THE DIGITAL TRANSFORMATION MODEL FOR INNOVATIVE MARKETING MATURITY IN THE OIL COMPANIES

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ABSTRACT

Purpose: The manufacturing industry has been at the cutting-edge of technology advancements, which has

Objectives: The objective of this research is to examine digital transformation within the oil and gas industry, focusing on the transition to renewable energy sources and the role of innovative technologies. It aims to explore how digital technology transforms operational strategies and the importance of data utilization, brand recognition, and ethical data practices in this transformation process.

Methods: This study employs a qualitative investigation methodology to delve into digital transformation in the oil and gas sector. Through interviews with industry decision-makers, the research gathers insights into the challenges and opportunities faced by firms adopting digital solutions and strategies.

Results: The findings of the research highlight the transformative nature of digital technology within the oil and gas industry. They underscore the significance of managing internal and external boundaries during the transformation process. Key factors such as data utilization, brand recognition, and ethical data practices emerge as crucial for successful digital transformation. The study provides empirically grounded directions for developing frameworks to guide digital transformation practices in the industry.

Conclusion: In conclusion, this research contributes to the understanding of digital transformation in the oil sector. By shedding light on the challenges and opportunities inherent in adopting digital solutions, the study aims to facilitate sustainable development and enhance innovation potential in the energy landscape. The findings offer valuable insights for firms navigating the complexities of digital transformation and pave the way for future research in this area.

Keywords: Digital Transformation, Innovative Marketing, Oil Industry, Ethical Marketing, Leadership.

O MODELO DE TRANSFORMAÇÃO DIGITAL PARA MATURIDADE DE MARKETING INOVADOR NAS EMPRESAS PETROLÍFERAS

RESUMO

Objetivos: O objetivo desta pesquisa é examinar a transformação digital na indústria de petróleo e gás, com foco na transição para fontes de energia renováveis e no papel das tecnologias inovadoras. O objetivo é explorar como a tecnologia digital transforma as estratégias operacionais e a importância da utilização de dados, do reconhecimento da marca e das práticas éticas de dados neste processo de transformação.

Métodos: Este estudo emprega uma metodologia de investigação qualitativa para aprofundar a transformação digital no setor de petróleo e gás. Através de entrevistas com tomadores de decisão do setor, a pesquisa reúne insights sobre os desafios e oportunidades enfrentados pelas empresas que adotam soluções e estratégias digitais.

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EL MODELO DE TRANSFORMACIÓN DIGITAL PARA LA MADUREZ DEL MARKETING INNOVADOR EN LAS PETROLERAS

RESUMEN

Objetivos: El objetivo de esta investigación es examinar la transformación digital dentro de la industria del petróleo y el gas, centrándose en la transición a fuentes de energía renovables y el papel de las tecnologías innovadoras. Su objetivo es explorar cómo la tecnología digital transforma las estrategias operativas y la importancia de la utilización de datos, el reconocimiento de marca y las prácticas éticas de datos en este proceso de transformación.

Métodos: Este estudio emplea una metodología de investigación cualitativa para profundizar en la transformación digital en el sector del petróleo y el gas. A través de entrevistas con tomadores de decisiones de la industria, la investigación recopila información sobre los desafíos y oportunidades que enfrentan las empresas que adoptan soluciones y estrategias digitales.

Resultados: Los hallazgos de la investigación resaltan la naturaleza transformadora de la tecnología digital dentro de la industria del petróleo y el gas. Subrayan la importancia de gestionar los límites internos y externos durante el proceso de transformación. Factores clave como la utilización de datos, el reconocimiento de marca y las prácticas éticas de datos emergen como cruciales para una transformación digital exitosa. El estudio proporciona instrucciones con base empírica para desarrollar marcos que guíen las prácticas de transformación digital en la industria.

Conclusión: En conclusión, esta investigación contribuye a la comprensión de la transformación digital en el sector petrolero. Al arrojar luz sobre los desafíos y oportunidades inherentes a la adopción de soluciones digitales, el estudio tiene como objetivo facilitar el desarrollo sostenible y mejorar el potencial de innovación en el panorama energético. Los hallazgos ofrecen información valiosa para las empresas que navegan por las complejidades de la transformación digital y allanan el camino para futuras investigaciones en esta área.

Palabras clave: Transformación Digital, Marketing Innovador, Industria Petrolera, Marketing Ético, Liderazgo.

1 INTRODUCTION

The era of digital transformation in the oil industry represents a crucial shift that companies must embrace to remain competitive in today's rapidly evolving landscape. With the ability to revolutionize operations and deliver unparalleled value, digital connectivity has
become necessary for global industries, including the oil and gas sector. This industry has historically been essential in providing energy, light, and transportation to people worldwide, underscoring its need to redefine its boundaries through digitization, digitalization, and digital transformation. The evolution of digital transformation has been a gradual and ongoing process for decades, with organizations in various industries integrating technologies like maintenance management systems, SAP, and Maxima to boost their operations (Wanasinghe et al., 2020). These advancements have paved the way for a more digitized approach to business processes, increasing efficiency and productivity (Nesterenko et al., 2023). Digital transformation within the oil industry entails harnessing cutting-edge technologies such as data analytics, artificial intelligence, cloud computing, and robotic automation to drive operational efficiencies and streamline processes. By deploying innovative digital tools like 'digital twins' and AI-driven simulations, organizations can optimize maintenance procedures, enhance workforce productivity, minimize downtime, and elevate overall business performance (Blanka et al., 2022). These advancements are critical for addressing industry-specific challenges like change resistance, data security issues, skills gaps, and training requirements.

Although the oil industry's digital transformation is behind other sectors in maturity levels, downstream companies can unlock significant benefits by focusing on improving maintenance resource utilization and leveraging technical support tools like AI simulations. Unforeseen events such as the COVID-19 pandemic have accelerated the adoption of digital technologies in the oil and gas sector to ensure business continuity amidst market volatility.

As companies navigate through shifting market dynamics, environmental concerns, and the pursuit of a sustainable future with reduced carbon emissions, digital transformation emerges as a pathway forward. By embracing cloud-native solutions, fostering cultures of innovation, strengthening cybersecurity protocols, and leveraging technologies like IoT and AI, organizations can expedite their digital transformation journeys (Šimberová et al., 2022). Real-world success stories from industry giants like Exxon Mobil, Saudi Aramco, and ADNOC (Abu Dhabi National Oil Company) and in Iraq, the Iraqi oil company Oil Marketing Company (SUMO) Basra Gas Company; Shamal Gas Company; Masafi Al-Janoob Company; Mosafi Shamal Company; Mosafi Al-Wasat Company; Iraqi oil tanker company; Basra Oil Company. Demonstrate the tangible benefits of digital transformation initiatives in the Middle East (AL-Saadi et al., 2022). In essence, digital transformation within the oil industry transcends mere technological upgrades; it entails creating value across all facets of business operations (Furr et al., 2022). Companies can flourish in an increasingly digitized world through a wholehearted
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commitment to enterprise-wide transformation endeavors centered on reinvention and competitiveness (Gupta et al., 2023).

The oil and gas industry must transform digitally to unlock its full potential and reap significant benefits. The sector is undergoing rapid changes, grappling with issues like fluctuating prices, shifting energy demands, and the imperative of decarbonization (Stoddart et al., 2020). In response to these challenges, companies increasingly turn to digital solutions to enhance efficiency and productivity. Nevertheless, implementing digital transformation in the oil and gas industry presents its own set of challenges. Companies must carefully choose which technologies to adopt, integrate them into their value chain, and ensure that their workforce is equipped with the necessary skills and training to effectively leverage these tools (Moica et al., 2018). The success of digital transformations depends on aligning technology investments with strategic goals and cultivating a digitally literate workforce capable of driving innovation (ElMassah & Mohieldin, 2020).

Despite these obstacles, the potential rewards of digital transformation in the oil and gas industry are substantial. From improving operational efficiency to cutting costs and enhancing safety measures, digital technologies can transform businesses in this sector (Bican & Brem, 2020). Companies that embrace digital transformation will be better positioned to adapt to evolving market dynamics, drive down expenses, increase profitability, and stay competitive in an increasingly digital environment (D’Almeida et al., 2022). The digital revolution is transforming the oil sector, requiring companies to redefine processes, enhance efficiency, and stay competitive. By adopting intelligent technologies and automating tasks, costs are reduced, quality is improved, and efficiency is boosted. Embracing digital transformation is crucial for success in an industry known for handling extensive data and facing tough competition. It concerns technological progress, organizational agility, and responsiveness to market dynamics (Machado et al., 2020). Companies must adapt by integrating technology into their marketing strategies, opening avenues for productivity enhancements, cost reductions, and innovations. Implementing transformations organization-wide is essential for maintaining a competitive advantage, with cloud technology and analytical capabilities playing key roles (Razmanova & Andrukhova, 2020). Regulatory limitations, limited consumer engagement, and data privacy concerns must be carefully addressed by leveraging data analytics for targeted marketing campaigns and fostering innovation. Successful digital transformation in oil marketing requires collaboration with industry partners for knowledge exchange and staying informed about emerging technologies and trends. This will be pivotal.
for companies seeking to enhance their marketing strategies through digital transformation and stay ahead of rivals (Venkatesh et al., 2019).

The oil industry, a vital component of the global energy landscape, has witnessed significant disruptions in recent years, driven by technological advancements, environmental concerns, and shifting consumer preferences. In this dynamic environment, digital transformation has emerged as a catalyst for innovation, offering opportunities to streamline operations, enhance efficiency, and develop innovative marketing strategies. However, capitalizing on the potential of digital transformation in the oil industry requires a comprehensive understanding of the underlying processes and the challenges associated with implementing innovative marketing approaches.

This research aims to explore the digital transformation process in the oil industry and identify the challenges faced in implementing innovative marketing strategies. By addressing these two research questions, the study provides valuable insights that can guide oil companies in leveraging digital technologies to enhance their marketing efforts and remain competitive in an evolving market.

1- What is the digital transformation process in the oil industry?

2- What are the challenges facing implementing innovative marketing strategies in the oil industry?

2 STATEMENT OF THE RESEARCH PROBLEM

The oil and gas sector is at a critical juncture in digital transformation and innovative marketing, where decisions will shape the industry's future. Despite its crucial role in the global economy, the industry trails behind others in embracing digital advancements and tackling cyber risks. The abundance of sensitive data within the sector makes it a prime target for potential cyber threats, posing significant risks to market stability and operational integrity (Litvinenko, 2020).

In the oil and gas business, digital transformation is essential for maximizing production efficiency, reducing operational expenses, and improving decision-making processes. However, the industry faces financial limitations, sluggish implementation rates, and insufficient preparedness to address distinctive digital transformation obstacles. To succeed in this cutting-edge marketing field, organizations must have a comprehensive digital strategy that includes clear objectives, effective governance, adherence to regulations, adaptability,
advanced technological knowledge, IT innovation, collaborative efforts, and a culture that values transparency (Philbin et al., 2022).

Efficient use of digital tools empowers oil and gas enterprises to overcome these obstacles and promote innovation. The sector can lead in digital technology by adopting advanced technologies such as big data analytics and positioning itself as a "digital-first" entity. Companies can achieve dominant positions in new market segments and reduce cybersecurity vulnerabilities by strategically investing in digital transformation initiatives (Aldayel & Alturki, 2021).

Ultimately, the crux of the research lies in recognizing the significance of digital transformation and innovative marketing within the oil and gas domain. Companies can bolster their competitiveness, operational efficiencies, and industry collaborations by exploring these critical areas and crafting actionable recommendations for implementing digital transformation frameworks. This study endeavors to equip decision-makers with invaluable insights into navigating the challenges associated with digital transformation in oil companies.

3 RESEARCH OBJECTIVES

The main focus of this study is to investigate the digital transformation processes undertaken by oil companies, with a specific emphasis on the obstacles they face and the potential solutions that could enhance their strategic prioritization efforts and spur future innovation initiatives. By immersing ourselves in the ever-changing digital realm of the oil and gas sector, our research aims to illuminate how these companies can effectively navigate these transformations. It is imperative to grasp digital transformation's key trends, opportunities, and challenges to craft strategic responses that will fuel growth and maintain competitiveness within this industry. Through a qualitative research approach, we aim to gather valuable insights from industry leaders, experts, and stakeholders to reveal diverse perspectives on the impact of digitalization. By pinpointing the critical factors contributing to success, as well as the obstacles and best practices associated with digital transformation in oil companies, our study aims to offer practical recommendations for organizations embarking on their digital journeys. Ultimately, our research goals aim to enrich the existing knowledge base on digital transformation in the oil industry and provide tangible guidance for companies striving to thrive in an ever-evolving digital landscape.
4 IMPORTANCE OF RESEARCH

Undoubtedly, research plays a critical role in digital transformation within oil companies. As digital technologies become more integral across various sectors, the oil and gas industry is no exception. Numerous research studies have underscored the transformative impact of digitalization on operations, decision-making processes, and overall efficiency in oil companies. This shift towards digitization boosts productivity and unlocks fresh avenues for innovation and expansion.

Adopting digital transformation technologies is essential to innovative marketing maturity in the oil sector. By utilizing digital transformation, businesses can enhance customer satisfaction by providing superior experiences and services. This customer-focused approach is essential to maintaining competitiveness in today's dynamic market environment. In addition, digital transformation leads to improved operational efficiency and cost savings. By simplifying procedures and incorporating automation, oil companies can achieve high levels of productivity and profitability.

Furthermore, digital transformation empowers businesses to swiftly adapt to evolving market dynamics, fostering agility in their operations. This adaptability in business strategies sets the stage for innovation in products and services. In an industry as rapidly changing as oil and gas, promptly responding to market shifts is crucial for long-term prosperity.

In essence, research focusing on digital transformation within oil companies is indispensable for comprehending the repercussions of technological progress on industry norms. Researchers can supply invaluable insights into how oil companies can flourish in an increasingly digitized world by delving into the correlation between digital transformation and pioneering marketing approaches.

5 LITERATURE REVIEW

Digital metamorphosis is a crucial journey for companies, including those in the oil industry in Iraq. It involves using digital technologies to transform business processes, culture, and customer interactions beyond traditional functions like sales and marketing. The three critical phases of digital transformation are digitization, digitalization, and digital transformation, emphasizing the integration of digital tools into business practices. Innovative marketing strategies through digital tools can increase efficiency, stronger customer connections, and heightened competitiveness, although challenges like data privacy and
cybersecurity must be considered. Success stories in the oil sector show how technology can drive growth and profitability. Adhering to best practices for infrastructure enhancements, effective leadership during change management, and ethical marketing principles are essential for successful digital transformation. Analyzing consumer feedback helps tailor strategies to meet market demands and drive sustainable growth. Continuous improvement and adaptation to new technologies are vital for sustained success in the oil industry. Understanding the significance of digital transformation and effectively leveraging technology can help companies navigate the evolving landscape confidently.

5.1 DIGITAL TRANSFORMATION

Digital transformation (DT) is characterized by planned changes built on a foundation of advanced technologies. Digital transformation is an organizational shift to big data, analytics, the cloud, mobile communication technologies, and social media platforms to provide goods and services (Furr et al., 2022) also described digital transformation as a tool for transforming business processes, cultures, and organizational aspects to meet changing market requirements by digital technologies (Blanka et al., 2022). Digital transformation is characterized by three elements: (1) reexamining and redefining firm boundaries; (2) the opening up of products and services to community input, as well as reducing property rights; and (3) reshaping organizational and product identities (Mandviwalla & Flanagan, 2021). views digital transformation as a radical institutional change that diffuses and disrupts both fields and organizations. Digital transformation comprises the combined effects of several digital innovations and technologies, bringing about novel actors, structures, practices, values, arrangements, and beliefs that change, destroy, replace, or complement existing rules of the game within organizations, ecosystems, industries, or fields (Krasnova et al., 2023). Digital transformation entails various consequences that reshape business models, impact employment among leaders, employees, and knowledge workers, and impact organizational cultures.

5.2 INNOVATIVE MARKETING

Regarding digital transformation in oil companies, grasping the concept of avant-garde marketing is crucial. Innovative marketing entails using new methods and tactics to engage customers, boost brand recognition, and foster sales growth. In today's digital age, where online interactions and social media platforms heavily influence consumer behavior, innovative
marketing plays a pivotal role in aiding oil companies in adapting to shifting market dynamics (Ismael, 2022).

A critical aspect of innovative marketing is integrating digital technologies to develop personalized and targeted campaigns. By utilizing tools like artificial intelligence, augmented reality, and mobile marketing, oil companies can customize their messages for specific audience segments, leading to increased engagement and conversion rates. These technologies also facilitate real-time data analysis, enabling companies to make informed decisions based on customer preferences and behavior (Krasyuk et al., 2020).

Furthermore, innovative marketing in the oil sector entails exploring novel channels and platforms to reach customers. With the emergence of digital content management and social media advertising, companies can engage with consumers in more interactive and immersive ways. This helps build brand loyalty and allows for direct customer feedback and communication (Chang, Y. C., Zhongshu, Y. Z. & Anyi, 2023).

In essence, innovative marketing within the realm of digital transformation empowers oil companies to remain competitive in a rapidly evolving environment. By embracing cutting-edge technologies and implementing creative strategies, these companies can distinguish themselves from rivals, attract new clientele, and drive sustainable growth (Gupta et al., 2023).

5.3 OIL INDUSTRY

The oil and gas industry is undergoing a significant transformation due to the impact of digital technologies. Despite being a vital sector, it remains one of the most minor digitally mature markets worldwide. Companies within this industry must reshape their business models, strategies, and management practices in response to the digital revolution. With the rise of data analytics, artificial intelligence, robotics, and the Internet of Things, the way resources are explored, extracted, and managed in the oil and gas sector is paradigm shifting (Fernandes et al., 2021).

In today's landscape, the focus has shifted from quantity to quality, pushing oil companies to embrace digital transformation for increased efficiency, reduced costs, and enhanced operations throughout the value chain. This shift goes beyond updating technology – it involves creating value across all aspects of the business. A survey conducted by Accenture revealed that 70% of industry leaders consider enterprise-wide transformation crucial for competitiveness in this sector. Companies leverage digital tools and platforms from critical
players like ExxonMobil, Chevron, Shell, Microsoft, IBM, and Google to drive innovation and operational excellence (Gooneratne et al., 2020).

A comprehensive approach to digital transformation is necessary for companies to adapt swiftly to market changes and maintain a competitive edge. The integration of digital technology is reshaping business models by accelerating innovation processes, improving operational efficiencies, streamlining product development and delivery methods, and enhancing customer relationships. By making digital technology the foundation for competition, companies in the oil industry are redefining their market strategies (Zhu et al., 2020).

Overall, digital transformation poses both challenges and opportunities for companies in the oil industry. Embracing digitalization and harnessing emerging technologies like Smart Data analytics, robotics automation, IoT solutions, and cloud computing services can position these companies as frontrunners in the ongoing global race toward becoming "the digital winner" in this evolving industry (Wanasinghe et al., 2021).

5.4 RELATIONSHIP BETWEEN DIGITAL TRANSFORMATION AND INNOVATIVE MARKETING

The synergy between digital transformation and cutting-edge marketing practices is paramount for oil companies in today's dynamic landscape. Digital transformation entails a fundamental shift in how organizations harness digital tools to generate value and develop innovative business models (Casadesus-Masanell & Ricart, 2010). This evolution encompasses stages like digitization, digitalization, and full-scale digital transformation. The oil sector is not immune to this trend, facing mounting pressure to adapt to evolving consumer preferences and behaviors (Patton, 2015).

Innovative marketing strategies are instrumental in driving the success of digital transformation initiatives within oil companies. These strategies involve implementing novel approaches that leverage digital technologies to engage customers, boost brand recognition, and fuel revenue growth. By embracing innovative marketing techniques, oil companies can utilize data analytics, automation, and artificial intelligence to craft personalized customer experiences and optimize their marketing endeavors (Ouanhlee, 2023).

Fusing digital transformation and innovative marketing gives oil companies a competitive edge in a swiftly changing market environment. Oil companies can enhance operational efficacy by adopting a data-centric marketing approach, utilizing cutting-edge
technologies such as AI, and prioritizing customer-centric tactics, propelling revenue expansion and outpacing their rivals (Ismael, 2022).

The correlation between digital transformation and forward-thinking marketing is indispensable for oil companies striving to flourish in an increasingly digitalized world. By embracing this symbiotic relationship and deploying state-of-the-art strategies, oil companies can position themselves for sustainable success in the ever-evolving energy sector (Chang, Y. C., Zhongshu, Y. Z. & Anyi, 2023).

5.5 CHALLENGES OF DIGITAL TRANSFORMATION

Digitization has become crucial for continued business growth in the competitive business market. The digital transformation uses advanced digital and advertising technologies to transform traditional services and business processes into more intelligent and digital forms. For organizations, digital transformation looks for advanced ways to improve user experience and achieve revenue goals. Digital transformation is in high demand in the business market due to the range of opportunities it provides to help companies grow faster. A survey shows that the digital transformation market is expected to grow at an annual rate of 19.1%, from $521.5 billion in 2021 to $127.5 billion in 2026 (Costa et al., 2022). If companies in an industry develop, they are likely to stay caught up. Digital transformation helps companies continue to evolve and win the race in the competitive business market.

Digital transformation is more than just adopting and automating new software, technologies, and processes that are more efficient than traditional business practices and processes. It can be a complete reinvention of an organization's core business model. The path to digital transformation can be challenging. Some obstacles and challenges can hinder ambitious initiatives (Radouan Ait Mouha, 2021). Digital transformation faces many challenges, such as;

- Ineffective data management;
- Inefficient business processes;
- Budget constraints;
- Lack of specific business strategies;
- Evolving customer needs;
- Lack of dedicated IT skills.
The digital transformation of any organization depends on seven main framework pillars. Auditing and analysis include exploring the marketing environment to determine its performance. It provides a detailed overview of companies' tools and strategies for their marketing framework. Digital transformation is about implementing new technology and engaging talented and skilled people at the early stage of your project (Litvinenko, 2020). Successful digital transformation mainly depends on the company's goals and objectives. Without a vision and goals, digital transformation is likely to fall behind. Operations governance and alignment in sales and marketing are also essential for digital transformation. If an organization's sales and marketing teams are united, the company tends to boost sales and achieve revenue goals faster. Advanced technologies such as advanced analytics and artificial intelligence have enabled companies to undertake successful digital transformations and have a practical marketing framework. Companies need strategic plans and marketing techniques to achieve a stable position in the modern business market. Effective marketing channels, activities, segmentation, and KPIs are essential for strategic development. Lastly, businesses need to ensure regular performance checks and improvements to determine the effectiveness of their marketing campaigns (Nesterenko et al., 2023). Here, we have presented the seven pillars of the digital transformation framework needed for businesses to grow faster and achieve revenue goals (Figure 1).

**Figure 1**

*The seven pillars of the digital transformation framework*

Source: prepared by the researcher

6 BACKGROUND RESEARCH

Research into oil companies' digital transformation efforts is essential for grasping the ever-changing market dynamics and identifying avenues for growth. Numerous studies have
assessed the competitive environment and segmentation within the oil and gas industry, shedding light on historical and current market performance. These studies also delve into effective marketing strategies, market contributions, and recent advancements made by industry leaders. By examining the intricacies of innovative marketing tactics and digital transformation, it becomes clear how these elements work hand in hand to fuel industry expansion.

Moreover, the literature review emphasizes the significance of innovative marketing strategies in driving digital transformation within oil companies. By defining digital transformation and innovative marketing and their relevance to the oil industry, a solid foundation is laid for understanding these concepts. The interplay between digital transformation and creative marketing is thoroughly explored to underscore their pivotal role in fostering business success.

Conducting background research on global trends in digital transformation within the oil and gas sector illuminates vital industry players, regional market trends, and projected growth rates. Insights from APAC, North America, the Middle East and Africa, Europe, and South America offer a comprehensive overview of market dynamics.

This background research establishes a strong foundation for comprehending oil companies' digital transformation landscape. Analyzing market trends, key industry players, and successful case studies lays the groundwork for further exploration of implementing a digital transformation model to achieve innovative marketing maturity within oil companies.

7 RESEARCH METHOD

Due to its nature, the current research is considered applied developmental research in terms of its objective. In this research, an attempt is made to use the qualitative approach and the qualitative data collected while helping to improve and expand knowledge in the field of digital transformation by presenting a comprehensive model in this field to fill the existing gaps. The method of collecting information is qualitative and in the form of a systematic literature review. The main goal of this research is to design a conceptual framework to provide a clear and comprehensive picture of the digital transformation model for innovative marketing maturity in oil companies. Therefore, in the current research, to answer the questions and achieve the objectives, a systematic literature review was used to collect qualitative data and to analyze the data from the organization's data theory with the help of the Excel program. This research only dealt with the process of studies conducted in the field of digital transformation inside and outside Iraq, taking into account the novelty of the issue of digital transformation in
Iraq. The information society for the research includes interviews with experts in this field. For this purpose and to define the information community for the current research, the system of interviews with experts is a method to determine better and understand the phenomenon studied, summarize the available evidence, identify gaps in the current research, and provide the final framework. The current research literature is a qualitative review of textual data (Šimberová et al., 2022). According to the model of Wolfswinkel et al., 2013, there are five stages of definition (definition of research questions, definition of inclusion criteria, identification of appropriate databases, search (searching for identified sources), selection (reducing samples), analysis and analysis (open, central and selective coding) and presentation of the conceptual model. The terms “digital transformation management,” “digital leadership,” and “digital transformation infrastructure” were also used as keywords.

8 BACKGROUND OF THE STUDY

a. (Ivančić et al., 2019) In the study "Mastering the Digital Transformation Process: Business Practices and Lessons Learned" by Lucija Ivanic, Vesna Bosilj Vukic, and Mario Spremic, the researchers conducted a qualitative investigation to explore various aspects of digital transformation in businesses. Through three case studies in Croatia, the researchers aimed to contribute to the field of digital transformation by proposing empirically grounded directions for developing a framework for digital transformation and its business implementation. The research methodology involved interviews with selected companies and a cross-case analysis to identify dimensions and sub-dimensions related to digital transformation practices and lessons learned. The findings provided insights into the experiences of the case companies in the digital transformation process, offering recommendations for practitioners to guide their strategies. The study acknowledged the limitations of qualitative research but suggested that the findings could be generalized and further explored in future research endeavors;

b. (AL-Saadi et al., 2022) This study delves into the ongoing digital transformation within the oil and gas industry as it navigates the transition toward renewable energy sources. The research highlights the importance of innovative technologies in creating business networks and shaping the architecture of digital economy systems. Key findings suggest that digital transformation in the energy sector leads to reduced production costs, energy savings, increased productivity, and enhanced innovation potential. The study also emphasizes the significance of renewable energy technologies in reshaping the energy
landscape, focusing on solar panels and offshore wind turbines. Furthermore, the research underscores the need to successfully transition to renewable energy sources to ensure a positive energy balance and economic efficiency, attracting investments and driving sustainable development;

c. (Wanasinghe et al., 2021) In a study exploring the readiness for digital transformation in a higher education institution towards Industrial Revolution 4.0, researchers analyzed key factors impacting universities in the digital era. They focused on the model of University 4.0 and the intelligent education framework to assess the readiness of a specific institution in Vietnam. The study collected data from staff and students using questionnaires distributed via Google Forms. Results indicated that the institution was at an initial level of intelligent education in the digital university. Factors such as governance, technology-enhanced partnerships, and training models were evaluated, highlighting areas for improvement in the institution's digital transformation journey. The study emphasized the importance of aligning educational programs, learner experiences, training services, and governance practices with the demands of the digital age;

d. (Hinings et al., 2018) "Digital Innovation and Transformation from an Institutional Perspective" delves into the impact of digital innovations on organizations and fields through an institutional lens. It highlights the importance of understanding how digital innovations are introduced in products, services, systems, and processes, emphasizing the role of institutional theory in studying radical change. The document discusses innovation challenges, including the struggle for legitimacy, as exemplified by Uber's positioning as a digital service rather than a traditional taxi service. It also touches on the diffusion of innovations and the mediating role of professionals in the nonspread of innovations. Overall, the file underscores the significance of institutional arrangements in facilitating successful digital transformation and innovation adoption;

e. (Plekhanov et al., 2023) In this document, Plekhanov, Franke, and Netland conducted a systematic review and research agenda on digital transformation in organizations. They applied a multi-layered framework to analyze how firms are evolving into part of digital ecosystems, emphasizing power and resource shifts among organizational layers. By focusing on articles from high-ranking journals and using thematic analysis, they identified 537 relevant articles. The study aims to provide new insights into digital transformation and its impact on organizational power dynamics and emerging forms of organization in the digital economy. The methodology involved a rigorous selection
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process based on journal rankings and thematic analysis within the three layers of the firm. The findings suggest a dynamic view of digital transformation and highlight the importance of managing internal and external boundaries during the transformation process. The study concludes by proposing future research directions and acknowledging limitations related to the sampling frame and subjective nature of qualitative content analysis;

f. (Saarikko et al., 2020) In a comprehensive study on digital transformation recommendations for digitally conscious firms, researchers examined the transformative properties of digital technology and its impact on business strategies. The study emphasized the importance of leveraging data as an interdisciplinary resource and highlighted the need for firms to carefully gather the correct data for their specific needs. Additionally, the study underscored the significance of teaming up to create competitive advantage through brand recognition in the digital era, emphasizing the role of a firm brand name in engaging customers in transformative efforts and innovative business models. Furthermore, the study explored the empirical context of the Internet of Things (IoT) as a disruptive technological paradigm that necessitates firms to acquire new capabilities and revisit old truths. It categorized firms into product-oriented, service-oriented, and technology-oriented categories, each facing unique challenges and opportunities in implementing IoT solutions and strategies for digital transformation. The study also delved into the ethical considerations of data ownership and privacy in the digital age, with firms taking measures to ensure compliance with laws, protect sensitive data, and respect user privacy. Overall, the study provided valuable insights into the strategic utilization of data, brand recognition, and ethical data practices for successful digital transformation in firms.

9 MATERIALS AND METHODS

9.1 DATA COLLECTION

Given the experimental nature of the study and the time constraints, we will collect the data through a qualitative methodology by conducting interviews with decision-makers. The decision to employ a qualitative technique and conduct interviews for data collection was based on the study's requirements and the time constraints associated with data gathering. In addition, the advantages of qualitative research over quantitative research were also considered when
making the decision. Qualitative research is a method that seeks to collect non-numerical data systematically to obtain valuable insights. It is a strategy based on something other than statistics, lacks a clear framework, or is only partially structured. When formulating the questions to be addressed, the method employed is contingent upon providing an answer to the question at hand. Typically, a researcher employs this strategy when their primary objective is to provide a detailed description of a topic or phenomenon rather than quantifying it (Liu et al., 2023). Therefore, the participants' thoughts, viewpoints, and traits are of utmost importance in this type of research. Consequently, it is unreasonable to anticipate using charts or visual depictions in qualitative research. We gather information in the participants' authentic environments without alteration or control. Furthermore, this implies the exclusion of experiments and control groups from this type of research. While qualitative methodologies provide a more profound knowledge of research problems, they might be challenging to interpret due to their heavy dependence on thematic analysis. However, qualitative research has numerous advantages when implemented in the appropriate study framework. It facilitates communication between the researcher and the respondents by relying on individuals' perspectives, perceptions, and opinions. (McGrath et al., 2019). The respondents are more involved than in structured surveys since the data collection methods are relatively dynamic (Jaana Woiceshyn, 2018). The researcher can conduct more investigations, enabling the presentation of additional rationales and responses beyond the initial ones. Furthermore, it can perceive and document non-verbal signals, which are crucial in the context of talks and interviews. Interviews can yield vital information that surveys may require to collect. Employing qualitative research as a preliminary measure can facilitate the identification of issues and provide avenues for gaining insights into people's thoughts and perspectives (Liu et al., 2023). However, the research focused on the Iraqi Ministry of Oil, which required the inclusion of Iraqi managers and workers. Thus, the idea was to determine whether the targets at the Ministry of Oil had the ideal informed framework to allow informed decisions or what they felt was necessary to develop an ideal tool to assist them in adopting the technology development process. Ultimately, the eleven experts were mainly decision-makers in the Iraqi Oil Ministry. The aim was to obtain responses from all levels of leaders, including both top-level and low-level managers. The researcher only considered managers with at least a year of relevant experience. The eleven experts were selected based on information obtained from Creswell’s research, which recommended 5 to 25 participants, and Boyd's recommendation of 2 to 10 participants, provided that the study had thematic redundancy (Hammersley, 2019). The interviews focused on two main sections. Section 1 introduced the study, collecting data about
the participants. Section 2 focused on interview questions and getting responses to the overall research aim.

9.2 SAMPLE

Several decision-makers in the Iraqi Ministry of Oil will be interviewed to obtain their answers to the prepared questions.

The researcher’s part in conducting the interview will be summarized as follows (Osei-Kyei & Chan, 2017):

1. Prepare for the interview;
2. Look for experts and ask for their help;
3. Addressing misunderstandings or concerns that arise;
4. Focus on the level of clarity of the answer;
5. Write the answers to start the analysis.

Table 1 lists the people supervising the digital transformation efforts at the Ministry of Oil (Maysan Oil Company), as well as their roles and positions as experts.

Table 1

*The Iraqi Ministry of Oil (Maysan Oil Company) expert position*

<table>
<thead>
<tr>
<th>P</th>
<th>Education</th>
<th>Specialized field</th>
<th>Type of expertise</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ph.D</td>
<td>IT management</td>
<td>Supervisory management</td>
<td>20 years</td>
</tr>
<tr>
<td>2</td>
<td>Ph.D</td>
<td>Public administration of decision-making</td>
<td>Executive</td>
<td>19 years</td>
</tr>
<tr>
<td>3</td>
<td>Ph.D</td>
<td>Business management, marketing orientation</td>
<td>Executive</td>
<td>10 years</td>
</tr>
<tr>
<td>4</td>
<td>Ph.D</td>
<td>Business management, policy orientation</td>
<td>Executive</td>
<td>7 years</td>
</tr>
<tr>
<td>5</td>
<td>Ph.D</td>
<td>Public administration, information systems management</td>
<td>Executive</td>
<td>4 years</td>
</tr>
<tr>
<td>6</td>
<td>Masters</td>
<td>MBA majoring in information systems</td>
<td>Executive</td>
<td>21 years</td>
</tr>
<tr>
<td>7</td>
<td>Masters</td>
<td>Technology management, technology transfer trend</td>
<td>Executive</td>
<td>7 years</td>
</tr>
<tr>
<td>8</td>
<td>Masters</td>
<td>MBA majoring in strategy</td>
<td>Executive</td>
<td>11 years</td>
</tr>
<tr>
<td>9</td>
<td>Masters</td>
<td>International marketing business management</td>
<td>Executive</td>
<td>9 years</td>
</tr>
<tr>
<td>10</td>
<td>Masters</td>
<td>Human resources management</td>
<td>Executive</td>
<td>12 years</td>
</tr>
<tr>
<td>11</td>
<td>Masters</td>
<td>Public administration, transformation management</td>
<td>Executive</td>
<td>8 years</td>
</tr>
</tbody>
</table>

Source: Prepared by Authors (2024)
10 RESULTS AND ANALYSIS

10.1 QUALITATIVE APPROACH

During data analysis, the researcher sought data familiarity by carefully examining the responses and comprehending the information provided, including impressions and underlying meaning, to gather all the essential data from the vast amount of information available (Jaana Woiceshyn, 2018). The analysis aided in pinpointing the vital inquiries that required responses. Furthermore, it focused on answering the three interview questions.

The digital transformation model stage of innovative marketing maturity was formed (Figure 2). Overall, the results of open coding led to the identification of 770 primary codes, 570 Open Codes, 52 Selective Codes, axial codes 15, and 4 Categories (including infrastructure, digital transformation leadership, digital transformation management, and ethical marketing) (Table 2).
Table 2

Results of open coding led

<table>
<thead>
<tr>
<th>Open Coding</th>
<th>Axial Coding</th>
<th>Selective Coding</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using artificial intelligence, data analysis techniques, digital operations management systems, electronic platforms for cooperation and communication, remote tracking and monitoring systems, process automation and self-control, advanced communications infrastructure, cloud communications technologies, big data storage and management systems, advanced cybersecurity solutions, technology-based quality management systems, virtual operation and augmented reality technologies in training and maintenance, and development of digital control systems and robotics in industrial processes.</td>
<td>P10 P4 P2 P6 P11 P9</td>
<td></td>
<td>Digital organization</td>
</tr>
<tr>
<td>Developing an electronic market, e-commerce platforms, and phone applications, and applying blockchain technologies to facilitate transactions, achieve transparency and security, improve user experience, develop subscription and shared economy models, provide online customer services, technical support, implement customer relationship management (CRM) system, apply artificial intelligence techniques in analytics and decision making, provide e-learning and distance training platforms, develop digital project management systems, improve internal processes using process automation, and develop a business model based on data and analysis.</td>
<td>P5 P4 , P1 , P8 P6 P3 P9 P2 P8</td>
<td></td>
<td>Digital business model</td>
</tr>
<tr>
<td>Develop professional and attractive websites, use social media marketing strategies, provide valuable digital content to attract customers, implement targeted email campaigns, use organic search techniques and paid advertising, improve user experience across web and app platforms, implement integrated e-marketing strategies, implement interactive and experiential marketing strategies, provide an integrated digital sales system, analyze data and use it to improve performance, and develop digital marketing capabilities for internal teams.</td>
<td>P3 P9 P10 P8</td>
<td></td>
<td>Digital marketing and sales</td>
</tr>
<tr>
<td>Developing an e-commerce platform to facilitate purchases and sales, adopting machine learning techniques to analyze big data, developing a digital logistics system to improve supply chains, using virtual reality technologies in safety and maintenance training, providing geographic analysis techniques to determine optimal geographic locations for projects, improving data security and cyber protection in the industry, applying robotics and automation technologies in industrial processes, using predictive analysis techniques to forecast demand and improve resource planning, improving knowledge management and information sharing across the company, implementing interactive marketing strategies to</td>
<td>P8 P2 P3 P1 P4</td>
<td></td>
<td>Digital strategy</td>
</tr>
</tbody>
</table>
increase interaction with customers, and developing a digital asset management system to improve equipment maintenance and management.

| Distributed control system (DCS) for production processes, voice and speech recognition technologies to improve communication, applying augmented reality techniques in training and maintenance, geographic data system for analyzing geographical locations, using artificial intelligence techniques in oil and gas exploration, applying advanced cyber security techniques, using robotics and automation technologies in hazardous operations, applying predictive analysis techniques to anticipate malfunctions, implementing big data management system for data analysis, implementing secure and reliable communications networks, using medical visualization and diagnostic techniques for inspection, and applying edge computing technologies in remote locations. | P6 P7 P10 P11 | Technology |
| Implementing a Technical Asset Management (EAM) system for equipment, industrial automation in production processes, using computer vision techniques to inspect parts, applying distributed control systems (DCS) in operations, applying thermal imaging techniques to monitor performance, using engineering analysis techniques for design, implementing a public safety management system (PSM), applying wireless networking technologies in the fields, using robotics technologies in dangerous operations, implementing a sustainable maintenance management system, and applying remote sensing techniques in monitoring. | P7 P1 P8 P11 P2 P5 P9 | Technical foundation |
| Graphical analysis platforms for oil data, cloud services for storing and processing big data, virtual reality applications for training technicians, digital control platforms for production processes, advanced cybersecurity solutions to protect infrastructure, analytical forecasting services for strategic planning, electronic communication, and collaboration platforms for working teams, remote control services in field operations, intelligent energy consumption control platforms. | P5 P4 P1 P6 P8 P9 P11 | Digital products and services |
| Setting schedules for engineering projects, preventive maintenance plans and scheduled maintenance, using continuous monitoring and evaluation techniques, analyzing data to identify trends and deviations, appointing work teams and defining responsibilities and tasks, improving communication and coordination between teams, conducting internal audits and self-evaluations of performance, assessing and managing scheduling risks, documenting and following up on changes in schedules, and using probabilistic analysis techniques for forecasts. | P7 P5 P6 P2 P1 | Punctuality |
| Application of innovative sensing technologies in equipment, use of robots and automation in production, analyzing data for continuous improvement, implementation an intelligent energy | P1P2 P9 | Smart factory |
The Digital Transformation Model for Innovative Marketing Maturity in the Oil Companies

| Management System, applying augmented reality techniques for training, using artificial intelligence in diagnosis and maintenance, implementing intelligent communication networks for the factory, applying fuzzy analysis techniques to predict faults, using intelligent control techniques in production processes, implementing an innovative quality management system, using big data techniques for analysis, implementing cloud platforms for storage and processing, implementing an intelligent maintenance management system, and using wireless communication technologies in the factory. | P3 P7 P3 P4 | Digital Support |
| Online technical support platforms, mobile applications for communication and assistance, electronic portals for providing services and information, knowledge management systems to exchange information and experiences, remote technical support via video call, robots and artificial intelligence for technical support, performance analysis, and remote monitoring applications, technical support for control and automation systems, technical support for security and safety systems, and technical support for quality and risk management systems. | P1 P5 P3 P4 P6 | Digital Support |
| Programming and web application development, dealing with database management systems, artificial intelligence and machine learning, virtual reality and augmented reality technologies, information security and cyber protection, predictive analysis and statistical forecasting, development and management of social media sites, design and development of user interfaces, encryption and digital signature techniques, mobile software, and mobile application development, massive analysis and extensive data mining, and ability to deal with SCADA and PLC systems. | P5 P4 P6 P3 P11 P9 | Digital Skills |
| Training employees on customer service, rapidly responding to customer inquiries, effectively and communicating with customers, resolving problems and complaints efficiently, providing technical advice and consulting to customers, following up on customer satisfaction and collecting feedback, developing a distinct and innovative customer experience, organizing training courses and workshops for clients, providing technical support and guidance to customers, organizing awareness sessions for clients on the latest technologies, analyzing customer response and improving operations, and developing a database to follow up on customers and their needs. | P3 P4 P8 P7 P10 P6 | Customer Service |
| Promoting awareness of the importance of digital media, developing skills for researching and evaluating digital information, encouraging participation and effective interaction on social media, taking advantage of multimedia to transfer knowledge, developing the ability to produce quality digital content, promoting awareness of digital intellectual property rights, creating a culture of cyber protection and privacy, promoting awareness of information security and safe handling, promoting awareness of access to information rights, developing digital marketing and advertising capabilities, and promoting a culture of innovation and digital leadership. | P6 P2 P3 P10 P11 P5 P8 P1 | Digital Media Culture |
| Applying safety and security standards at work, providing regular security training, conducting risk management and security analysis, protecting sensitive data and information, | P10 P7 P4 P1 | Compliance Security |

The Digital Transformation Model for Innovative Marketing Maturity in the Oil Companies

<table>
<thead>
<tr>
<th>Using encryption and digital signature techniques, ensuring compliance with security legislation and laws, monitoring and responding to cyber intrusions, developing access and authentication management policies, educating employees about cyber security risks, implementing early warning and response systems, and cooperating with external parties to enhance security.</th>
<th>P5 P6 P11 P2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embracing flexible work styles, fostering cross-functional teams, prioritizing continuous learning, and encouraging experimentation to adapt quickly, solve problems creatively, and collaborate effectively for faster decision-making and a culture of knowledge sharing.</td>
<td>P6 P1 P11 P7 P4 P3 P2</td>
</tr>
<tr>
<td>Periodically update systems and technologies, embrace flexible and experimental work methods, evaluate performance and operations regularly, and develop adaptive policies and procedures. Encourage participation, embrace new ideas, foster a culture of experimentation and constructive risk-taking, and provide flexibility in team formation and organization. Offer training for ongoing development, learn from successes and failures, promote cultural change and habit shifts, and establish agile organizational structures.</td>
<td>P4 P2 P3 P10 P5 P9 P11 P7 P6</td>
</tr>
<tr>
<td>Create a system for documenting and distributing knowledge, encouraging continuous learning and personal development, and providing platforms for sharing and exchanging knowledge. Document valuable knowledge and experiences. They are giving knowledge-based databases. Adopting technological tools for knowledge management and providing easy access to critical information, directing experiences and expertise to new members, encouraging interaction, creating knowledge networks, providing a digital library of knowledge resources, and promoting a knowledge-based sharing and learning culture.</td>
<td>P7 P9 P4 P8 P1 P3 P1 P11</td>
</tr>
<tr>
<td>Encouraging cooperation between companies and institutions, organizing multidisciplinary work teams, adopting a culture of participation and practical collaboration, and providing an environment that promotes cooperation and exchange. Organizing programs and events that enhance cooperation, encouraging participation in joint projects, and exchanging information and experiences between companies. Promoting a culture of teamwork and collaboration, organizing workshops and collaborative sessions, and facilitating joint research projects.</td>
<td>P5 P6 P9 P4</td>
</tr>
<tr>
<td>Developing an innovative digital system for the oil industry, integrating technology into exploration and production. Analyzing big data for accurate forecasts, using AI to enhance productivity and cut costs. Enhancing communication through interactive platforms, applying VR and AR in training. Ensuring cyber protection, optimizing workflow with digital automation, and managing geological data digitally. Innovating renewable energy and environmental tech, enhancing user experience on digital platforms.</td>
<td>P3 P11 P7 P1 P5 P10</td>
</tr>
</tbody>
</table>

| Agility and flexibility | Changeability | Knowledge management | Cooperation and collaboration | Digital vision | Digital Roadmap | Digital transformation leadership |
The Digital Transformation Model for Innovative Marketing Maturity in the Oil Companies

| Data for better strategies and applying automation in operations. Ensuring secure digital data storage and sharing. | P10 P11 P1 P7 P8 P5 P1 | Digital designer |
|Integrating AI into digital design, creating data-driven designs. Designing visualization systems for digital governance, enhancing interactivity and usability. Developing UI for oil industry control, utilizing new design techniques. Creating interactive models and UI for digital processes and social communication. Designing expressive graphics, visual charts, and responsive multi-screen designs. | P6 P8 P11 P2 P9 P5 P1 | Planning and coordination |
|Coordinating oversight for efficiency and accountability, designing data exchange models, developing governance regulations, updating processes, and analyzing workflows, implementing communication strategies, training for skill enhancement, and technical support tools, ensuring cybersecurity, and implementing evaluation mechanisms for governance effectiveness. | P11 P6 P5 P10 P2 P4 | Monitoring control |
|Enhancing communication and coordination in administrative processes, developing electronic payment methods, promoting digital technologies for information exchange, defining key indicators for performance evaluation, expanding communication channels for integration, assessing readiness for technology adoption, issuing regular reports for data dissemination, aligning policies with business strategy, and evaluating programs for efficiency. | P8 P2 P4 P9 P10 P11 | Digital partners |
|IT companies specializing in communications, network services, and cybersecurity for the oil industry. Providers of cloud storage, data management, and digital financial services for oil companies. Companies offering digital consulting, logistics, and cooperation platforms for the oil industry. Providers of consulting services for improving digital processes and comprehensive IT support. | P2 P5 P11 P7 P8 P9 P10 P1 | Organizational Structure |
## The Digital Transformation Model for Innovative Marketing Maturity in the Oil Companies

| Updating technological infrastructure and investing in data analytics, AI, and blockchain. Enhancing sustainability through digital transformation and AR/VR technologies. Improving oil operations with energy analytics, robotics, and smart contracts. Investing in performance analytics, environmental optimization, and digital skill development for employees. | P4 P10 P3 P11 P8 P5 P9 | Digital investment |
| Experts in data analytics, AI, and cybersecurity. Developers of blockchain, energy analytics, and robotics solutions. Specializing in digital marketing, project management, and organizational transformation. Proficient in security analytics, data engineering, and predictive maintenance. Specializing in market analysis and demand forecasting. | P8 P1 P11 P4 P7 P5 P2 | Digital talent |
| Develop a holistic digital transformation strategy encompassing data analytics, AI, and automation. Oversee technical process transformation and information security. Manage digital performance analytics, employee training, logistics, and supply operations. Lead digital project management, resource scheduling, production processes, maintenance, and facilities management. | P10 P3 P7 P9 | Digital management |
| Develop and implement a digital innovation strategy, fostering a culture of creativity and collaboration. Manage the digital transformation process for innovation, including partnerships with startups. Utilize data analysis for innovation and implement digital innovation marketing strategies. Oversee portfolio management, intellectual property rights, and patents. Create training programs to enhance innovative capabilities and facilitate the transition from innovation to practical application. Organize competitions and challenges to promote innovation within the organization. | P3 P10 P8 P2 P9 P7 P4 | Digital innovation management |
| Develop and implement communication and coordination mechanisms. Define shared goals for cooperation and enhance information flow. Create digital training strategies for managers and improve project planning coordination. Implement communication policies and virtual collaboration platforms. Enhance knowledge exchange among managers and establish digital direction strategies. Utilize monitoring tools for coordination and offer training programs for digital skills. Provide technical support for using digital technologies effectively. | P4 P2 P5 P10 P1 P8 | Coordination with on organizational measures |
| Enhance cooperation and teamwork between teams by developing digital tools for knowledge sharing. Improve transparency and information flow among stakeholders. Ensure compatibility between goals and strategies, sharing best practices digitally. Strengthen leadership in digital coordination, implement standard procedures, and encourage knowledge | P9 P7 P5 P11 P8 P2 P4 | Realization of organizational measures |
sharing. Enhance strategic planning and implementation, motivate innovative initiatives, and establish a framework for measuring organizational performance.

| Develop advanced environmental monitoring systems utilizing remote sensing techniques. Create a system for collecting, analyzing, and forecasting ecological data. Implement a digital network for monitoring and enhancing sensor availability and accuracy. Strengthen cooperation with environmental authorities, monitor noise and vibration, and improve communication with local communities. Provide tools to evaluate environmental impacts effectively. |
| Develop techniques for identifying environmental data and advanced forecasting models. Enhance information extraction from ecological data and implement digital systems for data storage. Improve remote sensing techniques and continuous environmental performance enhancement. Develop robotics and automation programs for monitoring and enhancing wireless radiation techniques for communications. Implement artificial intelligence programs for monitoring and improve wireless communication technologies for monitoring networks. |
| Develop an integrated environmental monitoring system with digital networking technologies. Utilize artificial intelligence and machine learning to analyze ecological data. Apply remote sensing techniques in monitoring the oil industry's environmental impact. Ensure secure delivery of sensing data over reliable communication networks. Utilize aerial and space photography for ecological monitoring in the oil sector. Enhance digital network security for oil industry monitoring. Provide online access to environmental data through a monitoring system. Implement wireless networking for environmental data communication. Use deep neural networks for data analysis and forecasting. Utilize virtual reality for worker training in ecological scenarios. |
| Publish annual production statistics, economic cost analysis, and environmental reports. Manage petroleum product availability, consumer complaints, and refunds. Conduct health, environmental risk analysis, and project safety evaluations. Update petroleum product information regularly for transparency and compliance. |
| Enhance transparency in oil industry operations and combat corruption. Assess and manage environmental and social risks while promoting corporate responsibility. Ensure diversification and equality in employment, implement safety standards, and provide training programs. Develop oversight mechanisms, protect shareholder rights, and enhance governance standards. Foster innovation, evaluate performance, strengthen community participation, and build strategic partnerships. |
| Implement development projects, support health care, and promote local culture. Enhance infrastructure, basic services, and social participation. Improve water quality, support sports activities, and ensure transparency. Collaborate with NGOs, provide financial support, and empower women. Foster sustainable partnerships and equality in community initiatives. |

<table>
<thead>
<tr>
<th>companion ship</th>
<th>Monitoring and environmental interaction</th>
<th>Digital research and development</th>
<th>Environmental monitoring and digital network creating</th>
<th>Transparency in information</th>
<th>Corporate governance</th>
<th>Transparency and accountability</th>
<th>Ethical marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Digital Transformation Model for Innovative Marketing Maturity in the Oil Companies</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
| **Evaluate oil's environmental impact, mitigate carbon emissions, and improve waste management. Promote water source sustainability, transparent reporting, and safety standards. Develop plans for oil spill incidents, enhance community participation, and provide training in environmental safety. Support biodiversity, monitor air quality, and enhance social impact transparency. Improve local livelihoods, support sustainable development, and raise environmental awareness.** | P8 P1  
P10 P3  
P9 P7 | Accountability for environmental and social impacts |
| **Develop clean technology for oil extraction and promote renewable energy use. Enhance energy efficiency, mitigate greenhouse gas emissions, and implement carbon storage methods. Improve fuel efficiency, reduce waste, and encourage eco-friendly packaging. Offer education programs, engage communities in emission reduction, and collaborate with partners for environmental practices exchange.** | P10 P8  
P2 P9  
P7 P4 | Reducing carbon emissions |
| **Preserve natural sites, protect wildlife, and promote sustainable agriculture. Provide resources for rare plants, protect soil and water, and offer green spaces for communities. Support sustainable fishing, preserve coastal environments, and enhance cultural diversity. Engage communities in biodiversity protection, and collaborate with NGOs to safeguard biodiversity.** | P2 P5  
P10 P1  
P8 P2  
P4 P9 | Protecting biodiversity and Water waste management |
| **Implement programs to maintain surface water quality and improve industrial wastewater treatment. Promote water recycling techniques and address groundwater pollution. Reduce fresh water use, utilize recycled water in production, and ensure safe waste disposal. Raise awareness about proper waste disposal, implement material reuse programs, and enhance efficiency.** | P7 P5  
P11 P8  
P2 P4 | Environmental sustainability |
| **Develop oil extraction techniques with minimal environmental impact and utilize solar energy in refining. Implement renewable thermal energy programs and environmental distillation technology. Promote geological carbon storage and reduce gas emissions. Use drones for emission monitoring and analyze environmental impact. Foster innovation in oil drilling technologies and develop solutions for waste oil conversion.** | P9 P10  
P3 P11  
P8 P5  
P1 | Innovation and clean technology |
| **Collaborate with government organizations, academic institutions, and NGOs for environmental projects. Provide environmental education for employees and the public, engage communities in industry decisions, and partner with environmental organizations. Develop renewable energy projects, work with local governments on sustainability initiatives, and engage in regional cooperation for environmental knowledge exchange. Partner with international organizations for environmental projects to enhance global sustainability efforts.** | P11 P10  
P6 P5  
P7 | Collaborating and partnership |
| **Focus on education and skills development for local communities. Create job opportunities and promote public health. Invest in community infrastructure like roads and schools to enhance well-being and living standards. Offer assistance during disasters and emergencies, and provide essential services such as water and electricity. Ensure social and health care services for workers to support their overall well-being.** | P6 P5  
P9 P11 | Providing social services |

Implement training programs for employees on ethical values and raise awareness about the risks of corruption and bribery. Develop and enforce strict internal policies to prevent corrupt practices and ensure transparent financial reporting. Establish reporting mechanisms for corruption and bribery incidents. Collaborate with government agencies to combat corruption and provide guidance to suppliers on ethical conduct. Engage in community initiatives against corruption and strengthen internal control systems. Participate in global transparency and accountability initiatives to promote ethical business practices.

Ensure comprehensive safety training for workers and implement strict safety procedures and standards. Provide safe and suitable work equipment and tools, and promote a safety culture with heightened risk awareness. Offer appropriate healthcare and regular check-ups, establish protocols for handling work accidents and emergencies, and introduce advanced techniques and technology to boost safety measures. Conduct regular reviews of safety policies and procedures, and provide guidance and training to supervisors and administrators to uphold safety standards.

Offer vocational training programs for workers and provide scholarships and educational opportunities to enhance skills. Collaborate with universities and educational institutions to strengthen educational partnerships. Provide training on the latest technologies and promote the significance of education and training. Offer distance learning and e-learning opportunities for continuous development. Develop partnerships with educational and industrial entities to foster learning. Enhance leadership and management training programs and encourage knowledge sharing among employees.

Adhere to high-quality standards in production to ensure the availability of safe and healthy products. Conduct thorough testing on products and provide accurate information about them. Promote sustainable health and environmental practices throughout the production process. Implement continuous quality control systems and comply with consumer protection legislation. Establish mechanisms for consumer complaints and feedback and prioritize effective communication with consumers. Develop consumer education and awareness programs to enhance consumer knowledge and engagement.

Provide educational materials that are understandable and easy to access. Distribution of educational publications and brochures. Use the media to spread information. Providing informational websites for consumers. Organizing educational workshops and seminars. Disseminate information about potential risks and how to deal with them. Provide phone numbers to report consumer concerns. Developing educational programs for schools and communities.


<table>
<thead>
<tr>
<th>Implement training programs</th>
<th>Combating corruption and bribery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure comprehensive safety training</td>
<td>Worker safety</td>
</tr>
<tr>
<td>Offer vocational training programs</td>
<td>Promoting education and training</td>
</tr>
<tr>
<td>Adhere to high-quality standards in production</td>
<td>Quality of products</td>
</tr>
<tr>
<td>Providing educational materials</td>
<td>Awareness and education</td>
</tr>
<tr>
<td>Applying strict environmental standards</td>
<td>Preserving the environment</td>
</tr>
</tbody>
</table>

innovation in environmental conservation techniques. Providing transparent reporting on the environmental impact of the industry. Guiding consumers to choose environmental products.

Source: Prepared by Authors (2024)
10.2 RELIABILITY AND VALIDITY OF CODING

After defining the conceptual elements, the results of the coding process were evaluated in the form of verifying the agreement of two coders based on the Kappa coefficient and ensuring its reliability. In this study, the researcher delivered three samples of the main texts of the selected interviews to a subject expert for evaluation, extracting 52 codes as shown in Table 3. Based on the data presented in Table 4, the kappa value and coefficient of the coding results for the two researchers were 0.78, which is more than the acceptable threshold of 0.6. Considering that the significance level of the Kappa coefficient is less than 0.05, the assumption of independence of the extracted codes was rejected, and their dependence on each other was confirmed. Therefore, we can conclude that the coding results exhibit sufficient reliability.

Table 3
Agreement and disagreement values of two coders 1 and 2

<table>
<thead>
<tr>
<th>The first coder</th>
<th>0</th>
<th>1</th>
<th>The sum of the second coder</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>53</td>
<td>7</td>
<td>60</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>44</td>
<td>49</td>
</tr>
<tr>
<td>The sum of the first coder</td>
<td>58</td>
<td>51</td>
<td>109</td>
</tr>
</tbody>
</table>

Source: Prepared by Authors (2024)

\[
P_{A0} = \frac{53 + 44}{109} = 0.89 \quad (1)
\]

\[
P_{AE} = \frac{(44 + 5) \times (53 + 7)}{109} \times \frac{(44 + 7) \times (53 + 5)}{109} = 0.50 \quad (2)
\]

\[
K = \frac{0.89 - 0.50}{1 - 0.50} = 0.78 \quad (3)
\]

10.3 RESULTS

The primary objective of the current research is to establish a comprehensive framework for digital transformation in the oil sector. Figure 2 illustrates the various concepts, categories, and dimensions that make up the conceptual model of digital transformation. This paradigm served as the foundation for building Iraq’s digital transformation maturity model. The framework comprises 14 discrete categories and is structured into four fundamental
components: infrastructure, digital transformation leadership, digital senior management, and ethical marketing. The key elements for attaining digital transformation maturity encompass administrative, technical, and human infrastructure. The essential elements of digital transformation encompass cultural infrastructure, leadership, a digital roadmap, digital governance, digital regulation, and digital resources. Factors that impact the maturity of digital transformation in senior digital management include strategic planning, digital strategy, coordination, and performance metrics. Electronic. They are utilizing digital networks to monitor the environment and connecting financial systems to achieve greater efficiencies. Regarding ethical marketing, key concerns encompass transparency, responsibility, ecological sustainability, social accountability, and safeguarding consumer interests.
The Digital Transformation Model for Innovative Marketing Maturity in the Oil Companies

Figure 2
The digital transformation model for innovative marketing maturity in the oil companies

Source: Prepared by the researcher

10.4 INFRASTRUCTURES

In the current research, the infrastructure dimension, which includes managerial, technical, human, and cultural infrastructures, was identified as one of the four dimensions of the maturity model of digital transformation, which are among the primary conditions for the success and implementation of digital transformation in the organization. In the field of management infrastructure, paying attention to the digital organization, digital business model,
digital marketing and sales, and digital strategy creates a competitive advantage for the organization. It provides the vision, mission, and goals of the organization in the implementation of digital business, which is of particular importance. It is crucial to consider factors such as digital culture, knowledge management, agility, and changeability in the realm of cultural infrastructures, as these can significantly influence the field. Also, in technical infrastructure, attention to technology, digital ecosystem, digital support, etc., and in the field of human infrastructure, he gave special attention and importance to the training of employees and the insight of customers. In general, it can be said that any organization's achievement and progress towards digitalization depend on the proper platform and the provision of relevant infrastructures since there are relatively good infrastructures in most internal organizations. Therefore, the need to pay attention to the success of the maturity of digital transformation and move in this direction by the managers of organizations is a vital matter. The results obtained in this regard are consistent with the research results of (AL-Saadi et al., 2022) (Yee et al., 2019) (Alojail et al., 2023)
organization, should take this into account. Remain vigilant of the organization's surroundings while also recognizing potential opportunities and being mindful of risks that have the potential to dismantle organizations. During the initial stages of the trip, senior management in the digital realm should prioritize planning and directing, and based on these tasks, they should establish the organization's course of action. Additionally, it should take into account the environmental factors relevant to digital research and development, digital networking, market monitoring, and other related activities. The alignment of (Ahmad et al., 2021) with environmental monitoring and engagement with other managers is evident. Prior studies have partially explored digital senior management. However, this research is an independent and primary dimension of digital transformation maturity. It suggests that digital senior management is crucial in helping organizational managers achieve their goals and visions.

10.6 DIGITAL TRANSFORMATION LEADERSHIP: EXPLORING DIGITAL TRANSFORMATION LEADERSHIP WITHIN INNOVATIVE MARKETING MATURITY IS KEY

It has been thoroughly examined in multiple organizational research studies on an individual level. This study comprises four elements: a digital plan, digital management, digital structure, and digital assets. Leadership generally promotes cooperation among employees to achieve goals (Nazemi et al., 2022). In the present era, growing technological progress has made digital transformation essential for numerous organizations' survival and ongoing operations. The evidence of this progression is pervasive, as it has undermined contemporary world methodologies and attributes. They have a six-month timeframe to make changes or maintain the status quo. The rate at which change occurs is crucial in determining whether an organization will succeed or fail. To maintain a competitive edge, an organization must be open to change in all areas influenced by these changes, as they will inevitably have an impact. In the fast-evolving world of digitalization, effective leadership is crucial for success in the workplace. If traditional modes of thinking continue to prevail, expanding work networks and implementing new information technology systems will yield limited benefits. Recognizing the need to modify the leadership paradigm has prompted organizations to recruit and engage individuals under the designation of "digital leaders" to support this transformation. When investigating digital transformation leadership (Yuan et al., 2020)(Philbin et al., 2022) (AlNuaimi et al., 2022; Imran et al., 2021; Leso B.H.; Cortimiglia M.N.; Ghezzi A., 2023) focused on specific aspects. In the present research, certain indicators of the researched
organizations have been mentioned separately. The current study highlights digital transformation leadership as a critical aspect of innovative marketing maturity, underscoring its significance inside organizations. Managers should consider this.

**Ethical marketing** practices for organizations committed to positively impacting society and the environment. It highlights the following key points: Ethical marketing involves transparency and accountability in providing consumers with transparent, honest information about products and processes. This transparency extends to decision-making processes and recognizes responsibility for environmental and social impacts. Organizations can contribute to environmental sustainability by prioritizing sustainable practices and demonstrating their commitment to ethical behavior (Kayikci et al., 2022). He also emphasized ecological sustainability, the importance of protecting biodiversity, effective resource management, and adopting clean technologies to advance environmental sustainability. Organizations can intensify their efforts toward achieving environmental goals by collaborating with other entities. While he focused on social responsibility, ethical organizations engage in social responsibility by providing services that benefit society, combating corruption, ensuring worker safety, and promoting education and training. This comprehensive approach recognizes companies’ broader role in contributing positively to the communities in which they operate. Through the researcher's focus (Nesterenko et al., 2023) on consumer protection, ethical marketing practices also focus on offering high-quality products, educating consumers about their rights and ethical choices, and encouraging sustainable consumption practices. This ensures that consumers are informed and empowered to make ethical purchasing decisions.

11 CONCLUSION

Research is essential for promoting innovation and improving the level of marketing expertise in the oil business. By leveraging knowledge gained from research activities, firms can successfully tackle the obstacles presented by digital transformation, maintain competitiveness in the market, make well-informed decisions, and foster a culture of ongoing enhancement. These studies emphasize the crucial importance of leadership, allocation of resources, and strategic alignment in enabling effective digital transitions in the oil business. Organizations may enhance their competitiveness and adaptability in the constantly changing digital landscape by utilizing cutting-edge marketing methods backed by solid IT infrastructure and dynamic skills. The digital transformation in the oil business is advancing steadily, and it faces challenges that must be overcome. Although the industry is adopting digital tools to
optimize operations and foster expansion, the shift towards greener energy poses a substantial obstacle. To meet the imperative of reducing emissions by 2030, it is essential for all stakeholders, including governments and corporations, to engage in coordinated initiatives. Oil and gas firms must adopt technology to achieve sustainability and efficiency, which is essential to being at the forefront of innovation and achieving their sustainability objectives. Oil companies can develop a robust framework for their initiatives by analyzing the successful methods of small service organizations and comprehending the fundamental goals of digital transformation using BPM methodology. Oil firms can expedite their progress toward attaining advanced marketing capabilities in the digital transformation era by implementing efficient governance structures that encourage collaboration, communication, and alignment with long-term plans. To thrive in a fiercely competitive climate, oil firms must adopt digital transformation as a crucial strategy, given the quick pace of technical breakthroughs and changing consumer behaviors.

REFERENCES


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