives on the caliber of project management within the National Water Company in the Northern Sector, contextualized by Vision 2030. The research accentuates the criticality of digital technologies in enhancing operational efficiencies and service provision. The impacts are delineated as follows:

Efficiency Augmentation The integration of digital infrastructures has significantly expedited operational processes and amplified productivity, primarily by curtailing the duration requisite for task completion.

Quality Enhancement The adoption of digital innovations has markedly refined the quality of services rendered, thereby fostering elevated customer satisfaction.

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Adaptability and Flexibility (Agility)Digital solutions have endowed the organization with the agility to promptly adjust to market fluctuations and novel requisites.

Analytical Proficiency The capability to aggregate and dissect voluminous data sets has enabled informed decision-making predicated on current and precise data.

Collaboration and Communication Technologies emergent from digital transformation have streamlined intra-organizational communication and collaboration, thus propelling the efficient realization of project objectives.

It is paramount to recognize that the efficacious application of these technologies is contingent upon an advanced infrastructure, a proficient workforce, and a coherent strategy that champions innovation and perpetual advancement. The investment in digital transformation is posited as a strategic foresight, instrumental in actualizing the company's strategic aspirations and fortifying its competitive stance in the industry.

Practical Implications 'Digital transformation' encapsulates the process whereby entities integrate contemporary media and communication technologies to optimize their operational and service modalities. This encompasses leveraging artificial intelligence, cloud computing, the Internet of Things, and expansive analytics to bolster business efficacy.

Transformational Blueprint Roadmap The odyssey of digital transformation encompasses a spectrum of stages, initiating with an appraisal of the extant conditions and objective formulation, succeeded by strategic deployment and execution, and culminating with the assessment of outcomes and the navigation of challenges.

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Exemplar: Saudi Arabia In the Kingdom of Saudi Arabia, the Suhail platform has emerged as a paragon of digital transformation success, harnessing artificial intelligence to secure a competitive edge.

These exemplars elucidate the potential of digital transformation to elevate business operations, spur economic proliferation, and enable entities to harness modern technologies to fulfill their objectives and ameliorate customer experiences, thereby contributing to an enhanced quality of life.

resources and references:

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importance of project management in digital transformation and how it can contribute to success and innovation.

- The guide for preparing specifications and specifications for digital projects is available on the unified national platform.
- "40 References on Digitization and Technology", a list of various references covering topics related to digitization and technology.
- https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3619999.
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- https://bakkah.com/ar/knowledge-center/تأثير-التحول-الرقمي-على-إدارة-المشاريع

Tables, drawings and abbreviations.

1-1Applying (PMIS) on Quality of Project Management.

1-2Questionary.

1-3 Some of Questionary Results.

Project Management Information System (PMIS)