Supportive Management Mindset Model for IT System Implementation: A Case Study of the UAE Oil and Gas Sector

A thesis in partial fulfilment of the requirements of University of Derby for the degree of Doctorate of Business Administration (DBA)

College of Business, Law and Social Sciences

AHMED SALEM ABDULLA SALEM ALSHAGGA

August 2025

Acknowledgment

I extend my deepest gratitude to the academic and professional communities whose guidance and support have played an instrumental role in the development of this research. Special thanks are due to my supervisors and mentors at the University of Derby for their invaluable feedback and constructive insights, which have sharpened the focus of this study.

I am profoundly appreciative of the collaborative spirit demonstrated by my colleagues in the UAE oil and gas sector, especially those who participated in the research survey and provided their valuable input. Their contributions have been vital to understanding the intricate interplay of management mindset and IT system implementation.

A special note of appreciation is extended to my company, ADNOC, for facilitating and supporting my study journey. The opportunities and resources provided by ADNOC have been instrumental in enabling the successful completion of this research. Their commitment to fostering a culture of innovation and learning has greatly inspired and guided this work.

I would also like to acknowledge the pivotal role of the University of Derby's learning courses, which provided me with the essential skills, methodologies, and frameworks that enriched my research process. The workshops and training sessions offered by the university have significantly contributed to my academic development, enhancing both the theoretical and practical aspects of this study.

This research stands as a reflection of my 25 years of professional experience in the oil and gas industry. Over the decades, I have been privileged to witness the sector's growth and transformation and to contribute to its evolution. The insights gained from this journey have profoundly shaped the perspectives and motivations underlying this study, providing a real-world lens through which the findings were interpreted and contextualized.

Finally, my heartfelt thanks go to my family and friends for their unwavering support and encouragement throughout this journey. This study would not have been possible without their belief in my ability to tackle complex challenges and persevere.

ABSTRACT

Problem Statement, Background, and Rationale: The successful implementation of IT systems in the UAE oil and gas sector is influenced by management mindset. However, the role of internal and external management mindset factors in determining IT system effectiveness remains an underexplored area. This research problem centres on investigating how a supportive management mindset facilitates IT implementation through dynamic capabilities and IT quality standards. Current literature inadequately addresses the inverse relationship between management mindset and IT system adoption in the UAE oil and gas industry, necessitating an in-depth investigation to address this research gap. This study fills this research gap by identifying key internal (IT competencies, leadership, systems awareness) and external (PESTLE, competition, customer demands) factors influencing IT system implementation. It examines how these factors affect organisational dynamic capabilities and IT quality standards, thereby ensuring technological effectiveness. The study is envisaged to be beneficial and particularly relevant as the UAE oil and gas sector faces increasing digital transformation pressures, requiring structured and adaptive management strategies.

Research Aims, Objectives, and Conceptual Framework: The overarching aim of this research is to develop a supportive management mindset model that enhances IT system implementation in the oil and gas sector. To achieve this aim, the study is designed to establish the following objectives: (1) identify the practices of a supportive management mindset and their influence on IT system implementation, (2) analyse the impact of these practices, and (3) develop an applicable model for IT system adoption in the UAE oil and gas industry. The research is guided by the following questions: How do internal and external management mindset factors influence IT system implementation? How does management mindset affect technology adoption through dynamic capabilities and IT quality standards? The study employs a conceptual framework integrating Dynamic Capabilities Theory and IT quality standards to explore these relationships systematically.

Data Collection, Analysis, and Key Findings: A quantitative research methodology was employed, involving the distribution of 382 questionnaires to employees across the UAE oil and gas sector, with 172 valid responses (45% response rate). Data analysis was conducted using SPSS, employing regression analysis to test the proposed hypotheses. Findings confirm that a supportive management mindset significantly influences IT system implementation. Internal factors such as IT competencies, leadership, and systems awareness, along with

external factors like PESTLE conditions, competition, and customer demands, positively impact IT system adoption. Additionally, dynamic capabilities and IT quality standards were found to mediate the relationship between management mindset and IT system success. The study supports all proposed hypotheses, reinforcing the critical role of management mindset in fostering successful technology implementation. However, the hypotheses are considered in the context of this research design

Research Discussion and Contributions to Knowledge: This research makes significant academic and practical contributions. Academically, it develops a comprehensive framework integrating management mindset characteristics with IT system implementation, bridging gaps in existing literature. The study contributes by (1) identifying key internal and external factors influencing IT adoption, (2) integrating Dynamic Capabilities Theory to contextualize IT system adaptation, (3) incorporating IT quality standards for enhanced technological effectiveness, and (4) applying the framework to a real-world context, specifically ADNOC.

Practically, the research proposes a structured model that aids organisations in improving IT system implementation. The findings emphasize the need for management to align leadership practices with technological needs, foster a culture of continuous learning, and actively engage employees in IT transformation initiatives. The proposed model offers oil and gas sector stakeholders a strategic approach to enhancing IT project success rates, improving customer satisfaction, and aligning with international IT quality standards. As the UAE's oil and gas industry continues its digital transformation, this study contributes towards a foundational framework to guide effective IT system adoption and sustain competitive advantage.

Table of Contents

List of Figures

List of Tables

List of Appendices

CHAPTER 1: INTRODUCTION

1.1 Introduction and Research Context

Supportive management mindset has been associated with a variety of contemporary issues related to individuals and organisational performance, and its enhancement for organisational goals and strategies (Abubakar et al., 2019). Several empirical studies (e.g. Mikalef and Pateli, 2017; Abubakar et al., 2019; Pidduck et al., 2023) have contributed to arguments that supportive management mindset is associated with individuals and organisational performance, and its enhancement for organisational goals and strategies in the context of various business sectors. The multidimensional implications of supportive management mindset will be further investigated in the current research in terms of its direct and indirect effects on IT system implementation. This essential relationship will be holistically investigated through technology system implementation as a significant mediator in this relationship. The research will be applied to the UAE oil and gas sector through proposing a holistic model that reflects the optimal practices and relationship between supportive management mindset and IT system implementation.

The concept of a supportive management mindset is considered as a reflection of massive psychological, behavioural, and distinctive practices that can be transformed into organisational practice (Hall, 2016). The practices can involve a variety of tasks such as personal management (the reflective mindset), organisation management (the analytical mindset), relationships management (the collaborative mindset) and change management (the mind set of action). The association of management minds with technological development and practices, specifically in IT system implementation, pose significant challenges in terms of requiring a clear and in-depth understanding of system analysis, while deploying effective leadership capabilities (Pidduck et al., 2023). The project will examine this linkage in the UAE oil and gas sector. In this context, choosing an appropriate and effective IT system can be relied on various factors such as supportive management mindset, organisation's dynamic capabilities (Mikalef and Pateli, 2017), and IT quality standards (Lloyd, 2020).

The contemporary organisational practices derived from management mindset can be influenced by both internal and external factors, which can shape the approach to selecting an IT system. The organisation's ability to adapt to change is significant, as it requires the allocation of necessary resources and the establishment of a conducive culture to support the

implementation of the new systems. Furthermore, the technical aspects of IT, specifically the established standards for selecting systems, can play a key role in ensuring the success of the system implementation process. These standards encompass various stages such as gathering user requirements, planning, analysis, user acceptance, implementation, and continuous improvements.

A supportive management mindset is essential for organisations to create an organisational culture that is both effective and efficient. It is based on recognition that the organisation's long-term success relies on its ability to develop and implement sustainable practices (Rimanoczy, 2020). Supportive management mindset is an important factor in promoting IT system implementation practices. It involves creating an environment where organisational development is seen as a priority, and where employees are encouraged to take initiative in developing and implementing IT system implementation. It also involves providing the necessary resources and guidance to ensure that these practices are implemented effectively.

Investigating the relationship between supportive management mindset and IT system implementation needs to be conducted to fill the existing gap especially in the UAE work environment. IT system implementation is critically associated with dynamic capabilities and implementation of IT quality standards. In this context, managing and operationalising IT quality standards remains fundamental to organisational process success (Hickman and Silva, 2018). This assertion is originally based on the increased adoption of technology systems in key sectors to overcome persistent challenges of environmental volatility (Nainaar and Masson, 2018). Therefore, there is a growing complexity of organisational systems through the adoption of technology systems (Mitreva et al. 2015). Kunz and Stephanow (2017) and Sarafrazi et al. (2016) add that these systems are useful in different scopes of performance improvement and organisational efficiencies. IT systems help maintain quality and overcome complex organisational decisions within the organisation, making operations more efficient and helping manage organisational processes beyond the traditional capacities of the human mind.

The benefits of technology implementation have been realised in key areas such as safety, health, environment, and employee welfare (Mitreva et al. 2015). In the oil and gas sector, the adoption and implementation of technology systems is instrumental to organisational success. Shuen et al. (2015) argue that technology has become a necessary element of dynamic capabilities in the oil and gas sector. Dynamic capabilities and performance efficiency have a growing attention in volatile sectors where business strategies are surrounded by uncertainty,

ambiguity, and complexity (Kinsinger and Walch, 2012). The oil and gas sector has been considered as a leader in how dynamic sectors may be managed using technology systems (Giones et al., 2018). Albrecht et al. (2015) stated that to maintain effective organisational processes, technology systems must conform to quality standards. IT systems implementation as a research moderating variable refers to the process of creating and deploying an IT system within an organisation (Abu-AlSondos, 2023). This includes the design, development, testing, deployment, and maintenance of the system.

Implementing an IT system as another moderating variable is a complex and critical process that requires proper planning, resources, and expertise. IT quality standards refer to the benchmarks and guidelines that define the level of quality expected from IT systems and services. Despite the emphasised need for IT systems implementation and IT quality standards implementation, and understanding the environmental factors (internal and external), dynamic organisations in some cases reduce IT budgets and ignore IT quality systems (Nainaar and Masson, 2018; Gunasekaran et al., 2017; Miseviciene et al., 2018). These determinants affect mainly management decisions on whether or not to implement a given technology system. Despite these developments, IT systems have been re-emphasised as the means through which oil and gas businesses may overcome environmental turbulence and remain competitive (Brynjolfsson et al., 2017). The significance of proposing and establishing a comprehensive model of management or leadership mindset in IT systems implementation, quality implementation, and dynamic capabilities in the oil and gas performance should be considered.

1.2 Research Gap

The oil and gas industry is one of the critical industries, and technology has been playing a major role in its operations, efficiency, and overall success. Technology adoption and implementation research in this industry has been on the rise in recent years, most of which focus on the adoption of Information Technology systems. However, there is still a gap in the literature with respect to how supportive management influences the effective implementation and continuous use of IT systems, particularly within the context of the UAE oil and gas sector. While different studies have focused on the role of technology in bringing about improved operational performance, internal and external management factors that lead to successful IT system implementation remain scantily explored in the studies of Shuen et al. (2015), Giones et al. (2018), and Brynjolfsson et al. (2017).

One of the most profound gaps in the literature has been the absence of a comprehensive framework for underlining the importance of management mindset in successful technology integration and implementation. An enabling mindset is fundamental since it underlines attitudes and behavior as well as organizational culture regarding the successful implementation of new technology. This research consequently tries to fill this gap by developing and testing a model that stresses management mindset in implementing IT systems in the UAE oil and gas sector. More specifically, this research will explain internal management factors that relate to successful implementation of IT systems, particularly the relationship between IT competencies, leadership, and awareness of the system and operation.

Much focus has been placed on how technology supports the implementation of Quality Management Systems (QMS), while the opposite direction is how quality management influences IT system implementation receives scant attention. Various works show that QMS is important in ensuring IT systems function effectively (Kuo, 2018; Pérez-Aróstegui et al., 2015). On the other hand, the relationship that exists between QMS and IT systems implementation, which maintains that successful implementation of quality standards is a prerequisite for successful adoption of IT systems, has been largely ignored. Previous literature has focused mostly on how technology enables the implementation of quality management practices rather than how the quality management system itself plays an enabling role in technology adoption. Pérez-Aróstegui et al. (2015) further emphasised that quality implementation acts as the backbone of successful integration of technology systems, a factor that has great implications for the oil and gas industry, where technology and quality management are the basis of operational success.

This research, therefore, seeks to fill this gap in existing literature by investigating how the principles of QMS influence IT system adoption in the UAE oil and gas sector. Such an understanding of this relationship will provide a framework that can guide organizations in implementing technology systems in a manner that supports both operational quality and strategic objectives. This study will, therefore, add new knowledge on how organizations in the UAE can enhance the performance of their IT systems and, hence, their operational performance by focusing on the interplay between quality management and technology systems. Moreover, there is not enough research regarding management mindset, especially on how it impacts organizational development. Araujo et al. (2021) raise the issue that more research is needed on how different approaches to management mindset lead to successful organizations, especially in the context of technology adoption. While studies have focused on

different aspects of management mindset, such as leadership and decision-making, how management mindset influences the implementation of technology systems remains understudied. The present study would, therefore, attempt to fill this gap by exploring how factors of management mindset, comprising strategic thinking, leadership support, and decision-making processes, ultimately influence successful implementation of IT systems in the UAE oil and gas industry.

Another related gap in literature is that on how risk management practices are coupled with the management mindset. Eastburn and Sharland (2017) added that management mindset certainly drives the kind of approaches for risk management in a few empirical research pieces which connect the former with the latter in an IT system implementation context. Those highly complex industries, such as oil and gas, have considerably depended on risk management in the cases of technology adoption and system implementation. But how management's attitudes and approaches to risk affect the decision processes associated with the adoption of technologies remains a mystery. In researching this link, the current research will add to an in-depth understanding of how management mindset, especially with respect to management practices, influences the successful implementation of IT systems.

Furthermore, Ramachandran et al. (2013) add that research into management practices, especially those studies with large samples and involving diverse organizational contexts, becomes necessary in understanding the full scope of managerial influences on technology adoption. Most prior studies were limited either by small samples or specific organizational contexts, often failing to capture the broader and more complex nature of management practices in large-scale industries. This present study overcame that limitation by adopting a large-scale survey research strategy to acquire data from a wide variation of organizations within the UAE oil and gas sector. That will widen one's appreciation of how practices like management communication, decision-making, and leadership styles provide a backdrop upon which companies and organizations of varied structure implement IT systems.

Alameeri et al. (2018) also argue that the sustainable management of the UAE has not been adequately researched, especially regarding its impact on the mentality of managers. The UAE is a fast-growing economy with a multi-cultural labour force a context different from others where other investigations on management practices have taken place. Local conditions feature prominently in the oil and gas industry of the UAE, especially under the continuous implementation of new technologies designed to meet emerging market needs and legislative

demands. This means that the link between management mindset and IT implementation within the UAE oil and gas sector has to be explored in more detail especially, companies are under increased pressure to integrate both technological innovation and sustainable practices within their operations. The knowledge of how management mindset influences both technology adoption and IT implementation efforts will provide the necessary insights for organizations to remain competitive in a globalized market.

The last section where more research should be conducted is the aspects of knowledge management practices on management mindset. According to Alrawi and Elkhatib (2009) knowledge management is interlinked to the management mindset, few research works have been carried on this issue regarding IT system implementation. This in essence underpins the significance of knowledge management practices, in making sure that there is seamless integration of new technologies while ensuring that employees are properly equipped with the skills and expertise in operating such systems. Therefore, this research will determine the relationship of knowledge management practices in interlinking with management mindset in ensuring successful implementation of IT systems in the UAE oil and gas sector, while developing this particular inchoate gap in literature.

Therefore, this research tries to fill some of the pivotal gaps that exist in the literature with respect to how management mindset and IT system implementation are related within the UAE oil and gas sector. This study explores how internal factors such as leadership, IT competencies, and awareness of systems interact with external factors such as risk management, and knowledge management to influence the success of technology adoption. This research will focus on areas not well researched in the past, thus making a contribution to both scholars and practitioners in the development of a comprehensive framework for successful implementation of IT systems in the UAE oil and gas sector.

1.3 The Aims of the Research

The research aims to develop a supportive management mindset model for IT system implementation in the oil and gas sector.

1.4 Research Objectives

To achieve the main aim of the study, the following research objectives are established:

1- To identify practices of supportive management mindset and their influence on IT system implementation in oil and gas sector

2- To analyse the impact of the identified practices of supportive management mindset on IT system implementation in oil and gas sector.

3- To develop an applicable model for supportive management mindset in the IT system implementation in oil and gas sector

1.5 Research Questions

To reflect the core and interrelated issues and relationships derived from the research problem, the research questions are addressed in a way to provide a robust research design and to contribute to theoretical and practical knowledge. These questions are formulated into main and sub-variables of the research and link these relationships with the conceptual framework of the study.

Question 1: To what extent do practices of supportive management mindset influence IT system implementation in the UAE oil and gas sector

Question 1.1: To what extent do the internal factors of management mindset including IT competencies, the awareness of systems and operations and leadership determine and support effective technology system implementation in the UAE oil and gas sector?

Question 1.2: To what extent do the external factors of management mindset including PESTLE factors, competition and customers determine and support effective technology system implementation in the UAE oil and gas sector?

Question 2: To what extent does management mindset affect technology system implementation through dynamic capabilities and IT quality standards in the UAE oil and gas sector?

Question 2.1: To what extent does management mindset affect dynamic capabilities in the UAE oil and gas sector?

Question 2.2: To what extent does management mindset affect the implementation of IT quality standards in the UAE oil and gas sector?

1.6 Research Hypotheses

The research sets out a number of relevant provisional ideas that represent the initial answers of the research questions. These hypotheses will be involved in the data collection instrument and examined in the empirical study in detail.

Hypothesis 1: Management mindset has a high positive support on technology system implementation through internal and external factors in the UAE oil and gas sector.

Hypothesis 1.1: The internal factors of management mindset including IT competencies, the awareness of systems and operations and leadership have high positive determination and support for technology system implementation in the UAE oil and gas sector.

Hypothesis 1.2: The external factors of management mindset including PESTLE factors, competition and customers have high positive determination and support for technology system implementation in the UAE oil and gas sector.

Hypothesis 2: Management mindset has a high positive effect on the IT system implementation through the dynamic capabilities and IT quality standards in the UAE oil and gas sector.

Hypothesis 2.1: Management mindset has a high positive effect on the organisational dynamic capabilities in the UAE oil and gas sector.

Hypothesis 2.2: Management mindset has a high positive effect on the implementation of IT quality standards in the UAE oil and gas sector.

1.7 Rationale and Contribution to Knowledge and Practice

Research rationale and contributions are divided into academic and practical contributions to knowledge and practices.

1.7.1 Academic Rationale and Contribution

The academic rationale of the study is to contribute to the filling of the identified research gap whilst adding to the literature a holistic critical framework of the supportive management mindset characteristics that can be interacted with the role of technology in the oil and gas sector. These characteristics have to be critically and reliably investigated in terms of their multidimensional implications that can be occurred on technology and IT system

implementation (Gadenne et al., 2012). The proposed model will serve foundations for future research into how management mindset can be improved mainly in technology-related projects (Nainaar and Masson, 2018). The research study will critically provide an association between management mindset characteristics and IT system implementation in the oil and gas sector by providing crucial knowledge in this area for organisational development in volatile sectors.

The research makes significant academic contributions to the field of management mindset and IT system implementation. The study provides a comprehensive and holistic framework that takes into consideration various internal and external factors that influence the success of IT system implementation in the oil and gas sector. These academic contributions can be categorized into the following:

A) Identification of key factors influencing IT system implementation

The research investigates a combination of factors that influence the successful implementation of IT systems within ADNOC. This combination has not been investigated in the relevant literature in one framework which enhances this addictiveness. These factors include internal factors such as IT competencies, awareness of systems and operations, and leadership, and external factors such as PESTLE factors, competition, and customers. This identification of factors provides a clear understanding of the complex environment in which IT systems are implemented and helps in devising effective strategies to overcome challenges.

B) Integration of Dynamic Capabilities theory

The study integrates the Dynamic Capabilities theory in the proposed framework, which helps to bridge the gap between theory and practice. The model provides a dynamic approach to IT system implementation that is tailored to organisations' unique needs and capabilities by considering an organisation's internal capabilities to adapt and respond to external changes. This adds to the existing body of knowledge especially in the oil and gas industry where similar managerial and operational practices are performed.

C) Incorporation of IT Quality Standards

The research also highlights the importance of incorporating IT quality standards in the implementation process. The study emphasizes the need for oil and gas organisations to adhere to international IT quality standards to ensure efficient and effective IT system implementation. This not only improves the overall quality of the implementation process but also enhances organisational performance and customer satisfaction.

D) Application of the framework in a real-world context

The research provides a practical demonstration of the framework's effectiveness and its applicability in addressing the challenges and complexities faced by ADNOC. The empirical evidence gathered from the case study adds value to the academic contributions of the research.

1.7.2 Practical Rationale and Contribution

The essence of the practical contribution stems from the practical investigation that will take place in the UAE oil and gas sector focusing on how the supportive management mindset can affect IT system implementation. The present study's underlying rationale is to propose a model for adoption and implementation in the oil and gas sector towards improving IT system implementation. The study's conceptual foundations are formulated on the practical rationale on the need to model how management decisions may be supported to drive technology projects in the oil and gas sector. Management and organisational leadership often face difficulties in technology projects necessary for organisational operations. These technological aspects play in many cases a significant role in generating profits and achieving sustainable competitive advantage (Nainaar and Masson, 2018). For this purpose, the contribution to knowledge through the present study will be instrumental in establishing a model that can be used to gain IT system implementation in the oil and gas sector through technology systems.

The proposed model will be critical considering the oil and gas sector continues to experience turmoil in today's socio-economic era, and technology has been cited as vital to performance efficiency and competitiveness (Heim et al., 2023; Al-Hajri et al., 2024; Adams et al., 2019). To the UAE, the model will be used to guide technology systems implementation, whilst focusing on quality standards implementation. Important players in the industry that may benefit from the present study include ADNOC Group. ADNOC Group remains the largest company in the UAE in terms of revenue and employees. The group is made up of 16 subsidiaries covering all levels of upstream, midstream, and downstream, oil and gas production and distribution. Some of the practical contributions of this research are:

A) Enhanced IT system implementation success

The framework provides a comprehensive and structured approach to management mindset and IT system implementation, which can significantly increase the chances of success.

ADNOC and oil and gas companies can benefit from this framework by implementing it in its IT projects, resulting in improved implementation success rates.

B) Improved customer satisfaction

The study provides a customer-centric approach to IT system implementation by considering external factors such as customer needs and preferences. The framework ensures that IT systems are implemented according to customer requirements, resulting in improved customer satisfaction by incorporating these factors. This is especially important in the oil and gas sector, where customer satisfaction plays a crucial role in maintaining a competitive edge.

C) Alignment with international IT quality standards

The research highlights the importance of adhering to international IT quality standards. Oil and gas organisations can ensure the reliability, efficiency, and security of their IT systems. This not only adds value to the implementation process but also enhances the organisation's reputation and credibility.

1.7.3 Theoretical Mapping of Hypotheses

The hypothesised propositions are sufficiently grounded within grounded theory. Hypothesis 1, which suggests that management attitude positively enables IT system implementation through internal and external dimensions, is based on Dynamic Capabilities Theory (Teece et al., 2018). The theory explains how managers' IT know-how, leadership, and awareness (H1.1) are internal capabilities for reconfiguring resources and sensitivity to PESTLE forces, competition, and customers (H1.2) as external sensing and adaptation capabilities.

Hypothesis 2, relating management attitude with IT system deployment using dynamic capabilities and IT quality norms, integrates Dynamic Capabilities Theory and Quality Management Theory. Hypothesis 2.1 aligns with the presumption that leadership-led dynamic capabilities enhance organisational flexibility and innovation within unpredictable situations, particularly in the oil and gas sector. Meanwhile, Hypothesis 2.2 is connected to Quality Management Theory in that it suggests that managerial commitment to IT standards of quality enhances effective implementation and sustained system performance. The overall framework combines General Systems Theory (Teece, 2018), and Information Systems Continuance Theory (Mishra et al., 2023), which position IT system implementation as an ongoing process

of alignment, feedback, and adjustment, supported by a proactive and adaptive management style.

1.8 Novelty and Significance of the Study

The research offers a new and original perspective in the existing literature on IT system adoption by highlighting management mindset as a key success factor in the UAE oil and gas sector. While earlier studies have extensively examined technical, infrastructural, or organizational factors influencing IT adoption (Salazar et al., 2021; Roberts et al., 2021), few have focused on how managers' cognitive orientation, awareness, and strategic vision impact implementation outcomes. This study introduces a novel conceptualization that considers mindset as an integrative driver connecting internal competencies and external pressures to IT implementation performance through the development and empirical testing of the Supportive Management Mindset Model.

The significance of this research lies in the two-level framing of internal and external variables. Unlike traditional models that restrict the assessment of IT readiness, the present study incorporates managerial competencies, leadership, and system awareness alongside external PESTLE, competition, and customer forces. This multivariate consideration encapsulates the unique complexities of the oil and gas sector in the UAE, where geopolitical, regulatory, and environmental factors dynamically engage with organisational practice.

The study breaks new ground by establishing an open link between management mindset and dynamic capabilities and IT quality norms, two relatively unexplored concepts within this sectoral context. Such links highlight the processes through which mindset is translated into tangible outcomes such as adaptability, compliance, and system sustainability in the long term. This research is novel in its conception, unprecedented in its empirical focus on the UAE oil and gas sector, and worthwhile in offering actionable suggestions to policymakers and business executives concerned with leveraging IT-facilitated change.

1.9 Proposed Research Design and Methodology

The research will be designed in a comprehensive and coherent methodological framework that consists of the following elements.

1.9.1 Research Methodology

The research methodological part consists of a set of research philosophies, methods, tools, data collection instruments and analytical framework. These elements are chosen to carry out

the current research based on the most appropriate elements that ensure the coherence, reliability and validity of the research.

The research employs the quantitative research method which is based on numerical and source data in which data collection methods such as experiments, surveys and archive documents are used (See: Goertzen, 2017). The quantitative approach can be based on positivist, objectivist and realist paradigms. With the application of positivist philosophy to scientific research, the objective feature of science is emerged. The researcher, who investigates a subject with an objective understanding, attempts to add persuasive and rational judgments and comments to the process while collecting and analysing data with research methods. Statistical methods will be used to find the relationships between management mindset practices and IT system implementation through a number of mediating factors and the results are expressed numerically. The aim of the objectivist view is to explain individuals' attitudes in a deterministic framework by putting it into an analytical framework. In this regard, the survey method that will be used in order to gather the required data is based on an objectivist understanding and the findings obtained from the survey are put into a regular pattern after being analysed (Salminen et al., 2020).

Qualitative method as another alternative can be used in many studies in the field of social and human sciences. Since many concepts are naturally expressed in numerical values in the discipline of management, quantitative research methods are most commonly preferred in studies close to the discipline of management as argued by Queirós et al. (2017). Although the phenomenon or concept that is the subject of research in other social science disciplines and psychology is not directly numerically measurable, it can be made indirectly measurable with numerical values during the research processes. Therefore, the field of application of quantitative research can be extended with the preferences and predispositions of the researcher during the implementation of the concepts. Even concepts that are not suitable for numerical measurement at first glance can be made the subject of quantitative method with an appropriate strategy.

Quantitative method covers all processes of reaching, collecting, compiling and analysing data that can be measured numerically (De Villiers et al., 2019). In this section, variables, which are the conceptual tools of the quantitative method, are first defined. Then, the data collection and analysis tools used to reach information with the quantitative method, and the quantitative research techniques will be discussed. The aim of the research in this context is to observe and

examine the variables, evaluate their changes and reveal the relationships between them. It is important to classify the variables according to their properties.

In some cases, if the data collection process is not given sufficient attention after the research design is completed perfectly, it can affect the quality and reliability of the research (Abdalla et al., 2018). However, it should be noted that the results of the research will be based on the collected data. Therefore, design and data collection are of equal importance. Especially in quantitative research, implementation and data collection processes are intertwined. Data collection is the most important stage of all scientific research. It directly affects the reliability and quality of the research. For this reason, it should be ensured that the data is collected as accurately as possible.

During the empirical study that will take place within the UAE oil and gas sector, defining the concepts in a way that highlights the different dimensions of that phenomenon, defining the important features of each dimension and determining the appropriate indicators for each feature will make the data collection process seamless. First, the feature to be measured will be defined, and the indicators that allow the research to make inferences about this feature will be clearly defined. The relationship between the feature and the indicator that will serve to measure that feature should be clearly stated. More than one indicator will be used to measure a feature. If more indicators are defined for the same feature, the inferences will be more accurate. These indicators should then be classified according to their similarities. Finally, indicators that can equally describe a feature are interchangeable.

1.9.2 Research Philosophy and Strategy

The study considers the positivist ontology to scientific inquiry. This philosophy explains that evidence in the social world can be as objective and scientific as evidence in the natural science setting (Saunders and Rojon 2014; Morato, 2013; Sekaran, 2003). This philosophy explains that a singular form of reality exists within social spaces, and this truth can be obtained using scientific metrics and benchmarks. The use of benchmarks and approved criteria ensures that evidence in these criteria can be competed or compared across contexts (Sekaran, 2003). The positivist philosophy also supports objectivist epistemology, which argues that evidence in any field of study may be established as objective to the knowledge known to this field of study.

1.9.3 Quantitative Methodology

The quantitative research methodology will be implemented. This methodology has a high inclination to the use of numbers in all aspects of data collection and analysis. The quantitative methodology predominantly involves the use of the survey questionnaire to collect the needed data. The quantitative methodology also supports a structural, and replicable methodology in support of the positivist philosophy (Sekaran, 2003). These methods are justified as evidence and are structural and objectively established.

1.9.4 Survey Research

The survey design entails the observation through the collection and analysis of new primary data for the sole purpose of testing identified research hypotheses. The survey research will collect data with the help of the survey questionnaire, also in a quantitative manner and in support of the positivist ontology (Sekaran, 2003). The survey research will help collate a holistic view of results or evidence as it exists within the UAE oil and gas sector. As opposed to the use of interviews and other qualitative methods, the survey research strategy helps collect data from a a purposive sample of respondents and also permits quantitative analysis as recommended by Saunders and Rojon (2014). The survey also ensures that the sampling efforts meet the criteria of representativeness and generalisability.

1.9.5 Population and Sampling

The population of the study consists of top, middle, and lower levels of management's directors and employees in the UAE oil and gas companies. All oil and gas companies within the UAE will be first sampled to reach a credible sampling frame. The researcher will reach out to participants in the UAE oil and gas sector through various channels, including LinkedIn, professional social communities, and work-related networking platforms. These methods will help facilitate efficient data collection from sample. The population of the research will be introduced, and the sample will be statistically determined. Given this population, the Slovin's formula will be used to arrive at the needed sample (Sekaran, 2003).

1.9.6 Data Collection Procedures

Data collection will be carried out through determining data collection instruments and other procedures.

1.9.6.1 Tool for Data Collection and Measurement of Variables

The questionnaire will be employed as the primary tool for data collection. The justification for choosing the questionnaire as the primary data collection tool is that it efficiently gathers quantitative data from a large, diverse sample, which is essential for the research's broad scope. The use of established measurement items and a Likert scale ensures reliability and validity, enabling consistent measurement of management mindset, internal and external factors, and technology implementation variables. The questionnaire is justified in support of the survey research strategy to collect quantitative data from a large group of audience (Saunders and Rojon, 2014). The dimensions within the framework will be measured using specific items selected from the existing literature sources. This will help gather statistical data from a large audience. Data on these items will be mainly gathered with the help of the five-point Likert scale. The questionnaire will have a section on demographics and bio-data. Data will be collected on the online platform. For a management mindset, Dunn et al. (2016) and Wielkiewicz (2002) hierarchical and systemic thinking will be employed. The external and internal tension factors will be adopted from different literature sources.

1.9.6.2 Procedures for Data Collection

Data will be collected over a period of 3 months or 12 weeks. All members within the scope of the study must be within an oil and gas company within the UAE or other offshore fields. The online survey will permit that respondents complete the survey at their convenience and speed up the overall data collection process. No physical or face-to-face interventions will be employed to gather the needed data.

1.9.7 Research Credibility (Reliability and Validity)

To maintain research credibility, the criteria of validity and reliability will be considered. Some validity benchmarks that will be implemented include content validity, construct validity, and discriminant validity. These validity benchmarks will ensure that the data collected with the help of the survey questionnaire adopt the use of scales in the broader literature (Saunders and Rojon, 2014; Sekaran, 2003). Sekaran (2003) also mentions the need for reliability in research; some reliability benchmarks that will be implemented include composite reliability and Cronbach's Alpha.

As part of efforts directed at research credibility, the pilot study will be conducted prior to the main data collection event. Five expert reviews will be conducted for the present study to

ensure that the study is suitable for the intended audience; these experts will involve at least one academic and one professional expert. Other measures of central tendency and normality and preliminary analysis will be conducted as part of the presentation of findings.

1.9.8 Data Analysis

Data analysis is strict, quantitative-based, supported by high-order statistical tests in analysing the relationships among the criteria and testing the hypotheses identified in previous sections. The statistical analysis will be conducted according to guidelines from previous studies which used quantitative methods research to objectively generate outcome based on empirical facts. The quantitative approach will be, meaning the research findings are strictly based on numerical data and the statistical analysis conducted (Bourne et al., 2021). Its nature, as a methodological approach, ensures such results are free from probable biases that come up in qualitative data interpretation and further enhances the study's replicability.

Main instrument of statistical analysis-IBM SPSS Statistics, version 27, will be used because it is the most well-known software package for data management and the analyses of data. SPSS will be used because of its strengths in manipulating large datasets, undertaking complex analyses, and creating detailed reports that may show relationships among variables. The wide recognition it holds in circles of both academic and professional contexts adds weight to the research through its transparency and the possibility of replication. The use of SPSS in analysing ensures such analysis is efficiently and effectively conducted, thus giving an in-depth look into the various hypotheses put across by this research (Sallis et al., 2021).

Regression statistical technique is a useful technique in predictive analysis. It is suited to the research because it focuses more on the prediction and exploration of relationships rather than on testing theory (Montgomery et al., 2021). Therefore, the objective of this study is to develop a predictive model which would indicate the supportive management mindset in implementing IT systems in the UAE oil and gas sector. Therefore, the choice of regression analysis befits the objectives of the study through the explication of complex relationships which may exist among latent variables, with a view to identifying key predictors for successful IT implementation.

Regression is especially useful in cases when the research model is complex and involves several constructs and indicators (Hoffmann, 2021). The foundation of this research study will be to identify those factors that facilitate a supportive mindset for management, such as leadership behaviour, organisational culture, and employee engagement, and to identify how

these factors can predict the success of an IT system implementation. In addition, regression enables the researcher to estimate the paths between structures of these and provide insight into strength and direction of their relationships. Moreover, compared to other approaches, regression has fewer restrictions regarding data normality and sample size. It also presents the most appropriate approach when the dataset is at a moderate level of size, as it happens in this study.

Other statistical approaches, besides regression, have been used in the analysis, especially in Chapter 4, through regression analyses, ANOVA, and other so-called inferential statistics to conduct tests of research hypotheses. Regression analysis will be used to test direct relationships among independent and dependent variables, enabling the researcher to quantify the impact of supportive management behaviour on the outcomes of IT system implementation. Regression analysis will show the magnitude to which management practices in aspects like communication, resource allocation, and decision support influence the success of IT projects.

On the other hand, ANOVA will be employed in comparing the differences between groups in the dataset, particularly with regard to demographic variables: age, gender, and experience level. Through ANOVA, the study checks whether such demographic variables influence perceptions about management support and the success of IT implementations. The importance of this analysis, therefore, rests on the establishment of how different individual characteristics could be acting as moderators of the relationships between management support and IT outcomes. The implication of the results from ANOVA provides insight into whether different groups within the organisation experience varying levels of management support, which could have implications for how IT systems are implemented and received.

Other major techniques, apart from the foregoing, include frequency analysis and simple linear analysis, meant to present an overview of the data in detail. Frequency analysis describes basic characteristics of the sample, which means distribution by categories of respondents into different demographic groups, while simple linear analysis establishes the first signs of trends and patterns in data. These descriptive analyses thus form the foundational structure for more sophisticated inferential analyses that will follow in later sections of the chapter.

The combination of regression with ANOVA, among other statistical techniques, helps assure comprehensiveness with a high degree of reliability in the research outcomes. These methods will, therefore, test the relationships not only between the variables under study but also attempt to find out moderators and mediators of these relationships and hence can provide a holistic

understanding of the factors that constitute a supportive managerial mindset in implementing IT systems. These findings are of course important in terms of actionable recommendations to managers in the UAE oil and gas industry, given that they have identified those behaviours and practices which may help successful IT implementation.

1.9.9 Ethical Considerations

Prior to data collection, full ethical approval must be obtained from the University of Derby. The university's laid down processes of ethics compliance will be followed. Following these protocols is the first step to ensuring that the study is conducted ethically. As part of the university's ethics, protocols, regional laws governing research activity must be considered as well. Since the university is in the UK, the General Data Protection Regulation which supersedes the UK Data Protection Act of 1998 and will be strictly considered in all aspects of the data collection process. In addition, the ethical areas of confidentiality and anonymity of all respondents will be strictly maintained. Permission to gather data will be accompanied by an informed consent form. Full debriefing will also be done after each person's participation in the study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides a comprehensive review of the literature relevant to the study of supportive management mindsets for IT system implementation within the context of the UAE oil and gas sector. The literature review is structured to explore the multifaceted nature of management mindsets and their influence on organisational performance, particularly in the adoption and implementation of information systems.

The chapter begins with an exploration of the concept of management mindset, outlining its background and global perspectives, before delving into the internal and external factors that shape this mindset. Internal factors, including IT competences, systems operations, and leadership, are pivotal to understanding how management approaches IT systems implementation. External influences such as PESTLE (Political, Economic, Social, Technological, Legal, and Environmental) analysis, competition, and customer expectations further contextualize how management must adapt to a dynamic and evolving environment.

Various management approaches, such as fostering interactive relationships with subordinates and enhancing human resources, are discussed for their role in cultivating a supportive mindset. The review also investigates the intersection of management and technology, with a focus on information management and the critical role of information technology in achieving organisational objectives. Theoretical frameworks, including Information Systems Continuance Theory, General Systems Theory, and Quality Management Theory, are considered to provide a conceptual foundation for understanding the dynamics between management and IT systems.

The chapter addresses the specific needs of the oil and gas industry, particularly in the UAE, where dynamic capabilities, IT quality standards, and the economic, social, and environmental dimensions of the sector are crucial for sustainable growth. The significance of software systems, such as ERP, exploration, and production software, highlights the importance of technology in driving operational efficiency in the oil and gas sector.

2.2 The Concept of Management Mindset

According to Arocas and Morley (2015), Management mindset is a concept that refers to a set of competences, beliefs and characteristics resulting in distinctive performance to achieve excellence within organisations and understanding the organisational goals that organisations

aim to achieve. Management mindset competency is a concept associated with value and objective alignment with the organisational goals managers' mentality, talent behaviours, and talent development (Luna–Arocas and Morley, 2015).

Araujo et al. (2021) pointed out that management mindset represents a complementary approach of thinking that aims to achieve effective IT system implementation. They emphasised that management mindset practices are based on continuous processes including recognising, interacting, understanding and translating these practices into actions. Kouzes and Posner (2019) stated that management mindset is a representation of entity's theorists, which deals with traits of intelligence and skills and abilities that can be learned and developed.

In another context, global mindset related to management has been conceptualised by Javidan and Walker (2012) as a term which comprises particular knowledge, skills and competences that have been associated with intellectual capital, global business savvy, cognitive complexity and cosmopolitan outlook. According to Ungson and Wong (2014), the concept of global mindset was provided in management discipline in the early 1990s which is based on a comprehensive vision that generates an integrated strategic framework that enhances organisational development and increasing individuals' capabilities through a set of strategies and processes.

From these definitions, the research defines management mindset as a set of interactive behaviours and practices performed by managers, leaders and decision-makers based on a variety of competences, experiences, psychological and behavioural attitudes and beliefs which result in communications, performing different assigned tasks at the internal and external levels.

2.3 Management Mindset Background

Tavanti and Davis (2018) argue that leadership with a high level mindset and competencies can make a positive impact on organisational visions and future trends. In this context, many studies have been carried out on the relationships between management mindset and other dimensions including the psychosocial framework of the collective mind (Yolles and Fink, 2013), human resources management and open innovation (Engelsberger et al., 2021) and managers' growth mindset and resource management practices (Abernethy et al., 2021),

The integration between management mindset and IT system implementation has been investigated in a variety of studies that have been criticising the interactive relationships between the contemporary practices of management and the sustainable organisational development (Tollin and Vej, 2012), effective mindset using the matrix map for strategic decisions (Zimmerman and Bell, 2015) and creating global leaders with effective mindsets (Gretzel et al., 2014).

The managers' approaches in the UAE companies have been developed in terms of understanding the diversity of leadership styles, management techniques and adopting managerial competencies and capabilities that lead to excellent approach strategies (Abou Assali and Troudi, 2019). Nair et al. (2019) argue that leadership practices performed by different positions within the private and public sector institutions in the UAE have significant associations with the organisational culture, reputation, decision-making processes, and human resource competences. The diversity of leadership styles based on the management mindset becomes an enormous challenge for institutions to select the appropriate characteristics and styles of leadership.

The increasing literature on management mindset approaches and their multidimensional relationships with IT system implementation leads to enhancing the awareness of this integration association that can be positively reflected in organisational performance. Cseh et al. (2013) investigated different elements of management mindset including transcendence, plasticity of the mind, flexibility, openness, mindfulness, curiosity, and humility, and they associate such characteristics with global environment.

Jamieson and Donald (2020) provide an association between management mindset and leadership competencies. The authors applied their study to educational institutions and engineering programmes. Eastburn and Sharland (2017) investigated the relationship between management mindset and risk management. They found that management mindset capabilities can provide crucial solution for mitigating risk stage as it based on predictable business process.

In a relevant perspective, Allen (2020) critically investigated the managerial mindset from a technological perspective. They focused on the digital mindset as a main research pillar and demonstrated that such technological factor has a direct association with industry 4.0 and other critical concepts that should be integrated into a business management. Hildebrandt and Beimborn (2021) pointed out that there is a lack in the literature of an unambiguous and

theoretic conceptualisation of digital mindset that is characterised by various psychological perspectives.

Management mindset has been a controversial area of study due to the complexity and interrelationships in the managerial contexts. In the UAE context, the growing contributions to knowledge of leadership and management practices have been increasingly developed (Alkheyi et al. 2020; Alnuaimi, 2020). In this context, investigating specific relationships in terms of the relationships between management mindset and IT system implementation is an essential justification. Recently, sustainable development has become a topic in the Middle East, where effective reports are one of the effective tools for assessing the commitment of institutions in the field of sustainable development, and the extent of their contribution and cooperation with the relevant authorities in this field (Gerged et al., 2018).

Issuing effective reports for institutions has positive repercussions on making accurate and informed decisions, managing risks and crises, enhancing the values and reputation of the institution, improving the relationship with the government and local communities, and strengthening the association between the institution and society in the long term. Although the objectives of the oil and gas sector in the UAE are compatible with each other, each company plays a separate and critical role in the core business of the sector (Shqairat and Sundarakani, 2018). Most developing countries depend on natural resources as their main source of income, and face many major challenges (internally and externally) in order to achieve economic diversification. Among the factors that prevent this is the rapid growth in export earnings resulting from resource extraction, which is accompanied by high exchange rate pressures which reduces the competitiveness of other commercial sectors in the economy. This makes the diversification of resource-rich economies inevitable to reduce the risks associated with heavy dependence on the growth framework of raw materials exports, and to avoid the impact of fluctuations in commodity prices on national economies.

The Arab economies are a clear model for resource-rich countries that depend on oil and gas as their highest financial resource, which has led to a significant decline in the contribution of other sectors to economic activity (Abdel-Latif and El-Gamal, 2020). In this regard, the UAE government sought over years to provide a diversity of economic resources and to increase the financial investment and other strategies that can enhance the general economic resources.

2.4 Global Management Mindset

The global mindset concept has been explored through different standpoints at the strategic, cultural and multidimensional perspectives levels (Yari et al. 2020). Global mindset is associated with management processes including decision-making style and managerial experience (Jiang et al., 2018), management education (Pathak, 2018), and cultural intelligence (Andresen and Bergdolt, 2017). It prioritises dimensions of strategic and organisational complexity generated by globalisation (Perez, 2017).

A premise that influences the concept of global mindset, from a strategic perspective is that managing multinationals implies having, among other skills, the ability to integrate and coordinate geographically distant operations and respond to demands in different locations (Goxe and Belhoste, 2019). Therefore, the strategic perspective emphasises an orientation towards global business, the vision of an interconnected world, the perception that there are opportunities in many places and the ability to understand and adjust to specific local issues, in the markets where organisations operate. The complexity of global mindset has been increased in terms of the international expansion of SMEs and the relationship between global mindset, decision-making and SME performance (Torkkeli et al., 2018).

The cultural perspective, in turn, prioritises issues related to national and cultural diversity, associated with the globalisation of business. These cultural perspectives have been integrated in the academic practice to develop the global mindset for learning and research purposes (Cseh and Crocco, 2020). This line of thinking reinforces the challenges faced by organisational managements as the business expands around. As a result, it becomes necessary to review ethnocentric positions, in order to adapt to new cultural realities. Therefore, the cultural perspective of the global mindset emphasises intercultural and relational dimensions, and the organisational and managerial competencies needed to understand other cultures, to increase the communication skills and effectiveness and interact with others, establishing and nurturing global interactions.

The multidimensional perspective of global mindset, in turn, integrates other aspects such as cultural and strategic perspectives. It can also include other dimensions, such as knowledge, individual competences and psychological dimension. On the other hand, Yin et al. (2008) propose a multidimensional approach based on the following dimensions: global orientation, global knowledge and global competences. Global orientation refers to presenting an intention

towards systematic and continuous international expansion (commitment to internationalisation) and it adheres to the elements of the strategic perspective (Fernandes et al., 2020).

Global skills involve having skills to build and manage multicultural relationships. Consequently, and aligned with the cultural perspective (Bourn, 2018). Global knowledge refers to having knowledge about foreign countries and industries and also involves the ability to detect global opportunities. It is being related to both perspectives (strategic and cultural). Thus, these three dimensions encompass elements of the aforementioned perspectives (strategic and cultural).

The UAE organisations intensified their internationalisation in recent decades (Madichie and Kolo, 2013). It is important for managers to develop a global mindset, in order to facilitate the understanding of the diversity of the various operating environments with regard to local culture, legislation relevant to each country, knowledge of the customer and competition, the prices charged, and the distribution.

Levy (2000) carried out an empirical study on the global mindset which aimed to verify the relationship between global mindset, team heterogeneity and global strategic posture. She found a significant relationship between the global mindset and global strategy and concluded that the senior management team's global mindset drives globalisation. Nummela, Saarenketo and Puumalainen (2004) conducted a survey of 385 companies in which the main focus was to identify what drives the global mindset and its relationship to company performance. The authors created a model and tested it in companies in the information and communication technology segment. They used as a concept for global mentality. To measure global mindset, they asked some questions on a seven-point Likert scale. They assumed two drivers for the global mindset: managerial experience and market characteristics. Managerial experience was measured using two items: percentage of managers with international experience and percentage of managers with international education.

The concept of global mindset should incorporate cultural (Vuong, 2016), strategic and multidimensional perspectives (Nielsen, 2018) and behavioural skills. Other relevant characteristics are associated with global mindset such as flexibility, sensitivity and interest in other cultures, appreciation of diversity, ease of managing conflicts, analysis and solutions of

complex problems, ease of dealing with uncertainty and complexity, interest in the new and in challenges, emotional and psychological stability, and ease of interpersonal relationships.

2.5 Internal Factors Related to Management Mindset

Internal factors are divided in this research to IT competences, systems and operations and leadership.

2.5.1 IT Competences

Information technology competencies are considered a valuable element in contemporary organisations (Al-Shami et al., 2021). In this aspect, without an understanding of the organisational processes by which information is transformed into perception, knowledge and action, organisations are not able to understand the relevance of their sources and of information and communication technologies (ICT) (Caputo et al., 2019). In this sense, it can be considered that the management and strategic organisation of information are objects linked to knowledge and, therefore, inseparable for the organisation that intends to stand out, as the way it uses and disseminates information plays a strategic role in its ability to adapt and react to market changes.

The absence of a sensitive organisational structure attentive to information management prevents synergy between the various departments that make up any organisation in the excess and in the lack of information. Moreover, the lack of IT competences can affect the inadequate access to informational content that can lead to organisation members to work with high degrees of tension and imprecision.

IT competences reflect how organisations can deal with information and knowledge management in their environment and how the decision-making process in organisations is influenced by information (Turulja and Bajgoric, 2018).

In order to manage all the information that permeates the organisation, it is essential that its employees have the qualifications, in particular, the necessary skills to select, filter, access and use information in an intelligent way, contributing to the construction of knowledge individual as well as organisations (Allal-Chérif et al., 2021). The importance of IT competences can be seen, as an area of studies and applications that, in the UAE, still needs deeper discussions and research involving the organisational context (Alzaabi et al., 2020). Therefore, observing this relevance of information and knowledge as key elements in the construction of a competitive

intelligence system for organisations based on information competence that needs to be investigated further in order to reach a sustainable work conditions.

The information technology competences of individuals are highly demanded to perform the organisations' activities, which can range from adaptations and incremental improvements in existing processes and products, to the development of new products, new production processes or new technologies. Investigating the IT competences area of the UAE organisations can reveal aspects related to the use of information technology to develop specific organisational skills for a particular business segment, taking into account, mainly, diversification strategies that can lead to better sustainable work conditions (Singh and Shaurya, 2021).

It is necessary that, in addition to knowledge, other tools are used, such as Competitive Intelligence (CI), which can be understood as the process that manages information flows, whether formal or informal, and through multiple integrated and developed information, with the objective of creating an organisational culture focused on CI (Cekuls, 2018). The IT competencies can be related to intelligence instruments including different processes such as prospecting and monitoring, selection and filtering, treatment and aggregation of value, dissemination and transfer, generation and use of data, information and knowledge, the informational asset and intellectual of the organisation.

Management competencies in the IT area become relevant for the organisations, as they are able to align investments in the area with the organisational objective, generating strong alignment between strategy and IT, which can positively impact different organisations (Tanriverdi and Du, 2020). In this sense, managing the integration between IT and the business involves appointing the right individuals in the right positions (and with direct responsibility for their decisions), in order to ensure that the investments made in IT are aligned with the strategic objectives of the organisation, considering that the data obtained by IT can provide information necessary for managers to make strategic and efficient decisions.

Entrepreneurial competence is treated as the competence of the individual when related to administrative practice (in the sense of managing any organisation), due to the different tasks that he can perform (Lyver and Lu, 2018). Entrepreneurial actions are associated with competencies as they represent the following aspects: sense of identifying opportunities, networking capability, conceptual skills, management skills, readability, positioning in emergency scenarios and organisational commitment (Hwang et al., 2020; Hashim et al., 2018).

Skilled human resources enable organisations to conceive and develop IT practices faster than the competitors. A focus on IT-enabled intangible resources enables organisations to leverage and exploit pre-existing intangible resources such as customer knowledge and synergy through the coexistence and complementarity of resources and capabilities (Khan et al., 2019). In order to articulate the development of IT competencies in an analytical framework that would allow describing the different stages of combining IT resources and capabilities, the IT competences should be enhanced by a set of practices that should be integrated in the organisational systems, structure, and training and development strategies.

Individuals should have a set of information technology solutions that provide a differentiated infrastructure. Based on these competences, the organisation can achieve a level of strategic IT alignment that allows it both to preserve global standards and to enable local differences, with cost, time and quality gains. IT competence refers to the extent to which a firm is able to know and use technologies to manage information about the market and customers (Devece, 2013). The trajectory of IT competence development in some organisations should be analysed in the light of specific methodological structure. This structure distinguishes two types of learning processes: those of acquisition and those of knowledge conversion (Van Grinsven and Visser, 2011). Some key characteristics of these processes (variety, intensity, functioning and interaction) are identified and their implications for the development of competences should be analysed.

In an unstable environment, IT strategic alignment initiatives can end up thwarted due to the brevity of product and business cycles. This dynamic can reinforce a managerial perspective from the strategic conflict, whose focus insists on the rationality of decision makers and privileges the external environment to the companies, to the detriment of aspects of their internal environment. The identification and analysis of learning processes in the organisation can constitute an intermediate or complementary competitive advantage and elucidate the company's qualification process (Namada, 2018). The relationship between competence development and learning processes has been addressed in different research traditions including research that focuses on companies operating in advanced economies (Wilhelm et al., 2019) and research that deals with companies in countries of recent industrialization or in development.

2.5.1.1 Multidimensional IT Competencies

The following elements are related to the IT competencies.

English Language for IT Competencies

English can be considered as an essential language for IT, as the most information of the contemporary IT systems are designed and explained through this language. In this regard, having the essentials of English is necessary for understanding the IT systems and applications (Khasawneh, 2021).

Familiarity with Apps

The professionals who work with IT should have the capability in dealing with different applications and know how to deal with them (Chen and Allman-Farinelli, 2019). They should know how to program them, as this is a significant differential, regardless of the function to be performed. For example, working with networking and databases can use their knowledge of app programming to bring more scalability and automation. In other words, familiarity with these items helps improve processes and achieve better results.

Data Analysis

The Internet of Things (IoT) has brought a new vision to IT and this has generated many security implications (Kelly et al., 2020). This context requires professionals to be able to apply analysis techniques. Another fundamental requirement is the interpretation of the collected data so that they become strategic information. It is also worth emphasising that data analysis serves the security of devices, as this is an increasing need in a technological and integrated world, in which information is in the cloud and requires companies to adopt solutions for prevention.

Creativity

The IT professionals should be creative in order to have effective strategic IT role. More than knowing how to develop technologies, they must find different ways to apply the solutions and tools and improve the business in creative approaches (Cropley, 2020).

Proactivity

Proactivity helps to resolve the risky situations that might occur and cause problems in the IT systems, privacy and other difficulties (Wu et al., 2018). In this regard, establishing a set of proactive systems and mechanisms can prevent further risks.

Adaptability

IT is constantly being renewed and professionals need to adjust to new contexts to achieve better results (Monteiro et al., 2020). This means being open to different working methods to face the challenges that arise on a daily basis. This skill is highly valued by companies, as employees with difficulty adapting are resistant to change and can generate conflicts.

Communicability

Communication is essential for professionals, including IT. By providing support to all departments and having a centralised performance. The interactive relationship between individuals and their leaders and managers is significant in this context which encourage individuals to communicate with confidence and help organisations to create new work vision and participate in significant processes such as decision-making processes and strategic plans (Brunton et al., 2019).

Flexibility

This is the competence needed to work in a team and deal with individuals of different profiles. The goal in this context is to have a collaborative attitude and empathy to understand others' attitudes.

2.5.2 Systems and Operations

Organisational systems and operations can be designed and adopted depending on the nature and characteristics of organisations. Designing management, financial and operational systems need technical and effective competences can reflect the organisational practices into outcomes that meet their strategic goals (Fatimah et al., 2020). There are different types of systems that serve different organisational levels: operational level systems, which support operational managers in transactions such as sales, accounts, warehouses, and raw material flow.

Management level systems serve the monitoring, control, decision-making and administrative procedures activities of middle managers and the strategic level systems, which help senior management to face issues and trends, both in the external and internal environment of the company (Tortorella et al., 2019). In addition to enterprise-level systems features, they also serve multiple functional areas such as sales, marketing, manufacturing, finance, accounting, and human resources.

2.5.2.1 Decision Support Systems (DSS)

Decision Support Systems (DSS) are designed and used to help in making unusual decisions based on contingent and constructive support approaches in advance in order to solve non-predefined problems using internal information (Kitsios, and Kamariotou, 2018). They have higher analytical power than other systems, built on different models to analyse and store data, make daily decisions, so they have an accessible interface and user service, they are interactive, being able to change and include data through menus that facilitate their entry and obtain information processed.

2.5.2.2 Human Resource Systems

Human resource systems are responsible for attracting, improving and maintaining the company's workforce (Ishak et al., 2021). They help to identify potential employees and select new individuals, develop talent and potential. At the strategic level, they identify skills, education and job types that meet the business plans. The management section monitors the recruitment, allocation and compensation of employees. The knowledge section describes functions related to training, the development of career plans and hierarchical relationships between employees and the operational section records the recruitment and placement of the company's employees.

2.5.2.3 Supply Chain Management (SCM)

Supply Chain Management (SCM) is the association and coordination of the activities of purchasing, manufacturing and moving a product to deliver it to the consumer more quickly at low cost. The supply chains are business processes to select raw materials and transform them into intermediate and finished products, interconnecting suppliers, industries, transport, retail, customers, with raw material selection, inventory control, delivery, providing services from the source to the consumer (Sarkar et al., 2021) . These processes are performed by operations management which aims to plan, execute and monitor all processes that are part of a company to ensure assertive decision-making and actions that generate real results. By covering all sectors and activities of a company, operational management offers a complete overview of the entire business scenario.

To ensure performing effective supply chain management systems, chain members need to work in a cooperative manner to achieve the mutual goals and better coordinate business

processes (Mardani et al., 2020). In the contemporary practices, many different systems are established to enable organisations to develop, assemble and manage products throughout their lifecycle. Supply chain operations have been significantly designed and adopted by organisations which are responsible for their own network, which reduces costs and facilitates the sharing of information, and having some access restrictions.

2.5.3 Leadership

Leadership characteristics have been considered as one of the most significant determinants in directing organisations to achieve their sustainable goals (Nor-Aishah et al., 2020). Hadi and Tola (2019) point out that leadership is the process by which a leader influences, inspires and motivates others that they are directed towards the achievement of common objectives. It implies an interpersonal relationship, where not only the aptitude of the leader plays, but also the predisposition of the followers and the conditions of the situation. Leadership practices are associated with motivation, power, management by objectives, and empowerment. Leadership deals with change and in turn complements management. The real challenge consists in combining strong leadership with management to provide an integrated set of effective practice.

In the contemporary leadership practices, the exceptional work circumstances occurred as a result of the outbreak of Covid-19 pandemic pose significant challenges on the compatibility between management mindset and leadership practices. As a result of these conditions, the virtual and online interaction has been increased to replace the traditional face-to-face interaction. From a critical perspective, Contreras et al. (2020) pointed out that organisations with effective e-leadership have the competences on operating telecommuting work to increase the productivity and performance of its employees. The authors stated that the traditional leadership practices could pose advanced risks due to the lack of control as the telecommuting work can be monitored on technological based system. In this context, the contemporary virtual work based on the management mindset competences can increase the effectiveness and appropriateness in working with leaders.

Vahdat (2021) examined the role of IT-based technology on managing the HR in the Covid-19 era. She found that the authentic leadership has a significant impact on IT system implementation under the current conditions that characterised by online interactions based on the IT- based technology. Lamprinou et al. (2021) found that the perceived organisational

support play a mediator role in the association between leadership practices and teleworkers and non-teleworkers. They investigated this association in terms of the underlying implications of the Covid-19 pandemic and the challenges that face the organisations in how to employ their leadership practices based on technological means.

Contemporary studies suggest that companies accelerate the process of acquiring knowledge about different leadership styles that can be compatible with their business nature and markets in different ways (Shamim et al., 2019). Leadership mentality has been associated with organisation's global business strategy (Cohen, 2010). In fact, this way would be through formal education, offering programs to develop skills in other languages and increase knowledge in different cultures and markets. A significant number of organisations around the world seek to establish policies to integrate and disseminate universal principles in different areas, associating sustainable principles and values with leadership practices in various sectors and small, medium or large scale (Rasche et al., 2013).

2.6 External Factors Related to Management Mindset

The external factors of this research are PESTLE, competition and customers.

2.6.1 PESTLE

PESTLE analysis is included to assess the external factors—Political, Economic, Social, Technological, Legal, and Environmental—that influence IT system implementation in the UAE oil and gas sector. This framework helps understand the broader context in which management mindset and technology adoption occur. To achieve multidimensional analytical results, it is significant to have an analytical approach that leads to relevant information that allows offering the client or the organisation, discoveries and data that contribute to their management and organisational efforts. In this context, PESTLE analysis is a tool used to obtain a macro image of the internal and external environmental factors (Simões, 2020). PESTLE integrates political, economic, social, technological, legal and environmental factors and allows an organisation to form an impression of the variables that could affect its business or industry (Debnath et al., 2021).

The PESTLE has been developed from being a tool only for industries, to become a useful instrument for management and strategic decision-makers, since it offers a high understanding level of the internal and external factors that affect a business or a brand. It allows identifying and discovering trends and situations that can positively or negatively impact the course of a business or brand.

It is common in public relations practice to use the SWOT analysis as a formula that can help assess the strengths, weaknesses, opportunities and threats of a company to understand its position in the market (Koshesh and Jafari, 2019). However, in the PESTLE analysis, a more complete way to understand and evaluate external factors can be provided. The application of this technique, being an analysis technique, consists of identifying and reflecting, in a systematic way, on the different study factors to analyse the organisational external environment, and subsequently to act consequently and strategically.

2.6.1.1 Political

Those factors associated with the political practices that may determine and influence the activity of an organisation in the future. The policies of the country where the organisation operates, government stability and changes in international agreements are analysed in this dimension. The different policies of local, national, continental and global governments are involved and analysed in this factor.

2.6.1.2 Economic

It consists of analysing and studying the current and future economic issues that may affect organisations in the execution of their strategies. This factor is associated with the economic cycles of the countries, the government's economic policies interest rates, inflation and income levels, tax regulations, economic crises, the segmentation into economic classes of the population and possible changes, macroeconomic factors specific to each country, the exchange rates or the level of inflation that must be taken into account for the definition of the economic objectives of the company and the unemployment rate (Mihailova, 2020; Yusop, 2018).

2.6.1.3 Social

Social factor represents the social activities, relations, individuals' attitudes and behaviours that can affect the internal relationships within organisations. These social practices should be controlled and monitored through effective leadership styles that can guide and direct their practices and performances through positive impact, motivation and inspiration. Different social dimensions are related to this factor including changes in income level, health awareness, changes in the employees' relations and team work, and changes in the population level.

2.6.1.4 Technological

This factor is more complex, since, although technological changes have existed, the speed with which they occur today is complex (Widya et al., 2018). This complexity is related to innovation, the appearance of new technologies related to the activity of the company that may cause some type of innovation, the emergence of disruptive technologies that change the rules in many sectors, the promotion of technological development that will lead the company to integrate these variables into its competitive strategy, changes in energy uses and consequences, new forms of production and distribution.

2.6.1.5 Legal

This factor refers to all those changes in the legal regulations related to organisations' projects, which can affect them positively or negatively. The legal context is associated with countries' laws and legislations, organisations' regulations, licenses, employment laws, intellectual property rights, occupational health and safety laws, and protected or regulated sectors.

2.6.1.6 Environmental

The environmental dimension is related to the external circumstances that occur and have associations with organisations. This factor can be associated with environmental protection laws, regulation on energy consumption and waste recycling concern about global warming, current and future ecological social awareness, and concern about pollution and climate change.

2.6.2 Competition

The economic, social and environmental changes of the organisational practices have witnessed considerable challenges related to the outbreak of Covid-19 pandemic and its multidimensional implications (Barouki et al., 2021). This pandemic needs to be considered more carefully in terms of how companies interact in the competitive scenario. At the same time, significant themes such as organisational development have emerged as factors that need to be integrated into this discussion. Both constructs "business competitiveness and organisational development" as strategic instruments for public and private managers' decision making (Danso et al., 2019), must be considered as fundamentally important in the contemporary practices to the new challenges brought by these discussions.

The incorporation of the concern with the integration of these constructs to the organisational management leads to the development of competences that can incur in gaining competitive advantages in the market in which the organisation is inserted. Considering, however, that the market structure is composed of different social actors, it is relevant that these actors also integrate the same concern into their practices. These actors, being those who can influence or be influenced by the organisation are so-called stakeholders (Danso et al., 2020) and can exert pressure on the organisation so that it adopts certain behaviours as a result of its interests, such as, for example , responses to environmental challenges, characteristic of the discussion. Operationally, companies have incorporated these discussions through corporate socio-environmental responsibility (Tres et al., 2022), presenting it as the answer to the challenges brought about by the need to align strategic practice with the new context of competition.

Considering the existence of a relationship between organisational responsibilities and competitiveness, organisations can acquire a competitive differential, given the dynamics of their market, by incorporating socio-environmental responsibility practices in their management (Dos Santos et al., 2019). From this perspective, it is understood that competitiveness is related to the ability to formulate and implement strategies, which can be reflected in organisational results when an organisation presents an unidentified differential in its competitors. In this way, it is perceived the need for sustainable development to be aligned with the organisational strategy so that it brings the competitive differential in question. Corroborating this idea, El-Aidie et al. (2021) argue that an organisation can be competitive by taking advantage of opportunities identified by the demands arising from the discussion on organisational responsibilities.

The short-term view and low knowledge on the subject of sustainable development on the part of managers are the main factors as an explanation for the fact that there is still limited agreement between the discourses of competitiveness. In this sense, not only managers, but also other actors involved in the competitive scenario would be losing market opportunities. Such actors, which may include competitors, suppliers, consumers, public authorities and civil society are also part of the market dynamics and, when considered together, form the so-called inter-organisational networks, characterised by the union between one or more companies and other organisations in the sense of cooperating to achieve better results in the market in which they operate.

2.6.3 Customers

Customers have been considered as one of the most significant determinants of organisational marketing strategies and operative practices. As an external factor, customers' needs should be considered and transformed into the organisational marketing processes that involve strategic goals and concentration of individual expectations. Although technology has brought benefits to the marketing environment, it also brought challenge as technology requires skills and sensitivity on the part of the project management and customers' needs (Başyazicioğlu et al., 2018; Barnwell et al., 2014).

Customers represent a significant external factor that needs to be considered in terms of its association with the core trends in the contemporary organisational practices (Taherdangkoo et al., 2019). To increase the positivity of the relationship between management practices and customers, companies seek to develop research, creating new organisational environments, new strategies, new ways of providing services, and creating mechanisms that allow customer retention, and may make them loyal to the brand or to the product and/or service offered. However, in this increasingly competitive and demanding market, and in the efforts and mechanisms presented by companies to achieve certain results, concerns begin to guide this process.

The customers as an external factor have become the essential actor in the business. According to this premise, the knowledge of the individual turns out to be an essential element in business development (Sivabagyam et al., 2018). In other words, the more the customer is known, the more the company's growth can be consolidated. This approach considers the role of the customers from anthropological, social, economic, administrative and communicational perspectives, to determine the way in which the characteristics of the client become a valuable input for the management of the organisation. In this context, at the managerial level, those responsible for the marketing departments must have data on its resources and capabilities, production capacity, objective quality of products, human resources, financial resources, organisational capacity, experience, and image within the market (Bae and Zamrudi, 2018). The external analysis has to provide information both on the macro environment and on aspects that are closer and have a direct influence on the organisation itself as customers, competitors or intermediaries. Once the external analysis has been carried out, the company will be in a position to determine which the closest threats are and which the opportunities that the environment offers them are. This stage of analysis opens the way to a next phase of the

marketing process and customers' analysis in which the company is already in a position to define its strategy. Companies must determine the criteria they use to segment their market, ensuring that the segments obtained are accessible, measurable and homogeneous with respect to the characteristics considered.

Companies have redirected their strategies from a traditional approach (directed towards the product), towards one with which a sustainable competitive advantage is achieved over time as it is oriented towards the relationship and generation of value to the client and customers (Haseeb et al., 2019). Therefore, it is important to analyse the processes that constitute the fundamental bases when undertaking improvement actions in any type of company. However, effective customer relationship management involves optimizing information management to enhance customer acquisition, penetration and portfolio maintenance strategies (Anshari et al., 2019). Customer management refers to the business strategy focused on knowing the client's needs, through the analysis of information supported by the application of information technologies (Nicuta et al., 2018). Therefore, the degree of satisfaction is increased, customer loyalty, it is a process with which the customer can be managed strategically. This process integrates different dimensions of the information related to the client. These are: customer contact operations, internal cross-office collaboration, external collaboration, customer representatives, sales performance management and market analysis. Customers' management allows the company to develop and manage the knowledge of its customers, in relation to contact and service processes, to identify changes in the market from which to generate value offer (Kis et al., 2019). However, before considering the adoption of a customers' management approach, it is necessary to assess if the organisation is already guided by a customers' management philosophy. If the company is customer-centric, and if its culture and history show that collective efforts have been made to create and support long-term customer relationships.

2.7 Management Mindset Approaches

Management mindset is associated with different approaches including interactive relationships with subordinates and human resource enhancement.

2.7.1 Interactive Relationships with Subordinates

Creating a direct communication channel between employees and management (and between company departments) enables the sharing of insights, knowledge and experiences, in addition to keeping the team well-informed and integrated. This alignment is fundamental as an

excellent strategy that reflects management mindset to communicate the company's results with subordinates in order to have an interactive relationship that can be positively reflected in the organisational performance.

Bradley et al. (2021) investigated the relationship between teamwork and growth mindset and team communication and their qualitative results revealed that groups reproduced positive reflection of team communication and cooperation, which was characterised by discussions of benefits and challenges that occur in working as teamwork. Neill (2018) emphasised that communication play a significant role in strategic relationships with subordinates at the internal communication level which can affect the current and potential employees. He stated that the effective communication characteristics can support organisational to the positive change and performance enhancement.

Over the years, human resource departments of the UAE organisations have undergone considerable changes, acquiring increasingly strategic roles based on openness and interactivity (Rees et al., 2007). The evolution of management approaches has brought several important consequences, requiring adaptation, flexibility, and training (Waxin and Bateman, 2016). Emotional intelligence is a fundamental requirement to manage adversity and reduce anxiety, factors that can hinder productivity. Thus, the leader needs to create an environment of dialogue and trust.

2.7.2 Human Resource Enhancement

Management mindset essentially is considered as the main driver for HR enhancement as that mentality mainly comes with a set of changes in society that come with the contemporaneity (Cooke, 2018). Globalisation, change in the production system, insertion of technologies, evolution of psychological knowledge and increased research in the area of organisational psychology are important changes for the formation of a new paradigm in HR.

The evolution of management has an important impact on the human resource of organisations. Constructive relationships between management and subordinates lead to a humanisation of relationships. Another important issue as Usheva (2016) emphasised is the valuing of teamwork, which has brought a new dynamic to the organisational management. Studies related to learning, as well as conditioning schemes that facilitate the process of knowledge assimilation, become necessary to support human resource practices.

The insertion and adoption of new technologies pose challenges for human resources in terms of how to transform management mindest and strategies into human resource interaction. The role of management mindset in this context simplifies communication, facilitates file sharing and storage, and makes bureaucratic processes more streamlined. However, computerised solutions also provide access to programs that are often major distractions for professionals. This requires corporate education procedures that help employees know how to deal with these resources. Additional important impact on human resources is the formation of a culture of innovation in companies (Maier et al., 2014; Gil-Marques and Moreno-Luzon, 2013). This trend is advantageous, but it involves the challenge of preserving the internal culture of the business.

Companies that seek to remain competitive must practice human capital management (Hossain and Roy, 2016). In addition, it is essential that they implement initiatives that facilitate the organisation of talent by objectives. In this way, employees have the opportunity to grow professionally and the old hierarchical models are put aside. HR departments rely on the use of management systems and digitisation. These programmes allow companies to define their strategy and objectives, increase individuals' efficiency and accelerate the achievement of results.

It is important to emphasise that the human resource constitutes a fundamental element that provides validity and use to the other resources. In this sense the personnel of the organisation can develop skills and competencies that allow the competitive advantage of the company to be sustained and lasting over time, thus making it possible to talk about the construction of an inimitable, unique and competitive human resource in the corporation. Human resource management is constituted in a "set of activities and concrete measures to operate the area and that have a direct effect on the behaviours, attitudes and aptitudes of individuals within the organisational scheme (Budhwar and Debrah, 2013).

The relationship between management mindset and human resources is more complicated to manage in terms of engaging the workforce, attracting talent to the enterprise, talent retention, training and development strategies, managing relationships and diversity in the workplace. There may also be referring to human barriers to the awareness level of management strategies, lack of commitment and conflicts, as well as problems with inadequate leadership (Adeniran, 2017). In order to avoid problems related to human resources, constructive strategies should be adopted such as establishing guidelines for work environment, clearly defining the roles and

responsibilities of individuals, as well as developing a sense of unity, trust, respect and cooperation.

2.8 Supportive Determinants of Management Mindset

Employees' relationships and public relations are considered as supportive determinants of management mindset.

2.8.1 Employees' Relationships

Employee relations represent a significant element of transforming management mindset strategies into cooperative and effective work environment. Employee relations can be considered as a study of relations between employees and employers, in order to find ways to resolve conflicts and help improve the organisation productivity, increasing the motivation and morale of individuals (Aboelmaged, 2018). This aspect is concerned with providing employees with information about the organisation's objectives so that they have a better understanding of management objectives and policies (Saeed et al., 2019). Through these relationships, employees can also be aware of their low performance and capabilities through effective relationships and mutual interactions which help them to correct performance. Employee relations also address employee complaints, concerns and inform employees of their rights and what to do in the event of discrimination.

The importance of employees' relationships as a social and organisational function is justified by the need for organisations to establish relationships or exchanges with other countries, organisations, groups and other individuals (Kang and Sung, 2017). Through these planned and effective relationships, organisations can be able to achieve their mission and achieve their goals.

According to Ferguson (2018), public relations as the general form of employees' internal relationships is a discipline whose research and literature have been increasingly consolidated since the 1980s and particularly in the 21st century, due to changing social, political and economic contexts. The debate about this profession has increased with: the expansion of the impact of employees' participation on the relationship between Industry and operational performance improvement (Tortorella et al., 2020). In addition, according to Lee et al. (2019), the employees' relationships have been associated with understanding the effects of employee and organisations relationships on employees' problematic perceptions and communicative behaviours.

2.8.2 Public Relations

The public relations function is the management of communication with different publics in organisations, with the purpose of creating an organisational identity and image that is well received by the general public opinion (Ferguson, 2018). According to Gilaninia et al. (2013), public relations can be defined as the management of communication between an organisation and its individuals. In a similar sense, public relations is a business function that contributes to the establishment and maintenance of lines of communication, understanding, acceptance and cooperation between the organisation and its employees (Lemon and Palenchar, 2018). It involves a series of programs designed to promote or protect the image of a company or its products in particular.

Al Saifi (2015) stated founds that potential consequences of organisational culture for the establishment, sharing of knowledge are elaborated, and there is an effect of organisational culture on different knowledge management operations and their associations with organisational performance. The activity of public relations consists of creating relationship management processes that promote the evolution of the company from the perspective of its organisational culture, as this highlights the need and importance of effective relationships, which involve understanding and commitment from the public and the organisation.

The employees relations function requires specific training to obtain the desired results and to the lead to decreasing the conflicts inherent within organisations in increasingly complex and demanding markets (Burke and Noumair, 2015). Without these trainings and human resource enhancement courses, understanding the rapid change and complexity of the information and communication society is compromised.

2.9 Management and the Technological Dimension

Contemporary trends in digital transformation have become more evident recently, such as the need for secure access to public and private networks (Sarker et al., 2018), competitive advantage in the age of Industry 4.0 (Adamik and Nowicki, 2018), endpoints, cloud backup, and a virtual work infrastructure that offers simplified management. Other digital transformation trends, on the other hand, are new to many managers, and they can be used to improve communication and productivity on a daily basis.

Management development, based on strategy, is a consistent basis for proactivity, innovation, creativity and technological assimilation capacity to reach business development (Ogbeibu et

al., 2020). In technological terms, management can be conceived as the administration of knowledge to stimulate a production process through the systematic introduction of technological innovations and not only seen as the acquisition of equipment, machinery and other instruments. Technology can be described in multiple ways. It is conceived as a simple means to carry out a task, where what is needed is to convert resources into products or services.

Technological dimension can be integrated with different practices associated with and resulted from management mindset. These practices can enhance product development process for industrial manufactured products (Ahmed et al., 2019). By considering the characteristics of management mindset, technological management can be interpreted in terms of the scientific development of techniques for viable options for solving problems such as planning, project control, research on innovation-based processes, management of scientific and technological information, among others.

Technological management is an interdisciplinary field that mixes knowledge, science and administration in order to plan, develop and implement technological solutions that tend to achieve the strategic and tactical objectives of an organisation (Su and Moaniba, 2017). If it is developed within a management framework that generates viability in the achievement of processes, it will allow an efficient interaction between technology, human resources and the knowledge obtained, which in turn leads to an increase in quality, productivity and competitiveness in the goods and services offered. In this sense, under the concept of technological management, science and technology are organised forms of knowledge that allow the application of new ways of assimilating processes, although each has a different objective (Vázquez-Ingelmo et al., 2019).

Science seeks the why of phenomena, while technology aims to know how to satisfy a need to generate a process, goods or service as a result based on management mindset and programming practices. Business organisations have a vital and intangible resource that allows them to develop their essential activity, which is the technological management of knowledge. As with data, information and knowledge, there are multiple definitions of technology management. Indeed, information is composed of organised data and facts, while knowledge consists of the construction of truths, beliefs, perspectives, concepts, judgments and expectations (Lankshear et al., 2013). In this sense, the involvement in which the aforementioned concepts are found in relation to technology and its management.

Information has specific directed essence and purposes within organisations. In oil and gas companies, Grant (2013) associated the development of knowledge management in the oil and gas industry with the technological means that can determine the development of operation, production and other managerial procedures. The information is used and placed in specific contexts and for particular procedures and settings. In this regard, knowledge is the combination of information, context and experience. Therefore, its procedural execution constitutes the application of technology through management.

Technological management refers to the competence to achieve the involvement of the concepts of data, information and knowledge and to assume a range of interests, perspectives and issues related to management approaches to improve the use of information in support of technology processes. According to Brownsword (2016), technological management is related to compatibility of the nature of rule of law and the way in which compliance with organisational regulations and policies. However, by proposing the applicability of a heuristic approach capable of encompassing all the elements, the technology management can be associated with two aspects. The first, as the application of scientific knowledge to obtain a practical result of science and management to the product, to the process, in terms of quality, effectiveness, value addition and competitiveness (García-Holgado et al., 2015) and, the second, as an organisational activity through which the necessary technology is defined and implemented to achieve the objectives and goals of the business due to managerial management.

A number of studies recognise technology management as the instrumental knowledge to discover new opportunities, when acquired, classified, preserved and exploited the objectives of the organisation (Barros et al., 2020; Fernandes, 2018). It is part of the quality that companies apply to their key business processes, since it depends on the management, knowledge and technology available for planning, production, distribution and delivery (Colledani et al., 2014).

Different studies have revealed that there is an association between management and technological advancement (Carayannis, 2018; Afroz et al., 2017). The huge investment of companies in the IT has been considerably increased (Pomaquero et al., 2019). Technological management requires knowing the needs of consumers to establish new scientific discoveries, new technologies, and new markets. Applying technology through its own management creates challenging competitive advantages due to the market is increasingly competitive (Garrido

Azevedo et al., 2017), demanding higher innovation (Zhang et al., 2017), and companies are organising their businesses focusing their efforts on creating higher value for their customers (Ryssel et al., 2014).

2.10 Information Management

Flett 2020 (2020) emphasised that information management has multidimensional associations within organisations, which can be reflected in a variety of practices including the rational information processes, intuitive information, and global leadership mindset. Voronkova et al. (2017) found that information management has a direct with industrial practices and their strategic development pathways. The authors suggested that the resource planning mechanisms employment should be implemented in large multi-industry companies to develop their management structure. Khuntia et al. (2018) considers the effective use of IT to be vital to the competitive strategy of organisations as well as their presence in the market. With the growing demand of the oil and gas market, organisations expect individuals to produce more, with higher quality and at lower cost (Elhuni and Ahmad, 2017). One of the ways to achieve these goals is to increase productivity, through investment in IT.

According to Hawash et al. (2019), the growing competitive advantages of oil and gas organisations, particularly in developing countries pose challenges in terms of the risk of traditional procedures of different managerial practices. In this regard, the authors stated that the successful implementation of Electronic Records Management System (ERMS) in these organisations can lead to an effective adoption of new technological approaches that can be positively reflected in the operations of these organisations.

Mazorodze and Buckley (2019) considers the growing importance of knowledge for organisations, with this many theories have emerged about how to manage knowledge and about how to manage knowledge-intensive organisations. Managing these new structures is fundamental importance for individuals involved in the process: customers, employees, shareholders and suppliers. Knowledge is an intangible asset in contemporary administrations. Therefore, the construction of this knowledge is vital, as well as its transformation into an instrument for the success and growth of organisations, without neglecting the creation and adaptation of existing structures and systems for this new business.

2.11 The Importance of Information for Organisations

The importance of information for organisations is undeniable and has increasingly been considered an important asset (Anggraeni, 2020). The difference between information and conventional tangible assets is its difficulty in management and evaluation. In this sense, in an increasingly competitive scenario, the search for information has provided alternatives for organisations to adapt to the management change created by the growing demand for new information technologies (Martins and Picoto, 2019).

In most companies, information technologies face different challenges as they could be excessive, inconsistent, distorted, outdated and dispersed. It is imperative that the information is present, but up-to-date, accurate and with quality. The efficiency in the use of information resource is measured by the relation between the cost of obtaining it and the value of the benefit derived from its use. Therefore, the costs of information are directly related to the costs of its collection, processing and distribution.

The effectiveness of information can be evaluated in terms of the information product, the use of information for organisational work, the use of information systems by users and their impact on the company, especially on organisational performance. Iyamu and Batyashe (2020) points out that information plays an indispensable role in enhancing the competitiveness, and business continuity. When information is well collected, manipulated and organised, knowledge about the business can be expanded, and with this, companies can benefit significantly. It also complements that information can be considered as one of the fundamental pillars or one of the basic premises for the efficient performance of any company.

Characteristics such as accuracy, consistency and high availability of information become essential for its survival (Agerstrand and Rudén, 2010). Companies are convinced of the importance of information for the management and decision-making process, however they do not seem to realise that the highest value of information lies in its use and not its generation.

It is important to select and organise information management and strategies in order to transform the gradual use in order to add value to organisations. Large companies spend massive amounts of money on IT to obtain information, but much of this money is invested in establishing a database with irrelevant or misused content (Stein, 2003). Brown and Harvey (2021) stated that the purpose of the information is to make the company reach its goals through the efficient and effective use of its human, material, technological and financial resources.

Therefore, even with all the technology available, it would also be necessary for companies to invest more resources in human resources, enabling them to make better use of the information and knowledge generated. Information can help companies to develop new products targeting new market needs, envision new investments and even increase their market share, and can help reduce the costs of their products in order to lead the company to greater competitiveness.

2.12 Information Technology Management

Contemporary management mindset approaches focus on technology management as a strategic tool to transform the organisational operations and processes into sufficient, effective procedures and mechanisms that can organisations in achieving their goals. Contrary to what usually occurs in many organisations, attention to the company's IT infrastructure must be constantly carried out in order to avoid problems. This proactivity and predictability are essential to anticipating IT incidents. Poor management results in reactive teams, leading to failures that compromise the continuity or performance of the business (Mntonintshi and Mtembu, 2018). These problems often result in customer dissatisfaction, lost time and money for equipment maintenance, and/or temporary systems inoperability. On the other hand, the correct monitoring of an infrastructure favours cost control, improves process efficiency and allows for a deep focus on the business. An excellent solution to achieve the best results is to use an IT infrastructure management software that has real-time monitoring (Sirkemaa, 2002).

IT infrastructure management is important to identify which processes are suitable for the company's environment, as well as defining the employees responsible for handling each of the possible incidents. After identification and proper documentation, processes can be automated with the appropriate software.

Over the years, information technology has become increasingly present in organisations and in the processes and tasks developed by its members, within this context; it is convenient to define IT. According to Olszak and Zurada (2015), IT is a set of methods and tools, mechanised or not, which aims to ensure the quality and timeliness of information within the business network. IT is a set of tools in search of the best treatment of information to maintain its flow at the right time for the best dynamics in the organisation.

According to Lightfoot et al (2011), the IT tools available for its proper use include hardware, software, database management systems and data communication technologies. In monitoring the evolution of information systems, it is possible to verify the support system through mobile

computing, which allows employees outside the physical domain of an organisation to communicate with organisations and with other individuals through wired or wireless networks.

Based on the information management function, it is then possible to raise the functions of a manager respecting the need for information in an organisational environment (Opoku, 2015). According to AlRawi et al. (2019), it is necessary for management to perform certain functions such as collecting information and monitoring the environment, making this collection in the external and internal environment of the organisation. Sharing information regarding the environment in which the organisation works, regarding trends, technological developments and market requirements, as well as sharing knowledge about the organisation through face-to-face meetings, meetings or through electronic systems.

Another function is to lead, motivate and guide employees, managers will deal with the formation of efficient teams by encouraging cooperation and conflict resolution, directing and motivating individuals in the organisation to achieve personal and organisational goals, managers will train, guide and assess the employees helping to develop their skills, knowledge, materials and equipment. The data must be characterised by high quality, and to be accurate, complete, timely, consistent, accessible, relevant and concise (Ghasemaghaei and Calic, 2019). They further claim that the main tools of document management systems are workflow software, auditing tools, scanners, scanning systems and databases.

IT projects involve complex processes whose knowledge are dispersed among several individuals and is based on experience. IT and its advances bring stronger links between departments in an organisation and can help to make the organisation more horizontal. The organisation no longer depends on physical proximity to coordinate its activities, work teams that perform various functions are able to communicate and collaborate electronically (Eisenberg and DiTomaso, 2021).

The new technologies arising from the advances in information technology allow for the electronic communication of richer and more complex information, in addition to removing limitations caused by time and distance. There is a special type of team that is the virtual, this type of team uses the contribution of technology to connect members who are geographically distant, but with a common work objective. Among the different ways organisations conduct their projects, given the intensification of IT presence, the development of remote actions by a

work team becomes common especially after the outbreak of Covid-19 pandemic (Galanti et al., 2021). Evidently, this establishes a new paradigm for coordinating actions and controlling goals and objectives.

2.13 Information Systems Continuance Theory

Information Systems Continuance Theory is chosen because it focuses on understanding the factors that influence the continued use of information systems, which is crucial for the sustainable implementation of IT systems in the UAE oil and gas sector. It helps in examining how management mindset, user satisfaction, and system success impact long-term adoption and effectiveness of technology systems. It is one of the key theories relevant to the present study is the information systems continuance theory (Mishra et al., 2023). This theory has gained popularity in explaining information systems management. The theory was originally developed based on the theory of expectation confirmation by Oliver (1980) and Bhattacherjee (2001). The information systems continuance theory posits that affective and cognitive beliefs have an influence on the individual or organisation's attempt to adopt and continue to use information systems. Conceptually different from the technology acceptance model (TAM), the information systems continuance theory looks at the post-adoption context and argues that the full implementation of technology systems depends on the level of satisfaction prior to the information systems usage, and the post-adoption expectations, and the overall usefulness of the information system (Mishra et al., 2023). TAM posits that perceived usefulness and perceived ease factors are the primary determinants of an individual's attitude towards using a new technology and ultimately their intention to use it.

The information systems continuance theory has been applied to different aspects of technology systems implementation within the organisations; these include the implementation of clinical information systems (Mellikeche et al., 2020), re-appointment systems, and enterprises resource management systems (Rezvani et al., 2017). The theory also permits expansion to incorporate other contextual factors and the incorporation of other theories to serve the model needs of different researchers (Rezvani et al., 2017). In this view, the information systems continuance theory has also been adopted to explain different organisational outcomes, such as service quality and customer satisfaction.

2.14 General Systems Theory to Information Systems

This theory is selected to provide a holistic view of the interrelated components within an organisation and how they affect the successful implementation of IT systems. This theory supports understanding the complexity of organisational structures, processes, and technology interactions in the UAE oil and gas sector, emphasizing the systemic approach to technology integration and management practices. The other theory that explains the underlying facets of the study is the general systems theory to information management systems. This theory was originally proposed in the 1960s and posits that information systems consist of key dimensions and parts that are often fragmented but required all parts to be managed coherently (Gregor, 2006). This theory explains information systems from an advanced way of thinking and explains that the value of the phenomena is lost if the fragmented pieces are isolated. The information systems are separated from its environment where it is implemented (Mora et al., 2003). As a system, the information system may be viewed as being of inter-related parts and as a system that interacts with its environment.

General Systems Theory is a conceptual framework that has been widely used in various fields, including management information systems, to study complex systems and their behaviour (Teece, 2018). It is based on the idea that a system is a set of interdependent and interconnected elements that work together to achieve a specific goal (Patton and McMahon, 2021). The theory provides a holistic perspective, viewing a system rather than focusing on individual parts. In the context of information systems, General Systems Theory has been applied to understand the complexity of IT systems and their implementation in organisations. Information systems have become an integral part of contemporary organisations, and their successful implementation is crucial for the organisation's efficiency and effectiveness. However, the implementation of IT systems is a complex process that involves various stakeholders, including management, users, and technical teams.

The supportive management mindset model is based on the principle of viewing the organisation as a system, with interdependent and interconnected elements (Sheffield et al., 2012). This model emphasizes the importance of the management's role in the successful implementation of IT systems. The management needs to have a supportive mindset that encourages collaboration, communication, and coordination among different stakeholders. This supportive mindset creates a conducive environment for all involved parties to work together towards the common goal of implementing an effective IT system. Moreover, the

model recognizes the importance of feedback and adaptation in the implementation process. It emphasizes the need for continuous evaluation and improvement of the system to ensure its effectiveness and meet the changing needs of the organisation. This mindset focuses on building a learning organisation that can adapt to the changing environment and needs of the organisation (Cseh et al., 2013).

The UAE oil and gas sector is a complex and dynamic environment that can benefit from adopting the supportive management mindset model for IT system implementation. Organisations in this sector can successfully navigate the challenges associated with IT system implementation by viewing the organisation as a whole system and fostering a collaborative and adaptive mindset. The model can also help in creating a culture of continuous improvement and innovation, which is crucial in such a competitive industry.

The UAE oil and gas sector has been facing increasing complexities and changes over time. This can be attributed to various factors such as technological advancements, market fluctuations, and regulatory changes (Al Zaabi and Zamri, 2022). These changes have created a dynamic environment in which organisations in the sector must operate to remain competitive. To navigate this constantly evolving environment, organisations in the UAE oil and gas sector can benefit from adopting the supportive management mindset model for IT system implementation.

2.15 Quality Management Theory

This theory is used to explore how quality standards and continuous improvement impact IT systems implementation. This theory is relevant because it highlights the importance of quality management in achieving system effectiveness, ensuring that the technology aligns with organizational goals and supports efficient operations, which is vital for the UAE oil and gas sector's technological advancement. The last theory of relevance to the present study is quality management theory. This theory explains that all aspects of quality management policymaking, quality management systems, and quality management methods are integrally linked (Jorgensen et al., 2006; Fonseca, 2015a; Fonseca, 2015b). In the context of the present study, this theory is justified on the grounds that quality systems play an important role in the actual and committed implementation of information systems.

2.16 The Need for Information Systems in the Oil and Gas industry

As the sector continues to experience challenges, oil and gas businesses and their management usually consider the need to cut cost and ensure efficient operations with the intention of maximising operating profits (Nainaar and Masson, 2018; Gunasekaran et al., 2017; Miseviciene et al., 2018). Nonetheless, reducing cost structures has not proven effective as businesses in this sector continue to experience losses and being hit hard by these internal and external challenges. With no clear end in sight regarding the end or direction of these external tensions, oil and gas companies are called up to implement technology projects to achieve competitive performance (Ramchurn et al., 2012; Brynjolfsson et al., 2017). Despite these assertions, oil and gas companies continue to hold back technology project implementation and implementation in the effort to reduce cost and ensure efficiency (Miseviciene et al., 2018). Leadership are often sceptical about technology systems implementation. This dilemma is one that continues to face oil and gas sector businesses and anchors a high level of uncertainty within the future of the industry.

2.17 Dynamic Capabilities

The term dynamics refers to the ability to renew competencies to achieve consistency with the changing business environment, and the term capabilities emphasises the key role of strategic management in adapting, integrating and reconfiguring internal and external functional skills, resources, and competencies to match the requirements of a changing environment (Rengkung, 2018). Having dynamic capabilities is relevant for companies that operate in environments characterised by the following conditions (Teece, 2009): (1) international trade exposed to opportunities and threats associated with rapid technological changes; (2) use of multiple inventions to create products or services that address customer needs; (3) well-developed global market for the exchange of goods and services, but poorly developed for the exchange of technological and managerial skills.

Dynamic capabilities term refers to the company's ability to dynamically adapt to market changes, especially in a context of accelerated technological change (Schoemaker et al., 2018). This adaptation takes place through the renewal of their competences through innovative responses, integration and reconfiguration of resources, in order to achieve new forms of competitive advantage. Dynamic capabilities are related to the organisational processes that use resources - specifically the processes that integrate, reconfigure, acquire or release resources - to adapt or create changes in the market.

Zollo and Winter (2002) proposed the definition of dynamic capabilities as a pattern of stable and learned collective activity through which the organisation systematically generates and modifies its organisational routines in order to improve its effectiveness. This definition differentiates between dynamic capabilities and operational capabilities and indicates that the existence of dynamic capabilities does not necessarily imply superior performance. Based on these definitions, Helfat et al. (2007, p. 4) create a new conceptualisation that defines dynamic capabilities as the ability of an organisation to purposefully create, extend or modify its resource base. In this definition, it can be highlighted that: resource base includes tangible and intangible assets and human resources, as well as capacities that the organisation controls or to which it has access (through partnerships, for example). It can be emphasised that the different definitions have as a common point the reconfiguration, modification or transformation of resources in the face of rapid changes in the environment.

The success of companies depends on discovering and developing opportunities; efficiently combine internal and external inventions; streamline technology transfer within and between firms; protect intellectual property; update good practices of business processes; invent new business models; make decisions without bias; protect against imitation and other forms of replication by rivals (Teece, 2009). In other words, the success of companies, in the domestic or foreign market, depends on having high levels of dynamic capabilities.

Dynamic capabilities can be defined as the company's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments. (Khan et al., 2020). Therefore, intrinsically it is related to the growth of the company, at the same time that they represent necessary strategic capabilities for the organisation of business processes and routines. In the field of strategic management, dynamic capabilities refer to the capabilities of companies to be able to adapt to perceived changes or, at the same time, change their environments intentionally, so that they successfully achieve the expected objectives (Jantunen et al., 2018).

Seeking competitive advantage, viability and growth in efficiency and effectiveness imposes changes in organisations in the way in which organisational management develops, reinforcing higher systemic responsibilities with the environment and society. Likewise, the adoption of environmental and/or sustainable practices is one of the ways in which companies can obtain competitive advantages (Soloducho-Pelc and Sulich, 2020). The contribution of the corporate

world to sustainable development is essential, and the companies that consider sustainable development might increase their competitive advantage over the market.

According to Ebadi et al. (2020), companies are not isolated from the natural and social environment, they are part of it and, therefore, they do not exempt themselves from responsibility for the use and development of natural and social resources, compared to others in terms of environmental disasters, pollution and, mainly, scarcity of natural resources. In this way, companies should not just assess the impact of their supply chains on their financial results, but seek to maintain a responsible and ethical interaction with their internal collaborators - through an organisational culture that consideration of the satisfaction of the officials, transparency policies in the selection, payment, job security as well as with its stakeholders.

The digital transformation has been considered one of the most significant challenges that companies currently face, with growing discussions in academic research and contemporary practices and dynamic capabilities. The literature highlights the need to develop new strategies and capabilities for digital transformation and suggests that companies inserted in an environment marked by rapid and deep transformations manage to better develop their dynamic capabilities, building and renewing skills to respond to changes.

In the literature context, different studies aimed to contribute to the literature to include the perspective of dynamic capabilities for digital transformation, analysing different situational transformations to the new and contemporary practices (Matarazzo et al., 2020). In this regard, theoretical models were developed and some propositions were suggested, based on the literature, to assess the phenomenon. Subsequently, multiple case studies were carried out in different studies.

2.17.1 Dynamic Capabilities Development

To understand the development of IT dynamic capabilities based on the existing literature, the concept of dynamic capabilities and its approaches has been widely considered as essential factor in increasing individuals and organisational performance (Eikelenboom and de Jong, 2019). In this context, organisations seek to acquire and maintain competitive advantage through promoting and enhancing their individuals' capabilities in IT applications (Ferreira et al., 2020).

Dynamic capabilities seek to fill this gap and lead to an understanding of competitive advantage beyond resources, including the routine variable as a relevant element in the process, in addition to the combination of environmental influences that drive organisational strategies (Fainshmidt et al., 2019). The term "dynamic" refers to the ability to renew skills in order to achieve congruence with the changing business environment, for that, innovative responses are needed as market time is relevant as well as the rate of technological change and the difficulty of understanding the nature of future competitions.

The term capability emphasises the role of strategic management in properly adapting, integrating and reconfiguring the organisation's internal and external skills, as well as its resources and functional competencies to meet the demands of a changing environment (Tarigan et al., 2021). Dynamic capabilities result from the combination of management, learning and process reconfiguration processes (Jiang et al., 2020). Organisation must carefully analyse the environment to detect changes, spread knowledge and adjust according to what will generate competitive advantage in its environment.

Capability enhancement should be planned and designed in a way that ensures exploiting the organisational capabilities which allow the awareness of environmental changes, in addition to adapting its activities according to information systems and management control (Elbashir et al., 2021). The capability enhancement processes is a result of the organisational trajectory, considering the technologies acquired and produced, the products created, the established prices, the partnerships made and how all these elements contributed to the organisation's positioning. Therefore, the set of these elements comprise the dynamic capabilities that, according to Salvato and Vassolo (2018), refer to organisation’s process that uses specific resources for integration, reconfiguration, acquisition and availability of resources to match and create a change in the market. Dynamic capabilities, therefore, are the organisational and strategic routines of companies to reach new resource configurations.

2.17.2 Dynamic Capabilities in the Organisational Context

In the organisational context, Khan et al. (2021) split dynamic capabilities into three main elements (Sensing, Seizing and Reconfiguring): 1) ability to detect opportunities and threats; 2) ability to seize opportunities and 3) ability to remain competitive. The processes of identifying and modelling opportunities require constant mapping by the organisation through the choice and exploration of technologies. In addition, efforts should be directed towards the

development of products, processes or services that maintain and generate a competitive advantage. According to Ferreira (2020), this process, in addition to maintaining a competitive advantage, allows the development of products and processes to create viable business models.

Ability to detect opportunities and threats in a highly dynamic market, the difficulty in understanding how it works makes companies develop mechanisms to discern the environment and create new methods through learning, which, in turn, requires investments in research to complement organisational activities. However, these issues are supported by the opportunity perceived by managers through differentiated information, and by new exogenous or endogenous knowledge, which must be constantly explored by organisations through new technologies and new markets (Michaelis et al., 2021). In this sense, the capabilities of individuals range from individual cognitive abilities to organisational research and development processes (Salvato and Vassolo, 2018).

A relevant issue when discussing opportunities and threats is regarding access to information. Schoemaker et al. (2018) state that the individual's capabilities are directly associated with the amount of information existing in their context, which allows for higher progress in the search for solutions. This requires specific knowledge about the environment, in addition to quick decision-making based on the detected information. This activity requires learning, interpretation and creation of effective approaches to be adopted and implemented. The activities mentioned must be rooted in the organisational culture. A point that is relevant in this research is related to the decentralisation of companies.

The dynamic capabilities represent the moderator in the context of this research. In dynamic markets, where the competitive environment is constantly changing, dynamic capabilities allow the company to create sustainable competitive advantage by integrating, building and reconfiguring internal and external competences in order to take into account the rapidly changing environment (Karman and Savanevičienė, 2020).

The visible result of dynamic capabilities is the transformation of existing resources into new skills, and better adjusted to the market. Dynamic capabilities allow the organisation to renew and reconfigure itself in a creative approach (Ferreira et al., 2020) of existing resources and combination of new resources. Examples of these processes can be routines of product development, alliance and acquisition management capabilities, resource allocation routines and knowledge transfer.

Dynamic capabilities differ from operational (or functional) capacities, even though both have in common the fact that they are constituted by routines, defined there as repetitive patterns of activity. An operational capability can be defined as a high-level routine (or set of routines) that, together with its inputs, provides the organisation's management a set of options to produce outputs of a certain type (Lopez Hernandez et al., 2018). Therefore, operational capability is directly associated with the production of a good or service.

2.17.3 Structure of Dynamic Capabilities

Teece (2016) emphasises that an organisational capability is an inherent resource in individuals which emerges from learning, combining and acquiring assets that are used to produce positive results. As Teece points out, the understanding of dynamic capabilities can be improved by comparing them with ordinary capabilities. Ordinary capabilities serve to perform the activities necessary to achieve objectives, while dynamic capabilities serve to upgrade ordinary capabilities and direct common activities toward more beneficial efforts.

2.17.4 Ordinary Capacities

Winter (2003) defines ordinary or "zero-level" capabilities, as those that allow a firm to earn a living in the short term, and dynamic capabilities as those that operate to extend, modify, or create ordinary capabilities, allowing the development of a hierarchy of higher-order capabilities. From another perspective, ordinary capacities allow a degree of sufficiency in the performance of a well-defined task, and are made up of a combination of (1) expert personnel, including independent contractors; (2) facilities and equipment; (3) processes and routines, including any technical support manuals and; (4) the administrative coordination necessary to do the job.

Ordinary capabilities are best described as enabling technical efficiency and obtaining task performed right in core governance, administrative, and business operations functions, and can be considered strong when the company has achieved best practices and its employee base includes to the right individuals (Teece, 2014). These capabilities can be measured by comparing a specific task, such as labour productivity or inventory returns, to industry best practices (Teece, 2016). But much of the knowledge behind these capabilities can be acquired from consultants or through investment in training. This makes them capabilities that are easy to acquire and imitate, meaning that their presence at high levels is not important in determining whether the strategy is on the right track (Teece, 2014; 2016).

2.17.5 Dynamic Transforming Capability

This ability implies continuous renewal, continuously maintaining alignment and realignment of the specific tangible and intangible assets of the firm (Teece, 2016). According to Teece (2009), sustained and profitable growth depends on the ability to recombine and reconfigure assets and organisational structures as the company grows and markets and technologies change. This reconfiguration is necessary to maintain evolutionary fitness and try to escape unfavourable path dependencies.

As Teece (2016) stated that the ability to transform requires decision makers to be able to spread the strategic vision at all levels of the organisation, in a way that allows new strategies to be executed effectively and periodically consider (or reconsider) the adjustment of the organisation with the opportunity to be exploited. Therefore, transformation requires not only leadership skills, but also workforce commitment so that decision makers are able to weather resistance without affecting morale, thus gaining support among stakeholders.

2.17.6 IT Capabilities

IT Capabilities can be defined as the ability to mobilise and deploy IT-based resources in combination with other organisational capabilities and resources (Chen et al., 2014). Information is power in the case of organisations, industrialisation and strategic management brought with it an enormous amount of data that in the strict sense is humanly impossible to handle. In a world increasingly governed by information, having the correct information, just in time and in an adequate context is a key aspect in organisations, especially when they compete in highly technological sectors.

It is necessary to emphasise that computing is not just devices and integrated circuits, but a whole set of electronic and intangible devices (strategy, good practices, software) that allow information to be exchanged through a protocol. In addition, organisations have as a characteristic a high ownership of intangible assets, which brings higher accounting risks, because the destruction of their wealth can be faster (Saunders and Brynjolfsson, 2016).

IT resources can be considered as resources that allow generating a sustainable competitive advantage due to a certain period of time, because despite the different criticisms, it is empirically demonstrated the value of technology and its application in the field of IT. Consequently, under this premise and in accordance with other research, it can be estimated

that it is the most appropriate theory, considering that it has the necessary elements to evaluate the strategic value of IT resources and relate them to organisational performance.

The IT quality has multidimensional benefits within organisations due to different advantages that can be derived from integrating IT systems into many tasks and procedures. Currently there are growing IT systems and applications in different areas, mainly for information systems in companies. Dynamic capabilities of the IT systems have been associated with IT system implementation in different dimensions. In this regard, Junior et al. (2018) focused on the IT quality for development purposes. They found that implementation of specific IT practices can affect the effectiveness and the quality of the IT can significantly enhance the organisational development.

Companies seek to increase the quality of IT capabilities to be positively reflected in different management and operational processes. In this context, it is necessary that the IT systems are well designed and have their development with precepts of quality and productivity. The competitiveness in the IT practices should necessarily reach standards and norms that regulate the quality and productivity of its products and services (Mauerhoefer et al., 2017).

The quality of IT systems is paramount importance as it helps to minimise the expected errors and if errors do occur it has the ability to be detected faster and their correction will occur with more precision and accuracy. The purpose of carrying out a series of tests in the IT systems is to detect the occurrence of errors prevention. IT quality can contain functional requirements, explicitly stated performances, clearly documented development standards.

According to Zahra et al. (2019), IT capability has a significant impact on organisational performance as it can be associated with the level of organisational values, organisational performance and IT capability. It is a set of systems that transmit, manipulate, analyse or use information through digital mans as a complementary tool to information processing and which are necessary in communication tasks and in customer decision support. This definition is focused on computer equipment only.

IT is a complex dimension in terms of the appropriate capabilities required to perform organisational tasks to be in accordance with management mindset. It involves the ability to deal effectively with computers, software, public and private electronic communication networks, digital telecommunications services network, data transmission protocols and other services. It is the term that encompasses all technology used to create, store, exchange and use

information in its various formats (corporate data, audio, images, video, multimedia presentations and other media, including those that have not yet been created (Rajaraman, 2018).

IT has become the generally accepted term to encompass the rapidly expanding spectrum of equipment (computers, data storage devices, networks and communication devices), applications and services such as end-user computing, user service, application development used by organisations to provide data, information and knowledge. These are technological and computational resources for the generation and use of information. It is a set of components technologies, usually organised in computer-based information systems based on computing and communication to collect, process, store, transmit and use information.

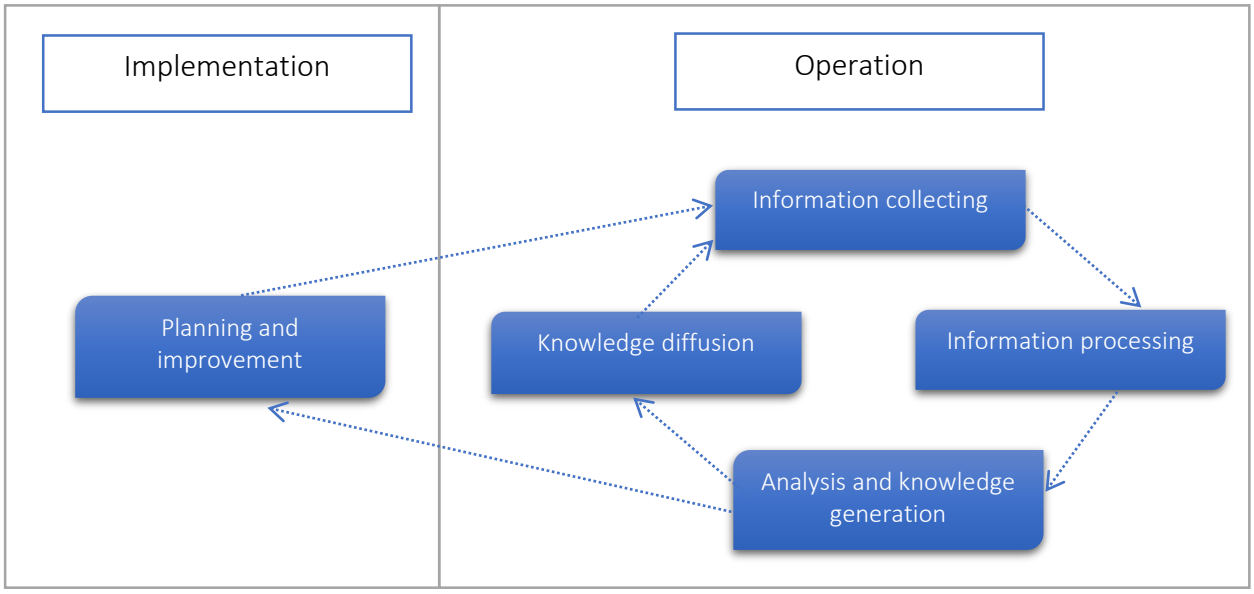
There is a broader concept of IT, including the use of "hardware" and "software", telecommunications, automation, multimedia resources and all other resources and personnel dedicated to IT, whether centralised or decentralised, without neglecting to consider information systems, services, businesses, users and the complex relationships involved (Sharma and Sharma, 2013). IT is all technological and computational resources for collecting, processing, storing and transmitting data necessary for the generation of information and its use.

2.18 IT Quality Standards Implementation to Support Information Systems Implementation

The quality management theory provides a vivid explanation of how information systems may be effectively implemented to realise such systems (Hickman and Silva, 2018). Implementing information systems without proper implementation of quality standards to support systems implementation may lead to futile results. It must be added that beyond the certifications, Quality Management Systems (QMS) have gained roots in global enterprises to improve overall company performance (Kunz and Stephanow, 2017; Sarafrazi et al., 2016). The connection between QMS and performance must, therefore, be clearly highlighted (Sarafrazi et al., 2016). Despite the need to support information systems with IT systems implementation, the lack of continuity or management dedication to quality management continues performance has been argued as one of the main challenges that inhibit technology project successes (Al Ibrahim, 2014).

As seen in Figure 2, IT systems operations and implementation are linked, and quality management systems help ensure "*proper integration [of IT systems] into the organisation and guarantee that obtained results support the strategic decisions*" (Lopez-Ortega, 2004).

Figure 2.1 IT Systems Operations and Implementation



Source: Lopez-Ortega (2004)

2.18.1 Unfavourable Management Mindset in Technology Systems Implementation and Quality Implementation

Ultimately, top management is often faced with the dilemma of quality assurance in key aspects of organisations such as technology projects. According to Liu and Chua (2019), top management support is the single most important factor in technology project implementation. This is based on the assertion that their approval is essential for the implementation of information systems. Management often seeks to be convinced beyond any reasonable doubt that such projects hold the needed potential to boost performance or competitiveness which is not easily proven, especially in high-risk projects (Sadeh et al., 2019). Given the lack of management commitment of technology project implementation and information technology (IT) quality standards implementation, technology projects' embedded benefits are severely jeopardised (Nainaar and Masson, 2018; Gunasekaran et al., 2017; Miseviciene et al., 2018).

2.18.2 IT Quality Standards Implementation

IT quality refers to the extent to which information technology systems, processes, and services meet established standards, user requirements, and organisational objectives in terms of reliability, efficiency, security, usability, and adaptability (Gorla et al., 2010). It encompasses

the alignment of IT functions with internationally recognised quality frameworks (such as ISO/IEC 25010 and ISO/IEC 27001) to ensure consistency, effectiveness, and value delivery to stakeholders (Estdale and Georgiadou, 2018). The quality has been considered as a competitive advantage for organisations which is related to many technological practices including Machine learning (ML) platforms, Artificial intelligence (AI) optimised hardware, and decision management (Zonnenshain and Kenett, 2020). To guarantee this quality, guidelines are used to measure its quality control, in addition to prolonging the life of the IT systems. The correlation between engagement, quality assurance, quality control, and software testing is often complicated in the IT systems. Quality assurance is the set of tasks that serve as support to provide adequate security where each of the processes created is permanently optimised, trying to ensure that the products meet the requirements and specifications of the product or software (Rejeb et al., 2019). It is also necessary that meet the ideal conditions for use.

Quality management is a set of actions and tools that aim to prevent possible errors or deviations in the production process and in the products or services obtained through it (Tigre et al., 2019). Quality management brings together a set of actions and procedures that seek to guarantee the quality, not of the products themselves, but of the process for which these products are obtained. Currently, there is no product that is not described as high quality because organisations know this is a specification that customers are looking for. Quality is not just about having a finished product efficiently, what is behind it all is total quality management. The IT quality is defined as a set of characteristics or factors that determine the level of efficiency of the information systems in use, in relation to meeting the expectations of its users (Lee et al., 2018). Quality software is one that perfectly meets, reliably, accessible, securely and on time to the different needs of the client.

Due to the growing investment in IT quality, a number of recent approaches have been emerged, adopted and applied in organisations including Fintech (Lee and Shiz, 2018), performance of telecommunication companies (Sobhani et al., 2021) and management innovation (Cai, 2021). Analysing the standard methodologies is widely implemented not only in IT, but also in other sectors such as ISO standards (promoting the development of standardisation). Behind these methodologies, many quality enhancement organisations have established specific standards of quality enhancement such as the ISO and BSI (Song and Wang, 2018). These leading bodies aim not only to establish quality standards, but also to

promote their essential applicability, through the knowledge acquired by the application of these techniques in the real world. However, companies have increasingly focused on the practice of hiring qualified and certified individuals who can comply with these standards and to transform the benefits derived from such bodies into beneficial practices.

With the dissemination of the use of IT, its importance in helping to increase the competitiveness of organisations can be noticed in the most competitive organisations. One of the areas most related to this assistance is the area of support services. By becoming an important area within organisations, it is also necessary to increase its performance and, therefore, it is essential to use management practices to align it with the organisations' strategies. The most used management practices are COBIT and ITIL (Suryawan, 2018; Moeller, 2013). In order to contribute to filling the gap in the assessment of the quality of IT support services, some studies presented models to assess and classify the quality of IT support services in light of relevant dimensions and criteria, based on assessment models of quality in services most used in scientific literature and in IT service management practices.

Numerous studies have been seeking to assess the quality of services according to the customer's perception, but the literature has reference to studies on the assessment of the quality of information technology services (Prakash, 2018), mainly with its subdivisions in support services, software development and/or networks. There is also a lack of reference to works that define the dimensions to be evaluated, the assessment itself and the attribution of importance of these services from the perspective of users, as well as the classification of services for a possible contextualization aimed at identifying weaknesses and potential to provide actions to be taken to continuously improve the quality of the IT services. IT and data processing, information systems, software engineering, information technology and the set of hardware and software involve human and administrative aspects (Hoda et al., 2018).

2.18.3 IT Working Standards

It is a set of rules that products, procedures or investigations that claim to be compatible with the same product must comply with (Masters, 2020). The standards offer many benefits, reducing the differences between the products and generating an environment of stability, maturity and quality for the benefit of consumers and investors. The efforts that are being made and those already made have pursued different objectives that range from the definition of API (Application Programming Interface), the formats of the files with the biometric parameter

information, the encryption of the biometric information, and the interaction between different biometric devices.

2.18.4 The Role of Information Technology and its Importance

Information technology has an important role in the organisational environment, as it offers tools that help increase competitiveness by changing variables such as cost, productivity, quality, flexibility. IT has proven to be an indispensable tool for organisational survival, as it provides higher speed to internal processes and allows managers to have a broad knowledge/relationship with their influence environment.

According to Prajogo and Olhager (2012), the adoption of IT enables individuals to perform more in a shorter amount of time, so that efficiency results in time savings that, in turn, can be reinvested in personal effectiveness. IT is generated and explained due to individuals' knowledge that has been increasingly used as an instrument for the most diverse purposes. It is used as a communication and business management tool, so that organisations and people remain operative and competitive in the markets in which they operate. IT has evolved rapidly and the perception that information and communication technology cannot be dissociated from any activity is increasingly intense, as an important instrument to support the incorporation of knowledge as the main value aggregator to products, processes and services delivered by organisations to their customers

2.18.5 Green Information Technology

One of the most important and pervasive technologies in today's world is the green IT (Bai and Sarkis, 2013). Computers and all kinds of communication and information devices occupy a large share of resources and energy of communities, which from this perspective is an important problem for communities and organisations to have an environmentally friendly development. Green information technology in this context is an effort to solve this problem to try to introduce this technology as a solution and on the other hand to help organisations towards economic, social and environmental factors (Dao et al., 2011).

Green information technology helps in making information technology decisions with all the green technology, with strict technological measures and soft instructions and management measures. Experts have presented green information technology as a technical solution to support the goals of environmentally friendly business (Dastbaz et al., 2015). Examining the green information technology as one of the components of organisational development is

crucial (Anthony et al., 2019). In this regard, the experience of developing countries shows that small and medium enterprises can play a pivotal role in economic and industrial development for various reasons.

Cotemporary organisations have become more aware of the necessity of creating green information technologies that can be resulted in prosperity and poverty alleviation due to the collection of financial resources at the national level. It also facilitates the participation of groups who are less able to work in the economy of their country. In addition, the oil and gas sector can play an important role in realising the privatisation process due to its ability to attract surplus labour (Waterworth Bradshaw, 2018). Therefore, one of the ways to achieve development is to use the capability of small and medium industries for the UAE (Ahmad et al., 2018).

An organisation that seeks to be sustainable must meet current needs without compromising the ability of future four generations to meet their own needs. This widely accepted definition strikes a balance between short-term decision-making and long-term aspiration in relation to small and medium-sized enterprises, and corporate sustainable. There are many reasons to believe that this trend will continue and will lead in an unpredictable and unimaginable direction. The definition of small and medium industries is different in different countries and depends on the prevailing economic and industrial conditions. Some of the criteria used to determine the type of industry (small, medium and large) are: number of employees, capital, total assets, sales volume and production capacity.

2.19 Social, Environmental and Economic Dimensions

Organisational ability (social, environmental and economic) must be related in an integrated way to achieve sustainable development (Epstein et al., 2018). From the integration between social and economic development, social inclusion is promoted, understood as the engagement of the population (or organisation) in favour of the collective. As the interrelationship between economic development and environmental preservation takes place, the concept of eco-efficiency emerges (Ren et al., 2018).

Social and environmental justice, on the other hand, occurs when the organisation manages to simultaneously integrate social development with natural capital, and begins to deal with the equalisation of the distribution of benefits and constraints imposed by environmental legislation, or by environmental problems, between different social groups (Pezzullo, 2007).

Schaltegger and Wagner (2017) argue that the social, environmental and economic framework captures the essence of organisational development by measuring the impact of companies' operational activities. When the result is positive, it reflects an increase in the company's value, in terms of profitability and contribution to shareholder wealth, as well as in terms of its social, human and environmental capital.

Kaplan-Hallam and Bennett (2018) argue that environmental management practices are conceptualised as an adaptive and dynamic process in which productive strategies and activities are guided in accordance with the corporation's environmental policy, through constant assessment of its interaction with the environment. In this context, academic literature investigates the relationship between environmental and financial performance. As disseminated by the World Business Council for Sustainable Development (wbcsd.org, 2021), eco-efficiency is a management philosophy that encourages business to search for environmental improvements and it is achieved through the provision of goods and/or services at competitive prices, which satisfy the needs of consumers and, at the same time, provide quality of life and reduce the environmental impact as well as the consumption of natural resources.

The incorporation of discussions that surround organisational development and sustainability in the main academic and business debates is increasingly evident (Feil and Schreiber, 2017). The prominence of oil and gas requirements during the technological development has been increased in the last decades. Organisations focus their orientations to new technological development approaches, attitudes and social norms into transformed practices.

2.19.1 Economic Diversification

Sustainable development, in essence, is the process of change in the exploitation of resources, the direction of investments, the direction of technological development, and institutional change, all in coordination and enhancement of all current and future capabilities to meet human needs and aspirations (Silvestre and Ţîrcă, 2019). Economic diversification is considered from the perspective of sustainable development as a guarantee of economic stability in the long term. It is the process of expanding the scope of economic activities through the production and distribution of goods and services and it increases and enhances the stability of economies by diversifying their economic base. It also to enhance the economy's ability to adapt and ensure long-term prospects in the face of the depletion of basic natural resources and

economic fluctuations under the pressure of competition, especially in the stage of contemporary globalisation.

Economic diversification has the tendency to meet the basic needs of sustainable development (Feliciano, 2019). Economic diversification works to expand the ability of the environment to meet individuals' needs through improved technology, social organisation, and diversification of areas of economic activity rather than on the exploitation of one aspect of the natural resources threatened with extinction and environmental degradation. The diversification establishes an economy based on abundance and securing justice within and between generations.

The Arab oil-producing and exporting countries depend in a large scale on a single resource that dominates the entire course of the economy (Elbanna and Abdel-Maksoud, 2020). Oil and gas, with their current revenues, represent the main element of economy to many Arab countries. The problem is that this is the main and almost the only element of revenues on which the financing of current expenditures depends, and there are many factors, some internal and some external, overlapping in it, and the external factors are stronger in determining the volume of production and prices of oil, and thus the determination of revenues from this resource.

2.19.2 Using Oil and Gas Revenues to Achieve Economic Diversification

The Arab oil economies suffer from the deterioration of the traditional sector in favour of the primary (extractive) commodity sector and the non-traded commodity sector, with the availability of physical capital and large oil resources that generate income and foreign currencies that are supposed to achieve economic diversification. However, the huge oil revenues of those countries, which resulted from the high and excessive production rates, led to the natural expansion of consumption, as the society in most of these countries turned into an excessive consumer society with all the associated negatives, damages and risks to production structures (Devarajan, 2019). The importance of raising the efficiency of human energy and its production, which led to a decrease in labour productivity in some countries, and the cost, quality and size of the produced goods reduced, which weakened their ability to compete with imported goods and services.

The role of the human element in the process of diversifying the production structure, and with the passage of oil prices and its export revenues during the past four decades with several

fluctuations, the Arab oil countries have faced an important task, which is how to use the increasing oil revenues to strengthen and diversify the national economy in a way that achieves the shortest return (Shahbaz et al., 2019). However, a reading of the economic data and the policies adopted in these countries leads to a set of conclusions, which indicate that the process of using oil revenues in consumer and investment spending is an obvious trend.

Arab oil countries should consider the need for organisational development of their incomes that can be represented in alternative future resources. GCC (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE)) countries are characterised by the reliance on exporting of oil and gas as the primary resource (Zaidan et al., 2019). In this context, adopting new strategies and resources is crucial in order to establish alternative strategic solutions such as increasing the effectiveness of investment and industry development. Therefore, it can be stated that the success of these countries in using oil revenues does not depend on the size of those revenues as much as it depends on the existing institutions that can control public spending and associate its use to the development of the manufacturing sector, which has the ability to move the rest of the sectors. KSA, UAE and Kuwait were ranked in the world's top 10 oil exporters with $133.6 billion, $49.3 billion and $38.2 billion, respectively (OPEC, 2018). These investments were distributed in the form of economic diversification as a strategic option to achieve sustainable development in the oil countries. These countries also established investment or hedging funds aimed at isolating the impact of fluctuations in oil revenues from the local economy.

2.20 The Significance of Software Systems and Operations in Oil and Gas Sector

Software systems and operations are essential to the UAE oil and gas sector as they provide the data and information needed to make informed decisions on production, safety, and environmental sustainability (Al-Ali et al., 2018). Software systems provide the tools to monitor and analyse the data, while operations allow for efficient and effective execution of production and logistics processes. Software systems and operations are critical for tracking, analysing, and optimising the operations of the sector, as well as for ensuring safety and compliance with government regulations. Additionally, software systems and operations are necessary for forecasting and managing risk, ensuring reliable and secure access to data, and improving the overall efficiency and effectiveness of the sector.

2.20.1 Exploration, Geology and Seismic Software

The UAE oil and gas sector is heavily reliant on exploration, geology, and seismic software for exploration and production (Thurley et al., 2022). These software tools are used to analyse data from seismic techniques, as well as to design and analyse oil and gas wells. An example of most widely used exploration, geology, and seismic software used in the oil and gas sector is Petrel from Schlumberger (Mohan et al., 2020). This software is used to analyse seismic data, to create geological models, and to design and analyse oil and gas wells. Other examples of exploration geology and seismic software include Petrel, Kingdom, Open Source Geophysical Toolbox (OSGEO), and Landmark Seisworks Other popular software includes Kingdom Suite from IHS Markit, GeoGraphix from Halliburton, and Petrosys from Petro-Canada (Coetzee et al., 2020). These software packages provide a comprehensive suite of tools for exploration and production, and allow oil and gas companies to analyse and interpret data quickly and accurately. The software can be used to identify potential oil and gas reserves, as well as to optimise production and reduce costs. They are essential tools for any oil and gas company operating in the UAE.

Exploration geology and seismic software are used to analyse geological and seismic data in the oil and gas industry (Huang et al., 2017). These software packages provide tools to analyse, interpret, and visualize geological and seismic data. These software packages can be used to identify geological features such as faults, stratigraphic layers, and structures, and to analyse seismic data to identify subsurface structures and deposits of hydrocarbons.

2.20.2 Production and Engineering Software in the UAE Oil and Gas Sector

The UAE oil and gas sector has embraced the use of technological solutions, offering software solutions that facilitate the production and engineering processes (Shqairat and Sundarakani, 2018). These solutions can help to improve the efficiency, safety and cost-effectiveness of the industry. Some of the software solutions available in this sector include oil and gas production software which provides solutions of data gathering, modelling, and analysis to optimize production operations. These software solutions are used to monitor production levels, assess production potential, and identify trends and areas of improvement.

Petroleum Engineering is another software which is used to design drilling plans, assess reservoir characteristics, and analyse production data (Davarpanah et al., 2018). It can also be used to optimize production operations, identify potential problems, and reduce environmental

risks. Reservoir Simulation Software is used to simulate the flow of fluids in reservoirs and calculate the properties of the fluids. It is used to assess production potential, optimise production operations, and identify areas of potential improvement. Geoscience Software is used to analyse geological data and develop 3D images of the subsurface. It can be used to study subsurface rock formations and identify areas of potential oil and gas production (Buckley et al., 2019). Asset Management Software is used to manage and monitor the performance of assets in the oil and gas sector. It helps to streamline operations, identify areas of improvement, and

2.20.3 ERP (Enterprise Resource Planning) Software

ERP (Enterprise Resource Planning) software is a suite of integrated applications that automate and streamline business processes (Alsharari, 2022). It is designed to help companies manage their day-to-day operations, such as inventory management, financial accounting, human resources, customer relationship management (CRM), and supply chain management (Aljawarneh and Al-Omari, 2018). By automating and integrating these processes, ERP systems can provide organisations with more accurate, up-to-date information and enable them to make better decisions. Moreover, ERP systems can help reduce costs and improve operational efficiency.

ERP software is an important tool for the oil and gas sector in the UAE, as it helps to manage and unify the various aspects of the business. ERP solutions can provide an integrated view of the entire value chain, from exploration and production, to refining and distribution, to retail sales and customer service (Nkasu, 2020). ERP systems also allow for better decision making and resource optimisation, as well as providing real-time visibility into the financial performance of the business. Additionally, ERP solutions deliver insights into customer relationships, supply chain management and operations, and enable the oil and gas sector to collaborate and share information across the organisation (Nkasu et al., 2022).

2.21 Summary of the chapter

This chapter provides a comprehensive review of the literature relevant to the study of supportive management mindsets for IT system implementation within the context of the UAE oil and gas sector. The literature review is structured to explore the multifaceted nature of management mindsets and their influence on organisational performance, particularly in the adoption and implementation of information systems.

The chapter provided a critical discussion and an exploration of the concept of management mindset, outlining its background and global perspectives, before delving into the internal and external factors that shape this mindset. Internal factors, including IT competences, systems operations, and leadership, are pivotal to understanding how management approaches IT systems implementation. External influences such as PESTLE (Political, Economic, Social, Technological, Legal, and Environmental) analysis, competition, and customer expectations further contextualize how management must adapt to a dynamic and evolving environment.

Various management approaches, such as fostering interactive relationships with subordinates and enhancing human resources, are discussed for their role in cultivating a supportive mindset. The review also investigates the intersection of management and technology, with a focus on information management and the critical role of information technology in achieving organisational objectives. Theoretical frameworks, including Information Systems Continuance Theory, General Systems Theory, and Quality Management Theory, are considered to provide a conceptual foundation for understanding the dynamics between management and IT systems.

The chapter addresses the specific needs of the oil and gas industry, particularly in the UAE, where dynamic capabilities, IT quality standards, and the economic, social, and environmental dimensions of the sector are crucial for sustainable growth. The significance of software systems, such as ERP, exploration, and production software, highlights the importance of technology in driving operational efficiency in the oil and gas sector. This chapter sets the foundation for the next chapter which will focus on the methodological part of the research.

2.22 Summary of Hypothesis Development

The building of hypotheses in this study is based on the premise that management mindset is one of the critical propellers of the success of IT system implementation for complex and huge industries such as oil and gas (Trindade et al., 2023). A facilitating mindset includes managerial attitudes, values, and capabilities that collectively influence how technology is accepted, utilized, and integrated into organizational processes (Nielsen, 2018). In sectors where technology is a core driver of operational efficiency and excellence, it is essential to know the mechanisms through which management mindset affects system implementation. The hypotheses developed in this research rely on theoretical foundations, e.g., dynamic capabilities theory (Kuuluvainen, 2012), and business–IT alignment (Aversano et al., 2012), and are supplemented by recent empirical data from equivalent environments.

Management Mindset and System Implementation

The first broad hypothesis (H1) is that an enabling attitude in management has a strong and positive impact on the implementation of IT systems through both intra-organizational and extra-organizational variables. It has consistently been shown through prior studies that the mental attitude and style of leadership of management has a direct bearing on the pace and success of digital transformation initiatives (Kazim, 2019). In the oil and gas sector, which is characterized by high implementation costs and high failure rates, a facilitative managerial mindset for new technologies ensures resource allocation, risk minimization, and worker acceptance (Akpe et al., 2024).

Internal Factors in IT Competencies, Awareness and Leadership

H1.1 indicates this relationship to internal determinants such as IT skills, awareness and leadership. Researchers argue that while senior managers might not necessarily need deep technical IT competencies, they must have sufficient technological literacy in order to understand the business significance of IT systems (Rajadhyaksha, 2005). Such IT competencies makes leaders capable of explaining the value of IT systems, placing them within strategic objectives, and inspiring organizational members to embrace change. Research proves that engaged leaders not only increase system usage rates but also build trust and innovation cultures that drive long-term system usage (Laufer et al., 2025). This is particularly important in the oil and gas industry, where front-line employees typically operate legacy systems and can first react against digitization.

External Factors: PESTLE, Competition, and Customers

H1.2 broadens the hypothesis to external drivers including PESTLE factors, competition and customers. IT system adoption is not only an organizational internal decision but is often necessitated by external drivers. For example, regulatory architecture within the UAE energy sector increasingly targets digital reporting, environmental concerns, and cybersecurity that all necessitate companies adopting sophisticated IT systems (Chaterera-Zambuko, 2025). Similarly, global competition in oil and gas has increased, pushing firms to employ digital means such as predictive analytics and ERP software to remain competitive. Consumers are also requiring higher efficiency and transparency in business processes, further emphasizing the trend towards management mentality to account for and mitigate external pressures through efficient use of IT systems (Merlo et al., 2018). Encouraging managerial attitude is thus a mediating variable between external pressures and organizational performance.

Dynamic Capabilities and Implementation of IT System

The second overarching hypothesis (H2) emphasizes that management attitude has a positive effect on IT system implementation through dynamic capabilities and quality standards of IT. Dynamic capabilities, as defined by Teece et al. (2018), is relate to the ability of an organization to integrate, build, and reconfigure internal and external resources to adapt to changing environments. For oil and gas companies operating in volatile energy markets, dynamic capabilities are no option but necessity (Shuen et al., 2014). A positive management mindset complements such capabilities by promoting learning, flexibility, and strategic rejuvenation. Academic research in the energy sector reiterates that firms with more robust IT-facilitated dynamic capabilities have higher efficiency, innovation, and resilience in their performance.

H2.1 argues that management attitude has a positive effect on the development of dynamic capabilities. Managerial adaptability and proactiveness enable them to sense opportunities, mobilization of resources, and organizational transformation, which are the cornerstones of building dynamic capabilities (Salvato and Vassolo, 2018). This relationship is particularly critical in IT system implementation, given the accelerated pace of technological change and the need for continuous reconfiguration and updating of resources. Without managerial direction towards experimentation and transformation, dynamic capabilities are underdeveloped, and IT systems fail or remain stagnant.

IT Quality Standards and System Sustainability

H2.2 highlights the role of IT quality standards in assuring system implementation sustainability. IT quality standards encompass practices such as structured project management, standard procedures, information security, and system integration procedures (Barafort et al., 2017). It is more likely that governance and quality-oriented managers will make IT audit investments, encourage standard compliance such as ISO/IEC 27001, and monitor performance measures. Such alignment between management mindset and IT quality has been identified to enhance short-term project success and long-term sustainability of IT investment (Maleh and Sahid, 2024). In the UAE oil and gas sector, where systems often underpin safety-critical activities, managerial emphasis on IT quality is especially important.

Generally, hypotheses presented in this study logically follow from theoretical frameworks and empirical truth. A supportive management mindset facilitates IT system implementation through internal (IT capabilities, systems awareness, leadership) and external (PESTLE, competition, customers) drivers (H1, H1.1, H1.2). It also affects the development of dynamic

capabilities (H2.1) and ensures IT quality compliance (H2.2). These hypotheses highlight the central position of managerial orientation in enabling organizational, environmental, and technological aspects of system implementation.

2.23 Conceptual Framework

The conceptual framework reflects the distinctiveness of the current study that investigates the influential relationships between management mindset and IT System Implementation (H1). In this framework, the supportive management mindset is categorised into internal (IT competences, the awareness of systems and operations, and leadership) factors (H1.1), and external (PESTLE factors, competition and customers) (H1.2). In this context, Nielsen (2014) emphasised that management mindset represents the core motivational element for individuals' competences. Kouzes and Posner (2019) investigated the impact of managers' mindset on leadership behaviour and they recommended for further research. In addition, Javidan and Bowen (2013) emphasised that management mindset can determine and enhance the competitive advantages as an external factor. Moreover, Hilton et al. (2020) investigated the interaction between customer success management and managerial practices which consider customers as an essential part of the success. These studies implicitly link management mindset with the internal and external factors in controversial and individual investigations without making a combination in one study, and most of them recommended for further research needed.

The impact of these factors will be investigated in terms of the IT systems implementation within the oil and gas industry. In addition, management mindset is hypothesised to influence IT systems implementation including dynamic capabilities and implementation of IT quality standards (H2.1 and H2.2). Konlechner et al. (2018) investigated how dynamic capabilities facilitate technological change through strategic managerial practices and how these capabilities support the management of technological change. They provided future directions of the need of further research in order to be investigated in new research settings. Barafort et al. (2017) highlights the importance of a centralized and integrated risk management approach based on ISO standards in strengthening organisational capabilities in IT settings. They identified key management activities and their integration with process-based activities by analysing various ISO standards such as ISO 9001, ISO 21500, and ISO/IEC 27001. This integration is significant for developing a management mindset that prioritizes risk-based thinking, leadership and commitment, and a process approach in IT settings.

These constructs represented in technology systems implementation are also hypothesised to be moderators in the relationship between supportive management mindset and IT systems implementation. In the oil and gas industry, investigating the technological advancement needs to be carried out from different perspectives taking different variables that have not been investigated in the literature (George et al., 2016). These relationships represent the essence of this research which are central to the research gap under observation. The uniqueness is derived from the combination of the independent (management mindset), dependent (IT System Implementation) and moderators factors including dynamic capabilities of the organisation, and IT quality standards implementation which have not investigated in the UAE oil and gas context with such integration.

The framework is proposed with special attention to the implementation of information technology systems in the oil and gas sector. Mainly, the UAE oil and gas sector is drawn into context. Considering the framework focuses on information technology systems, it is important that the respondents and participants are restricted to this domain. Focusing on the UAE will also set precedence for the framework to be applied to other contexts within the Gulf Corporation Council (GCC) and the surrounding region. As the UAE has a number of the largest oil and gas exploration and production companies, the findings will be generally useful to other oil and gas companies (Almazrouei et al., 2019).

The study is specifically underpinned by several key theories that legitimize relationships put forth in the hypotheses. Dynamic Capabilities Theory (Teece et al., 2018) is the overall lens, as it explains how organisations react to technological change by reconfiguring internal capabilities and realigning them to external conditions. Management mentality is hypothesized in this research as an advanced ability to shape the organisation's ability to sense opportunities, capture technology solutions, and change structures in ensuring competitiveness within the oil and gas sector.

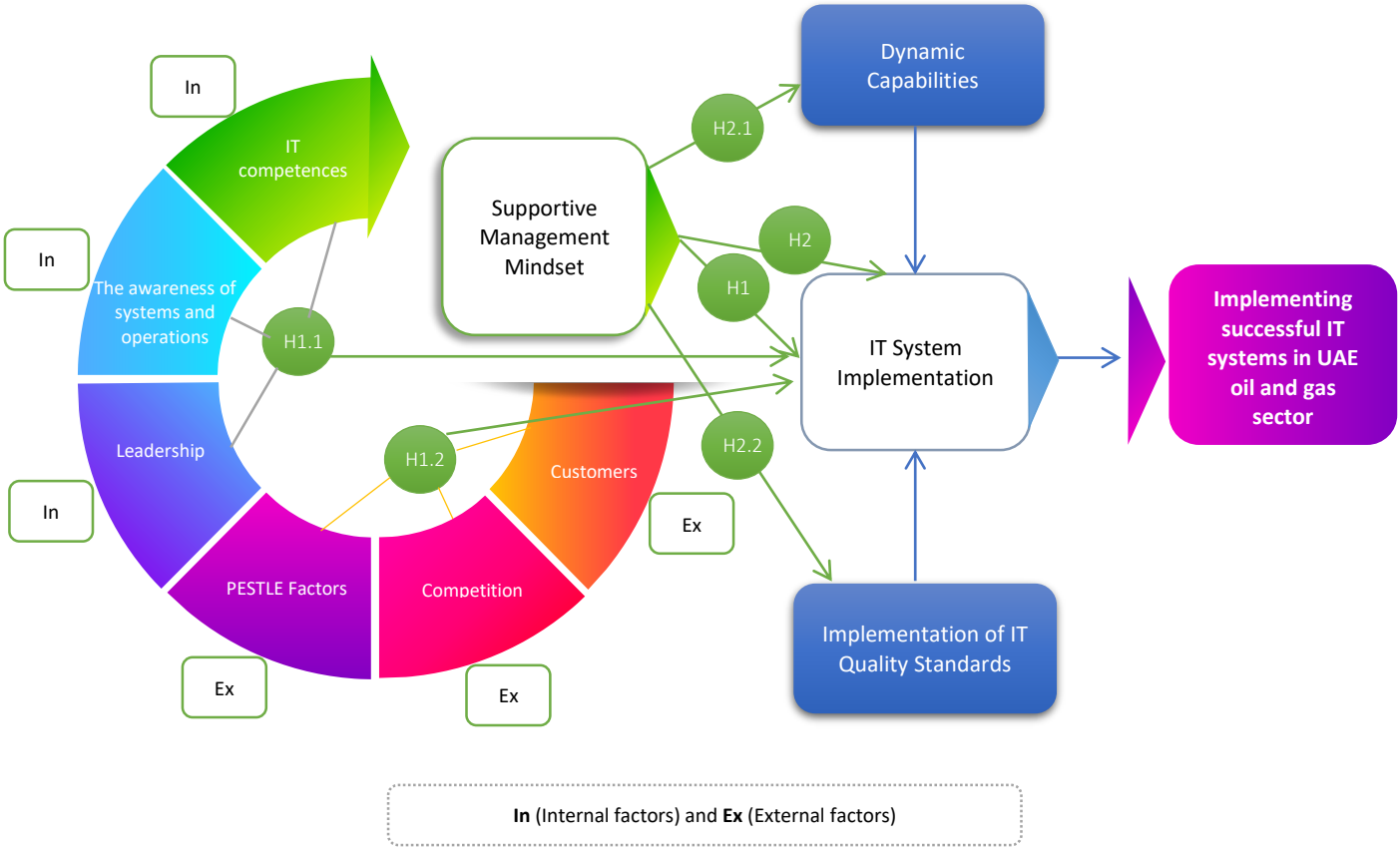
This is complemented by General Systems Theory (Gregor, 2006), on which the unification of internal and external variables in the model is based. Through considering management mind-set to be an interaction system bringing IT ability, leadership, and operation perception into interaction with external stimuli such as customers and PESTLE forces, the model reflects how organisations are open systems influenced by endogenous as well as exogenous variables.

Quality Management Theory (Hickman and Silva, 2018) justifies the position of IT quality standards as a moderator. The perspective underlines leadership commitment and process

orientation as fundamental to successful system implementation. Moreover, Information Systems Continuance Theory (Mishra et al., 2023) supports the emphasis on sustaining IT implementation rather than adoption in isolation, thereby extending the conceptual framework to long-term system efficacy.

The research framework will be investigated in comprehensive theoretical and analytical processes in order to examine the validity, reliability and to examine the research hypotheses formulated and associated with this framework. The practical investigation will be analysed using descriptive and statistical analysis such as SPSS software and other analytical techniques in order to test the research hypotheses.

Figure 2.2: Conceptual Framework



(Source: The researcher)

3. CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter will provide an integrated methodological framework on the steps needed to design research and make a coherent and cohesive association between research elements. This framework will consist of associating the theoretical aspect of research with the practical aspect that will be conducted in the UAE oil and gas sector. The methodological aspect of the study will be presented by addressing many aspects that constitute a logical sequence and explain the justifications and rationale of the research philosophy, the research approach, research methods, the data collection tool and the stages necessary to design and distribute the data collection instrument, and the research population and sample.

The research design involves the procedures established to obtain data that will be used to investigate the relationships between research variables that will be analysed accordingly (Bloomfield and Fisher, 2019). In a complementary context, the research design refers to the establishment of conditions that allow the collection and analysis of data, making it possible to carry out the research and providing constructive procedures and stages of the methodological part that relies on a variety of appropriate approaches and analytical techniques (Sileyew, 2019).

Academic research is based on the systematic use of specific methods and procedures to obtain information or to discover relationships between variables in society (Guetterman and Fetters, 2018). Scientific research aims to highlight new information or verify old information in order to increase or verify knowledge. Therefore, the current research is based on testing the hypotheses put forward in order to understand or analyse the phenomenon of management mindset. Scientific knowledge is considered organised knowledge that is subject to controls and methodological foundations (Dzwigol and Barosz, 2018). This knowledge differs in many cases from the analyses and the prevailing ideas in society. It is based on the realisation that scientific knowledge is constrained by ethical barriers and conditions for direct access to information.

The research process involves different hierarchical levels including the research problem identification, research question formulation, the investigative hypotheses, the theoretical review of the literature, the methodological design, practical investigation of the relationships between the research variables, and analytical framework (Lim and Luo, 2020). The research

process employed in the present study encompasses a set of sequential steps that begins with the identification of the problem and that allows the subsequent identification of the research question. The next step involves exploring the available literature in the areas management mindset, from which the general hypotheses of the study are formulated. Based on these general hypotheses, a quantitative research is carried out, which involved the hypotheses testing and data interpretation.

3.2 Research Philosophy

A research philosophy reflects the beliefs related to data gathering of specific phenomena and the choice of the logical constructiveness in interpreting explicit phenomena under investigation (Seele, 2018). In this context, it is essential to discuss the philosophy of existence "Ontology" and the philosophy of knowledge "Epistemology", which pave the way for an explanation of the research methodology derived from these philosophies.

3.2.1 Ontology and Epistemology

3.2.1.1 Ontology (Science of Being)

Ontology refers to the existential philosophy which refers to the existence of a set of attributes and characteristics that prove the existence of a phenomenon, regardless of whether it is discovered in whole or in part (Aspers, 2015). Ontology in research deals with the existential conditions of culture, social issues and material contexts. An ontology in research deals with the evaluation of the nature of reality.

In the methodological part, the research should adopt a logical and constructive sequence for the existence of the phenomenon, what do we know about it, and how will its most prominent problems be measured and investigated within a specific and measurable scope that constitutes a valuable addition to it. The current research seeks to clarify the philosophical positions and implications of the chosen methodology for a unique research problem. The nature of social reality is mainly discussed in ontology, and it takes on the nature of reality (Waller, 2020). It is observable, measurable, fixed and defined existence. In the social sciences, social ontology deals with the relationship and existence of the different aspects of society, such as social structures, cultural norms and social actors. In this regard, the phenomena under investigation discussed in Social Ontology are related to current research variables including management

mindset and organisational development. In particular, social reality and Social Ontology refer to differing beliefs about the fundamental nature of reality.

3.2.1.2 Epistemology (Philosophy of Knowledge)

The philosophy of knowledge is one of the most prominent philosophies in the history of scientific research (Turri, 2016). This philosophy refers to knowledge derived from research, demonstrative processes and scientific evidence, which has been accessed through extensive research processes, discoveries, examinations and analyses, and is characterised by a logical, convincing, and constructive context (Boon and Van Baalen, 2019). It deals with the question of how to reach accepted knowledge. Epistemology is the branch of philosophy concerned with the nature of knowledge, its possibility, surrounding environment, scope and logical basis of evidence. It is about how we gain knowledge or how we learn about specific phenomena and different methods of gaining knowledge (Kuper et al., 2017).

Epistemology and methodology are often confused with each other. Methodology refers to the path/method to be followed in order to reach scientific knowledge. In the history of science, two separate scientific traditions answer the question of how knowledge can be obtained (epistemology). These are sorts of rationalism and empiricism (Fedyk and Xu, 2018). The aim of this research in this context is to reveal the basic philosophical assumptions that guide the researches in the field of management mindset and the essential ontological and epistemological features of the research tradition adopted in the field.

3.3 Research Paradigm

3.3.1 Post-Positivism

According to Indreswari (2018), research paradigms are the set of common beliefs and agreements that characterise scientists' attitudes related to identified problems that should be understood and addressed. The research paradigms or philosophical underpinnings is represented in the post-positivism. In this context, the research adopts the post-positivism as the most appropriate paradigm to the research.

Post-positivism is a research paradigm that acknowledges the limitations of the positivist approach to knowledge generation and seeks to overcome them by incorporating critical reflection and subjectivity into the research process (Panhwar et al., 2017). It is based on the belief that knowledge is not objective and that reality is not independent of the observer. Post-

positivists recognize that human perception and interpretation play a significant role in understanding the world, and therefore, they advocate for the inclusion of subjectivity, context, and perspective in the research process (Jackson and Dolan, 2021). They also acknowledge the influence of social, cultural, and historical factors on the production of knowledge.

Unlike positivists who believe that there is one objective reality that can be discovered through scientific methods, post-positivists see reality as complex and dynamic, with multiple interpretations and perspectives (Pathak and Thapaliya, 2022). Therefore, they argue that research should focus on uncovering the subjective meanings and interpretations of individuals rather than seeking universal truths. Post-positivism also rejects the value neutrality of the positivist approach and recognizes the researcher's potential biases and values that may influence the research process. As a result, it emphasizes critical reflection and reflexivity, encouraging researchers to be aware of their own positionality and potential biases.

3.4 Deductive Research

The deductive approach follows a systematic research method, in which the research proceeds from introductions, theories, models, framework, theoretical insight and principles to specific findings and precise frameworks and demonstrated evidence on a mental and logical basis (Cramer-Petersen et al., 2019; Rahi, 2017). The inferential approach has its own tools, the most important of which are: measurement, mental experimentation, synthesis, and evidential proof. The deductive approach is a significant approach used in scientific and social research in the fields of human sciences such as philosophy, logic, philosophy of science, business, social research, and epistemological philosophies.

Many researchers have relied on the deductive approach in their scientific research, and the deductive approach is based on deduction and inference, and the extraction of knowledge from other previous knowledge related to each other, and the interrelationship of all scientific phenomena and their follow-up throughout the history of the research (Bibel and Kreitz, 2015). The scientific researcher can derive the most important results from some simple previous information, as it is one of the mental processes in the first place, which depends to a large extent on the skill, experience and ability of the scientific researcher.

The deductive method is defined as that scientific method in which the transition from the whole to the part, and from general thinking to specific thinking, it is opposite to the inductive approach, which is based on the method of thinking from the part to the whole (Cramer-

Petersen et al., 2019). The deductive approach is also characterised by the scientific researcher's reliance on the so-called observational thought, in which the researchers observe all phenomena and hypotheses, which they work to prove in scientific research. The scientific researchers also rely on the deductive method to reach the different theories, which is one of the most important features of the deductive method. Another prominent feature of the deductive method is that it is able to predict the results that can be proven through those theories (Park et al., 2020). In addition, the deductive approach is characterised by its results as being general results, and it can be generalised to the individuals in question to a large extent, in contrast to many other scientific approaches, whose results cannot be relied upon.

Induction refers to the process or act of inferring general propositions from partial propositions (Henderson, 2018). Unlike deductive inference (in the sense of propositional logic and predicate logic) in which the correctness of the premise entails the correctness of the result, in inductive inference the correctness of the premise does not logically guarantee the correctness of the result. However, it seems that induction plays an important role not only in science, but also at different qualitative levels of investigation as the inductive approach refers to the learning from experience according to the rules that come from repeated experiences.

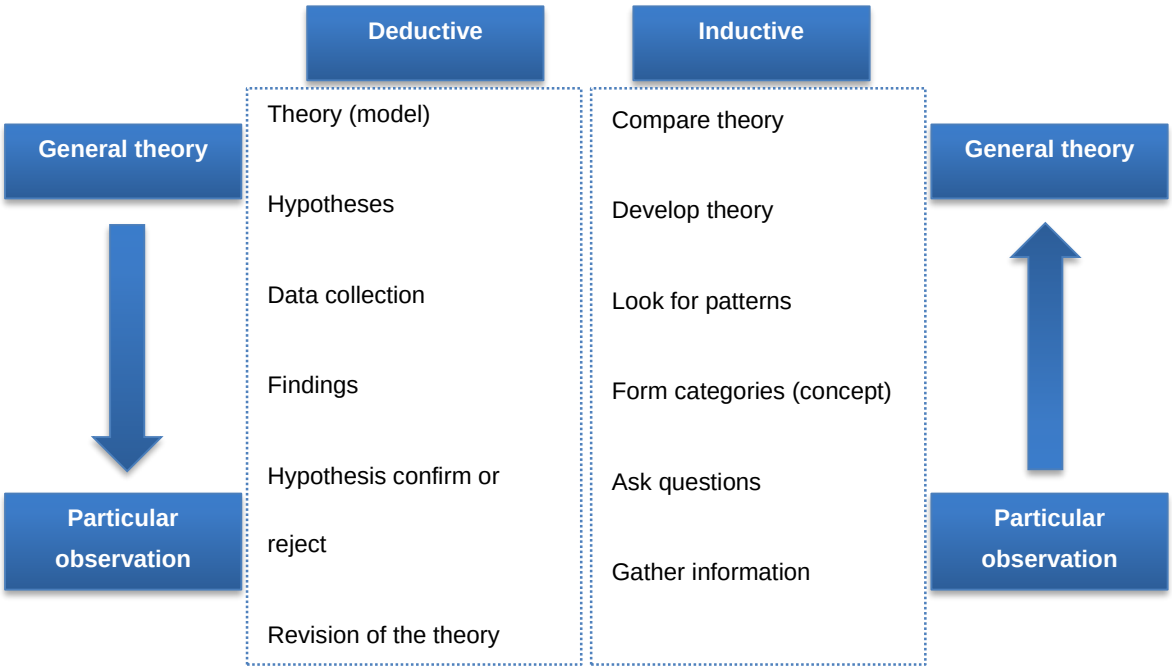
It is important to note that logical or philosophical induction is different from deduction approach. Logical induction is the journey from the specific to the general and the study of examples and details for the study of generalities, but mathematical induction is one of the fundamental methods of proving theorems in mathematics and the truth of the result is definite and certain (Garrabrant et al., 2016). In mathematical induction, accepting two premises and rejecting the result leads to a contradiction as mathematical induction is a kind of logical analogy.

Compared to the deductive approach, the inductive approach is compatible with the phenomenological approach, which argues that the meaning of the social structure of the world is realised by individuals (Azungah, 2018). A research with an inductive approach normally uses qualitative data. As a result of inductive research, theoretical and conceptual data can be applied in qualitative studied. Theoretically, the qualitative method interprets and evaluates the causes of events and phenomena in terms of how they occur. Therefore, research techniques and strategies used are flexible. It focuses on explaining events and phenomena rather than cause-effect relationships.

The nature of the current research is consistent with the quantitative approach, which measures the effect of the relationship between research variables in relation to management mindset and organisational development through information technology implementation including dynamic capabilities and operationalisation of IT quality standards. In this context, the deductive approach is considered the most appropriate approach to the current research and can be adopted due to the suitability and nature of this approach.

The following figure summarises the deduction and induction approaches in terms of how they are generated.

Figure 3.1: Steps in Deductive and Inductive



(Nguyen and Du, 2010)

3.5 Research Population

The population refers to the data set that includes all possible observations (Gould, 2015). The population involves the complete set of research units that collectively configure the research domain. Considering that the present study involves management mindset investigated within the UAE oil and gas sector, a database of the research population is created. The first step in the analysis involves the identification and elimination of oil and gas companies. The second step consists of identifying and excluding companies that are inaccessible. Through this

justification and selection criteria, the research will focus on the top, middle, and lower levels of management's directors and employees in the UAE oil and gas companies.

3.5.1 Criteria of the Research Participants

Choosing the research population is carried out in accordance with the research criteria in selecting the UAE oil and gas companies characterised by specific features which are appropriate for the current research. The table below shows the most significant points in the research criteria.

Table 3.1: Criteria of the research participants

No	Criteria	Explanation
1	Accessibility	Oil and gas institutions that authorise their employees to cooperate and participate in filling out research questionnaires without strict restrictions and contribute to the promotion of scientific research outputs in the UAE and have cooperation with scientific research centres in the UAE.
2	Availability	The institutions on which it is possible to conduct research and have organisational resilience that helps the researcher to conduct the practical study in a timely manner, where the directors of the departments as well as the employees of these companies can participate in order to enhance the outputs of the research
3	Relevant roles	A set of different roles, positions and assigned tasks that are performed within these institutions and related to the research variables with regard to management mindset and organisational development.
4	Diversity	Diversity in job performance that enriches the research and which the research derives information from different points of view and levels of work that have different and unique characteristics, which can be positively reflected in enhancing and enriching the research

3.5.2 The UAE Oil and Gas Companies Investigated

This stage of investigation is based on the research criteria which show the number of the UAE oil and gas companies that will be investigated in accordance with their number of employees, which reflects the research population. These companies are:

Table 3.2: The UAE oil and gas companies investigated

No	Company	Number of employees
1	Abu Dhabi National Oil Company (ADNOC)	50,000 employees
2	Emirates National Oil Company (ENOC)	9,000 employees
3	Emarat	196 employees
4	Dubai Petroleum Establishment	865 employees
5	Sharjah National Oil Corporation (SNOC)	165 employees
6	Dana Gas	1,100 employees
7	Dragon Oil Plc	896 employees
8	Mubadala Petroleum	500 employees
	Total	**62,722 employees**

(adnoc.ae, 2022; enoc.com, 2022; emarat.ae, 2022: dubaipetroleum.ae, 2022: snoc.ae, 2022; danagas.com, 2022; dragonoil.com, 2022; mubadalapetroleum.com, 2022)

3.6 Research Sample

3.6.1 Sample Selection

The sample refers to the data set that includes a part of the research population (Gould, 2015). The essential aspect of the sample is the possibility of drawing conclusions for the entire population, considering a part of its elements which can represent the research population sufficiently. Therefore, the sample must be representative in the UAE oil and gas industry. The selection of the research sample will be objective, impartial and without any bias. The study sample will represent the research population in an integrated and comprehensive manner, so that the results of the research are reflected and represent the population as a whole. The researcher will verify the existence of parity between the various elements of the study population after identifying and determining the nature of the units of the research population before applying the scientific bases in selecting the sample. Moreover, it will be emphasised that the sample size is compatible with the nature and size of the study, the nature of the research and the objectives that the research seeks to achieve.

3.6.2 Research Sample Determination

3.6.3 Estimated Effect Size

The statistics involved in calculating a specific sample size can be a complex stage (Singh and Masuku, 2014). Part of this calculation involves the introduction of an “estimated effect size”. The smaller the estimated effect size to obtain, the larger sample should be. It is vital that the

estimated effect size used in the calculation is justified. In this regard, estimated effect sizes should be based on a multitude of sources, including prior high-quality evidence and experience.

3.6.4 Additional Considerations

Sample size calculations should be carried out before the start of the study to eliminate any bias or deviation from the study protocols. Another factor to consider is also practicality. In the real world, sample sizes are often influenced by administrative constraints, costs, and available resources. The determination of the sample size in the design of a probabilistic sampling survey is one of the most important stages (Singh and Masuku, 2014). It must be approached with strict adherence to the technical considerations of statistical theory, to the objectives of the research, and future uses of the information.

In order to calculate the number of units that will form part of the sample, the variance of the variable of interest must be considered, as well as the precision with which estimates are desired and the confidence required. In this case, the sampling process leads to determining the number of observations necessary to cover the objectives of a multi-thematic study, managing to generate an appropriate balance between execution costs and the desired precision for the different parameters to be estimated. However, it must be emphasized that finding optimal solutions is difficult when the characteristics to be investigated are disparate or the observed frequencies are low in the study domains of interest. In the texts that study the theory of sampling, the determination of the sample size for multi-thematic research is analysed, in the first instance, as if it is a univariate problem (Cochran et al., 1953) without considering that practically all surveys are of multiple purposes.

The calculation of the sample size to estimate parameters of proportions with multinomial distribution is a daily situation in the design of the questionnaires carried out by researchers. In this way, the problem of determining the number of observations necessary for the simultaneous estimation of multinomial proportions is equivalent to the construction of simultaneous confidence intervals for variables with multinomial distribution, with the difference that in the calculation of the sample size the limits they are set a priori by the researcher, in order to control the probability that the interval contains the true value of the parameter.

3.6.5 Cochran's Equation as a Prominent Approach

Cochran's equation is a prominent sampling size technique used in social science research that provides the optimal size of sample that reliably represent the research population. The justification for choosing Cochran's equation is that it helps determine the optimal sample size, ensuring a reliable representation of the research population (Ahmed, 2024). This widely used technique in social science research provides statistically accurate results, enhancing the validity and generalizability of the findings.

In this regard, the Cochran's equation is shown as follows:

Equation 1: $$n = \frac{n_0}{1+\frac{(n_0-1)}{N}}$$

Abbreviations

$\boldsymbol{n_0}$ represents the sample size generated from the equations number 2.

N represents the overall population.

In order to generate the size of sample, $\boldsymbol{n_0}$ must be calculated based on the equation number 2.

Equation 2: $$n_0 = \frac{z^2\,pq}{e^2}$$

Abbreviations

z refers to the value chosen of anticipated confidence level

p refers to the predictable percentage

q = 1-p

e refers to the chosen level of precision

By applying these variables, p equivalents 0.05, and 95% confidence level with ±5% precision. Therefore, the size of the sample is:

p = 0.5 and q =1-0.5 = 0.5, e = 0.05 and z =1.96

Equation 2:

$$n_0 = \frac{z^2\,pq}{e^2} \quad = \quad n_0 = \frac{(1.96)^2\,(0.05)(0.05)}{(0.5)^2} \quad = \quad 384.16 \approx 384$$

By calculating $\boldsymbol{n_0}$, the equation number 1 can be used to determine the size of the research sample. The population of the current study is represented in 62,722 employees, and the equation therefore will be as follows:

$$n = \frac{n_0}{1+\frac{(n_0-1)}{N}} \quad = \quad n = \frac{384}{1+\frac{(384-1)}{62{,}722}} \quad \approx 382$$

G-Power Method

To plan for the appropriate sample size, an a priori power analysis was conducted with G-Power 3.1. With a medium effect size (f^2 = 0.15), α = .05, 0.80 power, and 10 predictors, the smallest sample required was 118 participants. In addition, based on the population of 62,722 and using the finite population correction at a 95% confidence level with a 5% margin of error, the lowest sample needed was 382 participants. Research therefore employed the figure of 382 to ensure representative coverage, statistical validity, as well as safeguard against possible non-responses.

3.7 Data Processing and Analysis

The data and relevant information resulting from the quantitative approach can be complex. However, they are directly transformed into units of measurement related to objects, and they vary in the level of abstraction, in the frequency with which they occur and in their relevance to the main research questions. Therefore, the research seeks to transform these data and information into opportunities, through the use of an analytical structured process that can provide a reliable analytical framework based on appropriate statistical techniques.

The scope of this phase employs the statistical study which will focus on providing descriptive and statistical analysis using frequencies' analysis, simple linear regression to test the research hypotheses. This process of study involves and seeks to understand the characteristics of a given population's attitudes through the analysis of a sample of elements to verify the frequency and cases in which such characteristics are verified. The quantitative study is characterised by the numerical nature of its results and requires planning in the elaboration of the response scales of the data collection instrument (Apuke, 2017). In order to provide a comprehensive and reliable analytical framework, a set of appropriate statistical technique will be carried out using the SPSS software.

3.8 Data Synthesis

The Unit of Analysis

The level of organisational management for the UAE oil and gas sector is the unit of analysis for this study, where management mindset and managerial practices that compel IT system implementation are emphasised. Department managers, IT leadership, and decision-makers are the key respondents as they are the organisational place where supportive management mindset is translated into IT-related strategies, decisions, and implementation outcomes.

Data Collection Instrument

The primary data collection instrument employed in this research is an online questionnaire, with the purpose of generating empirical information on the connection between management thinking and IT system implementation among the UAE oil and gas sector. The use of an online questionnaire method was instigated by the geographical distribution of respondents across organisational departments and requirements of efficiency, anonymity, and accuracy in gathering information. Online distribution also facilitated a higher response rate by allowing respondents to complete the questionnaire at their convenience, while ensuring that the data could be captured and processed systematically.

The questionnaire was structured into distinct sections, each corresponding with the constructs inherent in the research hypotheses and conceptual framework. Section 1 gathered organisational and demographic information, such as respondents' age, gender, job title, and years of experience. Five-point Likert scale of "Strongly Disagree" (1) to "Strongly Agree" (5) was utilized to measure the degree of agreement with questionnaire statements. This made it possible to measure subjective impressions to continuous data open to statistical analysis. Questionnaire items were adapted from validated scales in prior researches to maintain content validity and theory construct concordance.

Questionnaire Design and Validation

The questionnaire used in the research was designed to capture both background information and attitudes directly related to the research hypotheses. The questionnaire was organized according to the research pillars, aligning with the independent, dependent, and moderation variables in the conceptual framework. Statements were crafted to capture constructs like management mindset (internal and external drivers), IT system implementation, dynamic capabilities, and IT quality standards. Respondents marked the degree of agreement with a five-

point Likert. This scale was chosen due to the reliability, and appropriateness in translating perceptions into quantifiable data for statistical examination.

In order to obtain content validity, items were adapted from strongly validated and established instruments in earlier literature, particularly in the domains of management mindset, dynamic capabilities, and IT quality. Pilot-testing of the questionnaire was conducted among a limited number of respondents in the oil and gas sector to measure clarity, understandability, and use. Pilot study comments were used to adjust wordings and eliminate ambiguity and thereby enhance validity and reliability of the instrument

Reliability and Validity Test Methods

In this study, validity and reliability of the research instrument were tested to establish the quality and validity of data collected. Reliability was established primarily through Cronbach's Alpha, an internal consistency scale between items for every construct. A figure over 0.70 was acceptable, indicating that items measured the same factor. This promoted consistency and reliability against items for management mindset, execution of the IT system, dynamic capabilities, and standards for IT quality across participants.

Validity was, nevertheless, examined both for content and construct perspectives. Content validity was attained during the design process of the questionnaire by direct correspondence of items to research goals and hypotheses and through expert examination by researchers and professionals in the oil and gas sector. This ensured that the items corresponded to theoretical factors being studied. Construct validity was tested using factor analysis to ensure that the items loaded as anticipated into their respective constructs. Specifically, it was established through convergent validity where construct items loaded high and discriminant validity where constructs were separated from each other. The study ensures that the instrument not only is reliable but also valid in assessing theoretical relationships between IT system implementation and management mindset to enhance the robustness and credibility of findings.

Data Purification Process

Data purification was carried out to ensure accuracy, completeness, and relevance of the data set for analysis. The responses were initially screened for missing responses, incomplete answers, and inconsistency. Cases with significant amounts of missing data were deleted, and minor gaps were addressed by applying mean substitution. Descriptive statistics and boxplots were used to identify extreme values that may cause results to become skewed, and outliers

were identified. Normality check, linearity check, and homoscedasticity check were carried out to validate appropriateness for further statistical analysis. Proper purification was conducted to make certain that the final dataset was clean, credible, and representative, and thus improved the validity and reliability of the research findings.

How the Missing Data are Handled

Missing data were dealt with following a systematic approach to maintain the integrity of the dataset. Responses with missing values were omitted at the initial step to avoid bias. This method maintained the overall sample size and preserved the distribution characteristics of the data. Mean substitution was applied because it is suitable for Likert-scale items, where slight gaps can be reasonably approximated without over- or underestimating variance. This approach made sure that lacking information never compromised the representativeness, validity, or reliability of the analysis.

3.8 Ethical Consideration

Ethics in research addresses the moral principles and values that can influence the activities carried out by researchers (Arnold and Bowie, 2019) and aims to prevent those involved from suffering losses or consequences resulting from research activities. This study observes and respects the ethical principles applicable to research, in order to ensure the results and their potential scientific contributions to knowledge.

Gathering research data requires an ethical framework that regulates the study in order to obtain the data in accordance with university's ethics and integrity (Freeman et al., 2020). Research ethics requires knowledge of respecting the privacy of research participants, preserving their rights and respecting their opinions, and preserving the safety of participants and researcher. The research ethics of science often challenges access to information.

3.8.1 Research Ethics Truthfulness

The researcher will explain the purpose of the study to the participants, and inform them of the essential and core information that constitutes the research work. The researcher will introduce the research objectives and the main purpose of the study by conveying the information in an honest and truthful manner without falsifying any information or completing incomplete information based on previous theories or the personal opinions. The researcher will try to build

a relationship of trust with the participants in order to obtain higher level of cooperation and more accurate and credible results.

3.8.2 Anonymity

Anonymity refers to protecting the identity of the research participants keeping the personal data anonymous without revealing to any other party (Williams et al., 2017). The anonymity is ensured to protect the privacy of participant's data and information that can be associated with any analytical part in the collecting, analysing, and discussing the data of the research. It is the process of collecting data without obtaining personal, or sensitive data that the participants' might not prefer to disclose

3.8.3 Confidentiality

The issue of privacy is concerned with the protection of data collected by the researcher during the research period (Petrova et al., 2016). The data includes private and accurate information, and the researcher will ensure the privacy of the information and keep it in a safe place where others cannot access it or view the data. The research will clarify that the data will not be released to any other parties and it will remain confidential and anonymous and will be deleted after the completion and endorsement of the research.

3.8.4 Consent

The researcher will obtain the consent of the participants before starting any distributing process of the questionnaire. The consent is usually written by asking the participant to sign a clear statement of consent to participate in the research. This statement includes an explanation of the purpose of the study and what it will require from the participant. In addition, this statement will explain to the participant what the rights are during and after the study. The researcher will not, at any stage of the research, use embarrassment in order to obtain information or to pressure the participant.

3.9 Summary of Chapter

Chapter 3 provides the details of the methodology adopted for this research study. This chapter begins by introducing the research philosophy in terms of ontology and epistemology. The paradigm is post-positivist, where the form of research approach adopted is deductive so as to enable hypothesis testing from existing theory.

The target population of the research consists of UAE oil and gas companies, within which participant selection criteria have been clearly identified. For the selection of samples and determining their size, Cochran's formula is applied to ensure that an appropriate size is attained. Data processing and analysis methods are presented, together with ethical considerations in respect to truthfulness, anonymity, confidentiality, and informed consent. To ensure integrity and transparency of the process, such ethical guidelines shall be referred to. This chapter paves the way to the practical study that will be reflected in chapter 4 focusing on data analysis.

CHAPTER 4: DATA ANALYSIS

4.1 Introduction

This chapter outlines the process of gathering and analysing data. It provides an overview of the different data analysis methods and techniques that can be used to interpret the collected data. The chapter also explains the importance of using appropriate techniques to aid in the interpretation of data. Further, it provides details on the different types of analysis that can be conducted and the associated objectives. In addition, the chapter discusses the benefits of using different types of analysis. It highlights best practices for data analysis.

Data analysis is an indispensable part of the current research. It enables the research to draw meaningful conclusions from the data that has been collected from the oil and gas companies and to uncover trends and patterns that might otherwise remain hidden. Understanding and applying the various data analysis techniques helped the research to obtain accurate and relevant results. The process of data analysis consists of four main steps: data preparation/organisation, data reduction and sorting, interpretation, and summarisation.

Data preparation/organisation involves the process of organising the collected data for subsequent analysis. Data reduction involved the process of summarising the data using techniques such as data aggregation and data decomposition. This is important to ensure that the data is concise and relevant. Interpretation involves analysing the data to draw conclusions and deduce patterns and trends. Types of analysis that has been conducted include descriptive analysis, predictive analysis, and statistical Analysis. Descriptive analysis describes the data set and summarises relevant information, predictive analysis enables the researcher to make predictions based on past data, and statistical analysis enables the researcher to make recommendations based on the data and to extract the results that test the hypotheses.

Data analysis has many advantages including the extraction of more nuanced and accurate information from the data, improved decision making, and the identification of emerging trends. However, data analysis also has some drawbacks. This includes its reliance on complex techniques and methods, the potential for errors due to incorrect assumptions, and the potential for misinterpretation of results. In order to ensure accurate and reliable results from data analysis, the research follows the best practices such as selecting appropriate methods and tools, setting concrete objectives, and considering sample size and applying reliable and appropriate analytical tools.

Understanding and applying the various analysis techniques and best practices enable the researcher to equip with the knowledge to obtain accurate and reliable results.

4.2 Data Collection and Response Rate

The data collection and preparation for the quantitative data analysis for the questionnaires distributed on 8 UAE oil and gas companies involves a variety of procedures. The preparation begins with determining the sample size and selection of the measurement technique. This helps determine the focus of the questionnaire and how to best target participants to receive valuable feedback about the companies being studied. Respondents in these companies were then be contacted and asked to participate in the questionnaire. After the data is collected, the next step was sorting and preparing the data for analysis.

The goal of data collection and preparation is to ensure that the data is accurate and valid for use in the analysis. Data collection is the process of getting valid information from the respondents that have been selected for the questionnaire. It is important to collect data in a systematic method that allows for statistical accuracy, generalizability, and reliability.

Once the data has been collected, it was prepared for analysis. This includes eliminating any bad data points as well as merging similar data points together. Data also needs to be standardized in order to make it easier to analyse. This involves converting all data into the same type of unit, such as a percentile or a number scale. Data was then organised in tables or graphs and summarized for easier readability. The last step is to standardize it for statistical tests to be performed. The next table shows the number of the UAE oil and gas companies chosen in this study.

Table 4.1: The number of the UAE oil and gas companies chosen in this study

UAE oil and gas companies investigated	Number of employees
Abu Dhabi National Oil Company (ADNOC)	50,000
Emirates National Oil Company (ENOC)	9,000
Emarat	196
Dubai Petroleum Establishment	865
Sharjah National Oil Corporation (SNOC)	165
Dana Gas	1,100
Dragon Oil Plc	896
Mubadala Petroleum	500
Total	**62,722**

The researcher distributed 382 questionnaires and 172 of these questionnaires were received back and obtained. The response rate was 45% (*172 the number of questionnaires received back ÷ 382 the sample size and questionnaires distributed*).

The questionnaires were distributed to the population in the UAE oil and gas companies through various channels. These included emails, LinkedIn, and other professional networks which do not require gatekeeper letters. This approach ensured that the questionnaire reached a diverse and representative sample of individuals working in the oil and gas industry in the UAE. Participants were selected based on their job role and level of experience to gather a comprehensive understanding of the industry.

4.3 An Overview of the UAE Oil and Gas Sector

The UAE is a major player in the global oil and gas sector. The UAE is home to some of the world's largest oil companies, produces more than 3 million barrels of oil per day, and is one of the largest exporters of petroleum products (Guzansky et al., 2021). With the industry being important to the country, the UAE has developed an extensive range of policies and programs to ensure that its oil and gas sector remains competitive and profitable.

The UAE produces 3.8% of all the oil used globally and holds about 6% of the world's remaining crude oil, and this supply is expected to be completely used up by the end of the century (Salimi et al., 2022). Abu Dhabi, the largest and wealthiest of the seven emirates, is home to most of the nation's oil and gas reserves. The UAE has a competitive oil and gas sector. The country is home to two major international oil companies, ADNOC and the Emirates National Oil Company (ENOC). These companies are responsible for the majority of the country's oil and gas production. In addition to these two companies, there are numerous other international oil companies operating in the UAE including Emarat, Dubai Petroleum Establishment, Sharjah National Oil Corporation (SNOC), Dana Gas, Dragon Oil Plc and Mubadala Petroleum.

In order to ensure that its oil and gas industry operates as efficiently as possible, the UAE has enacted a number of policies and programs. These include legislation promoting investment and technology transfer, such as the issuance of free trade zones, allowing foreign companies to 100% own and operate their businesses in the country. The UAE has sought to strengthen ties with other resource-rich countries in the region through making partnerships and agreements with leading countries (El Khatib et al., 2022). These agreements are aimed at

fostering collaboration between the nations in the fields of oil and gas exploration, production, and transportation.

The UAE is currently in eighth place when it comes to global oil reserves, possessing approximately 5.8% of the world's total (Bayomi and E. Fernandez, 2019). Through its extensive range of policies and programs, the country is striving to ensure that its industry remains competitive and profitable in the global market. Over the past decade, the UAE oil and gas sector has been transforming, modernizing, and diversifying to meet the energy needs of a growing population. In order to keep up with the ever-changing global energy environment, UAE oil and gas firms have had to reassess their strategies in order to stay competitive.

The UAE has managed its oil and gas resources responsibly and is constantly striving to improve efficiency, productivity, and safety in the sector. As such, the country has implemented a range of policies and regulations to ensure the organisational development of its oil and gas supplies. The UAE also encourages oil and gas companies to adopt best practices in line with the principles of responsible resource management.

Management mindset and IT system implementation (ITSI) are essential elements investigated in the current research play a significant role in the UAE oil and gas sector's commitment to responsible resource management. A sustainable approach to the oil and gas sector involves a long-term vision, focusing on developing competencies, using energy efficiently, and reducing waste. It also involves taking into consideration the social, economic, and environmental impacts of operations (Dmitrieva and Romasheva, 2020). Management mindset is a key factor in transitioning to a sustainable oil and gas sector that is able to meet current and future demand. Effective management requires a mindset that is more focused on long-term planning, rather than short-term gains. This entails considering the financial, environmental, and social implications of a given strategy, which in turn requires a deeper understanding of the sector and its stakeholders (Xu et al., 2019). Furthermore, managers have a responsibility to ensure that operations are conducted in an ethical and sustainable manner. This includes promoting the safe and efficient use of energy, investing in renewable and alternative energy sources, and taking steps to reduce and mitigate the environmental impact of operations. Managers must also ensure that their employees are properly equipped with the necessary skills and resources to carry out their duties safely and effectively.

Through a combination of effective management and a commitment to IT system implementation, UAE oil and gas firms are able to reduce their emissions footprint, minimize

environmental risks, and increase efficiency (Arnaut and Dada, 2022). This can help ensure that the sector is able to meet the energy needs of a growing population and its growing economy without compromising future generations.

The UAE oil and gas sector is an important part of the global energy environment. UAE oil and gas firms must remain competitive by investing in advanced technologies, implementing responsible resource management strategies, and building long-term sustainable plans. The successful implementation of such initiatives will ensure that the sector is able to continue providing energy to the UAE and the world for generations to come.

The investigated framework of the study can be used by the UAE oil and gas sector to prepare a training courses for the new and young leaders based on the framework Also, the output of the data analysis will show how management mindset is important and the leaders should focus and follow the systematic IT quality standards for IT system selection to ensure meeting the requirements and full utilization to the effective IT system implementation.

4.4 The Reliability of Analysis

Reliability in research refers to the extent to which the results of research studies remain consistent when repeated by different researchers (Hajjar, 2018). It is essential for research data to remain reliable in order to be useful and valid. Inaccurate or unreliable findings have little or no predictive or explanatory power, and can even lead to inappropriate decisions being made. Correct interpretation of reliability in research is therefore essential for ensuring that reliable and valid results are obtained. Interpreting research reliability in a correct way allows the researcher to identify and eliminate any sources of bias or error, and make sure that the findings remain consistent.

Case Processing Summary

		N	%
Cases	Valid	172	99.4
	Excluded[a]	1	.6
	Total	173	100.0

a. Listwise deletion based on all variables in the procedure.

This case processing summary is saying that there were 172 valid cases (99.4%). There was one excluded case (0.6%), and in total, there were 173 cases (100%). The excluded case was dismissed because it was lacking data for all the variables listed in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.966	4

This reliability statistic indicates that the items used to measure a given concept are highly reliable, as the Cronbach's Alpha value is close to 1.0 (Robertson and Evans, 2020). It suggests that the four items used to measure this concept are highly consistent and measure the same underlying construct. This reliability statistic indicates that the four items are highly reliable. The Cronbach's Alpha coefficient of .966 is very close to 1, indicating that the items are strongly related to each other and measure the same construct. This suggests that the items are valid measures of the underlying construct and can be used to measure it accurately.

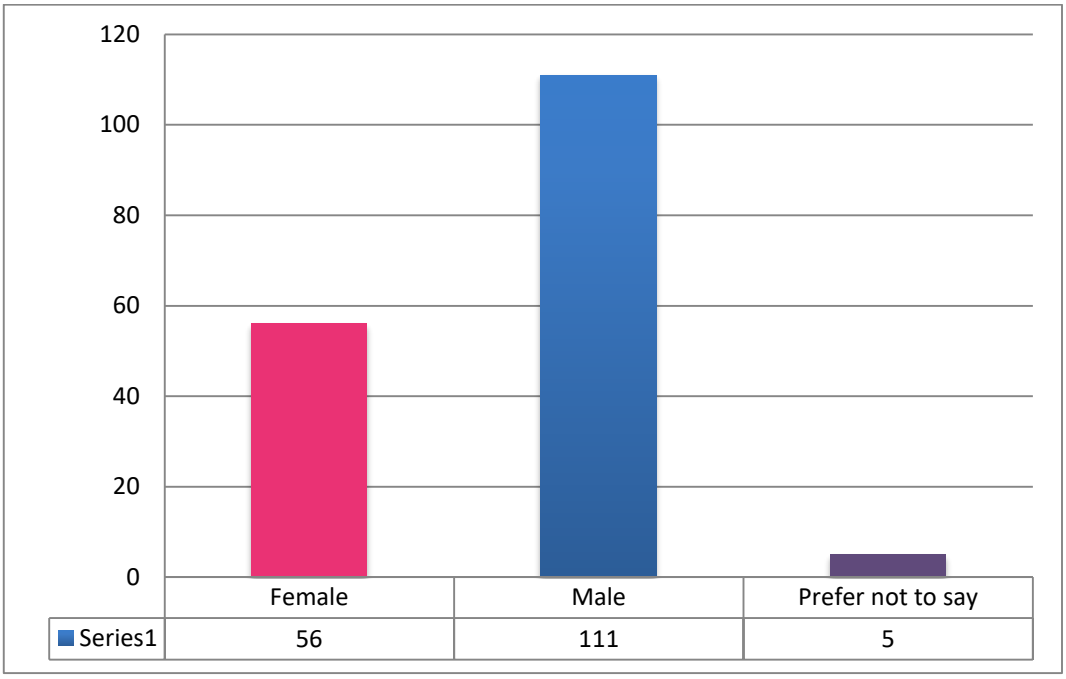
Non-Response Bias Test

In order to test for possible non-response bias, the respondents were split in return order into "early" (first quartile; n = 43) and "late" (last quartile; n = 43) groups (173/4). Item-level comparisons were conducted by Welch's t-tests on Q1–Q49. Demographic/multi-select items Q1–Q5 were non-numeric and therefore excluded, which left 44 analyzable items (Q6–Q49). Missing values were handled per item by listwise deletion. Of the 44 items, 22 were statistically significant early–late differences at $p < .05$. Most importantly, all of the significant differences were of one direction: The late respondents provided lower ratings on average (median absolute difference ≈ 0.50 Likert points; median Hedges' g ≈ 0.69). The average difference across all items was −0.38 Likert points (late vs. early), increasing to −0.61 for the significant items. This consistent directional effect implies that late respondents were always more negative, which is strong evidence of a risk of non-response bias if late/non-respondent views are under-represented.

4.5 First Part: Demographic Questions

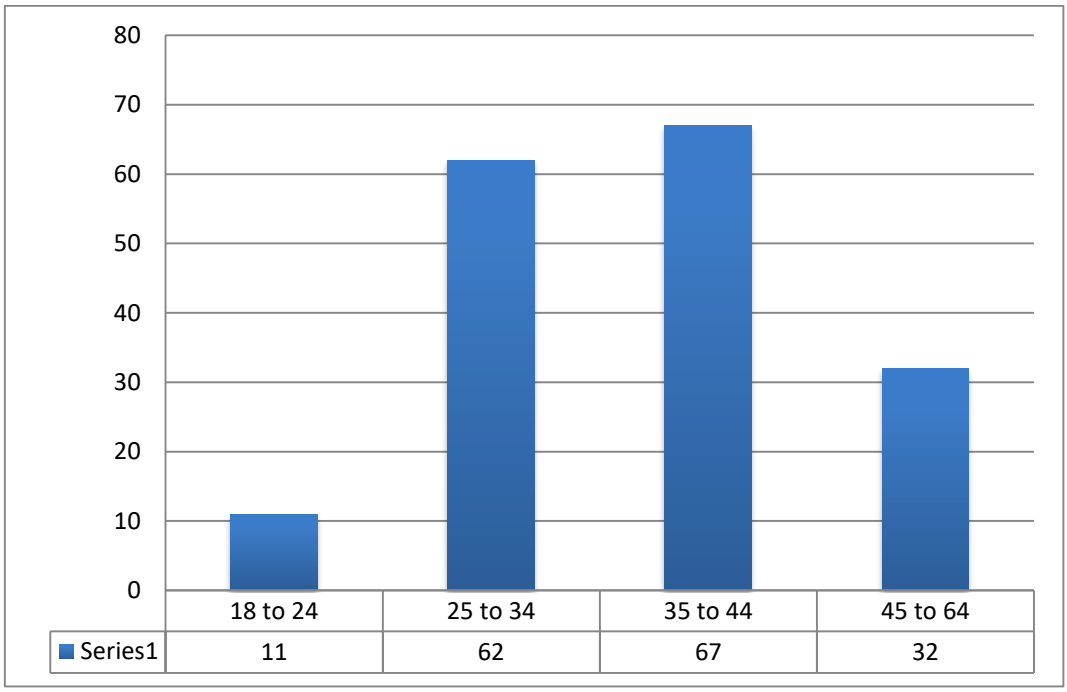
Analysing the demographic questions is important as it helps to understand who the target population. Demographic factors such as age, gender, and work experience level can be reflected in their attitudes in investigating the research pillars.

Figure 4.1: Q1 – What is your gender?



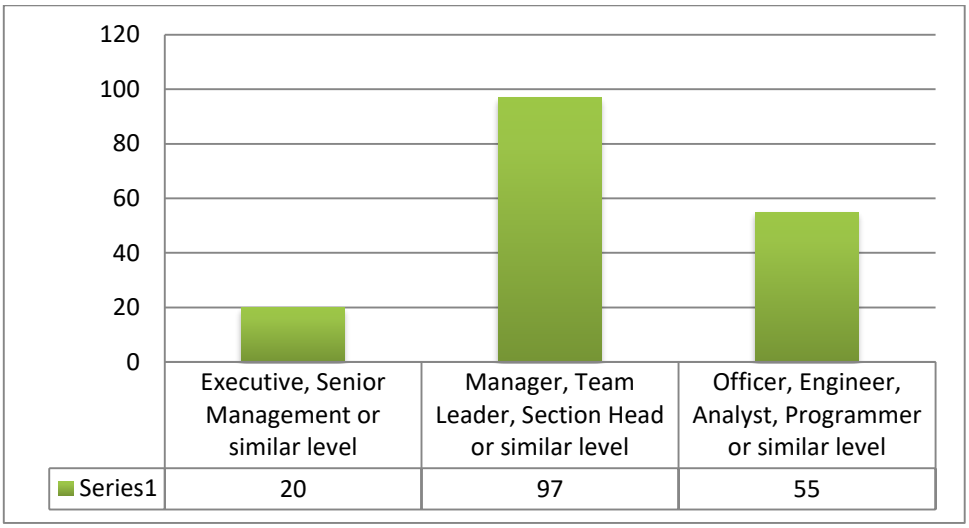
There were a total of 172 participants in the questionnaire, with 56 being female, 111 being male, and 5 preferring not to say their gender. This means there were 32% female participants, 64% male participants, and 2.9% participants that did not state their gender.

Figure 4.2: Q2 - What is your age category?



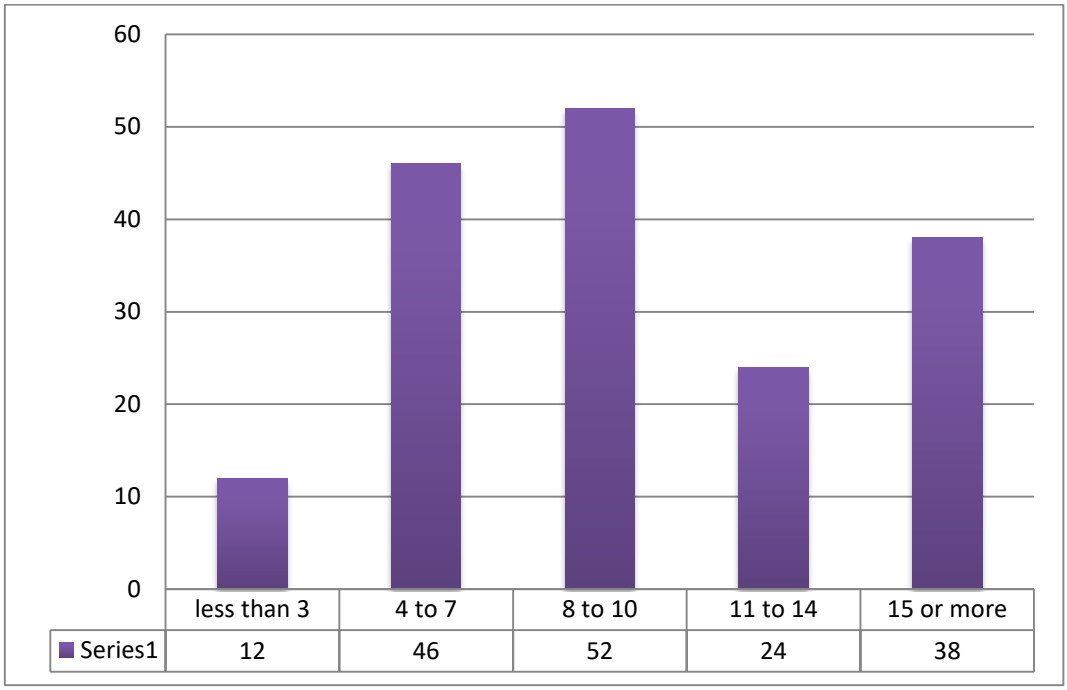
This indicates that the majority of the participants of the questionnaire were between the ages of 25 to 44, with 62 participants being between 25 to 34 and 67 participants being between 35 to 44. There were also 11 participants between the ages of 18 to 24 and 32 participants between the ages of 45 to 64. This is a positive result as it ensures a wide range of perspectives and experiences are included in the study. With a diverse pool of participants, it is more likely that the data collected is reflective of the larger population being studied, allowing for more reliable trends and results.

Figure 4.3: Q3 - What is your work position?



There are a total of 172 participants in this survey. 20 of them are executives or senior-level management, 97 are managers or team leaders, and 55 are officers, engineers, analysts, or programmers. This is positive, as the different work positions of the participants means that they will be bringing unique perspectives and insights to the discussion. Having a wide variety of backgrounds and roles among participants, the responses are likely to be richer and more interesting. This, in turn, can lead to more creative solutions or ideas that have not been thought of previously.

Figure 4.4: Q4 - What is your work experience?



This data shows that more participants gave a rating between 8 to 10 than any other range. The least popular range was less than 3 with 12 participants giving a rating there. The participants gave a rating between 4 to 7 were 46 participants. 38 participants gave a rating of 15 or more. The diversity of experience ensures that the results of the study will benefit from a range of responses from participants with different levels of work experience. This diversity of opinions and experiences ensures that a much wider array of perspectives can be taken into account when evaluating the data, thus strengthening the validity of the findings.

Q5: Have you taken any relevant training related to management, human resources, and IT?

The training programs taken by the participants show that they have reasonable technical knowledge of IT operations, leadership and management skills, and an understanding of oil and gas operations. Such individuals would have the capacity to become top candidates for positions requiring a combination of technical and leadership abilities in the oil and gas industry.

Taking relevant training related to management, human resources, and IT is an important step in improving the overall efficiency of the oil and gas companies, as it helps such companies to

develop the necessary skills and knowledge associated with key business functions. Management training helps employees understand how to create organisational structures, manage teams, delegate tasks, and create fiscal and operational plans. Human resources training can teach the processes and principles of hiring within the oil and gas sector as well as how to develop effective strategies for motivating and retaining staff. IT trainings can develop the communication technology, IT infrastructure management, network analysis, database administration, cybersecurity, and website development, which help develop employees' technical skills. This type of training has many benefits. It improves an organisation's operations, enhances staff knowledge and expertise, and allows an organisation to take advantage of new technologies such as Cloud computing, mobile devices, and artificial intelligence AI.

4.6 Research Pillars

The frequency analysis shows the responses of the 172 participants in the questionnaire, which reflect the intellectual attitudes towards the subject of the research and the relationships that were formulated in the questionnaire. It can be seen that the diversity obtained in the part of the demographic questions is of high value. The participants ranged between males and females and different age groups, as well as various practical experiences. This diversity supported the research in an important way as responses were obtained from groups of different ages, genders and work experiences. This part will be related to the research pillars, which were divided according to the main hypotheses of the research, which will be analysed later to test the validity of the hypotheses of the study. Where the current part will show the various frequencies in the degrees of response, approval and opposition to the phrases that were proposed to measure the validity of the hypotheses or not.

4.6.1 Frequency Analysis

The frequency analysis of the responses is an important tool for understanding what personnel at the UAE oil and gas companies think about the phenomena under investigation. Frequency analysis allows the researcher to look at an array of data points to help analyse the conditions of the management mindset and its multidimensional implications of IT system implementation.

A review of the frequency analysis of this study reveals that 'IT system implementation', 'framework', 'implementation', and 'management' are some of the most frequently used words. This highlights the main focus of the research, which is the development of a supportive

management mindset framework for IT system implementation that contributes to the organisational development. The study also emphasises the need for a unified and comprehensive approach to IT system implementation needed for a robust approach to system integration and adaptation to ensure continuous growth and success. Furthermore, also revealed by the frequency analysis of this research is a focus on 'research' and 'examination'.

Table 4.2: Responses' frequencies of the Part (P1.1 A)

P 1.1 A: The internal factors of management mindset including (IT competencies, the awareness of systems and operations and leadership) and technology software system implementation

Q 1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree				
	Somewhat dis	26	15.0	15.1	15.1
	Neutral	25	14.5	14.5	29.7
	Somewhat agree	73	42.2	42.4	72.1
	Strongly agree	48	27.7	27.9	100.0
	Total	172	99.4	100.0	

Q 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	1.2	1.2	1.2
	Somewhat dis	10	5.8	5.8	7.0
	Neutral	22	12.7	12.8	19.8
	Somewhat agree	60	34.7	34.9	54.7
	Strongly agree	78	45.1	45.3	100.0
	Total	172	99.4	100.0	

Q 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	20	11.6	11.6	11.6
	Somewhat dis				
	Neutral	40	23.1	23.3	34.9
	Somewhat agree	55	31.8	32.0	66.9
	Strongly agree	57	32.9	33.1	100.0
	Total	172	99.4	100.0	

Q 4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	1.7	1.7	1.7
	Somewhat dis	11	6.4	6.4	8.1
	Neutral	54	31.2	31.4	39.5
	Somewhat agree	52	30.1	30.2	69.8
	Strongly agree	52	30.1	30.2	100.0
	Total	172	99.4	100.0	

Q 5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	16	9.2	9.3	9.3
	Somewhat dis				
	Neutral	48	27.7	27.9	37.2
	Somewhat agree	65	37.6	37.8	75.0
	Strongly agree	43	24.9	25.0	100.0
	Total	172	99.4	100.0	

Q 6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.6	.6	.6
	Somewhat dis	7	4.0	4.1	4.7
	Neutral	25	14.5	14.5	19.2
	Somewhat agree	74	42.8	43.0	62.2
	Strongly agree	65	37.6	37.8	100.0
	Total	172	99.4	100.0	

Q 7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.6	.6	.6
	Somewhat dis	6	3.5	3.5	4.1
	Neutral	26	15.0	15.1	19.2
	Somewhat agree	60	34.7	34.9	54.1
	Strongly agree	79	45.7	45.9	100.0
	Total	172	99.4	100.0	

Q 8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	1.2	1.2	1.2
	Somewhat dis	14	8.1	8.1	9.3
	Neutral	33	19.1	19.2	28.5
	Somewhat agree	68	39.3	39.5	68.0
	Strongly agree	55	31.8	32.0	100.0
	Total	172	99.4	100.0	

Q 9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	1.2	1.2	1.2
	Somewhat dis	14	8.1	8.1	9.3
	Neutral	31	17.9	18.0	27.3
	Somewhat agree	71	41.0	41.3	68.6
	Strongly agree	54	31.2	31.4	100.0
	Total	172	99.4	100.0	

Q 10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	1.7	1.7	1.7
	Somewhat dis	17	9.8	9.9	11.6
	Neutral	40	23.1	23.3	34.9
	Somewhat agree	57	32.9	33.1	68.0
	Strongly agree	55	31.8	32.0	100.0
	Total	172	99.4	100.0	

Q 11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	9	5.2	5.2	5.2
	Somewhat dis	26	15.0	15.1	20.3
	Neutral	24	13.9	14.0	34.3
	Somewhat agree	47	27.2	27.3	61.6
	Strongly agree	66	38.2	38.4	100.0
	Total	172	99.4	100.0	

The pillar "P 1.1 A: The internal factors of management mindset including (IT competencies, the awareness of systems and operations and leadership) and technology software system implementation" is the first part in the questionnaire, which includes 11 phrases. In the responses of the participants, the degrees of approval, neutrality and disagreement were different, which indicates the diversity of views on the relationships in this pillar. It is noted that the majority of participants agree to some extent that management mindset (competences, beliefs and characteristics) is perceived and understood by individuals in terms of its significant roles played within the organisation, where 73 of them indicated agreement. In a higher level of agreement, the majority of the participants emphasised that management mindset and technology software systems are critical for the success of organisational production and services, as 60 and 78 indicated somewhat agreeing and strongly agreeing, respectively.

In the internal factors, in questions 3, 4 and 5, the responses were positive regarding IT competencies that affect technology software system implementation including Individuals' IT background, Employees' acquired IT skills and qualifications and IT training, courses and programs provided by management as the strong agreement responses were slightly high with 57, 52 and 43 respectively. The other internal factors of the awareness of the software systems and operations included exploration, geology and seismic software, production and engineering software and ERP (Enterprise Resource Planning) software. The production and engineering software and ERP reached the highest support as 60 and 79 were agreeing respectively. In the third factor represented in the leadership, leadership styles and characteristics were supported by 71 and 54 of the agreement, while the responses of leadership capabilities were varied between the neutrality, and agreement with 40, 57 and 55.

Table 4.3: Responses' frequencies of the Part (P1.2 A)

P 1.2 A: The external factors of management mindset including (PESTLE factors (Political, Economic, Sociological, Technological, Legal and Environmental), competition and customers) and technology system implementation

Q 12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	2.9	2.9	2.9
	Somewhat dis	10	5.8	5.8	8.7
	Neutral	68	39.3	39.5	48.3
	Somewhat agree	55	31.8	32.0	80.2
	Strongly agree	34	19.7	19.8	100.0
	Total	172	99.4	100.0	

Q 13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	1.2	1.2	1.2
	Somewhat dis	8	4.6	4.7	5.8
	Neutral	28	16.2	16.3	22.1
	Somewhat agree	73	42.2	42.4	64.5
	Strongly agree	61	35.3	35.5	100.0
	Total	172	99.4	100.0	

Q 14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	1.7	1.7	1.7
	Somewhat dis	17	9.8	9.9	11.6
	Neutral	34	19.7	19.8	31.4

Q 15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	4.0	4.1	4.1
	Somewhat dis	12	6.9	7.0	11.0
	Neutral	43	24.9	25.0	36.0

	Somewhat agree	70	40.5	40.7	72.1
	Strongly agree	48	27.7	27.9	100.0
	Total	172	99.4	100.0	

Q 16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.6	.6	.6
	Somewhat dis	19	11.0	11.0	11.6
	Neutral	35	20.2	20.3	32.0
	Somewhat agree	73	42.2	42.4	74.4
	Strongly agree	44	25.4	25.6	100.0
	Total	172	99.4	100.0	

Q 17

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	8	4.6	4.7	4.7
	Somewhat dis	14	8.1	8.1	12.8
	Neutral	39	22.5	22.7	35.5
	Somewhat agree	42	24.3	24.4	59.9
	Strongly agree	69	39.9	40.1	100.0
	Total	172	99.4	100.0	

Q 18

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.6	.6	.6
	Somewhat dis	13	7.5	7.6	8.1
	Neutral	41	23.7	23.8	32.0
	Somewhat agree	73	42.2	42.4	74.4
	Strongly agree	44	25.4	25.6	100.0
	Total	172	99.4	100.0	

Q 19

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	1.2	1.2	1.2
	Somewhat dis	16	9.2	9.3	10.5
	Neutral	57	32.9	33.1	43.6
	Somewhat agree	55	31.8	32.0	75.6
	Strongly agree	42	24.3	24.4	100.0
	Total	172	99.4	100.0	

Q 20

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	2.9	2.9	2.9
	Somewhat dis	10	5.8	5.8	8.7
	Neutral	24	13.9	14.0	22.7
	Somewhat agree	61	35.3	35.5	58.1
	Strongly agree	72	41.6	41.9	100.0
	Total	172	99.4	100.0	

Q 21

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.6	.6	.6
	Somewhat dis	16	9.2	9.3	9.9
	Neutral	38	22.0	22.1	32.0
	Somewhat agree	56	32.4	32.6	64.5
	Strongly agree	61	35.3	35.5	100.0
	Total	172	99.4	100.0	

Q 22

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.6	.6	.6
	Somewhat dis	18	10.4	10.5	11.0
	Neutral	35	20.2	20.3	31.4
	Somewhat agree	59	34.1	34.3	65.7
	Strongly agree	59	34.1	34.3	100.0
	Total	172	99.4	100.0	

Q 23

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	2.9	2.9	2.9
	Somewhat dis	31	17.9	18.0	20.9
	Neutral	21	12.1	12.2	33.1
	Somewhat agree	57	32.9	33.1	66.3
	Strongly agree	58	33.5	33.7	100.0
	Total	172	99.4	100.0	

The second pillar in the questionnaire is represented in “P 1.2 A: The external factors of management mindset including (PESTLE factors (Political, Economic, Sociological, Technological, Legal and Environmental), competition and customers) and technology system implementation” which included 12 phrases. The political, economic, social, technological, legal, and environmental have been differently answered, for example in the first factor "the political dimension" most of the answers were conservative and the participants chose neutrality by 39%, while 55 and 34 agreed to different degrees. In the economic factor, most of the participants believe that economic growth, interest rates, exchange rates, inflation, disposable income of consumers and businesses a can affect the quality and effectiveness in applying the technology software system as 42% and 35% were somewhat and strongly agree. In a similar way, the social factor has similar characteristics to the economic dimension. In different responses, the technological, legal and environmental factors were evaluated with moderate responses as the neutrality was 25%, 20% and 23% respectively.

The focus of how competition can affect technology software system implementation regarding is represented in three different phrases. Management approaches towards competitors using technological software systems, where most of the responses were in favour of this effect with rates of 42% and 25% with different degrees of agreement. On the contrary, the responses of the statement "market shares, organisational performance and technology monitoring comparing with competitors" were somewhat conservative, as the largest percentage, 33%, was neutral. In the phrase "The competitive employees' IT skills and capabilities", the agreement ratings were relatively high, with 35% and 42% somewhat and strongly agreeing on this effect.

Table 4.4: Responses' frequencies of the Part (P1.B)

P 1 B: Technology software system implementation

Q 24

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	2.9	2.9	2.9
	Somewhat dis	42	24.3	24.4	27.3
	Neutral	46	26.6	26.7	54.1
	Somewhat agree	47	27.2	27.3	81.4
	Strongly agree	32	18.5	18.6	100.0
	Total	172	99.4	100.0	

Q 25

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	9	5.2	5.2	5.2
	Somewhat dis	24	13.9	14.0	19.2
	Neutral	81	46.8	47.1	66.3
	Somewhat agree	58	33.5	33.7	100.0
	Strongly agree	172	99.4	100.0	
	Total				

Q 26

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	19	11.0	11.0	11.0
	Somewhat dis	32	18.5	18.6	29.7
	Neutral	74	42.8	43.0	72.7
	Somewhat agree	47	27.2	27.3	100.0
	Strongly agree	172	99.4	100.0	
	Total				

Q 27

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	2.9	2.9	2.9
	Somewhat dis	21	12.1	12.2	15.1
	Neutral	49	28.3	28.5	43.6
	Somewhat agree	50	28.9	29.1	72.7
	Strongly agree	47	27.2	27.3	100.0
	Total	172	99.4	100.0	

Q 28

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	2.3	2.3	2.3
	Somewhat dis	35	20.2	20.3	22.7
	Neutral	31	17.9	18.0	40.7
	Somewhat agree	57	32.9	33.1	73.8
	Strongly agree	45	26.0	26.2	100.0
	Total	172	99.4	100.0	

Q 29

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	9	5.2	5.2	5.2
	Somewhat dis	26	15.0	15.1	20.3
	Neutral	37	21.4	21.5	41.9
	Somewhat agree	50	28.9	29.1	70.9
	Strongly agree	50	28.9	29.1	100.0
	Total	172	99.4	100.0	

Q 30

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	1.2	1.2	1.2
	Somewhat dis	27	15.6	15.7	16.9
	Neutral	58	33.5	33.7	50.6
	Somewhat agree	50	28.9	29.1	79.7
	Strongly agree	35	20.2	20.3	100.0
	Total	172	99.4	100.0	

Q 31

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	.6	.6	.6
	Somewhat dis	18	10.4	10.5	11.0
	Neutral	41	23.7	23.8	34.9
	Somewhat agree	74	42.8	43.0	77.9
	Strongly agree	38	22.0	22.1	100.0
	Total	172	99.4	100.0	

Q 32

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	2.3	2.3	2.3
	Somewhat dis	13	7.5	7.6	9.9
	Neutral	24	13.9	14.0	23.8
	Somewhat agree	66	38.2	38.4	62.2
	Strongly agree	65	37.6	37.8	100.0
	Total	172	99.4	100.0	

The pillar “P 1 B Technology software system implementation” was investigated and its data collected in a way that varied in the answers. With regard to whether the implementation of technological systems can be determined by the existing competencies within the company”, a large percentage of 24% somewhat disagreed with this assumption while 27% were neutral. In the phrase “the technological systems applied in the company such as exploration, geology and seismic software, production and engineering software and ERP software are characterised by the ability to update according to the requirements of the operations”, the participants’ responses were mostly in favour with high agreement rates. It reached 47% somewhat agree and 33% strongly agree.

The operational system for drilling and production operations was considered as a system that can be developed by appointing more qualified personnel in the field of IT as 74 participants were somewhat agree on this assumption. The awareness of employees about applying contemporary technological systems and keeping pace with the development witnessed by the oil sector as an essential pillar in the implementation has been differently answered as 28% were neutral, 29% were somewhat agree, while 27% were strongly agree. There is a diversity of responses related to the statements 28, 29 and 30, as the participants indicated that employees could develop their capabilities through advanced training in information technology. In addition, interactive processes from exploration to production could require a coherent and easy-to-understand technological software systems as the responses varied from the neutrality and agreement. Moreover, the implementation of technological work systems could be more efficient through an effective leadership vision as confirmed by the most of responses.

On the other hand, there was a relatively high degree of agreement in the last two statements. In the statement "there is a positive interaction between the leadership within the company and the importance of accurately implementing technological systems", most of the participants, 43%, agreed with a medium degree, while 22% agreed with a high degree, which supports the statement. Similarly, the majority of participants believe that there is an impact, motivation and inspiration by the leadership practices on employees in the IT departments with 38% somewhat agree and 37% are strongly agree.

Table 4.5: Responses’ frequencies of the Part (P2 A)

P 2 A : Management mindset

Q 33

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	2.3	2.3	2.3
	Somewhat dis	13	7.5	7.6	9.9

Q 34

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	4.0	4.1	4.1
	Somewhat dis	23	13.3	13.4	17.4

	Neutral	35	20.2	20.3	30.2
	Somewhat agree	65	37.6	37.8	68.0
	Strongly agree	55	31.8	32.0	100.0
	Total	172	99.4	100.0	

Q 35

		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree				
Valid	Somewhat dis	7	4.0	4.1	4.1
	Neutral	23	13.3	13.4	17.4
	Somewhat agree	35	20.2	20.3	37.8
	Strongly agree	51	29.5	29.7	67.4
	Total	56	32.4	32.6	100.0

Q 37

		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree	2	1.2	1.2	1.2
Valid	Somewhat dis	22	12.7	12.8	14.0
	Neutral	31	17.9	18.0	32.0
	Somewhat agree	66	38.2	38.4	70.3
	Strongly agree	51	29.5	29.7	100.0
	Total	172	99.4	100.0	

Q 39

		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree	7	4.0	4.1	4.1
Valid	Somewhat dis	22	12.7	12.8	16.9
	Neutral	32	18.5	18.6	35.5
	Somewhat agree	56	32.4	32.6	68.0
	Strongly agree	55	31.8	32.0	100.0
	Total	172	99.4	100.0	

Q 41

		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree	2	1.2	1.2	1.2
Valid	Somewhat dis	15	8.7	8.7	9.9
	Neutral	35	20.2	20.3	30.2
	Somewhat agree	61	35.3	35.5	65.7
	Strongly agree	59	34.1	34.3	100.0
	Total	172	99.4	100.0	

Q 43

		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree	3	1.7	1.7	1.7
Valid	Somewhat dis	19	11.0	11.0	12.8
	Neutral	55	31.8	32.0	44.8
	Somewhat agree	56	32.4	32.6	77.3
	Strongly agree	39	22.5	22.7	100.0
	Total	172	99.4	100.0	

	Neutral	35	20.2	20.3	37.8
	Somewhat agree	51	29.5	29.7	67.4
	Strongly agree	56	32.4	32.6	100.0
	Total	172	99.4	100.0	

Q 36

		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree	.6	.6	.6	.6
Valid	Somewhat dis	5.8	5.8	6.4	5.8
	Neutral	20.8	20.9	27.3	20.8
	Somewhat agree	41.0	41.3	68.6	41.0
	Strongly agree	31.2	31.4	100.0	31.2
	Total	99.4	100.0		99.4

Q 38

		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree	5	2.9	2.9	2.9
Valid	Somewhat dis	22	12.7	12.8	15.7
	Neutral	34	19.7	19.8	35.5
	Somewhat agree	62	35.8	36.0	71.5
	Strongly agree	49	28.3	28.5	100.0
	Total	172	99.4	100.0	

Q 40

		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree	2	1.2	1.2	1.2
Valid	Somewhat dis	11	6.4	6.4	7.6
	Neutral	38	22.0	22.1	29.7
	Somewhat agree	81	46.8	47.1	76.7
	Strongly agree	40	23.1	23.3	100.0
	Total	172	99.4	100.0	

Q 42

		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree	6	3.5	3.5	3.5
Valid	Somewhat dis	19	11.0	11.0	14.5
	Neutral	31	17.9	18.0	32.6
	Somewhat agree	69	39.9	40.1	72.7
	Strongly agree	47	27.2	27.3	100.0
	Total	172	99.4	100.0	

Q 44

		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree	3	1.7	1.7	1.7
Valid	Somewhat dis	19	11.0	11.0	12.8
	Neutral	39	22.5	22.7	35.5
	Somewhat agree	59	34.1	34.3	69.8
	Strongly agree	52	30.1	30.2	100.0
	Total	172	99.4	100.0	

The “P 2 A: management mindset” within the oil companies in the UAE has been investigated from different dimensions. With similar responses, the participants confirmed that they feel that managerial mentality can be the main determinant of achieving effective IT system implementation through effective implementation of the dynamic work capability. Moreover, they feel that management mindset can significantly contribute to the effective implementation of IT quality standards. With one of the highest agreement phrases, the statement 40 “Management mindset has an impact on IT system implementation through implementation of IT quality standards in terms of IT structural and procedural quality that enhances IT system implementation” has been supported by 47% somewhat agree and 23% strongly agree respectively. Management mindset has controversial impact on IT system implementation in

terms of the legal, ethical adequacy standards related to IT system implementation as 22% were neutral, 34% were somewhat agree and 30% were strongly agree.

Table 4.6: Responses' frequencies of the Part (P2 B)

P 2 B: IT system implementation

Q 45

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	1.7	1.7	1.7
	Somewhat dis	14	8.1	8.1	9.9
	Neutral	38	22.0	22.1	32.0
	Somewhat agree	74	42.8	43.0	75.0
	Strongly agree	43	24.9	25.0	100.0
	Total	172	99.4	100.0	

Q 46

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	1.2	1.2	1.2
	Somewhat dis	15	8.7	8.7	9.9
	Neutral	32	18.5	18.6	28.5
	Somewhat agree	72	41.6	41.9	70.3
	Strongly agree	51	29.5	29.7	100.0
	Total	172	99.4	100.0	

Q 47

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	6	3.5	3.5	3.5
	Somewhat dis	25	14.5	14.5	18.0
	Neutral	40	23.1	23.3	41.3
	Somewhat agree	53	30.6	30.8	72.1
	Strongly agree	48	27.7	27.9	100.0
	Total	172	99.4	100.0	

Q 48

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	6	3.5	3.5	3.5
	Somewhat dis	28	16.2	16.3	19.8
	Neutral	39	22.5	22.7	42.4
	Somewhat agree	55	31.8	32.0	74.4
	Strongly agree	44	25.4	25.6	100.0
	Total	172	99.4	100.0	

Q 49

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	1.7	1.7	1.7
	Somewhat dis	27	15.6	15.7	17.4
	Neutral	41	23.7	23.8	41.3
	Somewhat agree	55	31.8	32.0	73.3
	Strongly agree	46	26.6	26.7	100.0
	Total	172	99.4	100.0	

The last pillar "P 2 B: IT system implementation" focused on the IT system implementation. The participants were asked whether there is an understanding and awareness among managers and employees of the impact of the management mindset on achieving effective IT system implementation.

Although the neutrality of the responses reached 22%, participants who agreed are 43% while the strong agreement was 25%. another question has been provided is to what extent can IT system implementation be achieved by supporting the company's dynamic competencies. Similarly, to the first statement, the majority of respondents' attitudes were concentrated in the slightly agreement as 42% and the other respondents were distributed between neutral and strongly agree options with 18% and 29% respectively. In this pillar, the IT system implementation was supposed as a factor that can be enhanced by adopting the most important and latest quality standards in operational and managerial processes. The participants' respondents were varied as some were disagree, 25 participants, 40 neutral, 53 somewhat agree, and 40 strongly agree. The diversity of responses were recorded in the statement that says "IT

system implementation is achieved in technological processes by keeping pace with global developments in the field of technology". 28 respondents were slightly disagree on this assumptions as they might assume that the oil and gas companies are already keeping pace with the global development of technology, while 39 of them were neutral, and it can be noted that the majority of responses support the slight and strong agreement of the statement with 32% and 25% respectively. The goals of the organisation were assumed to be associated with IT system implementation more effectively through positive interaction between leadership and employees. In this context, the answers of this assumptions were similarly distributed among the respondents as 16% were slightly disagree, 24% neutral, while 32% and 27% were in different agreement levels.

4.6.2 Simple Linear Regression Analysis

Linear regression analysis is a powerful tool used in the field of predictive analytics (Kumar and Garg, 2018). It is used to identify relationships between independent variables (management mindset) and a dependent variable (IT system implementation). Simple linear regression is a form of quantitative data analysis used on the data gathered from the UAE oil and gas companies. It is used to model the relationship between two continuous variables, often denoted as x and y. Simple linear regression is used to estimate the expected value of a dependent variable “IT system implementation” (y) based on the value of an independent variable “management mindset” (x).

The first step in conducting a simple linear regression is to choose the set of independent and dependent variables and to define the sample size. After the variables are chosen, the next step is obtaining data from the UAE oil and gas companies. The data has been compiled into an appropriate data format, in SPSS files.

The next step is to perform descriptive statistics on the data and develop an appropriate linear regression model. Descriptive statistics include features such as means, standard deviations, and other summary statistics for the data. After descriptive statistics are completed, the appropriate linear regression model has been determined. This includes choosing the appropriate regression model and determining the degrees of freedom for the model (R2).

After establishing the regression model, it is important to compare the regression results to the actual data (Yao and Li, 2014). This is done by plotting the regression line on the data graph. This will allow us to evaluate the accuracy of the model. Moreover, various evaluation metrics

can be used to measure the model's performance such as the coefficient of determination (R-squared). These metrics can provide an indication of whether the model captures the relationships in the data.

Through fitting a line through a scatterplot, regression analysis helps in identifying trends, quantifying relationships, and making predictions about the future. This helps in making informed decisions about the direction of the relationships in phenomena. In addition, it can provide insight into other findings, such as the impact of a change in a variable, or how trial and error experimentation can help reduce the time required to reach a conclusion. Linear regression is an essential part of the predictive modelling toolkit, as it is often used in forecasting and predictions. Linear regression analysis is used to determine the relationship between variables at a given point in time. It encompasses the variation in one variable is reflected in the other, implying a strong correlation between them.

Linear regression analysis is an appropriate strategy for examining the relationship between management mindset and IT system implementation. This is because linear regression captures the variability in the outcome variable (in this case, IT system implementation) based on the independent variable (management mindset). The linear regression allows to assess whether the effects of the independent variable on the outcome variable are statistically significant.

Once the relationship between the two variables has been established, linear regression analysis allows to further explore the nature of the relationship. Specifically, linear regression allows to assess whether the effects of the independent variable on the outcome variable are statistically significant. This helps to determine whether the observed effects of the independent variable on the outcome variable are likely to be replicated in other organisations which work in the oil and gas sector. This is important because it confirms whether the expected benefits of a positive management mindset can be expected with any degree of certainty.

Pillar 1.1: Pillar 1.1: The internal factors of management mindset and technology software system implementation

P 1.1: The internal factors of management mindset including (IT competencies, the awareness of systems and operations and leadership) and technology software system implementation.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	H1.1[b]	.	Enter

a. Dependent Variable: Technology System Implementation TSI

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.861[a]	.742	.741	.34226	.742	489.208	1	170	<.001	1.866

a. Predictors: (Constant), H1.1

b. Dependent Variable: TSI

This model summary provides information about the quality of the model. In regression analysis, the correlation coefficient (R) is a measure of the direction and strength of the linear relationship between the observed values and the predicted values of the dependent variable. The coefficient of determination (R^2) provides the proportion of the variance of the dependent variable explained by the independent variables in the model. That is, R^2 measures how well the predictors as a whole account for the variation of the outcome. Adjusted R^2 adjusts this measure for the number of predictors in the model and sample size and provides a more accurate estimate of explanatory power by penalizing for irrelevant variables that fail to contribute significantly to the model.

The R value of .861a indicates that the model explains approximately 86% of the variance in the data. The R Square value of .742 indicates that the model explains 74.2% of the variance in the data. The Adjusted R Square value of .741 indicates that the model explains 74.1% of the variance in the data after adjusting the degrees of freedom.

The Std. Error of the Estimate of .34226 indicates that the standard deviation of the residuals is 0.342, suggesting that the model is quite precise. The R Square Change of .742 indicates that the model explains 74.2% of the variability in the data. The F Change of 489.208 indicates that the model is statistically significant. The df1 and df2 values of 1 and 170 respectively indicate that the data used for the model is from over 170 participants.

The Sig. F Change of <.001 indicates that the model is extremely statistically significant. The Durbin-Watson value of 1.866 indicates that there is minimal correlation between successive residuals, suggesting that the model is not suffering from autocorrelation. In general, this model summary provides evidence that the model is of high quality.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.306	1	57.306	489.208	<.001[b]
	Residual	19.914	170	.117		
	Total	77.220	171			

a. Dependent Variable: TSI

b. Predictors: (Constant), H1.1

ANOVA is used to compare the means of three or more groups to assess whether there are statistically significant differences between them. It is particularly useful in research that involves multiple groups or variables, as it minimizes the risk of errors compared to multiple t-tests. ANOVA provides a robust method for understanding the impact of independent variables on a dependent variable. The results of this c Model 1 show that there is a statistically significant relationship between the dependent variable (TSI) and the predictor variable (H1.1). The F-value of 489.208 and the significance value of < .001 demonstrates that there is a strong and statistically significant association between H1.1 and TSI. The hypothesis 1.1 indicates that the internal factors of management mindset including IT competencies, the awareness of systems and operations and leadership have high positive determination and support for technology system implementation in the UAE oil and gas sector. Based on these results, it can conclude that hypothesis H1.1 is accepted

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.219	.160		1.366	.174
	H1.1	.889	.040	.861	22.118	<.001

a. Dependent Variable: TSI

The model coefficient for constant is .219. This means that the constant variable is expected to be .219 when all the other predictor variables are 0. The model coefficient for H1.1 is .889. This means that when H1.1 increases by 1 unit, the TSI is expected to increase by .889 units.

The standardized coefficient for H1.1 is .861, which indicates that H1.1 is strongly associated with the TSI. The t-value for H1.1 is 22.118, which is statistically significant at the .001 level.

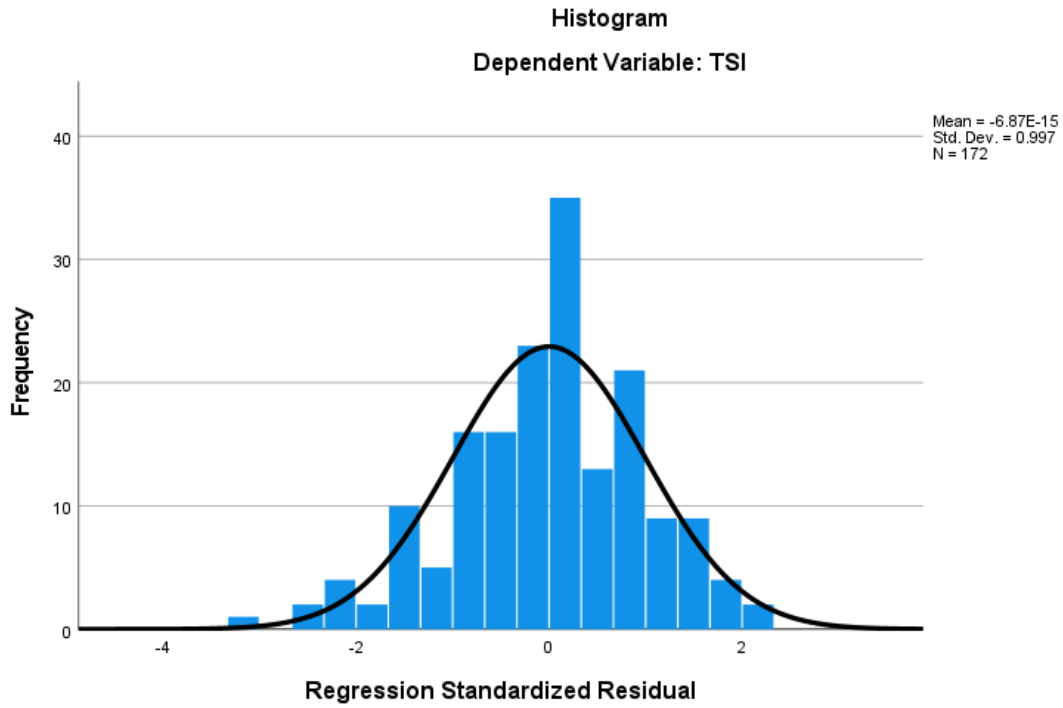
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.2394	4.6639	3.7190	.57890	172
Residual	-1.09816	.74034	.00000	.34126	172
Std. Predicted Value	-2.556	1.632	.000	1.000	172
Std. Residual	-3.209	2.163	.000	.997	172

a. Dependent Variable: TSI

The residuals statistics indicate that the predicted values range from 2.2394 to 4.6639, with a mean of 3.7190 and a standard deviation of 0.5789. The residuals range from -1.09816 to 0.74034, with a mean of 0.00000 and a standard deviation of 0.34126. The standardized predicted values range from -2.556 to 1.632, with a mean of 0 and a standard deviation of 1. The standardized residuals range from -3.209 to 2.163, with a mean of 0 and a standard deviation of 0.997. These statistics indicate that the residuals for the TSI are statistically insignificant.

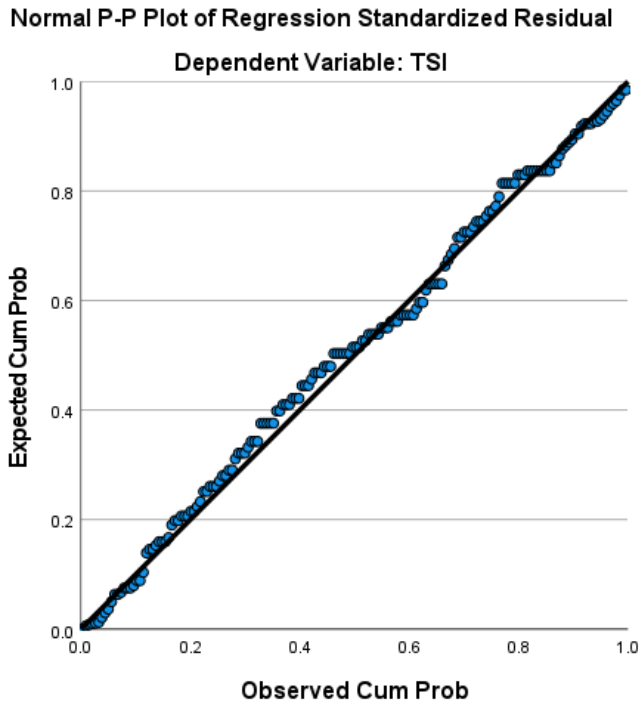
Figure 4.5: Histogram – Regression Standardized Residual (H 1.1)



In a standardized residual, the mean of the residuals for all data points is zero. This means that any values in the residuals that are significantly above or below zero can indicate discrepancies

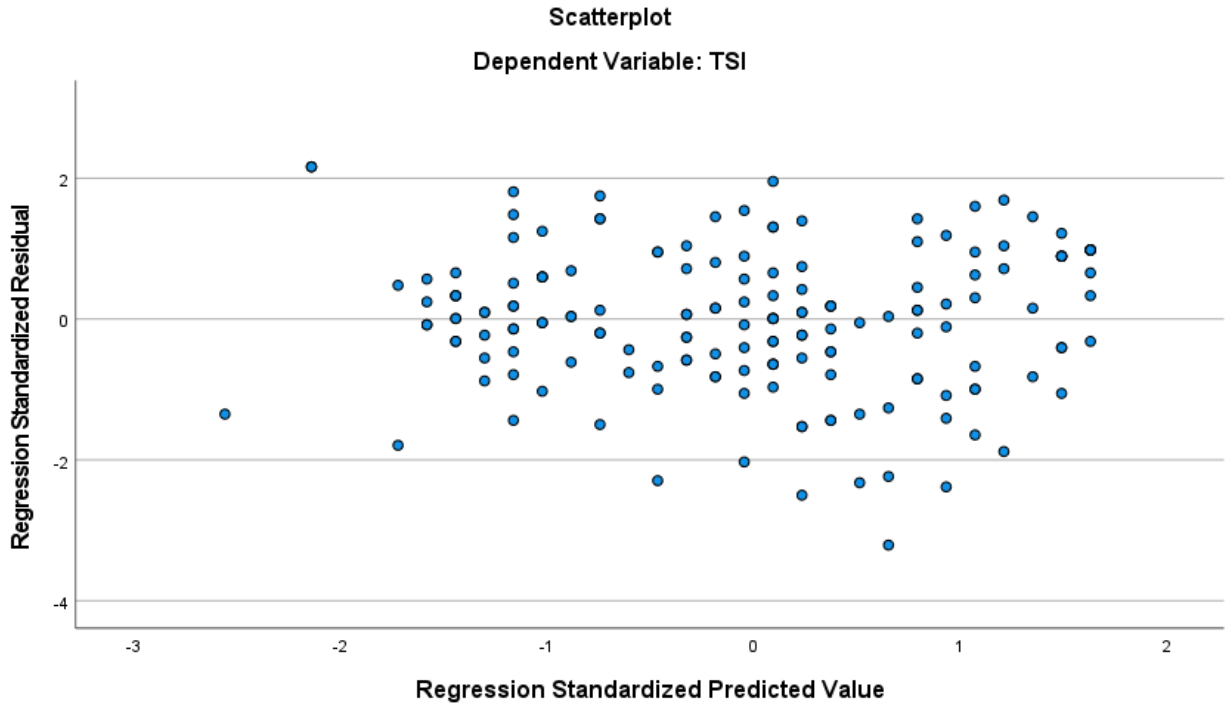
that may need to be further investigated. The standardized residual also normalizes the residuals so that they can be compared across different models and different datasets. This allows identifying potential outliers in the dataset and determining where more investigation is needed.

Figure 4.6: Normal P-P Plot of Regression Standardized Residual of H 1.1



The P-P plot is used in this analysis which is a graphical tool used to compare two sets of data by plotting their cumulative distribution functions. This helps determine if the two sets of data come from the same population. It is typically used to check for normality, and to compare other distributions. The plot shows a straight line of the two sets of data which have the same distribution. If the data sets do not have the same distribution, the plot will exhibit a curved or S-shaped line.

Figure 4.7: Scatterplot (regression standardized residual and regression standardized predicted value) of the H 1.1



The scatterplot chart is a graph where the relationship between the research variables is illustrated by plotting them on a graph, with one variable on the X-axis and the other on the Y-axis. Scatterplot is used to explore the relationship between the internal factors of management mindset including IT competencies, the awareness of systems and operations and leadership and technology system implementation. The chart also is used to identify potential correlations, and understand the spread of the data.

Pillar 1.2: The external factors of management mindset and technology system implementation

P 1.2: The external factors of management mindset including PESTLE factors, competition and customers have high positive determination and support for technology system implementation in the UAE oil and gas sector.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	H1.2[b]	.	Enter

a. Dependent Variable: TSI

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.863[a]	.744	.743	.34069	.744	495.292	1	170	<.001	1.612

a. Predictors: (Constant), H1.2

b. Dependent Variable: TSI

The R value of this model is 0.863, indicating a strong relationship between H1.2 and TSI. The R-squared value is 0.744, which suggests that 74.4% of the variance in TSI is explained by H1.2. The adjusted R-squared value of 0.743 indicates that the model is slightly better than the baseline model. The standard error of the estimate is 0.34069, which is a measure of the variation around the regression line. The change statistics is also 0.744, indicating that changes in H1.2 account for 74.4% of the changes in TSI. The Durbin-Watson statistic of 1.612 indicates that there is no autocorrelation present in the model. This suggests that the regression model is valid.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.489	1	57.489	495.292	<.001[b]
	Residual	19.732	170	.116		
	Total	77.220	171			

a. Dependent Variable: TSI

b. Predictors: (Constant), H1.2

The ANOVA[a] table above presents the results of a regression analysis used to estimate the effect of H1.2 on the dependent variable, TSI. The significance value (Sig.) of 0.001 indicates that there is a statistically significant relationship between H1.2 and TSI. The F statistic is 495.292 and indicates that the model explains a large amount of the variance in TSI. The Regression Sum of Squares (57.489) indicates that 57.489 of the total variation of 77.220 can be attributed to H1.2, demonstrating the impact of H1.2 on TSI. The hypothesis 1.2 indicates that the external factors of management mindset including PESTLE factors, competition and customers have high positive determination and support for technology system implementation in the UAE oil and gas sector". Consequently, the hypothesis 1.2 is accepted.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.457	.149		3.069	.003
	H1.2	.848	.038	.863	22.255	<.001

a. Dependent Variable: TSI

The coefficient for H1.2 in this regression model is 0.848, which means that for each 1-unit increase in H1.2, the TSI increases by 0.848. This has a standardized coefficient of 0.863, indicating a strong relationship between H1.2 and TSI. A t-test of the coefficient also indicates that the relationship is significant, with a p-value of less than 0.001.

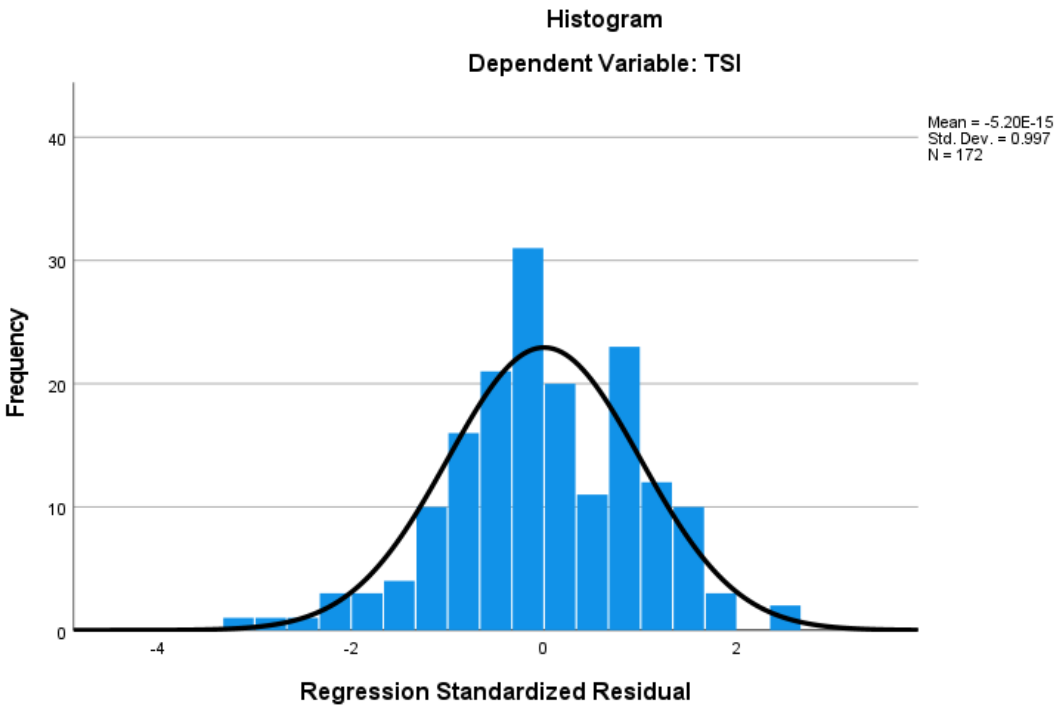
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.2946	4.6979	3.7190	.57982	172
Residual	-1.08231	.82716	.00000	.33969	172
Std. Predicted Value	-2.457	1.688	.000	1.000	172
Std. Residual	-3.177	2.428	.000	.997	172

a. Dependent Variable: TSI

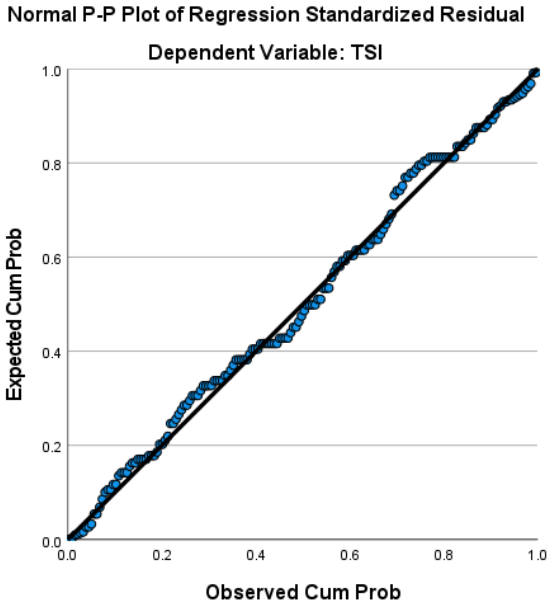
This residuals table is showing the statistics for the TSI (Total Sum of Squares) values for the data set. The predicted value is between 2.2946 and 4.6979. The minimum TSI is 2.2946, the maximum is 4.6979, the mean is 3.7190, and the standard deviation is .57982. The residual value is between -1.08231 and .82716. The minimum residual is -1.08231, the maximum is .82716, and the standard deviation is .33969. The standard predicted value is between -2.457 and 1.688 with a mean of 0.00 and a standard deviation of 1.00. The standard residual is between -3.177 and 2.428 with a mean of 0.00 and a standard deviation of 0.997.

Figure 4.8: Histogram – Regression Standardized Residual (H 1.2)



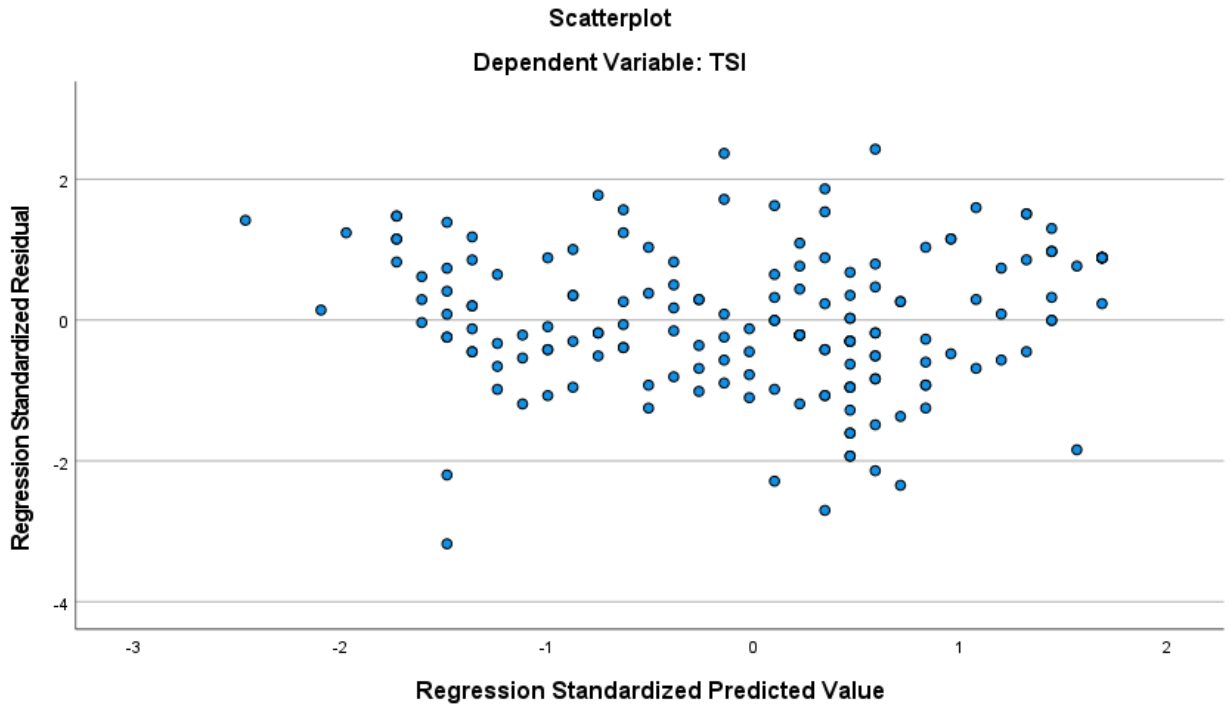
The histogram of Regression Standardized Residuals (H 1.2) visualizes the distribution of residuals from a regression model. It assesses assumptions of normality and identifies outliers or patterns.

Figure 4.9: Normal P-P Plot of Regression Standardized Residual of H 1.2



The Normal P-P Plot of Regression Standardized Residuals (H 1.2) evaluates the assumption of normality. Data points aligning closely with the diagonal line suggest normally distributed residuals, supporting model validity.

Figure 4.10: Scatterplot (regression standardized residual and regression standardized predicted value) of the H 1.2



The scatterplot of regression standardized residuals and predicted values (H 1.2) assesses homoscedasticity and linearity. A random, evenly dispersed pattern indicates consistent variance, supporting the regression model's assumptions.

Pillar 2.1: The impact of management mindset on IT system implementation through dynamic capabilities

P 2.1: Management mindset has a high positive effect on IT system implementation through dynamic capabilities in the UAE oil and gas sector

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	H2.1[b]	.	Enter

a. Dependent Variable: ITSI

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.864[a]	.746	.744	.37187	.746	498.812	1	170	<.001	2.100

a. Predictors: (Constant), H2.1

b. Dependent Variable: ITSI

The R Square value of the model is 0.746, which means approximately 75% of the variance in the response variable is explained by the independent variables in the model. The Adjusted R Square value is slightly lower at 0.744, which shows that some of the explanatory power of the model may have been overstated. The F Change value of 498.812 and Sig. F Change of < 0.001 suggest that the model is a good fit, as the significance value is much lower than the typical 0.05 threshold. The Durbin-Watson statistic of 2.1 suggests that the model has low serial correlation.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68.979	1	68.979	498.812	<.001[b]
	Residual	23.509	170	.138		
	Total	92.487	171			

a. Dependent Variable: ITSI

b. Predictors: (Constant), H2.1

ANOVA[a] compares the means of two or more groups of data. In this ANOVA[a], the dependent variable is IT system implementation and the predictor is "H2.1". The model's sum of squares is 68.979, the df is 1, the mean square is 68.979, the F is 498.812, and the significance is less than .001. This indicates that there is a very strong relationship between the predictor and the dependent variable. The hypothesis 2.1 indicates that management mindset has a high positive effect on IT system implementation through dynamic capabilities in the UAE oil and gas sector. In this analytical context, this hypothesis is accepted.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.484	.148		3.270	.001
	H2.1	.860	.039	.864	22.334	<.001

a. Dependent Variable: ITSI

The OLS regression model for ITSI has a coefficient of 0.484 for the intercept (constant) and 0.860 for the H2.1 variable. The standard error for H2.1 is 0.039 and the beta is 0.864. The t-statistic for H2.1 is 22.334 and it has a significance of < .001. This implies that the H2.1 variable has a significant effect on ITSI.

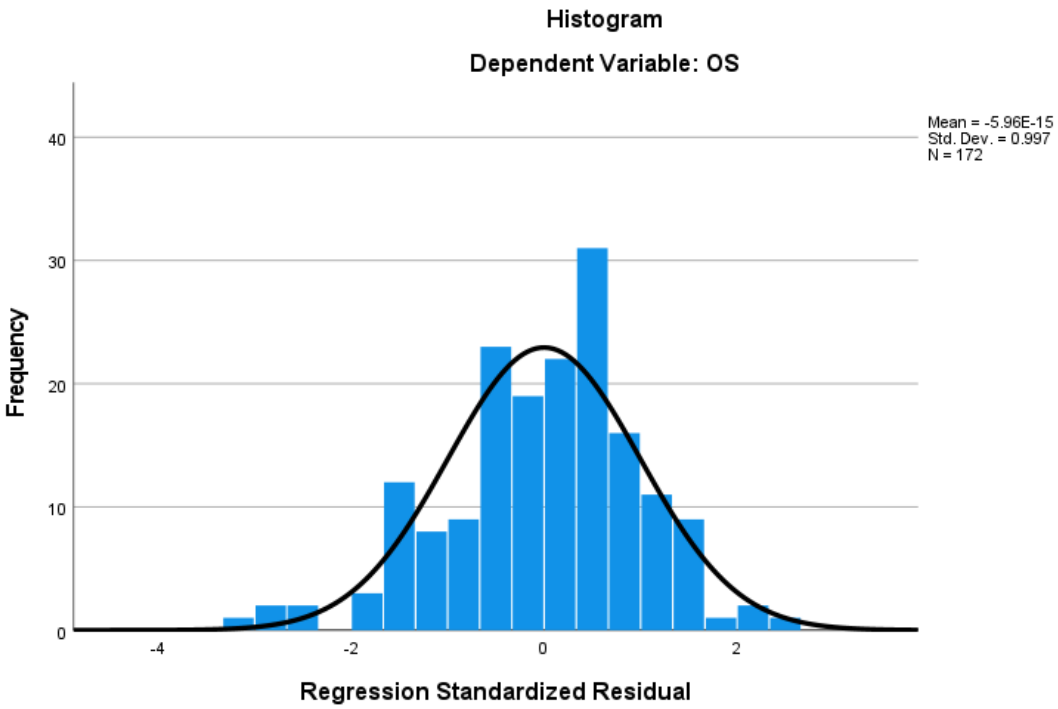
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.2043	4.7853	3.7256	.63513	172
Residual	-1.18528	.87506	.00000	.37078	172
Std. Predicted Value	-2.395	1.668	.000	1.000	172
Std. Residual	-3.187	2.353	.000	.997	172

a. Dependent Variable: ITSI

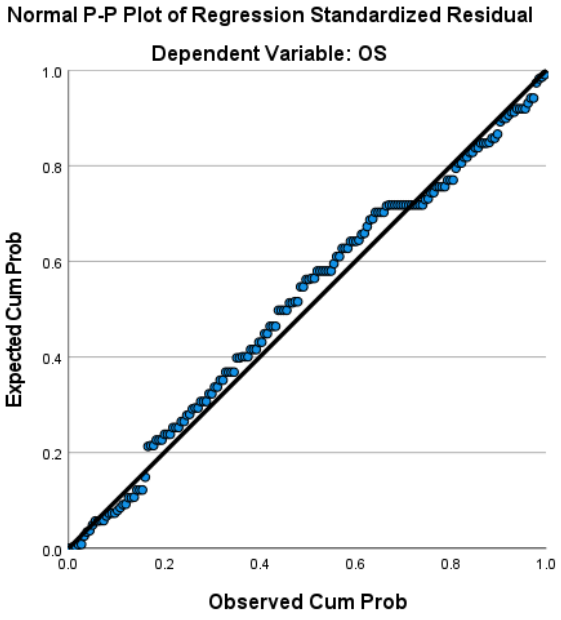
The residuals statistics provide information about the observed and expected value of the dependent variable (ITSI). The minimum observed ITSI was 2.2043 and the maximum was 4.7853, with an overall mean of 3.7256 and a standard deviation of .63513 across the 172 observations. The residual values range from -1.18528 to .87506, with a mean of 0 and a standard deviation of .37078, indicating the observed values are in line with expectations. The standardized predicted and residual values both range from -2.395 to 1.668 and -3.187 to 2.353, respectively, with a mean of 0 and a standard deviation of 1.000 and .997, respectively. Thus, it appears the model is a good fit for the data.

Figure 4.11: Histogram – Regression Standardized Residual (H 2.1)



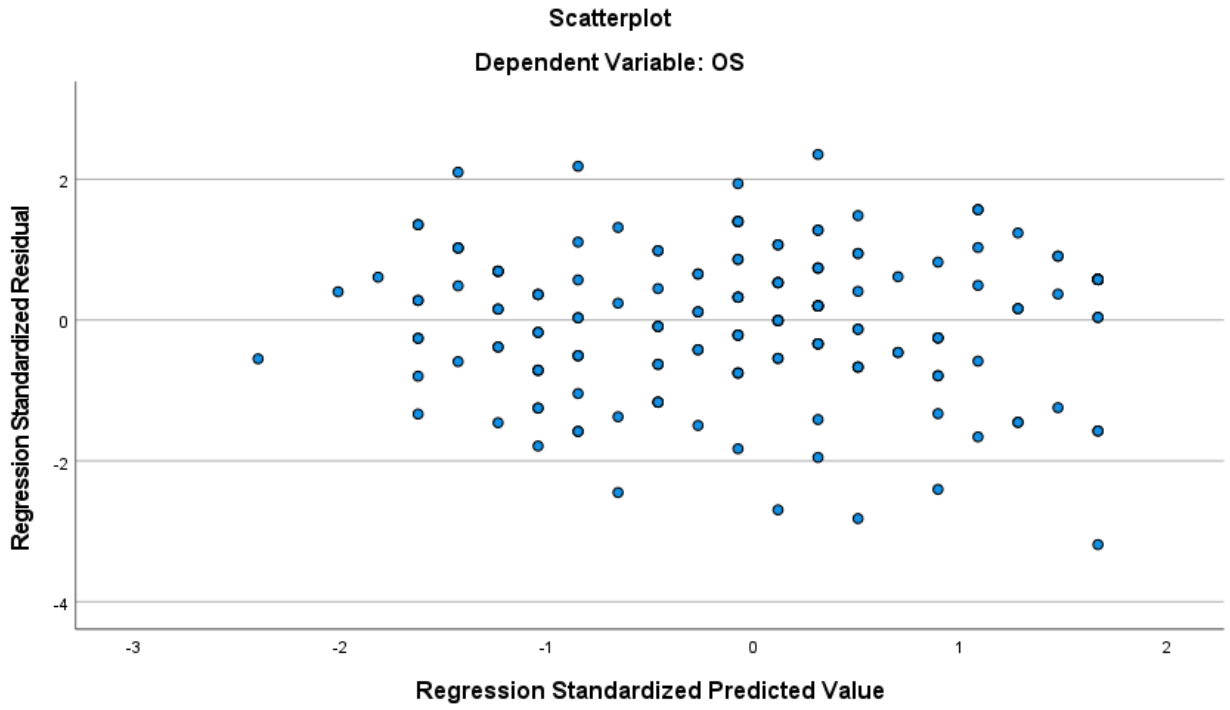
The histogram of Regression Standardized Residuals displays the distribution of residuals of (H 2.1). It assesses normality, identifying potential outliers or deviations affecting the regression model's accuracy.

Figure 4.12: Normal P-P Plot of Regression Standardized Residual of H 2.1



The Normal P-P Plot of Regression Standardized Residuals evaluates the normality assumption of the (H 2.1). Data points closely following the diagonal line suggest normally distributed residuals, supporting the validity and reliability of the regression model.

Figure 4.13: Scatterplot (regression standardized residual and regression standardized predicted value) of the H 2.1



The scatterplot of regression standardized residuals and predicted values of the (H 2.1) evaluates homoscedasticity and linearity.

Pillar 2.2: The impact of management mindset on IT system implementation through implementation of IT quality standards

P 2.2: Management mindset has a high positive effect on IT system implementation through implementation of IT quality standards in the UAE oil and gas sector.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	H2.2[b]	.	Enter

a. Dependent Variable: ITSI

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.750[a]	.563	.561	.48755	.563	219.090	1	170	<.001	1.907

a. Predictors: (Constant), H2.2

b. Dependent Variable: ITSI

The model summary indicates that the coefficient of determination (R) is 0.750, meaning that there is a moderate positive correlation between the dependent variable (ITSI) and the predictor (H2.2). The R Square is 0.563, which shows that 56.3% of the variation in ITSI can be explained by the variation in H2.2. The adjusted R Square is slightly lower at 0.561, which suggests that the model has some predictive power. The standard error of the estimate for the model is 0.48755, which is relatively low, indicating that the model is accurate in predicting ITSI. The change statistics show that the R Square for the model is 0.563, with a F Change of 219.090, df1 of 1, df2 of 170, and a Sig. F Change of <.001. The Durbin-Watson statistic is 1.907, indicating that there is a positive correlation between the errors for each observation in the data set.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52.078	1	52.078	219.090	<.001[b]
	Residual	40.409	170	.238		
	Total	92.487	171			

a. Dependent Variable: ITSI

b. Predictors: (Constant), H2.2

The ANOVA[a] result indicates that there is a statistically significant effect of the H2.2 variable on the ITSI variable. The F value of 219.090 is significantly greater than the critical F value at alpha = 0.01, indicating that the effect is statistically significant. The observed total sum of squares for the model was 92.487, with a regression sum of squares of 52.078 and residual sum of squares of 40.409. This result indicates that 52.078 of the variance in ITSI can be attributed to H2.2, with the remaining 40.409 being due to other variables or random error. The hypothesis 2.2 indicates that management mindset has a high positive effect on IT system

implementation through implementation of IT quality standards in the UAE oil and gas sector. According to this analysis, the hypothesis 2.2 is accepted.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.956	.191		5.013	<.001
	H2.2	.729	.049	.750	14.802	<.001

a. Dependent Variable: ITSI

The results of the regression suggest that the H2.2 predictor variable has a strong, positive relationship with the dependent variable, ITSI. The standardized beta coefficient is .750, indicating a high positive association between the two variables. The unstandardized coefficient is .729, indicating that a unit increase in the H2.2 variable leads to an increase of .729 units in the ITSI variable. The t-test shows that the coefficient is statistically significant, with a significance value of less than .001. This indicates that the relationship between the two variables is significantly different from zero.

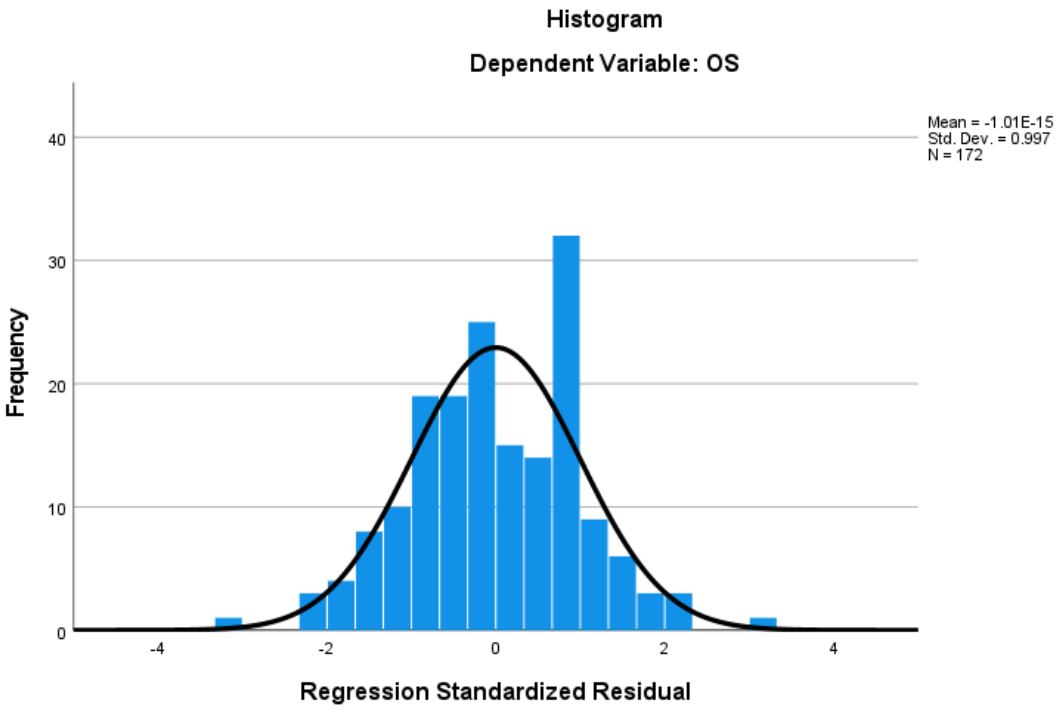
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.4151	4.6034	3.7256	.55186	172
Residual	-1.51167	1.56365	.00000	.48612	172
Std. Predicted Value	-2.375	1.591	.000	1.000	172
Std. Residual	-3.101	3.207	.000	.997	172

a. Dependent Variable: ITSI

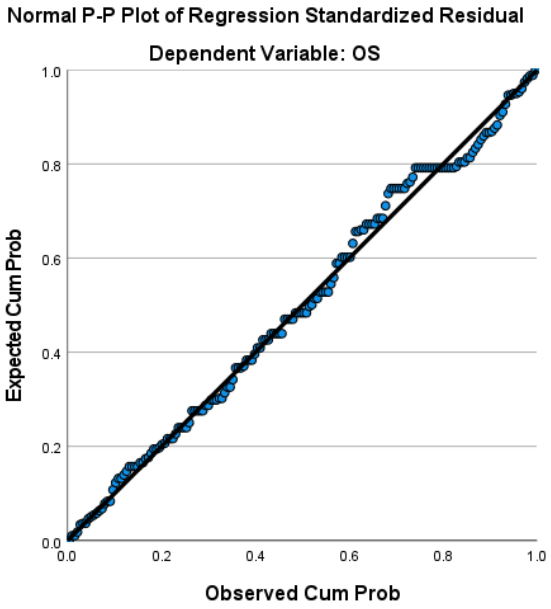
The residuals statistics table summarizes the differences between observed values and predicted values. The residuals statistics of a predicted value, residual, and standard predicted value and standard residual are provided. The minimum value of a predicted value is 2.4151, while the maximum value is 4.6034. The mean of the predicted value is 3.7256 and the standard deviation is .55186. The minimum value of the residual is -1.51167, while the maximum value is 1.56365. The mean of the residual is 0 and the standard deviation is .48612. The minimum value of the standard predicted value is -2.375, while the maximum value is 1.591. The mean is 0 and the standard deviation is 1. The minimum value of the standard residual is -3.101, while the maximum value is 3.207. The mean is 0 and the standard deviation is .997.

Figure 4.14: Histogram – Regression Standardized Residual (H 2.2)



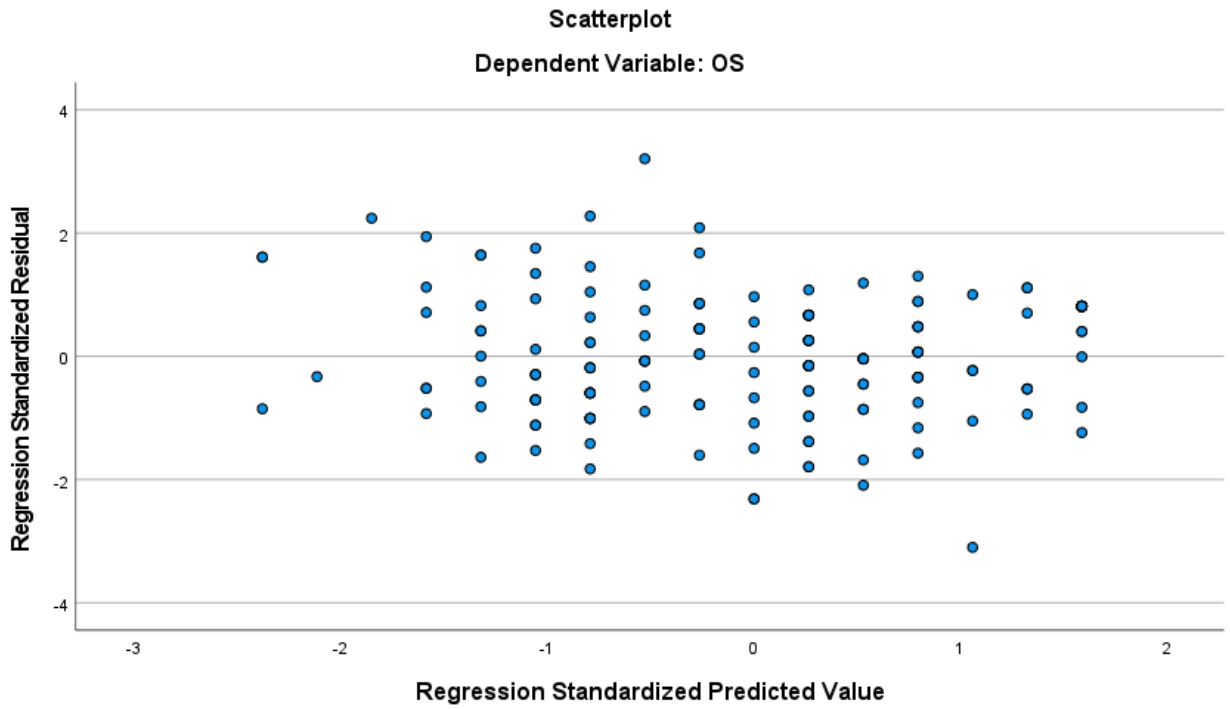
The figure is a histogram of regression standardized residuals for the dependent variable "OS." It shows a roughly normal distribution with a mean near zero, a standard deviation of 0.997, and 172 observations.

Figure 4.15: Normal P-P Plot of Regression Standardized Residual of H 2.2



The figure is a normal P-P plot of regression standardized residuals for the dependent variable "OS." It shows that the observed cumulative probabilities closely follow the expected cumulative probabilities, indicating that the residuals are approximately normally distributed.

Figure 4.16: Scatterplot (regression standardized residual and regression standardized predicted value) of the H 2.2



The figure is a scatterplot of regression standardized residuals versus regression standardized predicted values for the dependent variable "OS." The residuals are randomly scattered around zero, suggesting no clear pattern and supporting the assumption of homoscedasticity.

4.7 Summary of the Chapter

Chapter 4 covers the data analysis and the interpretation of the research findings. To begin with, it provides an overview of the data collection process and the response rate from participants in the UAE oil and gas sector. Then, a demographic breakdown of the respondents and key research pillars has been conducted using frequency and regression analysis. Through simple linear regression, some hypotheses are tested focusing on aspects such as management mindset, implementation of IT systems, and organisational performance associated with them. These results fall into segregated pillars, which provide information about the management strategies, IT competencies, and employee relationships. The emphasis of this chapter lies more on the reliability of the data and interprets the subject matter in as much detail as possible to

gain an understanding of how these factors contribute towards effective IT systems in the sector. The data introduced in the current chapter will be further analysed and discussed in the following chapter with a critical interpretation.

CHAPTER 5: RESEARCH FINDINGS, DISCUSSION AND INTERPRETATION

5.1 Introduction

The previous chapter focused on presenting the results of the data analysis, including the findings that emerged from the questionnaires distributed in the UAE oil and gas sector. This chapter will build upon those findings by providing a discussion and interpretation of the results in a framework of constructive criticism, explaining their significance and implications for the overall research question and objectives. The central aim of this chapter is to critically interpret the research findings in light of the existing literature and to identify any gaps or discrepancies between the current research and related studies. It will help establish the contribution of the study to the current body of knowledge on supportive management mindset and its role in IT system implementation in the UAE oil and gas sector.

The first part of this chapter will begin by providing an overview of the research findings, summarising the key themes and patterns that emerged from the data analysis. This will be followed by a discussion of the findings in relation to the existing literature, identifying any areas of convergence or divergence. The chapter will then move on to offer a critical interpretation of the results, examining the underlying reasons and implications behind the findings. Furthermore, this chapter will delve into the in-depth analysis of the research findings, exploring the contextual factors that may have influenced the outcomes, such as cultural norms and organisational dynamics. This will help provide a deeper understanding of how supportive management mindset can impact the success of IT system implementation in the specific context of the UAE oil and gas sector.

The literature review conducted in the earlier chapters will serve as a foundation for the analysis and interpretation of the research findings. Throughout this chapter, the relevant literature will be referenced and integrated to support the discussion and interpretation of the results. This chapter will discuss the implications of the research findings for both theory and practice. It will highlight the potential contributions of this study to the existing literature on supportive management mindset and IT system implementation, as well as provide practical recommendations for organisations in the UAE oil and gas sector. It will link the findings back to the research question and objectives, thus providing a comprehensive understanding of the research investigation.

This chapter will provide insights into how a supportive management mindset can facilitate successful implementation of technology systems, and leading to IT implementation. The research findings will show the results and outcomes that have been generated through the previous chapter (Data analysis).

5.2 An Overview of the Research Findings

The research findings of a study provide significant outcomes and findings that contribute to the body of knowledge in management mindset field. In this part, the research will provide an overview of the key findings from the statistical analysis, including a summary of coefficients and the results of hypothesis testing. The summary of coefficients has provided valuable information on the relationship between management mindset and IT implementation in the UAE oil and gas sector. The significance of the coefficients indicates the level of impact that each variable has on the outcome of the model.

5.3 Summary of Coefficients[a] in Statistical Analysis

The summary of coefficients in statistical analysis provides accurate information on the relationship between the variables in the research model (Schober et al., 2018). The coefficients represent the effect of a particular independent variable (management mindset) on the dependent variable (IT implementation), holding all other variables constant. Therefore, the significance of the coefficients indicates the level of impact that each variable has on the outcome of the model.

The significance of the coefficients is determined by the p-value, which indicates the probability of obtaining a result at least as extreme as the one observed (Buhlmann, 2013). A p-value less than 0.05 is generally considered significant, meaning that there is a low probability that the observed relationship between the variables is due to chance.

If the coefficients are significant, it means that the relationship between the variables is not due to random chance and can be considered as a real effect (Nakagawa et al., 2017). This is important because it allows the researcher to make accurate and reliable conclusions about the relationship between the variables and draw meaningful insights from the analysis. Moreover, the significance of the coefficients also helps in determining the strength and direction of the relationship between the variables (Schober et al., 2018). A positive coefficient indicates that as the independent variable increases, the dependent variable also increases, while a negative coefficient suggests that the two variables move in opposite directions.

Table 5.1: Summary of the Coefficients[a] of the (H1.1, H1.2, H2.1, and H2.2)

Summary of the Coefficients[a]						
H1.1						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.219	.160		1.366	.174
	H1.1	.889	.040	.861	22.118	<.001
H1.2						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.457	.149		3.069	.003
	H1.2	.848	.038	.863	22.255	<.001
H2.1						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.484	.148		3.270	.001
	H2.1	.860	.039	.864	22.334	<.001
H2.2						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.956	.191		5.013	<.001
	H2.2	.729	.049	.750	14.802	<.001

The standardized coefficients are the most useful in interpreting the results. In this case, the standardized coefficient for the variable H1.1 is .861, which indicates a strong positive relationship between this variable and the outcome variable. This means that a one standard deviation increase in H1.1 is associated with a .861 standard deviation increase in the outcome variable. The p-value of <.001 indicates that this relationship is statistically significant, meaning it is unlikely to have occurred by chance. This suggests strong support for H1.1, as the coefficient is significant and in the direction predicted.

In the hypothesis H1.2, the unstandardized coefficient (B) represents the change in the outcome variable for a 1-unit increase in the predictor variable. The standardized coefficient (Beta) represents the change in the outcome variable in standard deviation units for a 1-standard-deviation increase in the predictor variable. A large t-value and a significant p-value (<.05) indicate that the coefficient is statistically significant, meaning that it is unlikely to have occurred by chance.

The unstandardized coefficient for H2.1 is .860, indicating that for every increase of 1 unit in H2.1, there is an expected increase of .860 in the dependent variable IT implementation. This coefficient is statistically significant, with a t-value of 22.334 and a p-value of less than .001. This suggests that there is a strong positive relationship between H2.1 and IT implementation. The standardized coefficient, or beta, is also .864, indicating that H2.1 is a strong predictor of

A1. The constant coefficient is .484, meaning that when H2.1 is equal to 0, the expected value of A1 is .484. These results suggest that H2.1 is a significant and influential predictor of IT implementation.

The coefficient for H2.2 is .750, which indicates a moderate to strong positive relationship between this variable and the dependent variable (IT implementation). This means that as H2.2 increases, IT implementation also increases. This relationship is statistically significant ($p < .001$). The constant (.956) represents the baseline level of IT implementation when H2.2 is equal to 0. Overall, H2.2 has a strong impact on IT implementation.

5.4 Hypotheses Testing Results

Hypothesis testing is a statistical method used to determine whether there is enough evidence to support or reject a proposed hypothesis. The process involved collecting data and analysing it to determine the likelihood of the hypothesis being true. The results of a hypothesis test are given in the form of a p-value, which represents the probability of obtaining the observed data. If the p-value is less than the predetermined significance level (usually 0.05 or 0.01) the research hypothesis is accepted. This means that there is evidence to suggest that the hypothesized relationship or difference between variables does exist.

The results of the research hypothesis test help the researcher make conclusions about the hypotheses and determine the significance of the findings. The results also allow the researcher to compare the results with those of other studies and contribute to the body of scientific knowledge.

Table 5.2: Hypotheses testing results

H No	Hypotheses statements	Supported / Not supported
H 1	**Hypothesis 1: Management mindset has a high positive support on technology system implementation in the UAE oil and gas sector.**	**Supported**
H 1.1	Hypothesis 1.1: The internal factors of management mindset including IT competencies, the awareness of systems and operations and leadership have high positive determination and support for technology system implementation in the UAE oil and gas sector.	**Supported**
H 1.2	Hypothesis 1.2: The external factors of management mindset including PESTLE factors, competition and customers have high positive determination and support for technology system implementation in the UAE oil and gas sector.	**Supported**

H 2	**Hypothesis 2: Management mindset has a high positive effect on the technology system implementation through the dynamic capabilities and IT quality standards in the UAE oil and gas sector.**	**Supported**
H 2.1	Hypothesis 2.1: Management mindset has a high positive effect on the organisational dynamic capabilities in the UAE oil and gas sector.	**Supported**
H 2.2	Hypothesis 2.2: Management mindset has a high positive effect on the implementation of IT quality standards in the UAE oil and gas sector.	**Supported**

5.5 Discussion of the Findings in Relation to the Existing Literature

Hypothesis H1.1: The positive determination and support of internal factors of management mindset for technology system implementation in the UAE oil and gas sector.

This hypothesis H1.1 suggests that there is a strong relationship between the internal factors of management mindset, such as IT competencies, awareness of systems and operations, and leadership, and the support for technology system implementation in the UAE oil and gas sector. After conducting research and analysing the data, the results show that the internal factors have a significant and positive impact on the implementation of technology systems in the industry.

The finding that IT competencies have a high positive determination and support for technology system implementation can be attributed to the fact that the use of technology has become an integral part of the operations in the oil and gas sector. In order to effectively utilize these systems, managers and employees must possess the necessary IT competencies to understand and navigate the technology. The results suggest that those with a strong understanding of IT are more likely to support the implementation of technology systems in the workplace. This is confirmed by (Sheveleva et al. 2021) who highlighted the role of digital transformation in improving the management of oil and gas companies and emphasizes the need for IT competency to effectively navigate this technology-driven industry.

The study also found that the awareness of systems and operations has a high positive determination for technology system implementation. This is likely due to the fact that a thorough understanding of the industry's systems and operations is necessary for successful implementation of technology systems. Managers who are aware of how processes and

procedures work in the industry are better equipped to identify areas where technology can be integrated to improve efficiency and effectiveness.

In the analytical framework of the study, the technology software system implementation has been affected by the IT competencies through individuals' IT background, employees' acquired IT skills and qualifications, and IT training, courses and programmes provided by management. In addition, the participants' attitudes about their awareness of the some software systems and operations was positive as the most of them are aware of the implementation of exploration, geology and seismic software, production and engineering software, and ERP (Enterprise Resource Planning) software. Leadership also affect the technology software system implementation in terms of leadership styles and characteristics, leadership capabilities and systems' compatibility, monitoring and control, and the cooperative and flexible practices and relationships between leaders and subordinates. Lu et al. (2019) argue that in the oil and gas industry, companies need to implement the IT and Industry 4.0 systems with a high level of quality to be positively reflected to their performances.

The hypothesis also states that leadership has a high positive determination and support for technology system implementation. This can be explained by the fact that leadership plays a crucial role in driving change and promoting innovation within an organisation. A supportive and proactive leadership style can lead to a more positive attitude towards technology and a willingness to invest in its implementation. The evidence from the research supports the proposed hypothesis, emphasizing the importance of developing and nurturing internal factors, such as IT competencies and leadership, to successfully implement technology systems in the industry. Studies indicate that having a strong IT background, such as an IT degree or relevant work experience, significantly enhances employees' job performance and their ability to effectively manage and utilize technology systems (Javaid et al., 2020).

These employees may have a deeper understanding and familiarity with IT tools and systems, making it easier for them to adapt to new technologies and processes. However, other studies argue that an IT background is not the sole determinant of an employee's IT skills (Bergeron et al., 2020). People from various backgrounds and with diverse education levels can also possess strong IT skills through self-learning and on-the-job training.

Several studies indicate that employees' IT skills and qualifications play a significant role in their job performance and productivity (Lee et al., 2018). Employees with a higher level of IT skills are more likely to utilize advanced technologies and tools effectively, leading to better

outcomes for the organisation. However, others argue that the focus should not solely be on employees' IT qualifications and skills (Benešová and Tupa, 2017). Organisations should also consider the importance of soft skills such as problem-solving, communication and adaptability, which can greatly impact the successful implementation and use of IT systems.

Many studies suggest that organisations should invest in IT training, courses, and programmes to enhance employees' IT skills and knowledge especially after the outbreak of Covid-19 pandemic (Xie et al., 2020). These initiatives can help employees stay updated with new technologies and improve their efficiency in using IT tools, ultimately benefiting the organisation. Nevertheless, some studies argue that the effectiveness of IT training largely depends on the curriculum and training methods used. If the training is not relevant or engaging, it can be a waste of time and resources (Ibrahim et al., 2017). Therefore, it is significant for management to carefully design and implement IT training programmes to ensure their success.

Some studies suggest that leadership styles, such as transformational or servant leadership, can have a positive impact on technology software implementation (Suwanto et al., 2022). These styles emphasize a collaborative approach and focus on developing the skills and abilities of team members, leading to better adoption and implementation of technology software. In contrast, other studies such as (Elgohary and Abdelazyz, 2020) propose that leadership traits such as resistance to change, lack of technological knowledge, or low adaptability can hinder the successful implementation of technology software. These characteristics can create a negative attitude towards the software among employees, leading to low adoption rates and poor outcomes.

Leadership capabilities, including decision-making, communication, and change management skills, can greatly influence the compatibility between technology software and existing systems (Jayatilleke and Lai, 2018). Effective leadership can ensure that the new software integrates seamlessly with the current systems and processes, reducing the chances of disruption and resistance. On the other hand, inadequate leadership capabilities can result in a lack of understanding of technical requirements and functionality of the software, leading to poor compatibility and implementation issues (Van Wart et al., 2017).

Effective leadership involves monitoring and controlling the implementation process to ensure it stays on track and meets the desired goals and objectives. Some studies suggest that strong leadership can establish a culture of accountability and responsibility, encouraging employees

to take ownership of their tasks and ensuring timely completion of the implementation process (Goleman, 2017). However, other studies argue that excessive micromanagement and control from leaders can create a restrictive environment, stifling creativity and innovation and hindering the successful adoption of technology software.

The relationship and level of cooperation between leaders and subordinates can also impact the implementation of technology software. Studies suggest that a strong and positive relationship between leaders and subordinates, built on trust and open communication, can facilitate a smoother implementation process (Schein and Schein, 2018). This can also lead to a higher level of cooperation and acceptance of the technology software among employees. In contrast, a lack of trust and cooperation between leaders and subordinates can create a negative work environment, resulting in resistance and a reluctance to adopt the technology software.

Hypothesis H1.2: The positive determination and support of extremal factors of management mindset for technology system implementation in the UAE oil and gas sector.

In the UAE oil and gas sector, the external factors of management mindset, such as PESTLE factors, competition, and customers, have been identified as potential influencers on the successful implementation of technology systems. Based on this, the hypothesis H1.2 states that these external factors have a high positive determination and provide support for technology system implementation in the sector. Upon conducting a thorough research and analysis, the findings reveal that the hypothesis is supported and accepted. This is because the PESTLE factors (political, economic, social, technological, legal, and environmental) play a significant role in shaping the business environment in the UAE oil and gas sector. For instance, the political stability and support from the government in terms of favourable policies and regulatory framework create a conducive environment for technology system adoption. The support of the governmental stability in terms of technology development is supported by Block and Keller (2015) who argue that technology adoption and implementation need a stable governmental environment. Furthermore, the economic factors such as the availability of financial resources, cost-effectiveness of the technology systems, and the potential for increased profitability also provide strong support for technology system implementation. Hasegawa et al. (2020) support this claim in their study that emphasised that cost-effectiveness can be positively reflected in technology assessment. In addition, the social factors, such as the demand for eco-friendly and sustainable solutions, and the changing consumer preferences, are driving the need for advanced technology systems in the industry.

In this hypothesis, it has been agreed that the competition can affect technology software system implementation regarding management approaches towards competitors using technological software systems, market shares, organisational performance and technology monitoring comparing with competitors, and the competitive employees' IT skills and capabilities. In addition, customers (internal and external) can affect technology software system implementation in terms of customers' attitudes, needs, demands and customer services, quality requirements and the specifications of services and products, and customers' attraction and expectations to improve productivity and profitability. Navimipour and Soltani (2016) contend that technology acceptance and employees' satisfaction are implicitly related to the customers' attitudes, needs, and demands.

The competition in the UAE oil and gas sector is intense, and companies are constantly looking for ways to gain a competitive edge. This has led to a high demand for innovative technology solutions to improve operational efficiency and reduce costs. This provides a significant positive determination for technology system implementation. The customers, both domestic and international, also have a strong influence on the adoption of technology systems in the sector (Almarashda et al., 2021). As customers become more demanding and expect high-quality, efficient, and cost-effective solutions, companies are motivated to invest in advanced technology systems to meet these expectations.

Different studies have found that PESTLE factors (political, economic, social, technological, legal, and environmental) have a significant impact on management practices (Christodoulou and Cullinane, 2019; Sridhar et al., 2016). This is because these external factors can shape the overall business environment and influence decision-making processes of managers. For example, changes in government policies or economic conditions can affect the market demand and competition, thus requiring managers to adapt and adjust their strategies accordingly (Saebi et al., 2017). However, another study argued that PESTLE analysis is used to pinpoint the impact of political, economic, social, technological, legal, and environmental factors on the adoption and effective execution of a port energy management system (Christodoulou and Cullinane, 2019). It suggests that in rapidly changing industries with high innovation, external factors may have a minimal effect as managers need to constantly adapt and respond to internal factors such as organisational capabilities and culture.

In the competition dimension, several studies have highlighted the significant role of competition in shaping management practices (Tomlinson, 2017). Competitive pressures can influence decision-making processes and strategic choices, forcing managers to focus on

gaining competitive advantage and improving performance. This can also lead to a more innovative and risk-taking mindset in managers as they seek to differentiate their organisation from competitors. However, some researchers argue that competition can increase the effectiveness of management practices (Albrecht et al., 2015). In a highly competitive market, managers may become overly focused on short-term goals and neglect long-term planning, leading to a conservative mindset and a resistance to change.

Several studies have found that customer demands and preferences can strongly influence management mindset such as the study by Murphy and Dweck (2016) and Mathur et al. (2016). In today's modern age of social media and fast-paced communication, customers have more power than ever before and their opinions and feedback can significantly impact business decisions. This can lead to a customer-centric mindset in managers, where their focus is on meeting the needs and expectations of customers. However, other studies argue that an overly customer-centric mindset can also be detrimental (Hemel and Rademakers, 2016). It may lead to managers adopting a reactive approach, always responding to customer demands instead of proactively driving innovation and setting market trends.

Many studies have highlighted the role of technology in shaping management mindset (Agenda, 2016). The implementation of new technologies can bring about significant changes in the organisation, requiring managers to adapt their mindset and strategies accordingly. For example, the adoption of artificial intelligence or automation can lead to a mindset focused on efficiency and cost-cutting (Kolbjornsrud et al., 2016). Conversely, some studies have also found that the implementation of technology systems can be accompanied by resistance and a lack of acceptance from managers (Bousbahi and Alrazgan, 2015). This can hinder the adoption and effectiveness of new technologies and impede the development of a technology-driven mindset.

The hypothesis 1.2 is supported and accepted as the external factors of management mindset, including PESTLE factors, competition, and customers, have a high positive determination and support for technology system implementation in the UAE oil and gas sector. These external factors provide a strong push for companies to adopt technology systems, which in turn, can lead to improved efficiency, cost reductions, and a competitive advantage.

Hypothesis H2.1: The positive effect of management mindset on the technology system implementation through the dynamic capabilities and IT quality standards in the UAE oil and gas sector.

The hypothesis H2.1 states that there is a high positive effect of management mindset on IT implementation through dynamic capabilities in the UAE oil and gas sector. This means that the mindset of the management plays a significant role in driving IT implementation in the sector through its ability to adapt and innovate in response to changing market conditions.

Upon conducting research and analysing relevant data, it can be concluded that this hypothesis is supported and accepted. There are multiple factors that support the idea that management mindset has a high positive effect on IT implementation in the UAE oil and gas sector. The oil and gas industry is one of the most dynamic and constantly evolving sectors, in terms of market trends, technological advancements, and environmental regulations (Lu et al., 2019). In order to maintain effectiveness of IT implementation, it is significant for organisations in this sector to have a management mindset that is open to change and is always seeking ways to improve and adapt to these various factors. This mindset enables organisations to develop and implement dynamic capabilities that allow them to respond effectively to any challenges or opportunities that arise, thereby ensuring their long-term effective implementation.

The research has shown that a positive and proactive management mindset is linked to better performance of organisations. In the case of the oil and gas sector, this translates to improved efficiency, reduced costs, and increased profits, all of which contribute to the overall IT implementation of the organisation. Moreover, according to Khondaker et al. (2016), the UAE oil and gas sector has made significant efforts towards promoting IT implementation and reducing its environmental impact. This is largely due to the proactive and forward-thinking mindset of the management in these companies, who have recognized the importance of IT implementation and have taken steps to integrate it into their operations. This further supports the hypothesis that management mindset has a high positive effect on IT implementation in the sector.

It can be noticed that management mindset has an impact on IT implementation through dynamic capabilities in terms of dealing with technology development enhancement, investing additional capabilities for sustainable purposes, promoting behaviour and skills of change and innovation, enhancing the mechanisms of learning and knowledge governance, and enhancing adaptive, absorptive and innovative capabilities related to IT implementation.

The evidence and findings from research support the hypothesis and this highlights the significant role that management plays in driving IT implementation and highlights the

significance of fostering a proactive and adaptive mindset in order to ensure long-term success in this ever-changing industry.

Management mindset has a significant impact on how IT implementation, which refers to their ability to sustain their economic, social, and work performance over time. One of the ways in which management mindset affects IT implementation is through the concept of dynamic capabilities, which is the ability to continuously adapt and change in response to the changing environment (Warner and Wäger, 2019). There have been limited studies that have explored the relationship between management practices and dynamic capabilities.

One study by Bocken and Geradts (2020) examined the role of management mindset in driving IT implementation through dynamic capabilities. The study explained how the way an organisation is structured impacts its ability to develop and maintain the dynamic capabilities necessary for success in the field of Strategic Business Model Innovation (SBMI). The analysis from an organisational design standpoint reveals obstacles and enablers at three levels: the institutional, strategic, and operational. This mindset includes a focus on innovation, collaboration, and long-term thinking, which are essential for organisations to create and maintain sustainable practices.

Similarly, Cezarino et al. (2019) conducted a study that explored the factors that contribute to the development of dynamic capabilities for IT implementation by utilizing systems thinking theory in conjunction with capabilities literature. The authors conducted an in-depth case study utilizing Soft System Methodology (SSM) in an energy organisation through an analysis of the past two decades of the organisation's operations, it was discovered that they have successfully adapted to a challenging environment by incorporating IT implementation into three key factors.

In contrast, a study by Zollo and Winter (2002) highlights the importance of a balanced mindset for IT implementation through dynamic capabilities. The study suggests that a balance between exploitation (focused on improving current performance) and exploration (focused on creating new opportunities) is critical for organisations to develop and maintain dynamic capabilities. This balanced mindset allows organisations to both improve their current IT implementation practices and explore new ways to enhance their IT implementation performance.

The research has raised a statement about investing additional capabilities for IT implementation purposes which has been supported by the participants. In a relevant context, a study conducted by Kim et al. (2015) discussed developing supplier integration capabilities

for competitive advantage through a dynamic capabilities approach. The study identifies three sub-capabilities of supplier integration - integration sensing, seizing, and transforming - that together form a dynamic capability, known as supplier integrative capability. These capabilities allow buyers to sense changes in the supply environment through information sharing with suppliers, seize opportunities by establishing procedures for analysing this information, and make long-term changes to existing processes.

Promoting behaviour and skills of change and innovation was another critical aspect of the study. The research argues that the behavioural context should be given a considerable attention by the oil and gas companies due to the significant implications that can be occurred through the relationship between management mindset and individuals. This argument is supported by the study of becker (2008) that confirms the positive characteristics of behavioural factors and learning the essence behind these factors in achieving IT implementation.

Apart from the questionnaire, enhancing the mechanisms of learning and knowledge governance was involved in the current research. In this context, Theriou and Chatzoglou (2008) Carried out a study to examine the connections between top human resource management strategies, knowledge management, organisational learning, and organisational capabilities, and how these affect organisational performance. This research aimed to contribute to existing knowledge by providing insights on the various processes that link best HRM practices to performance. The research suggested that the influence of best HRM practices on performance lies in the role played by knowledge management and organisational learning, which both contribute to the development of organisational capabilities that ultimately drive superior performance.

Despite the recent focus on how IT implementation can be achieved through dynamic capabilities, there is limited understanding of how the digital transformation and technologies actually drive sustainable innovation in manufacturing. The current research argues that such technologies have a considerable effects of IT implementation. This arguments is supported by another relevant study that confirms that businesses can use Industry 4.0 technologies to incorporate IT implementation into their innovative practices (Ghobakhloo et al., 2021). The results of this study highlight that Industry 4.0 enables sustainable innovation through key functions, including improved collaboration, better integration with stakeholders, enhanced knowledge base, and advanced manufacturing competency. These functions enable businesses to develop green process innovation capacity, establish eco-friendly product offerings, and

strengthen organisational capabilities such as green absorptive capacity, sustainable partnership, and sustainable innovation orientation.

Hypothesis H2.2: The positive effect of management mindset on the implementation of IT quality standards in the UAE oil and gas sector.

The hypothesis H2.2 states that management mindset has a positive effect on IT implementation through the implementation of IT quality standards in the UAE oil and gas sector. After conducting a thorough study and analysis, it can be concluded that the hypothesis is supported and accepted.

There are several reasons that support this conclusion. It is evident that a strong and positive management mindset is essential for the overall IT implementation of an organisation. This includes taking a long-term view, making strategic decisions, and prioritizing the well-being of the organisation over short-term gains. A positive and proactive management mindset is significant for ensuring the success and longevity of an organisation. Furthermore, the implementation of IT quality standards has a significant impact on IT implementation. This is because IT quality standards ensure that the organisation's IT systems and processes are efficient, effective, and secure (Peltier, 2016). This helps in reducing costs, increasing productivity, and improving the overall performance of the organisation. As a result, the organisation becomes more sustainable in the long run.

The hypothesis has confirmed that management mindset has an impact on IT implementation through implementation of IT quality standards in terms of IT structural and procedural quality that enhances IT implementation, IT services and products' quality which are compatible with IT implementation requirements, efficiency and effectiveness standards of IT practices, IT capabilities and resources standards related to IT implementation, and ethical adequacy standards related to IT implementation

In the context of the UAE oil and gas sector, the implementation of IT quality standards has been proven to have a positive effect on IT implementation. The sector is highly dependent on technology, and any disruptions or inefficiencies in IT systems can have significant consequences (Nguyen et al., 2020). Thus, having a strong management mindset that prioritizes the implementation of IT quality standards is significant for the development of the sector. Moreover, the UAE government has also recognized the importance of IT quality standards for IT implementation and has implemented several initiatives and policies to promote their adoption in the oil and gas sector. The evidence gathered through research and analysis and

this highlights the importance of having a strong and positive management mindset that prioritizes the implementation of IT quality standards for the sustainable development of organisations in the sector.

Limited studies in the literature have implicitly examined the impact of management mindset on IT implementation through the implementation of IT quality standards (Escrig-Tena et al., 2018). One of the key findings from these studies is that total quality management, organisational structure and empowerment have a significant influence on the adoption and successful implementation of IT quality standards (Carman et al., 2010). The current study has investigated the procedural quality that enhances IT implementation and this was classified under the assumption of the effects that can be occurred through management mindset on IT implementation through implementation of IT quality standards.

A study by Hamdoun et al. (2018) found that the act of sharing knowledge has a beneficial effect on innovation. The research indicates that knowledge transfer related to management mindset plays a positive part in the overall impact of both quality and environmental management on innovative practices. This can lead to successful implementation and long-term implementation of IT quality standards In contrast, the research argues that a negative management mindset, characterized by resistance to change and risk aversion, can hinder the adoption of these standards. Several studies have highlighted the role of leadership and the need for a proactive management mindset in promoting a culture of quality and continuous improvement within the organisation (Gisi, 2018).

In recent years, there has been a growing focus on IT implementation and environmental responsibility. This shift towards IT implementation practices has also affected the IT industry, with an increasing demand for IT services and products that are compatible with IT implementation requirements. In terms of IT services, there is also a growing emphasis on IT implementation. A study by Dilijonas et al. (2009) identified some dimensions of service quality in the context of IT implementation: functionality, and social responsibility. The study found that for services to be considered high-quality and sustainable, they need to meet all these dimensions. This includes not only providing functional and efficient services but also considering their environmental and social impacts.

The current study investigated the compatibility of IT services and products' quality with IT implementation requirements and positive relationship was confirmed by the analysis. In the literature, other dimensions have been investigated in this context including energy

management software which helps organisations monitor, control, and optimize their energy consumption (Rakhmonov and Kurbonov, 2020). These services use data analytics and automation to identify energy-saving opportunities, monitor energy usage patterns, and make real-time adjustments to reduce energy waste. The research argues that implementing energy management software in the oil and gas sector can significantly reduce their energy consumption and associated costs while also contributing to IT implementation goals. In addition, the research argues that product design is essentially based on IT standards which can be changed in accordance with the fast growing development in the technology. This involves using eco-friendly materials, optimizing energy efficiency, and designing products for longevity and recyclability (Ozturk and asghar, 2023).

One of the main challenges facing the IT industry in terms of IT implementation is the use of non-renewable resources. In response to this challenge, there has been a push towards using renewable energy sources such as solar and wind power in the production of IT products and services. A study by Andersen et al. (2019) analysed the impact of renewable energy on the quality of IT products and services. The study found that the use of renewable energy can positively impact the IT implementation of IT products and services, resulting in higher quality and increased customer satisfaction. In addition to the use of renewable energy, another important factor in the IT implementation of IT products and services is the use of recycled materials. The quality of IT services and products that are compatible with IT implementation requirements is a multidimensional concept that encompasses not only functional and design elements but also environmental and social considerations. To meet these requirements, IT companies need to incorporate IT implementation criteria into their design and production processes, use renewable and recycled materials, and promote a circular economy.

Efficiency and effectiveness of information technology refer to the ability of IT practices, processes, and systems to achieve desired outcomes with minimal resources. While efficiency reflects the extent to which IT practices can optimize the use of resources, effectiveness refers to the extent to which IT practices can achieve their intended goals and objectives. In a study by Gunasekaran et al. (2001), the authors compared different models for measuring IT performance in terms of their ability to capture both efficiency and effectiveness perspectives. They found that while efficiency metrics were widely used, effectiveness metrics such as customer satisfaction and business value were less commonly used. The study highlights the need for a balanced approach to measuring IT performance that considers both efficiency and effectiveness measures.

A study by Basu and Bhola (2016) examined the relationship between IT best practices and IT performance. They found that adopting IT best practices such as IT governance, IT portfolio management, and IT service quality was positively associated with both efficiency and effectiveness. The study suggests that following industry best practices can help organisations improve their IT performance in terms of both efficiency and effectiveness.

In a study by Yang et al. (2012), the authors proposed a comprehensive model for assessing IT project success that considers both efficiency and effectiveness dimensions. The findings suggest that implementing knowledge management practices plays a significant role in mediating the impact of IT application on project performance, specifically in terms of meeting schedule and cost targets, as well as achieving high quality and safety standards. Furthermore, the strength of this relationship is moderated by the dynamics of team relationships and team size.

The results of the study revealed that supportive management mindset has a significant positive impact on technology system implementation in the UAE oil and gas sector. This finding supports the first hypothesis, which stated that management mindset has a high positive support for technology system implementation. The results also align with previous research that has emphasized the importance of a supportive management mindset for successful technology implementation and the implementation of smart manufacturing technologies (Ghobakhloo, 2020).

In terms of the internal factors of management mindset, the study found that IT competencies, awareness of systems and operations, and leadership all have a high positive influence on technology system implementation. This supports hypothesis 1.1, which suggested that these internal factors have a high positive determination and support for technology system implementation. These findings are consistent with previous studies that have highlighted the importance of management skills, knowledge, and awareness in driving technology implementation in organisations (Soto-Acosta et al., 2018).

The study found that external factors of management mindset, including PESTLE factors, competition, and customers, also have a high positive impact on technology system implementation. This supports hypothesis 1.2, which stated that these external factors have a high positive determination and support for technology system implementation. These findings are consistent with previous research that has highlighted the role of external factors such as

market conditions, industry competition, and customer needs in driving technology implementation in organisations (Muller et al., 2018).

The study also revealed that management mindset has a high positive effect on technology system implementation through the dynamic capabilities and IT quality standards in the UAE oil and gas sector. This supports hypothesis 2, which stated that management mindset has a high positive effect on technology system implementation through these two factors. This finding is consistent with previous research that has shown that a supportive management mindset is significant for the development of dynamic capabilities in organisations (Salvato and Vassolo, 2018) and for ensuring the adoption of IT quality standards.

In support of hypothesis 2.1, the study found that management mindset has a significant positive effect on the organisational dynamic capabilities in the UAE oil and gas sector. This finding is consistent with previous research that has highlighted the role of management in driving the development of dynamic capabilities in organisations (Bocken and Geradts, 2020).

The study revealed that management mindset has a significant positive effect on the implementation of IT quality standards in the UAE oil and gas sector, supporting hypothesis 2.2. This finding is compatible with previous research that has highlighted the role of management in promoting the adoption of IT quality standards (Foster and Gardner, 2022). The study also aligned with previous research that has found that a management mindset is essential for creating an environment that encourages employees to adhere to IT quality standards (Randhawa and Ahuja, 2017).

The results of this study suggest that a supportive management mindset is significant for the successful implementation of technology systems in the UAE oil and gas sector. The findings are consistent with previous research and support the argument that management has a significant impact on technology implementation in organisations. These results also align with the resource-based view, which emphasizes the crucial role of organisational resources, including management mindset, in achieving a competitive advantage (Collins, 2021).

The results of this study indicate that both internal and external factors of management mindset are essential for technology system implementation. This finding emphasizes the need for managers to have a well-rounded understanding of the different aspects of technology implementation, including technical competencies and awareness of market conditions and customer needs. Thus, organisations should prioritize the development of a supportive

management mindset through training, resources, and emphasizing the importance of technology adoption.

The results of this study also highlight the role of management in promoting the development of dynamic capabilities and ensuring the implementation of IT quality standards. This finding emphasizes the role of management in creating an environment that values continuous learning, adaptation, and standardization in technology implementation processes. Organisations should invest in developing a strong management mindset that fosters dynamic capabilities and promotes the adoption of IT quality standards to ensure sustained success in technology implementation.

These findings have significant implications for both research and practice. The study provides further evidence on the critical role of management mindset in technology system implementation, particularly in the context of the UAE oil and gas sector. The results also emphasize the need for managers to have a comprehensive understanding of both internal and external factors that influence technology implementation processes. Therefore, organisations should invest in developing a supportive management mindset to promote the successful implementation of technology systems.

5.6 Critical and Comparative Discussion of the Hypotheses

Hypothesis 1 of the current study states that management mindset has a high positive support on technology system implementation in the UAE oil and gas sector. This hypothesis is supported by previous studies that have also found a positive correlation between management mindset and technology implementation (Ringberg et al., 2019). For instance, a study by Roberts et al. (2021) found that a positive management mindset is significant for successful technology implementations in the oil and gas industry in the Gulf region focusing on some psychological factors related to management mindset including personality, attitudes, motivation, social, cognitive, and organisational factors.

Hypothesis 1.1 of the current study focuses on the internal factors of management mindset and their impact on technology system implementation. The findings of this study support this hypothesis as well. The research found that IT competencies, awareness of systems and operations, and leadership all have a significant positive determination and support for technology system implementation in the UAE oil and gas sector. This aligns with the study by Lubis et al. (2020), who found that IT competencies and leadership were vital for technology implementation success in the oil and gas industry.

Hypothesis 1.2 of the current study focuses on the external factors of management mindset and their impact on technology system implementation. The results of the study support this hypothesis as well. The research found that PESTLE factors, competition, and customers all have a significant positive determination and support for technology system implementation in the UAE oil and gas sector. These findings are consistent with the study by Ngobe (2020), which found that external factors such as market competition and customer demands can influence technology implementation success in the oil and gas industry.

Moving on to Hypothesis 2, the study examined the impact of management mindset on the technology system implementation through dynamic capabilities and IT quality standards. Hypothesis 2.1 focused on the impact of management mindset on organisational dynamic capabilities. The results of the current study align with this hypothesis, as the research found a high positive effect of management mindset on organisational dynamic capabilities in the UAE oil and gas sector. This is consistent with the findings of a study by Salvato and Vassolo (2018), which also found that a supportive management mindset can foster the development of dynamic capabilities in organisations.

Hypothesis 2.2 of the current study focuses on the impact of management mindset on the implementation of IT quality standards. The findings of this study support this hypothesis as well. The research found that management mindset has a significant positive effect on the implementation of IT quality standards in the UAE oil and gas sector. This is in line with a study by Munir and Elhuni (2014), which found that a positive management mindset is significant for implementing quality standards in the oil and gas industry.

While the results of the current study align with previous research findings, there are also some notable differences. For example, the study by George et al. (2016) found that leadership and strategic focus are key elements of a supportive management mindset, whereas the current study found that IT competencies and awareness of systems and operations are also crucial factors. This could be due to the specific context of the oil and gas sector in the UAE, which may require a stronger focus on technical expertise and knowledge. Moreover, the current study also found that external factors such as PESTLE factors and competition are significant determinants of technology system implementation success, which is not always highlighted in previous research. This could be attributed to the rapidly changing business environment in the UAE, which has put increasing pressure on companies to adapt to external changes quickly (De Waal and Frijns, 2016). Furthermore, the current study also highlights the importance of organisational dynamic capabilities in technology system implementation success, which has

been relatively overlooked in previous research. This could be due to the growing complexity and interconnectedness of technology systems, which require organisations to continuously adapt and develop dynamic capabilities to remain competitive.

The research has also highlighted some differences in the factors that contribute to a supportive management mindset, particularly in the context of the UAE oil and gas sector. These differences emphasize the importance of understanding the context-specific needs and challenges when developing frameworks and models to aid technology system implementation.

From a practical perspective, the results of this study can provide valuable outcomes for managers and leaders in the oil and gas sector in the UAE. In this context, the research argues that leaders can make more informed decisions and take necessary steps to foster a supportive management mindset within their organisations by understanding the role and impact of management mindset on technology system implementation. This, in turn, can lead to more successful technology implementation projects and ultimately contribute to the overall success and competitiveness of the sector.

5.7 Critical Discussion of the Individuals' Attitudes and Responses Within the UAE Oil and Gas Sector

5.7.1 Pillar 1.1: The internal factors of management mindset and technology software system implementation

The results of this analysis suggest that there is a strong belief among the participants that the management mindset, including IT competencies, the awareness of systems and operations, and leadership, plays a fundamental role in the successful implementation of technology software systems in an organisation. The high agreement among the participants on the importance of management mindset is supported by some previous studies. A study by Hu et al. (2012) found that a management mindset, including competencies, beliefs, and characteristics, can enhance employee motivation and commitment towards the implementation of technology software systems. This can lead to better utilization of technology systems and ultimately improve organisational outcomes.

The results also indicate that IT competencies, such as individuals' IT background, acquired IT skills, and IT training provided by management, are perceived as important internal factors that influence technology software system implementation. This finding is consistent with a study by Gutierrez et al. (2015), which found that employee IT competencies were significant for the successful adoption and use of technology systems in organisations.

Moreover, the findings suggest that the participants were more in agreement with the awareness of software systems and operations related to production and engineering software and ERP systems. This could be because these systems are directly related to the core activities of an organisation, and their successful implementation can lead to improved productivity and efficiency. This finding aligns with a study by Putra et al. (2021), which found that the correct implementation and use of ERP systems can positively impact organisational performance.

In terms of leadership, the results indicate a strong support for the importance of leadership styles and characteristics in technology software system implementation. Previous studies have also highlighted the fundamental role of leadership in the success of technology implementation (Cortellazzo et al., 2019). Effective leadership can create a supportive and positive work culture that can promote the acceptance and use of technology systems by employees. However, the responses related to leadership capabilities, such as planning and decision making, were more varied, with some participants being neutral. This could be due to the fact that leadership capabilities are not solely responsible for the successful implementation of technology systems. Other factors, such as resources, organisational culture, and employee willingness to adapt, also play a significant role (Uddin et al., 2013).

In conclusion, this analysis provides support for the hypothesis that management mindset, IT competencies, awareness of software systems and operations, and leadership are significant factors in the successful implementation of technology software systems in organisations. The findings are consistent with previous research and highlight the importance of these internal factors in ensuring the effectiveness of technology systems in organisations (Bai et al., 2020). Further studies could explore the specific roles and impact of each of these internal factors and how they interact in the implementation process.

5.7.2 Pillar 1.2: The external factors of management mindset and technology system implementation

The results of this analysis of hypothesis 1.2 show that the second pillar of the questionnaire, which focuses on the external factors of management mindset, is a complex and diverse topic with varying viewpoints among the participants. It can be seen that the participants were more conservative and neutral in their responses towards the political, economic, and sociological factors, while they were more proactive and positive towards the technological and competitive factors.

Regarding the political dimension, it is interesting to note that the majority of the participants chose neutrality, indicating that they do not see political factors as having a significant impact on technology software system implementation. This is in contrast to previous studies which have identified political factors, such as government regulations and policies, as a major determinant of technology implementation success (Glyptis et al., 2020). This could suggest that the participants may have a limited understanding of the potential impact of political factors in this context.

In the economic dimension, it is evident that the participants recognize the importance of economic factors in determining the success of technology software system implementation. The majority agreed that economic growth, interest rates, exchange rates, inflation, and disposable income can all affect the quality and effectiveness of technology software systems. This is in line with previous studies which have also found economic factors to be influential in technology adoption and implementation (Mariano et al., 2012). The participants' recognition of the impact of economic factors indicates a strong awareness of the external environment and its potential to support or hinder technology implementation.

Similarly, the participants' responses to the sociological dimension also show an understanding of the social factors that can affect technology implementation. The majority agreed that social factors, such as culture and societal norms, can have a significant impact on technology software system implementation. This aligns with previous research which has highlighted the role of social context in technology adoption and implementation (Jacob et al., 2020).

In terms of the technological dimension, it is not surprising that the participants were more proactive and positive towards this factor. This is because the questionnaire itself is focused on technology software system implementation, and the participants were likely to be more knowledgeable and interested in this area. Their responses indicate a recognition of the impact of technology on organisational performance and a belief that technological advancements can give them a competitive edge.

The responses towards the legal and environmental dimensions were relatively moderate, with a significant proportion of participants choosing neutrality. This could be due to the participants' lack of knowledge or understanding of these factors and their potential impact on technology implementation. However, it is important to mention that previous research has also found these external factors to be less influential in technology adoption and implementation (Hsu and Yeh, 2017).

Regarding the effects of competition on technology software system implementation, the responses were generally positive, with a majority agreeing that competition can affect management approaches, market shares, organisational performance, and employee skills. This aligns with previous studies which have highlighted the importance of competition in driving technology innovation and implementation (Hojnik and Ruzzier, 2016). Moreover, the responses towards the competitive employees' IT skills further emphasize the role of human resources and their skills in effectively utilizing technology software systems.

This analysis highlights the complexity and diversity of external factors that can impact management mindset towards technology software system implementation. The participants' responses highlight varying levels of understanding and recognition of these factors, indicating a need for further education and awareness in this area. The results also provide insights for managers and organisations when considering the external environment and its potential impact on technology implementation success.

5.7.3 Pillar 2.1: The impact of management mindset on IT system implementation through dynamic capabilities

Based on the analysis of the hypothesis, it can be observed that there is a general consensus among the participants that the managerial mindset plays a crucial role in achieving effective IT system implementation. This is supported by similar responses from the participants, with a majority agreeing that effective implementation of the dynamic work capability and IT quality standards can contribute to IT system implementation. This finding is in line with previous studies that have also shown a positive correlation between management mindset and IT system implementation. For instance, a study by Wicks et al. (2012) found that a proactive and sustainable mindset among managers can lead to increased financial performance and IT system implementation. Furthermore, the high agreement on the statement that "management mindset has an impact on IT system implementation through implementation of IT quality standards" highlights the importance of IT in achieving effective IT system implementation. This is in line with the increasing role of technology in modern-day business operations and the growing trend of organisations adopting sustainable practices through the use of IT.

The results also show a controversial impact of management mindset on IT system implementation in terms of legal and ethical adequacy standards. While a significant number of participants agreed that management mindset can contribute to IT system implementation in these areas, there is also a considerable percentage who were neutral or somewhat disagree. This could suggest that there are some areas where management mindset may not have a

significant impact on IT system implementation, or there may be varying opinions among participants.

Comparing these findings with previous studies, it is evident that there is a lack of consensus on the impact of management mindset on legal and ethical aspects of IT system implementation. Some studies, such as Guerci et al. (2015), have found that management mindset and leadership behaviour are significant in promoting sustainable practices and ethical conduct within the organisation. However, other studies, like Weiss (2021), have shown that while management mindset is necessary for establishing sustainable practices, it might not always translate into ethical conduct. Therefore, it is essential to further explore and understand how management mindset can influence legal and ethical adequacy standards, as these are key factors for long-term implementation of organisations. The controversial findings of the current study may also indicate a need for a shift in mindset or a more comprehensive approach to evaluating the impact of management on IT system implementation.

The results of this study provide insights into the role of management mindset in achieving effective IT system implementation within the oil companies in the UAE. While there is a general consensus among participants on the positive impact of management mindset in certain areas of IT effectiveness, there is also a need for further research to understand and address the areas where there is a lack of agreement or controversy. These findings can be useful for oil companies in the UAE to develop strategies that promote the effectiveness of the IT system implementation and address any potential gaps in management mindset.

5.7.4 Pillar 2.2: The impact of management mindset on IT system implementation through implementation of IT quality standards

The results of the study on IT system implementation show that there is a general understanding and awareness among managers and employees of the impact of management mindset on achieving effective IT system implementation. This is supported by the fact that a majority of respondents agreed or strongly agreed with this statement, indicating that the concept of IT system implementation is well understood within the organisation.

This finding is consistent with previous research that suggests that a strong understanding and support for IT system implementation among both managers and employees can significantly contribute to the achievement of sustainable practices in organisations (Lamm et al., 2015). It also highlights the importance of promoting a sustainable mindset and culture within the organisation to ensure that strategic goals are consistently pursued and achieved.

The study also found that IT system implementation can be enhanced by supporting the company's dynamic competencies. This indicates that companies must continuously develop and adapt their competencies in order to remain sustainable in the long term. This is supported by previous research which has highlighted the importance of companies being able to adapt to changing circumstances and promote continuous learning in order to achieve effective practices (Billett, 2020).

In terms of operational and managerial processes, the study found that the majority of respondents agree or strongly agree that IT implementation can be achieved by adopting the most important and latest quality standards (Meyers et al., 2012). This finding is in line with previous research which has emphasized the importance of incorporating IT system implementation measures into operational and managerial processes in order to achieve effective practices (Ates et al., 2013). It also highlights the role of quality standards in promoting IT system implementation in organisations.

The study also examined the role of technology in achieving effective IT system implementation. The results showed that the majority of respondents support the statement that IT system implementation is achieved in technological processes by keeping pace with global developments in technology. The study looked at the association between organisational goals and IT system implementation, finding that positive interaction between leadership and employees can effectively link these two aspects.

The findings of this study support previous research and provide further evidence for the importance of understanding and promoting sustainable practices within organisations. It highlights the role of leadership, continuous learning and adaptability, as well as the use of technology and quality standards in achieving effective IT system implementation. These findings can serve as a valuable guideline for organisations looking to incorporate IT effectiveness into their operations and achieve long-term success.

5.8 The Role of IT Capabilities in Achieving Efficiency and Effectiveness

Kokkaew (2022) carried out a study about the influence of human resource management and knowledge management on non-financial organisational performance. The findings of the study confirmed the proposed model, showing a clear and significant link between HRM and knowledge management, as well as between knowledge and non-financial organisational performance, and between HRM and non-financial organisational performance specifically within the context of Thai infrastructure construction firms. Moreover, the results also revealed

that knowledge management acts as a mediator between HRM and non-financial organisational performance. These results further emphasize the significance of leveraging people and their knowledge in enhancing non-financial organisational performance.

The literature on efficiency and effectiveness standards of IT practices highlights the need for a balanced approach to measuring and improving IT performance (Shen et al., 2016). It is essential for organisations to consider both efficiency and effectiveness measures and invest in IT infrastructure and capabilities to achieve optimal outcomes. Following industry best practices and evaluating project success using a comprehensive model can also contribute to improving IT efficiency and effectiveness. Further research is needed to better understand the relationship between IT practices and performance and identify strategies for enhancing both efficiency and effectiveness in the IT domain.

5.9 Summary of the Chapter

Chapter 5 articulates in detail a discussion of the findings and relates the same to existing literature. The introductory part of the chapter summarizes the key findings derived in particular from a statistical analysis and testing of hypotheses. Further, the paper critically analyses the results, puts them in the context of earlier studies, and discusses attitudes prevailing among different groups in the UAE oil and gas sector. The focus is made on the analysis of management mindsets, IT capabilities, and their effectiveness regarding the achievement of organisational goals. Second, a comparative discussion highlights the differences and similarities of the responses; however, it also addresses the role of IT in enhancing efficiency. This chapter is concluded with a consideration of the strategic role of management in creating an enabling companies that are conducive for the implementation of IT systems. From there, salient points related to leadership, IT competencies, and external factors such as competition and customer expectations are brought to the fore.

CHAPTER 6: CONCLUSION, RECOMMENDATIONS AND FUTURE DIRECTIONS

6.1 Introduction

Throughout the previous chapters, the research has gradually delved into and examined the key associations and relationships within the research. This has been conducted in order to establish a clear and logical association to the research objectives that have been achieved through these chapters. The research has shown that supportive management mindset is important for the successful implementation of any IT system in an organisation. With the constant changes and advancements in technology, organisations in the oil and gas sector in the UAE faced challenges in implementing IT systems. This research aimed at developing a supportive management mindset framework for IT system implementation, specifically focusing on the oil and gas sector in the UAE.

Existing literature has limitedly highlighted the importance of a supportive management mindset in IT system implementation. However, limited research has focused explicitly on the oil and gas sector in the UAE (Shqairat and Sundarakani, 2018; Arif and Al Senani, 2020). This research aimed to fill this gap by providing a comprehensive understanding of the supportive management mindset in IT system implementation in the UAE oil and gas sector. The primary focus of this study was to investigate the impact of management mindset on IT implementation. Through a quantitative methods approach, from 62,722 employees working in the oil and gas sector determined, data was collected from a sample of questionnaires consists of 384 questionnaires distributed and 172 received back with 45% response rate.

The findings have important implications in the field of management mindset. They provide evidence for the need for further studies to better understand the complex relationship between management mindset and IT implementation. Furthermore, they highlight the importance of promoting responsible and mindful use of management mindset framework among oil and gas companies, which can help mitigate the negative impacts and promote the positive aspects.

The conclusion, recommendation and future directions chapter of this study aims to analyse the data collected and present the major results and their implications. This chapter will provide a comprehensive reflection of the research questions and objectives, and their corresponding outcomes. The conclusion chapter will introduce the results of the study and provide a detailed analysis and interpretation of these findings. It is the culmination of the research and provides meaning and significance to the work. The chapter will demonstrate the validity of the research. It will show that it has collected relevant data and conducted a thorough analysis, which adds

credibility to the study. The chapter will provide insight into the research process and justify the choices. It will provide a clear understanding of how the research has been carried out and analysed the data, making the research more transparent and replicable.

The chapter will show the analytical skills that demonstrate the ability to critically analyse data, draw conclusions, and make connections between the findings and existing knowledge. The core findings of the research will be shown which are derived from data analysis chapter. The chapter will provide a summary of hypotheses testing and show the significance of the relationships between research variables that have been statistically investigated. The critical interpretation of the research findings will be also introduced, and the distinctiveness of the research framework will be discussed. The chapter will provide a number of recommendations derived from the current research. The future directions of the additional research will be provided in order to suggest areas of studies that need to be investigated further in the UAE and international contexts.

6.2 Research Objective Achievement

Through the theoretical and practical study, the research objectives have been successfully achieved. Firstly, the research has examined the concept of a supportive management mindset and its role in promoting IT implementation. The theoretical study has explored various management theories and models that highlight the importance of a supportive management mindset in building strong organisational systems. Through this study, the research has successfully established a clear understanding of the concept and its significance in business operations.

Secondly, the research has focused on examining the impact of the identified supportive management mindset on IT system implementation in oil and gas sector. Through the theoretical study, various models and frameworks have been explored that demonstrate the role of IT systems in promoting organisational efficiency. Moreover, the practical study has provided empirical evidence through the primary research conducted in the UAE oil and gas sector.

The objectives of the research have focused on:

1- To identify practices of supportive management mindset and their influence on IT system implementation in oil and gas sector

2- To analyse the impact of the identified practices of supportive management mindset on IT system implementation in oil and gas sector.

3- To develop an applicable model for supportive management mindset in the IT system implementation in oil and gas sector

The research has also investigated the dynamic capabilities of organisations and their role in promoting IT implementation. Theoretical frameworks such as the resource-based view and dynamic capabilities theory have been explored, providing a deeper understanding of the relationship between dynamic capabilities and the current practices of IT system implementation. The practical study has also demonstrated the dynamic capabilities of oil and gas companies, showcasing their ability to adapt and innovate in the face of changing market conditions and technological advancements. Furthermore, the research has developed a framework that showcases the relationships between research variables, for example; supportive management mindset, and IT systems implementation. This framework has been based on the findings of the theoretical and practical studies and provides a critical and analytical perspective on the research objectives. Through this framework, the research has successfully presented a holistic view of the research, further contributing to the achievement of the research objectives.

6.3 Results Derived from Hypotheses

To test the research hypotheses, a linear regression analysis was conducted using data collected from a practical study in the UAE oil and gas sector. The study included an online questionnaire that was distributed to a sample of oil and gas companies in the UAE consisting of 382 questionnaires with 172 responses (45% response rate), and data was collected from the top, middle, and lower levels of management's directors and employees in the UAE oil and gas companies.

The results of the linear regression analysis showed that both Hypothesis 1 and 2 were supported and accepted. Hypothesis 1 states that management mindset has a high positive support on technology system implementation in the UAE oil and gas sector. The results of the linear regression analysis showed a significant positive relationship between management mindset and technology system implementation. This suggests that companies with a positive and supportive management mindset are more likely to successfully implement technology systems in the UAE oil and gas sector.

Further analysis of the sub-hypotheses, 1.1 and 1.2, also showed a significant positive relationship between internal and external factors of management mindset and technology system implementation. This suggests that not only do internal factors such as IT competencies

and leadership play a role in supporting technology system implementation, but also external factors such as PESTLE factors and competition.

The analysis of the hypotheses using regression analysis supports the acceptance of Hypothesis 2. H 2 posited that the management mindset significantly influences IT system implementation through dynamic capabilities and IT quality standards in the UAE oil and gas sector. The regression results confirmed this, showing a strong positive correlation between management mindset and successful IT system implementation when mediated by both dynamic capabilities and adherence to IT quality standards.

Furthermore, Hypothesis 2.1, which suggested that management mindset has a high positive effect on organisational dynamic capabilities, was also validated by the analysis. The findings demonstrated that a proactive and innovative management mindset fosters enhanced dynamic capabilities, which are crucial for navigating the sector's rapidly evolving environment.

Similarly, Hypothesis 2.2, which proposed a positive relationship between management mindset and IT quality standards, was supported. The results indicate that management's focus on quality significantly contributes to the successful implementation of robust IT standards within the sector. The findings confirm the critical role of management mindset in shaping both dynamic capabilities and IT quality standards, ultimately driving IT system success in the UAE oil and gas industry.

6.4 Hypotheses Testing and Analytical Discussion

This research aimed to investigate the role of management mindset in the successful implementation of IT systems in the UAE oil and gas sector, focusing on how internal and external factors, dynamic capabilities, and IT quality standards contribute to this process. The study was structured around two primary hypotheses, each further subdivided to examine specific dimensions of management influence. Based on the empirical findings, all proposed hypotheses were accepted, offering critical insights into the mechanisms through which management mindset affects IT system implementation. This section provides an in-depth analytical discussion of the hypotheses testing results.

Hypothesis 1: Management Mindset and IT System Implementation through Internal and External Factors

This hypothesis sought to establish that management mindset positively influences IT system implementation by addressing both internal and external factors. The empirical evidence supported this hypothesis, demonstrating a strong correlation between management's approach

and successful IT deployment. Key findings revealed that management mindset plays a critical role in balancing the internal capacities of the organisation, such as leadership and IT competencies, with external pressures, including PESTLE factors, competition, and customer needs.

The acceptance of this hypothesis highlights that a proactive and supportive management mindset is instrumental in overcoming challenges posed by both the internal structure of the organisation and the external environment. In the UAE oil and gas sector, where technological investments are high and the operational environment is complex, management's ability to align internal strengths with external demands is paramount for IT success (Al-Hajri et al., 2014). Moreover, these findings suggest that management's openness to change, along with their willingness to invest in IT infrastructure and human capital, creates a conducive environment for technology adoption.

Hypothesis 1.1: Internal Factors of Management Mindset

The testing of this sub-hypothesis confirmed that internal factors related to management mindset significantly influence the success of IT system implementation. Leadership was found to be the most critical factor, as strong leadership fosters a culture of innovation and motivates teams to embrace technological change. Leaders who are committed to digital transformation create a vision that aligns IT implementation with broader organisational goals, which in turn encourages employees to adopt new systems. This supports the claim introduced by Imran et al. (2021) who emphasised the significant role of leadership in digital transformation and how can be positively reflected in adopting new changes.

Furthermore, management's IT competencies and awareness of operational systems were also pivotal. Managers with a deep understanding of both IT and the organisation's core operations were better equipped to guide the implementation processes (Harmon, 2019). They could make informed decisions about which technologies would best enhance productivity, streamline operations, and improve safety and efficiency in the oil and gas sector. In addition, IT-savvy leaders were able to anticipate potential implementation challenges and develop strategies to mitigate them, thus improving the overall success rate of the projects.

The acceptance of this hypothesis suggests that organisations should prioritize the development of IT competencies within their leadership teams. Offering continuous training and exposure to emerging technologies can enhance management's ability to support IT system

implementation. Furthermore, encouraging managers to engage with IT projects more directly may lead to better alignment between technological capabilities and operational needs.

Hypothesis 1.2: External Factors of Management Mindset

This sub-hypothesis was also supported by the data, confirming that management's ability to respond to external factors significantly influences IT implementation. The UAE oil and gas sector operates in a dynamic environment where political, economic, social, technological, legal, and environmental (PESTLE) factors continuously evolve (Pryiatelchuk and Amirabbas, 2021). Management's sensitivity to these external factors was found to be crucial in guiding IT decisions.

For instance, regulatory changes in the UAE related to environmental sustainability and operational safety directly affect IT system requirements (Krzymowski, 2020). Managers who were proactive in understanding these regulations were better positioned to implement IT systems that ensure compliance and promote efficiency. Similarly, awareness of market competition drove managers to adopt innovative technologies that enhance the firm's competitive advantage. Customers' growing expectations for safety, reliability, and sustainability also pushed management to prioritize IT systems that improved operational transparency and customer satisfaction.

These findings suggest that managers must remain vigilant of the external environment, continuously scanning for changes in regulations, market conditions, and customer expectations. Integrating external factors into IT planning and decision-making processes ensures that system implementations are not only technologically sound but also strategically aligned with external demands.

Hypothesis 2: Management Mindset, Dynamic Capabilities, and IT Quality Standards

The second main hypothesis examined how management mindset affects IT system implementation by enhancing dynamic capabilities and ensuring adherence to IT quality standards. The data supported this hypothesis, revealing that management's mindset fosters the development of dynamic capabilities, which are essential for adapting to new technologies and integrating them into existing organisational frameworks. Simultaneously, a strong management commitment to quality standards ensures that IT systems meet the industry's rigorous demands for reliability and performance.

The acceptance of this hypothesis underscores the importance of dynamic capabilities in responding to the rapid technological advancements and regulatory requirements in the oil and

gas sector which confirmed by other studies such as Chirumalla (2021). It also highlights how management's focus on maintaining IT quality standards guarantees that systems are not only innovative but also robust and compliant.

Hypothesis 2.1: Management Mindset and Organisational Dynamic Capabilities

This sub-hypothesis was validated by the findings, which demonstrated that a supportive management mindset significantly enhances an organisation's dynamic capabilities. In the context of IT system implementation, dynamic capabilities referred to the ability of the organisation to adapt, reconfigure, and integrate new technologies to meet changing operational and regulatory demands.

The study revealed that managers who encourage flexibility and innovation are more likely to develop dynamic capabilities within their teams. These managers promote a culture that values learning and adaptation, allowing the organisation to respond swiftly to technological advancements and external pressures (Turnbull et al., 2020). This is particularly important in the UAE oil and gas sector, where the rapid evolution of technology and fluctuating market conditions require organisations to be agile.

Fostering dynamic capabilities allows management in ensuring that IT systems are not static but evolve over time to meet new challenges. This adaptability is crucial for long-term success, as it allows organisations to continually upgrade and optimize their IT infrastructure in response to both internal and external pressures.

Hypothesis 2.2: Management Mindset and IT Quality Standards

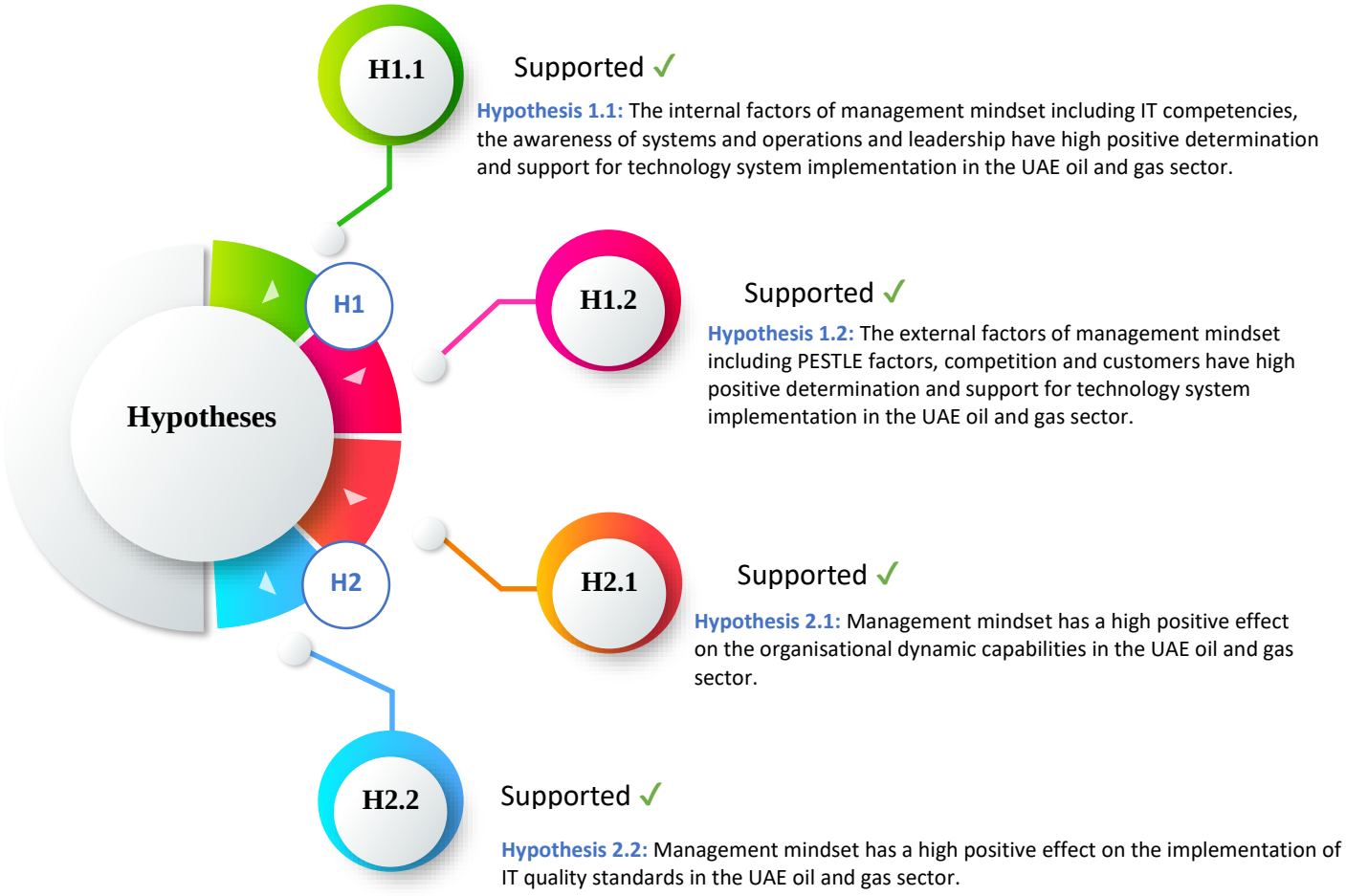
The final sub-hypothesis examined the relationship between management mindset and IT quality standards, and the results confirmed a positive correlation. Managers who prioritized quality were more likely to implement IT systems that met or exceeded industry standards for reliability, security, and performance. This focus on quality is particularly important in the oil and gas sector, where operational failures can lead to significant financial losses and safety hazards.

The data revealed that management's commitment to IT quality standards ensures that systems are thoroughly tested, comply with regulatory requirements, and are capable of supporting the complex operations of oil and gas firms. Managers who emphasize quality also tend to allocate more resources to IT training and development, ensuring that employees are well-equipped to use the systems effectively.

The acceptance of all hypotheses underscores the pivotal role of management mindset in IT system implementation within the UAE oil and gas sector. Responding to external pressures, developing dynamic capabilities, and adhering to quality standards, management creates an environment conducive to technological success by fostering internal competencies. These findings suggest that organisations should invest in developing IT-aware leadership and maintain a strategic focus on both internal and external factors during IT implementation. In doing so, they can ensure that their IT systems are not only innovative but also robust, adaptable, and aligned with industry standards.

The following figure shows the summary of hypotheses testing:

Figure 6.1: Hypotheses testing



6.5 Research Recommendations

Based on the research conducted on the impact of supportive Management Mindset on IT implementation in the UAE Oil and Gas sector, the following recommendations can be made:

6.5.1 Developing a Clear Vision and Strategy for IT System Implementation

It is significant for the UAE organisations to have a clear vision and strategy for implementing IT systems. This includes defining the goals and objectives of the implementation, as well as the expected outcomes and benefits. Having a clear vision and strategy will help align the efforts of the management and the IT department, and ensure that the implementation is driven by the needs of the organisation. The lack effective strategy can lead to different interpretations of the projects' objectives and goals, leading to conflicting priorities and direction (Zina, 2021). This can result in wasted time, resources, and effort. Clear vision and strategy provide a roadmap for the companies and outline the key steps, milestones, and timelines for the implementation, helping the team to stay on track and monitor their progress (Trindade et al., 2023). This is especially important for large and complex IT systems implementation, which may involve various departments and stakeholders. Furthermore, developing a clear vision and strategy for IT system implementation helps in managing risks. Identifying potential risks and challenges beforehand and including mitigation strategies in the vision and strategy can help reduce the impact and likelihood of those risks. It also allows teams to be prepared for any unexpected challenges that may arise during the implementation process. This proactive approach increases the chances of a successful implementation. In addition, a clear vision and strategy for IT system implementation provide a baseline for evaluating progress and success. It outlines the expected outcomes and benefits of the implementation, allowing the team to measure the project's success against these expectations.

The implementation of an effective IT system is a challenging task, as it requires not only technical expertise but also constructive strategic planning. In this context, it is significant to ensure an effective establishment of business objectives to identify business objectives. These objectives should be aligned with the overall strategic goals of the organisation and should address the specific needs and challenges of the oil and gas sector. This will ensure that the IT system is designed and implemented to support the business objectives effectively. Moreover, involving key stakeholders is a significant factor which requires the involvement and collaboration of key stakeholders, including senior management, IT professionals, and end-users. Therefore, it is significant to engage these stakeholders in the strategy development process to ensure their buy-in and support for the implementation.

6.5.2 Fostering a Supportive Management Mindset

The research highlights the importance of a supportive management mindset in successful IT system implementation. This includes managers who are willing to listen to the concerns and

suggestions of the employees, and who are open to change and improvement. Managers should also be proactive in providing support and resources to the IT department, and should encourage collaboration and communication between different departments (Agarwal and Sambamurthy, 2020).

Based on various studies and industry reports, it is evident that a supportive management mindset can lead to several benefits for the oil and gas sector. These include improved employee retention, increased productivity, and a positive impact on the bottom line. Therefore, it is significant to incorporate this mindset into the management practices of oil and gas companies. To achieve this goal, the following research recommendations are proposed:

Providing Training and Development

One key aspect of a supportive management mindset is the continuous development of managers' capabilities. Organisations in the oil and gas sector should invest in training and development programs that focus on leadership, communication, and emotional intelligence. These skills are essential for creating a supportive work environment and effective management practices.

Promoting diversity and inclusion

Another significant aspect of a supportive management mindset is promoting diversity and inclusion within the organisation. This involves creating a workplace culture that respects and values individual differences, such as gender, cultures, and backgrounds. Managers can foster a sense of belonging and create a positive work environment for all employees.

Encourage open communication

Effective communication is key to creating a supportive management mindset. Managers should encourage open and honest communication with their employees, providing regular feedback, and listening to their concerns. This will foster a sense of trust and transparency within the organisation, leading to better employee satisfaction and engagement.

6.5.3 Providing Adequate Resources and Infrastructure

IT system implementation requires a significant investment in terms of resources and infrastructure. Organisations should ensure that they provide adequate resources, including hardware, software, and trained personnel, to support the implementation process. This will help minimize delays and issues during the implementation, and ensure the smooth and effective functioning of the IT system once implemented.

One of the key reasons for the necessity of adequate resources and infrastructure in the oil and gas sector is the increasing demand for energy (Jin and Zhang, 2018). The global population is growing rapidly, and with it, the demand for energy. As countries develop and modernize, their energy needs also increase, putting more pressure on the oil and gas industry to produce and supply enough resources. In order to meet this demand, the sector must have the necessary resources and infrastructure in place to efficiently extract, transport, and distribute energy resources.

Another important factor to consider is the environmental impact of the oil and gas industry. Oil and gas production can have significant environmental consequences, such as air and water pollution, greenhouse gas emissions, and habitat destruction. Therefore, it is important that the sector has adequate resources and infrastructure to implement and maintain sustainable practices. This includes investing in advanced technologies that can reduce the industry's carbon footprint and limit its impact on the environment.

Providing adequate resources and infrastructure in the oil and gas sector is significant for the safety and well-being of its workers. The industry is known for its hazardous working conditions, and accidents can have devastating consequences for both workers and the environment. In order to mitigate these risks, the sector must have the necessary resources and infrastructure to implement strict safety regulations, provide proper training and protective equipment, and have emergency response plans in place.

Given the significance of having adequate resources and infrastructure in the oil and gas sector, it is recommended that further research be conducted to identify ways in which this can be achieved. One area of focus could be on the development and implementation of new technologies and processes that can improve efficiency and reduce the environmental impact of oil and gas operations. This could include investing in renewable energy sources, implementing carbon capture and storage technologies, or utilizing advanced data analytics for more accurate resource exploration and extraction.

Another area that requires further research is the role of government policies and regulations in promoting and supporting the development of adequate resources and infrastructure in the oil and gas sector. Governments have a significant role in setting and enforcing standards for safety, environmental protection, and sustainable practices in the industry (Lambin and Thorlakson, 2018). Further research could evaluate the effectiveness of existing policies and recommend potential improvements or new policies that could better support the sector.

6.5.4 Involving Employees in the Implementation Process

The research suggests that involving employees in the IT system implementation process can lead to better acceptance and adoption of the system. Organisations should actively involve employees in the planning, design, and testing phases of the implementation (AlNoaimi and Mazzuchi, 2021). This can be done through focus groups, workshops, or training sessions, where employees can provide input and feedback on the system. Moreover, organisations should provide adequate training and support to employees to ensure they have the necessary skills and knowledge to use the IT system effectively.

The oil and gas sector is a highly complex and dynamic industry, and successful implementation of projects and processes is significant for its sustainability and growth. Involving employees in the implementation processes has been identified as a key factor in ensuring the success of such projects. It is important to constantly review and improve existing processes, and one way to achieve this is by involving employees at all levels in the implementation process. One of the key benefits of involving employees in the implementation process is that it leads to a sense of ownership and responsibility. When employees are involved in the decision-making and implementation process, they feel more invested in the project and are more likely to take ownership of their roles (Tao et al., 2018). This sense of ownership can improve their motivation and dedication towards the project, leading to better performance and results. Involving employees in the implementation process also gives them a better understanding of the overall goals and objectives, and how their role contributes to the success of the project.

Involving employees in the implementation process can bring diverse perspectives to the table. Employees from various backgrounds and levels of the organisation can offer different insights and ideas that can improve the overall process. This can help in identifying potential risks and issues that may have been overlooked by a limited group of decision-makers. Involving employees also gives them the opportunity to share their knowledge and expertise, fostering a culture of collaboration and continuous learning within the organisation.

Involving employees in the implementation process can improve the overall efficiency and effectiveness of the project. With the involvement of employees, tasks can be delegated based on individual skills and capabilities, leading to a more streamlined and efficient process. Employees who have a deep understanding of their role can make informed decisions and take appropriate actions, reducing the likelihood of errors and delays. This can ultimately lead to

cost savings and enhance the overall performance of the project. However, involving employees in the implementation processes requires careful planning and management. To ensure the success of this recommendation, it is important to communicate clear guidelines and expectations to employees and provide them with the necessary training and resources. Employees also need to be involved from the planning stage and given a sense of autonomy and decision-making authority.

6.5.5 Fostering a Culture of Continuous Learning and Improvement

IT systems are constantly evolving, and organisations should encourage a culture of continuous learning and improvement. This includes providing opportunities for employees to enhance their skills and knowledge in IT systems, as well as promoting knowledge sharing and collaboration among employees. Oil and gas companies should also encourage employees to provide feedback and suggestions for system improvement, and should have processes in place to capture and act on this feedback including advanced learning such as machine learning applications (Hanga and Kovalchuk, 2019).

There is a need to prioritize and invest in employee training and development. In a competitive industry like oil and gas, companies need to have a skilled and knowledgeable workforce to remain competitive. Investing in employee training and development can enhance their employees' knowledge and skills, and also their overall performance and job satisfaction. This leads to a more engaged and committed workforce, which is important for organisations to drive innovation and adapt to changing industry trends. Furthermore, it is also essential for companies in the oil and gas sector to establish a formal knowledge management system.

Fostering a learning culture in the oil and gas sector can be by promoting a mentality of continuous improvement. Companies should encourage employees to seek out opportunities to learn and improve, whether it is through on-the-job training, workshops, or conferences. This not only helps employees develop new skills but also encourages them to think critically and creatively to find better solutions to problems. Furthermore, the research argues that companies should also provide a platform for employees to share their ideas and suggestions for improvement, creating a sense of ownership and empowerment within the organisation. In addition to investing in employee development and creating a knowledge-sharing system, adopting new technologies and innovative practices can also help promote continuous learning and improvement in the oil and gas sector. With advancements in technology and digitalization, there are numerous tools and systems available to help streamline processes and increase efficiency.

6.5.6 Monitoring and Evaluating the Implementation Process

It is important for organisations to monitor and evaluate the IT system implementation process to ensure that it is on track and aligned with the goals and objectives of the organisation. This includes regularly reviewing project milestones and progress, as well as conducting post-implementation reviews to identify areas of improvement. The research argues that monitoring and evaluation should involve regular communication and collaboration between the management and the IT department, as well as feedback from employees and end-users of the IT system.

Research has shown that effective monitoring and evaluation of the implementation process in the oil and gas sector is essential for its success and sustainability (Rentizelas et al., 2020). This recommendation suggests that a comprehensive and systematic approach to monitoring and evaluating the implementation process should be implemented in the oil and gas sector. The following are some key reasons for this research recommendation:

Ensuring compliance with regulations and standards

One of the primary reasons for monitoring and evaluating the implementation process in the oil and gas sector is to ensure compliance with regulations and standards. The oil and gas sector operates in a highly regulated environment, and any non-compliance with regulations can lead to serious consequences, such as environmental damage, safety hazards, and legal penalties.

Identifying areas for improvement

Monitoring and evaluation also provide an opportunity to identify areas where the implementation process can be improved. Through regular monitoring, any challenges in the process can be identified, and appropriate measures can be taken to address them. This ensures that the implementation process is continuously improved and becomes more efficient and effective over time.

Tracking progress and measuring success

Monitoring and evaluation also play a significant role in tracking the progress of the implementation process and measuring its success (Rui et al., 2018). This helps in assessing if the desired outcomes and objectives are being achieved and if the project is on track to meet its goals. Any deviations from the planned progress can be identified and corrective actions can be taken to ensure the project stays on track.

Enhancing transparency and accountability

The implementation of a robust monitoring and evaluation system in the oil and gas sector can enhance the transparency and accountability. This is important for building trust and confidence among stakeholders, including government agencies, local communities, and investors. A transparent monitoring and evaluation process can also help in identifying any potential conflicts of interest or unethical practices.

Encouraging continuous learning

Monitoring and evaluation also promote a culture of continuous learning within the oil and gas sector. Providing regular feedback on the implementation process can help organisations learn from their mistakes and successes and make necessary adjustments for future projects. This helps in building a knowledge base and improving the overall performance of the sector.

6.5.7 Developing a Change Management Plan

IT system implementation often involves significant changes to workflows, processes, and roles within organisations (Harmon, 2019). To ensure smooth transition and acceptance of these changes, organisations should develop a comprehensive change management plan. This plan should include clear communication strategies, training programs, and support mechanisms to help employees adapt to the new system. Organisations should also address any potential resistance to change, and provide incentives and rewards to motivate employees to embrace the changes.

The implementation of IT systems in the UAE Oil and Gas sector can be supported by adopting a supportive management mindset. This includes developing a clear vision and strategy, providing adequate resources and infrastructure, involving employees in the implementation process, fostering a culture of continuous learning and improvement, monitoring and evaluating the implementation process, and developing a change management plan.

6.6 Future Directions for Additional Research

The present research made a significant contribution in the investigation of the impact of management mindset on the implementation of technology systems in the UAE oil and gas sector. However, the study also points out various areas in which further research can be carried out to make additional contributions to the knowledge of supportive management practices in IT system implementation. These pertain to the interplay of internal and external factors, dynamic capabilities, IT quality standards, and management mindset itself. Future studies can go beyond this study by addressing these areas, fill the knowledge gap, and therefore provide

more comprehensive models and frameworks that apply not only to the UAE oil and gas sector but also to other sectors and regions with similar technological challenges.

6.6.1 Delving into the Multi-Dimensionality of Management Mindset

The research argues that management mindset is multi-dimensional, which is driven through various influencing internal and external factors such as internal IT competencies, leadership influences, and external pressures such as PESTLE, among other factors. However, there is a need for more in-depth studies that break down and categorize the elements in greater detail. For example, it is possible to further investigate leadership, as an internal factor, by examining what type of leadership style (transformational, transactional, or laissez-faire) has the most positive influence on IT implementation.

Future research can also try to explore in detail how each of the PESTLE factors interfaces with the management mindset within the context of the oil and gas sector. The study thus recommends that future studies employ mixed-method approaches-qualitative approaches such as interviews and focus groups alongside quantitative analyses-to tease out subtle elements of management decision-making when different external pressures are applied. It can yield much better granularity of how the management mindset adjusts and adapts to the external conditions, hence providing insights that might be applied to similar industries in different geopolitical settings.

This study posits that management mindset represents a multi-dimensional construct that has an impact on successful implementation of IT systems in the UAE oil and gas sector. As such, this mindset involves not only cognitive and strategic orientations but also attitudes, beliefs, and competencies in management. The findings from this research have been able to show that management mindset can be conceptualised to comprise both internal and external factors, as reflected in Hypothesis 1.1 and 1.2. However, this conceptualization is useful but requires further unpacking in order to explore the depth and breadth of what comprises a "supportive" mindset for technology adoption. Indeed, future research should aim at unpacking these dimensions so as possibly to arrive at a far more nuanced understanding of how each of the components interacts to influence the implementation of IT systems.

6.6.2 Internal Dimensions: Leadership, IT Competencies, and Awareness

The internal level reveals three significant dimensions from the present study, namely leadership, IT competencies, and awareness of systems and operations. Each one of them needs more detailed research to understand how it affects management mentality.

6.6.2.1 Styles of Leadership

The internal factor that most influences organisational culture and the way in which new technologies are received is Leadership. Other future studies may investigate which of the styles, such as transformational, transactional, and servant leadership, can influence IT system implementation. Based on the research, it is expected that the transformational type of leadership, embracing innovation and forward thinking, will have the most influence in building a supportive mindset of management. On the other hand, highly transactional leadership-which focuses on short-term goals and perpetuates things as they are-may hinder IT from realizing its full capabilities. These relationships are tested through empirical studies in future research and can determine which style of leadership best supports IT innovation in industries such as oil and gas.

6.6.2.2 IT Competencies

The other critical dimension affecting how the decision on system implementation is made is the management's IT competency. The competency is related to management effectiveness and its familiarity with the processes, tools, and systems of IT. It adds that more IT literate managers are likely to support and manage the implementation of new systems effectively. The competency framework, in this regard, for managers to undertake key technical skills and knowledge for IT implementation must be developed. Moreover, future research should trace the development of competencies through continuous learning and training programs.

6.6.2.3 Systems and Operations Awareness

Another important internal factor involves the aspect of systems and operational awareness. This is understood as managers understanding not only the technical systems being implemented but also how those systems fit into the larger operational objectives of the organisation. The study concludes with the advocacy that future research be focused on how this operational awareness can be generated, especially in the oil and gas industries where successful operation of enormous and complex operations requires sound integration at various tiers. Future research could uncover methods for achieving alignment between technological systems and business objectives by examining the way that managers' awareness impacts the decision-making process in prioritizing and resourcing IT projects.

6.6.3 External Dimensions: PESTLE Factors, Competition, and Customers

Apart from internal factors, external forces such as PESTLE factors, competition, and customer expectations have a significant influence on management mindset. While all these issues have been highlighted in this research, further study on how their interaction impacts management mindset in IT implementation is warranted.

6.6.3.1 PESTLE Analysis and Its Impact on Mindset

In particular, within the UAE oil and gas sector, one significant factor for shaping the approach towards technology by management derives from PESTLE factors. For example, governmental policies for energy and environmental regulations or technological incentives could influence managerial choices of investments in IT. The study concludes by remarking that further research can be conducted to perceive the managers' perception and response to such external stresses, as well as how a facilitating management attitude might reduce risks or leverage opportunities brought about by these factors. A detailed exploration of each of the components under PESTLE, specifically geopolitical risks and the shift in the economic paradigm within which the energy markets operate, would give far greater depth to the external analysis.

6.6.3.2 Competition and Customer Expectations

The management is also driven to embrace new technologies due to increasing competition and the changing expectations of the customers. The effective, eco-friendly, and modern solutions demanded by the increasingly demanding customers force companies to innovate. The present study recommends that future research examines the influence of competitive pressures and customer expectations on management's strategic priorities and, by implication, management mindset regarding adopting technology. The comparison of firms which gain from the pressures with those that lag in the integration of IT would remarkably illuminate the role of management mindset as a driver of competitive advantage.

6.6.4 Cross-Sector Comparative Studies

The research suggests that future research should look beyond the oil and gas industry to test the generalisability of the supportive management mindset model through cross-industry comparative studies. Whereas this research has been able to establish the importance of management mindset in the UAE oil and gas sector, it is not known whether the same internal and external factors, the same dynamic capabilities, and IT quality standards are found in other industries like health, manufacturing, or finance.

The comparison of the oil and gas sector with other sectors can allow other researchers to be able to establish whether sector-specific factors enhance or diminish the influence of management mindset in the implementation process. Such comparative researches would allow the researchers to pinpoint commonalities and differences across the sectors in contributing to the development of sector-specific models or universal frameworks applicable to IT system implementation.

6.6.5 Dynamic Capabilities and IT Quality Standards

A sectoral comparison can also reveal variations in how management mindsets impact dynamic capabilities and IT quality standards. In fast-paced industries such as tech start-ups, dynamic capabilities like agility and innovation may be essential for IT system success. However, in industries like healthcare or government, where IT systems are subject to stringent regulations, the focus may shift toward compliance with established IT quality standards rather than adaptability. Comparative research can thus highlight whether different sectors prioritize IT quality standards over dynamic capabilities or vice versa.

6.6.6 Cross-Sectoral Adaptation of IT Implementation Models

By examining the management mindset in sectors like logistics, hospitality, or real estate, future research could explore whether the supportive management model in the oil and gas sector can be adapted to other industries. This comparative study could identify industry-specific best practices and leadership styles that significantly impact IT system implementation. In addition, the exploration of management mindsets in sectors with varied organisational structures and competitive pressures may lead to the development of a more flexible, sector-independent model of IT implementation.

6.6.7 Longitudinal Studies on Management Mindset Evolution

The study recommends that future research should take a longitudinal approach in order to study how management mindset evolves over time, especially in response to the rapid changes in technology and shifting market dynamics. Since the digital environment is in continuous metamorphosis with emerging technologies like artificial intelligence, machine learning, and blockchain, the change in this setting will also alter the management mindsets. Notably, the digitization in the oil and gas sector is gradually setting up with the increased use of technologies such as advanced analytics, IoT, and predictive maintenance.

Longitudinal studies could eventually reveal the evolution of management's attitude, competencies, and leadership style to meet new technological demands. In this way, the

research would provide a more dynamic perspective on factors that determine successful IT system implementation. Such studies could also identify resiliency and flexibility in management mindsets when disruptive technologies are encountered, which would be very instructive for organisational adaptability in light of digital transformation.

6.6.8 Expanding the Scope of Internal and External Factors

Although this research has considered a number of internal and external factors, the study recommends that future studies expand the scope of these factors to include other potential influences on management mindset and IT system implementation. For example, internal factors can be extended by taking into consideration organisational culture, employee engagement, and change management practices. How a supportive organisational culture and employee engagement can help bolster the management mindset will provide a fuller understanding of the internal dynamics that create successful IT implementations.

On the external front, the study could delve into international collaborations, global market trends, and geopolitical risks, which would be more applicable to the UAE due to its standing in energy and trade. The research asserts that these external factors-international regulatory standards, competition in the global arena, and trade relationships-may further pressurize or create opportunities for management thinking, as they work within a global perspective relating to the oil and gas industry.

6.6.9 The Investigation of the Role of Dynamic Capabilities across Varied Contexts

The study concludes that further research is needed to investigate the role of dynamic capabilities in various organisational settings. It suggests a special interest for environments with high levels of uncertainty and rapid technological discontinuities. Although this study has identified the significance of dynamic capabilities within the UAE oil and gas sector, it does not indicate how these capabilities are developed and maintained in other sectors or geographical regions that are experiencing different levels of technological maturity. For instance, in less technology-intensive markets, it would be particularly useful to examine whether management mindset can offset lower dynamic capabilities by enabling more innovative problem-solving approaches or by using partnerships and alliances to harness resources and competencies. The findings recommend that future research investigate organisational size and structure in view of the development of dynamic capabilities. Smaller organisations might be more flexible but also have few resources compared to large, more bureaucratic enterprises.

Dynamic capabilities refer to an organisation's ability to adapt, integrate, and reconfigure internal and external competencies in response to changing environments (Bleady et al., 2018). In the context of the UAE oil and gas sector, dynamic capabilities play a crucial role in the successful implementation of IT systems, as highlighted in Hypothesis 2.1. Future research should focus on exploring the role of dynamic capabilities across varied contexts to better understand their influence on IT system implementation in different sectors and organisational environments.

6.6.10 Sectoral Variations in Dynamic Capabilities

While the oil and gas sector is characterized by high capital investment, regulatory constraints, and complex technological systems, industries such as retail, healthcare, or finance operate in faster-paced, customer-centric environments. A comparative study across sectors could explore how dynamic capabilities, such as agility, innovation, and adaptability, vary in importance based on the specific industry's operational environment. For instance, in rapidly evolving sectors like technology and telecommunications, dynamic capabilities may be more critical for IT system upgrades and innovation, whereas in more traditional sectors, such as utilities or government, stability and adherence to standards may outweigh the need for adaptability.

6.6.11 Organisational Structures and Dynamic Capabilities

The role of dynamic capabilities may differ depending on the size, structure, and management hierarchies of organisations. Large, hierarchical organisations, such as multinational corporations in the oil and gas industry, may have more formalized processes for developing and leveraging dynamic capabilities (Grogaard et al., 2019). In contrast, smaller, more agile firms in industries like fintech or digital startups may rely on their inherent flexibility to foster dynamic capabilities, enabling them to rapidly adapt to technological changes. Future research could explore how organisational structure influences the development and effectiveness of dynamic capabilities in IT system implementation.

6.6.12 Cultural and Geographical Influences

Cultural and geographical contexts may also affect the role of dynamic capabilities in IT system implementation. For instance, in countries with rapidly changing economic environments, such as emerging markets, the need for dynamic capabilities to quickly adapt to new regulations, market demands, and technological advancements may be more pronounced. Comparative research could investigate how different cultural values, regulatory environments, and regional economic conditions influence the role of dynamic capabilities in IT implementation. This

could include an analysis of how organisations in highly regulated environments, such as healthcare or defense, balance the need for compliance with the necessity for adaptability.

6.6.13 Integration with IT Quality Standards

Dynamic capabilities must also be studied in conjunction with IT quality standards, as outlined in Hypothesis 2.2. Future research could explore the interplay between the need for dynamic adaptation and strict adherence to IT quality standards. For example, in industries with stringent compliance requirements, such as pharmaceuticals or finance, dynamic capabilities may need to be carefully managed to ensure that adaptability does not compromise quality standards.

6.6.14 Examining the Implementation of IT Quality Standards

Another direction of future research might concern an in-depth analysis of IT quality standards. According to the authors, although the current study has identified a positive effect of management mindset on the compliance with IT quality standards, further research is needed to explore how various kinds of IT standards (e.g., ISO/IEC certifications, industry-specific regulations, or cybersecurity protocols) and their interaction with management practices impact performance. It could be examined whether the supportive management mindset can more easily implement certain standards or whether there are specific barriers inhibiting the adoption of high-quality IT practices despite a positive management mindset.

In addition, it becomes obvious from the research that cultural and regional variances in the diffusion of IT quality standards are a potentially fruitful area of investigation. Specifically, future studies might examine how cultural attitudes toward risk, compliance, and innovation influence the implementation of IT standards. For example, are managers in different countries more or less likely to embrace rigorous IT standards depending on their cultural orientation toward rules and formal processes? Addressing such questions will enrich the literature on IT quality management and provide organisations with culturally sensitive strategies for implementing IT standards across borders.

6.6.15 Investigating the Interrelationship Between Internal and External Factors

This study advocates that future research needs to be done on an interlink between internal and external factors because neither of them works in a vacuum. For example, leadership itself may be influenced by external market pressures, regulatory changes, or even competitive threats. Future studies could therefore develop integrative models that capture the dynamic interplay between internal competencies (such as IT skills or leadership) and the forces of the external environment, such as factors stemming from PESTLE or competition. These integrative

models would better explain how management mindset is characterised from the broader environment and in turn influences IT system implementation.

The research also suggests that future research could apply system dynamics or agent-based modelling techniques to model complex internal and external interactions over time. Using computational modelling, scholars would be able to create the conditions under which management mindsets are most likely to lead to successful IT implementations and be used to investigate potential feedback between internal and external drivers of change.

6.6.16 Locating the Research in the Global Energy Transition

The world's energy transition to renewable sources and the decarbonization ambitions set a peculiar context for further exploration of the current research findings. The results indicate that future research should investigate how the changing face of energy businesses shapes management mindsets in the oil and gas industry, especially considering the trend in which even companies operating in this sector increasingly apply IT systems to pursue energy efficiency and emission reductions or manage renewable energy assets.

This may also involve research into how management mindset would change in response to energy transition demands, with a focus on IT systems being used to achieve such sustainability goals. For instance, a study in the future can be done to establish whether managers who are environmentally conscious will easily implement systems on green IT, and whether green IT systems provide a competitive advantage in the transitioning energy market.

6.6.17 Research on the Impact of Emerging Technologies

With the rise of new technologies such as AI, machine learning, blockchain, and cloud computing that continue to disrupt industries, the research suggest that further studies seek to determine how emerging technologies influence management mindset in the context of IT system implementation. For instance, in the case of the emergence of those technologies, researchers could investigate how managerial perceptions of risks and opportunities result in different mindset adoptions of advanced IT solutions. This could be, for example, the examination of the adoption of AI-driven IT systems in the oil and gas industry with regard to the role of management mindset in overcoming resistance to AI implementation. Or it might concern the effects of blockchain technology on the supply chain in the oil and gas industry, examining the manner in which the strategic vision of management together with an openness to innovation influences the successful implementation of such systems.

6.6.18 Development of Prescriptive Frameworks for Practitioners

This research, therefore, argues that there is a need for more prescriptive frameworks which can offer practical guidance to managers in the UAE oil and gas sector-and indeed beyond-on how to develop a supportive management mindset that fosters successful IT system implementation. Future research could focus on translating the findings from this and similar studies into actionable tools, such as management training programs, best practice guidelines, or decision-making frameworks that help managers navigate the complexities of IT system adoption.

These can be adapted for various organisational settings, given the differences in technological maturity, resources, and market conditions. It therefore follows from this study that such a framework should be codesigned with industry practitioners to ensure it will be useful and applicable, thus connecting academic research with the practice of the industry.

References

1. Abdalla, M.M., Oliveira, L.G.L., Azevedo, C.E.F. and Gonzalez, R.K., 2018. Quality in qualitative organisational research: Types of triangulation as a methodological alternative. *Administração: ensino e pesquisa*, *19*(1).

2. Abdel-Latif, H. and El-Gamal, M., 2020. Financial liquidity, geopolitics, and oil prices. *Energy Economics*, *87*, p.104482.

3. Abernethy, M.A., Anderson, S.W., Nair, S. and Jiang, Y.A., 2021. Manager 'growth mindset'and resource management practices. *Accounting, Organisations and Society*, *91*, p.101200.

4. Aboelmaged, M.G., 2018. Knowledge sharing through enterprise social network (ESN) systems: motivational drivers and their impact on employees' productivity. *Journal of Knowledge Management*.

5. Abou Assali, M. and Troudi, S., 2019. Expatriate leaders' leadership styles vs. local subordinates' perspectives in a United Arab Emirates higher education institution.

6. Abubakar, A.M., Elrehail, H., Alatailat, M.A. and Elçi, A., 2019. Knowledge management, decision-making style and organisational performance. *Journal of Innovation & Knowledge*, *4*(2), pp.104-114.

7. Adamik, A. and Nowicki, M., 2018, May. Preparedness of companies for digital transformation and creating a competitive advantage in the age of Industry 4.0. In *Proceedings of the International Conference on Business Excellence* (Vol. 12, No. 1, pp. 10-24).

8. Adams, D., Adams, K., Ullah, S. and Ullah, F., 2019. Globalisation, governance, accountability and the natural resource 'curse': Implications for socio-economic growth of oil-rich developing countries. *Resources Policy*, 61, pp.128-140.

9. Adeniran, O.B., 2017. *Examining the Competitive Advantage of Using Telecommuting in Nigeria* (Doctoral dissertation, Northcentral University).

10. Afroz, Z., Higgins, G., Urmee, T. and Shafiullah, G.M., 2017. Technological advancement of energy management facility of institutional buildings: a case study. *Energy Procedia*, 142, pp.3088-3095.
11. Agarwal, R. and Sambamurthy, V., 2020. Principles and models for organizing the IT function. In *Strategic information management* (pp. 243-260). Routledge.

12. Agenda, I., 2016, May. Shaping the future of construction a breakthrough in mindset and technology. In *World Economic Forum* (pp. 11-16).

13. Ågerstrand, M. and Rudén, C., 2010. Evaluation of the accuracy and consistency of the Swedish Environmental Classification and Information System for pharmaceuticals. *Science of the Total Environment*, *408*(11), pp.2327-2339.

14. Ahmad, S.Z., Ahmad, N. and Papastathopoulos, A., 2018. Measuring service quality and customer satisfaction of the small-and medium-sized hotels (SMSHs) industry: lessons from United Arab Emirates (UAE). *Tourism Review*.

15. Ahmed, M.B., Sanin, C. and Szczerbicki, E., 2019. Smart virtual product development (SVPD) to enhance product manufacturing in industry 4.0. *Procedia computer science*, *159*, pp.2232-2239.

16. Ahmed, S.K., 2024. Research Methodology Simplified: How to Choose the Right Sampling Technique and Determine the Appropriate Sample Size for Research. *Oral Oncology Reports*, p.100662.

17. Akpe, A.T., Nuan, S.I., Solanke, B. and Iriogbe, H.O., 2024. Development and implementation of cost control strategies in oil and gas engineering projects. *Global Journal of Advanced Research and Reviews*, 2(01), pp.001-022.

18. Al Saifi, S.A., 2015. Positioning organisational culture in knowledge management research. *Journal of knowledge management*.

19. Al-Ali, W., Ameen, A., Issac, O., Habtoor, N., Nusari, M. and Alrajawi, I., 2018. Investigate the influence of underlying happiness factors on the job performance on the oil and gas industry in UAE. *International Journal of Management and Human Science (IJMHS)*, *2*(4), pp.1-12.

20. Alameeri, A., Ajmal, M.M., Hussain, M. and Helo, P., 2018. Sustainable management practices in UAE hotels. *International Journal of Culture, Tourism and Hospitality Research*, *12*(4), pp.440-466.

21. Albrecht, S. L., Bakker, A. B., Gruman, J. A., Macey, W. H., & Saks, A. M. (2015). Employee engagement, human resource management practices and competitive advantage: An integrated approach. Journal of Organisational Effectiveness: People and Performance, 2(1), 7-35.

22. Albrecht, S.L., Bakker, A.B., Gruman, J.A., Macey, W.H. and Saks, A.M., 2015. Employee engagement, human resource management practices and competitive advantage: An integrated approach. *Journal of organisational effectiveness: People and performance*, *2*(1), pp.7-35.

23. Al-Hajri, A., Abdella, G.M., Al-Yafei, H., Aseel, S. and Hamouda, A.M., 2024. A Systematic Literature Review of the Digital Transformation in the Arabian Gulf's Oil and Gas Sector. *Sustainability*, *16*(15), p.6601.

24. Al-Ibrahim, A. (2014). Quality management and its role in improving service quality in public sector. Journal of Business and Management Sciences, 2(6), 123-147.

25. Aljawarneh, N. and Al-Omari, Z., 2018. The role of enterprise resource planning systems ERP in improving customer relationship management CRM: An empirical study of safeway company of Jordan. *International Journal of Business and Management*, *13*(8), pp.86-100.

26. Alkheyi, A.A.S.A., Khalifa, G.S.A., Ameen, A., Hossain, M.S., Hewedi, M.M. and Nasir, N.S.M., 2020. Strategic leadership practices on team effectiveness: the mediating effect of knowledge sharing in the UAE Municipalities. *Academic Leadership*, *21*(3), pp.99-112.

27. Allal-Chérif, O., Aranega, A.Y. and Sánchez, R.C., 2021. Intelligent recruitment: How to identify, select, and retain talents from around the world using artificial intelligence. *Technological Forecasting and Social Change*, *169*, p.120822.

28. Allen, S.J., 2020. On the cutting edge or the chopping block? Fostering a digital mindset and tech literacy in business management education. *Journal of Management Education*, 44(3), pp.362-393.

29. Almarashda, H.A.H.A., Baba, I.B., Ramli, A.A., Memon, A.H. and Rahman, I.A., 2021. Human resource management and technology development in artificial intelligence adoption in the UAE energy sector. *Journal of Applied Engineering Sciences*, *11*(2), pp.69-76.

30. Almazrouei, M., Khalid, K., Abdallah, S., & Davidson, R. (2019). Assessing the health, safety, and environment culture in the United Arab Emirates oil and gas industry. Journal of Engineering, Design and Technology.

31. AlNoaimi, F.A. and Mazzuchi, T.A., 2021. Risk management application in an oil and gas company for projects. *International Journal of Business Ethics and Governance*, pp.1-30.

32. Alnuaimi, A.S.A., 2020. The impact of leadership practices on total quality management and organisational performance in the UAE interior ministry. *European Journal of Multidisciplinary Studies*, *5*(2), pp.5-12.

33. AlRawi, H., Mosteanu, N.R. and Alrawi, I.H., 2019. Control Environment, Risk Assessment and Monitoring in United Arab Emirates Businesses. In *Creative Business and Social Innovations for a Sustainable Future* (pp. 55-65). Springer, Cham.

34. Alrawi, K. and Elkhatib, S., 2009. Knowledge management practices in the banking industry: Present and future state-case study. *Journal of Knowledge Management Practice*, *10*(4), pp.68-84.

35. Al-Shami, S., Bakri, M.H., Adil, H. and Al Mamun, A., 2021. Information technology competencies as antecedents for absorptive capacity and innovation capabilities in a high-tech industry. *foresight*.

36. Alsharari, N., 2022. the Implementation of Enterprise Resource Planning (Erp) in the United Arab Emirates: a Case of Musanada Corporation. *International Journal of Technology, Innovation and Management (IJTIM)*, *2*(1).

37. Alzaabi, M.A.S.H., Khatibi, A., Azam, S.F. and Tham, J., 2020. Information technology project environment in the United Arab Emirates (UAE). *European Journal of Social Sciences Studies*.

38. Andersen, L.M., Hansen, L.G., Jensen, C.L. and Wolak, F.A., 2019. *Can incentives to increase electricity use reduce the cost of integrating renewable resources* (No. w25615). National Bureau of Economic Research.

39. Andresen, M. and Bergdolt, F., 2017. A systematic literature review on the definitions of global mindset and cultural intelligence–merging two different research streams. The International Journal of Human Resource Management, 28(1), pp.170-195.

40. Anggraeni, A., 2020. Executive role in the use of information technology in public organisations. *Arthatama*, *4*(1), pp.17-32.

41. Anshari, M., Almunawar, M.N., Lim, S.A. and Al-Mudimigh, A., 2019. Customer relationship management and big data enabled: Personalization & customization of services. *Applied Computing and Informatics*, *15*(2), pp.94-101.

42. Anthony, J., Abdul Majid, M. and Romli, A., 2019. Green information technology adoption towards a sustainability policy agenda for government-based institutions: An administrative perspective. *Journal of Science and Technology Policy Management*, *10*(2), pp.274-300.

43. Apuke, O.D., 2017. Quantitative research methods: A synopsis approach. *Kuwait Chapter of Arabian Journal of Business and Management Review*, *33*(5471), pp.1-8.

44. Araujo, C.L., Picavet, M.E.B., de Souza Sartoretto, C.A.P., Dalla Riva, E. and Hollaender, P.S., 2021. Ecocentric management mindset: a framework for corporate sustainability. *critical perspectives on international business*.

45. Arif, M. and Al Senani, A.M., 2020, November. Digitalization in oil and gas industry-a case study of a fully smart field in United Arab Emirates. In *Abu Dhabi International Petroleum Exhibition and Conference* (p. D031S090R001). SPE.

46. Arnaut, M. and Dada, J.T., 2022. Exploring the nexus between economic complexity, energy consumption and ecological footprint: new insights from the United Arab Emirates. *International Journal of Energy Sector Management*.

47. Arnold, D.G. and Bowie, N.E., 2019. *Ethical theory and business*. Cambridge University Press.

48. Arocas, R. and Morley, M.J., 2015. Talent management, talent mindset competency and job performance: the mediating role of job satisfaction. *European Journal of International Management*, *9*(1), pp.28-51.

49. Aspers, P., 2015. Performing ontology. *Social Studies of Science*, *45*(3), pp.449-453.

50. Ates, A., Garengo, P., Cocca, P. and Bititci, U., 2013. The development of SME managerial practice for effective performance management. *Journal of small business and enterprise development*, *20*(1), pp.28-54.

51. Aversano, L., Grasso, C. and Tortorella, M., 2012. A literature review of Business/IT Alignment Strategies. *Procedia Technology*, 5, pp.462-474.

52. Bae, I.H. and Zamrudi, M.F.Y., 2018. Challenge of social media marketing & effective strategies to engage more customers: selected retailer case study. *International Journal of Business & Society*, *19*(3).

53. Bai, C. and Sarkis, J., 2013. Green information technology strategic justification and evaluation. *Information Systems Frontiers*, *15*(5), pp.831-847.

54. Bai, C., Dallasega, P., Orzes, G. and Sarkis, J., 2020. Industry 4.0 technologies assessment: A sustainability perspective. *International journal of production economics*, *229*, p.107776.

55. Barafort, B., Mesquida, A.L. and Mas, A., 2017. Integrating risk management in IT settings from ISO standards and management systems perspectives. *Computer Standards & Interfaces*, 54, pp.176-185.

56. Barnwell, D., Nedrick, S., Rudolph, E., Sesay, M. and Wellen, W., 2014. Leadership of international and virtual project teams. *International Journal of Global Business*, *7*(2).

57. Barouki, R., Kogevinas, M., Audouze, K., Belesova, K., Bergman, A., Birnbaum, L., Boekhold, S., Denys, S., Desseille, C., Drakvik, E. and Frumkin, H., 2021. The COVID-19 pandemic and

global environmental change: Emerging research needs. *Environment international*, *146*, p.106272.

58. Barros, M.V., Ferreira, M.B., do Prado, G.F., Piekarski, C.M. and Picinin, C.T., 2020. The interaction between knowledge management and technology transfer: a current literature review between 2013 and 2018. *The Journal of Technology Transfer*, 45(5), pp.1585-1606.

59. Basu, R. and Bhola, P., 2016. Impact of quality management practices on performance stimulating growth: Empirical evidence from Indian IT enabled service SMEs. *International Journal of Quality & Reliability Management*, *33*(8), pp.1179-1201.

60. Başyazicioğlu, H.N. and Karamustafa, K., 2018. Marketing 4.0: impacts of technological developments on marketing activities. *Kırıkkale Üniversitesi Sosyal Bilimler Dergisi*, *8*(2), pp.621-640.

61. Bayomi, N. and E. Fernandez, J., 2019. Towards sustainable energy trends in the Middle East: A study of four major emitters. *Energies*, *12*(9), p.1615.

62. Becker, K., 2008. Unlearning as a driver of sustainable change and innovation: three Australian case studies. International Journal of Technology Management, 42(1-2), pp.89-106.

63. Benešová, A. and Tupa, J., 2017. Requirements for education and qualification of people in Industry 4.0. Procedia manufacturing, 11, pp.2195-2202.

64. Bergeron, F., Croteau, A.M., Uwizeyemungu, S. and Raymond, L., 2020. A framework for research on information technology governance in SMEs. In Start-ups and SMEs: concepts, methodologies, tools, and applications (pp. 1567-1588). IGI Global.

65. Bhattacherjee A. (2001) Understanding information systems continuance: an expectation-confirmation model. MIS Quarterly, 25(3):351–70

66. Billett, S., 2020. *Learning in the workplace: Strategies for effective practice*. Routledge.

67. Bleady, A., Ali, A.H. and Ibrahim, S.B., 2018. Dynamic capabilities theory: pinning down a shifting concept. *Academy of Accounting and Financial Studies Journal*, *22*(2), pp.1-16.

68. Block, F.L. and Keller, M.R., 2015. *State of innovation: the US government's role in technology development*. Routledge.

69. Bocken, N.M. and Geradts, T.H., 2020. Barriers and drivers to sustainable business model innovation: Organisation design and dynamic capabilities. Long range planning, 53(4), p.101950.

70. Boersema, J.J., 2009. Environmental sciences, sustainability, and quality. In *Principles of environmental sciences* (pp. 3-14). Springer, Dordrecht.

71. Boon, M. and Van Baalen, S., 2019. Epistemology for interdisciplinary research–shifting philosophical paradigms of science. *European journal for philosophy of science*, 9(1), pp.1-28.

72. Bourn, D., 2018. *Understanding global skills for 21st century professions*. Springer.

73. Bourne, V., James, A.I., Wilson-Smith, K. and Fairlamb, S., 2021. Understanding quantitative and qualitative research in psychology: A practical guide to methods, statistics, and analysis. *Oxford University Press*.

74. Bousbahi, F. and Alrazgan, M.S., 2015. Investigating IT faculty resistance to learning management system adoption using latent variables in an acceptance technology model. *The Scientific World Journal*, *2015*(1), p.375651.

75. Bradley, C.L., Jeter, E., Lee, S. and Cooper, J.B., 2021. Impact of a Teamwork and Conflict Management Workshop on Growth Mindset and Team Communication. *American Journal of Pharmaceutical Education*.

76. Brown, D.R. and Harvey, D., 2021. *An experiential approach to organisation development*. Pearson Education.

77. Brownsword, R., 2016. Technological management and the rule of law. *Law, Innovation and Technology*, *8*(1), pp.100-140.

78. Brunton, M., Kankaanranta, A., Louhiala-Salminen, L. and Jeffrey, L., 2019. Are strategic communication management competencies and personal attributes global? A case study of practice in Finland and New Zealand. *International journal of business communication*, *56*(2), pp.151-172.

79. Brynjolfsson, E., Rock, D., & Syverson, C. (2017). Artificial intelligence and the modern productivity paradox: A clash of expectations and statistics. In Economics of Artificial Intelligence. University of Chicago Press.

80. Buckley, S.J., Ringdal, K., Naumann, N., Dolva, B., Kurz, T.H., Howell, J.A. and Dewez, T.J., 2019. LIME: Software for 3-D visualization, interpretation, and communication of virtual geoscience models. *Geosphere*, *15*(1), pp.222-235.

81. Budhwar, P.S. and Debrah, Y.A. eds., 2013. *Human resource management in developing countries*. Routledge.

82. Buhlmann, P., 2013. Statistical significance in high-dimensional linear models.

83. Burke, W.W. and Noumair, D.A., 2015. *Organisation development: A process of learning and changing*. FT Press.

84. Cai, C., 2021. Research on the influence of information technology investment on production cost management innovation in the retail industry under the 020 model. *International Journal of Nonlinear Analysis and Applications*, *12*(Special Issue), pp.1477-1495.

85. Caputo, F., Garcia-Perez, A., Cillo, V. and Giacosa, E., 2019. A knowledge-based view of people and technology: directions for a value co-creation-based learning organisation. *Journal of Knowledge Management*.

86. Carayannis, E., 2018. *Strategic management of technological learning*. CRC Press.

87. Carman, J.M., Shortell, S.M., Foster, R.W., Hughes, E.F., Boerstler, H., O'Brien, J.L. and O'Connor, E.J., 2010. Keys for successful implementation of total quality management in hospitals. *Health care management review*, *35*(4), pp.283-293.

88. Cekuls, A., 2018. Enhancing the Knowledge-Sharing Culture in Managing Competitive Intelligence in Latvian Enterprises.

89. Cezarino, L.O., Alves, M.F.R., Caldana, A.C.F. and Liboni, L.B., 2019. Dynamic capabilities for sustainability: Revealing the systemic key factors. Systemic Practice and Action Research, 32, pp.93-112.

90. Chaterera-Zambuko, F., 2025. Environmental Sustainability in the United Arab Emirates' Digital Records Management Landscape: An Analysis of Strategies and Policies. *Sustainability*, 17(14), p.6266.

91. Chen SC, Jong D, & Lai MT. (2014) Assessing the relationship between technology readiness and continuance intention in an e-appointment system: relationship quality as a mediator. J Med Syst;38(9):76.

92. Chen, C.J., 2019. Developing a model for supply chain agility and innovativeness to enhance firms' competitive advantage. *Management Decision*.

93. Chen, J. and Allman-Farinelli, M., 2019. Impact of training and integration of apps into dietetic practice on dietitians' self-efficacy with using mobile health apps and patient satisfaction. *JMIR mHealth and uHealth*, *7*(3), p.e12349.

94. Chen, Y., Wang, Y., Nevo, S., Jin, J., Wang, L. and Chow, W.S., 2014. IT capability and organisational performance: the roles of business process agility and environmental factors. *European Journal of Information Systems*, *23*(3), pp.326-342.
95. Chirumalla, K., 2021. Building digitally-enabled process innovation in the process industries: A dynamic capabilities approach. *Technovation*, *105*, p.102256.
96. Christodoulou, A. and Cullinane, K., 2019. Identifying the main opportunities and challenges from the implementation of a port energy management system: A SWOT/PESTLE analysis. *Sustainability*, *11*(21), p.6046.
97. Coetzee, S., Ivánová, I., Mitasova, H. and Brovelli, M.A., 2020. Open geospatial software and data: A review of the current state and a perspective into the future. *ISPRS International Journal of Geo-Information*, *9*(2), p.90.
98. Cohen, S.L., 2010. Effective global leadership requires a global mindset. *Industrial and Commercial Training*.
99. Colledani, M., Tolio, T., Fischer, A., Iung, B., Lanza, G., Schmitt, R. and Váncza, J., 2014. Design and management of manufacturing systems for production quality. *Cirp Annals*, *63*(2), pp.773-796.
100. Collins, C.J., 2021. Expanding the resource based view model of strategic human resource management. *The International Journal of Human Resource Management*, *32*(2), pp.331-358.
101. Contreras, F., Baykal, E. and Abid, G., 2020. E-leadership and teleworking in times of COVID-19 and beyond: what we know and where do we go. *Frontiers in Psychology*, *11*, p.3484.
102. Cooke, F.L., 2018. Concepts, contexts, and mindsets: Putting human resource management research in perspectives. *Human Resource Management Journal*, *28*(1), pp.1-13.
103. Cortellazzo, L., Bruni, E. and Zampieri, R., 2019. The role of leadership in a digitalized world: A review. *Frontiers in psychology*, *10*, p.456340.
104. Cramer-Petersen, C.L., Christensen, B.T. and Ahmed-Kristensen, S., 2019. Empirically analysing design reasoning patterns: Abductive-deductive reasoning patterns dominate design idea generation. *Design Studies*, *60*, pp.39-70.
105. Cropley, A., 2020. Creativity-focused technology education in the age of industry 4.0. *Creativity Research Journal*, *32*(2), pp.184-191.

106. Cseh, M. and Crocco, O.S., 2020. Globalizing HRD academic practice: Developing a global mindset for teaching and research. *Advances in Developing Human Resources*, *22*(1), pp.57-71.

107. Cseh, M., Davis, E.B. and Khilji, S.E., 2013. Developing a global mindset: Learning of global leaders. *European Journal of Training and Development*.

108. Cseh, M., Davis, E.B. and Khilji, S.E., 2013. Developing a global mindset: Learning of global leaders. *European Journal of Training and Development*, 37(5), pp.489-499.

109. Danso, A., Adomako, S., Amankwah-Amoah, J., Owusu-Agyei, S. and Konadu, R., 2019. Environmental sustainability orientation, competitive strategy and financial performance. *Business Strategy and the Environment*, *28*(5), pp.885-895.

110. Danso, A., Adomako, S., Lartey, T., Amankwah-Amoah, J. and Owusu-Yirenkyi, D., 2020. Stakeholder integration, environmental sustainability orientation and financial performance. *Journal of business research*, *119*, pp.652-662.

111. Dao, V., Langella, I. and Carbo, J., 2011. From green to sustainability: Information Technology and an integrated sustainability framework. *The Journal of Strategic Information Systems*, *20*(1), pp.63-79.

112. Dastbaz, M., Pattinson, C. and Akhgar, B., 2015. *Green information technology: A sustainable approach*. Morgan Kaufmann.

113. Davarpanah, A., Mirshekari, B., Jafari Behbahani, T. and Hemmati, M., 2018. Integrated production logging tools approach for convenient experimental individual layer permeability measurements in a multi-layered fractured reservoir. *Journal of Petroleum Exploration and Production Technology*, *8*, pp.743-751.

114. De Villiers, C., Dumay, J. and Maroun, W., 2019. Qualitative accounting research: dispelling myths and developing a new research agenda. *Accounting & Finance*, *59*(3), pp.1459-1487.

115. De Waal, A. and Frijns, M., 2016. The influence of the UAE context on management practice in UAE business. *International Journal of Islamic and Middle Eastern Finance and Management*, *9*(2), pp.236-253.

116. Debnath, R., Bardhan, R., Reiner, D.M. and Miller, J.R., 2021. Political, economic, social, technological, legal and environmental dimensions of electric vehicle adoption in the United States: A social-media interaction analysis. *Renewable and Sustainable Energy Reviews*, *152*, p.111707.

117. Dempsey, N., Bramley, G., Power, S. and Brown, C., 2011. The social dimension of sustainable development: Defining urban social sustainability. *Sustainable development*, *19*(5), pp.289-300.

118. Dempsey, N., Bramley, G., Power, S. and Brown, C., 2011. The social dimension of sustainable development: Defining urban social sustainability. *Sustainable development*, *19*(5), pp.289-300.

119. Devarajan, S., 2019. How to use oil revenues efficiently. *Institutions and macroeconomic policies in resource-rich arab economies*, pp.218-236.

120. Devece, C., 2013. The value of business managers'‘Information Technology’competence. *The Service Industries Journal*, *33*(7-8), pp.720-733.

121. Dilijonas, D., Kriksciuniene, D., Sakalauskas, V. and Simutis, R., 2009. Sustainability based service quality approach for automated teller machine network. In *Proceedings of the EURO-Mini Conference* (p. 241). Vilnius Gediminas Technical University, Department of Construction Economics & Property.

122. Dmitrieva, D. and Romasheva, N., 2020. Sustainable development of oil and gas potential of the Arctic and its shelf zone: The role of innovations. *Journal of Marine Science and Engineering*, *8*(12), p.1003.

123. Dos Santos, J.G.C., de Vasconcelos, A.C., De Luca, M.M.M. and da Cunha, J.V.A., 2019. Innovation and socio-environmental sustainability: a comparative study of Brazilian and European firms. *Revista de Administração da Universidade Federal de Santa Maria*, *12*(5), pp.995-1012.

124. Dunn, A. L., Ho, S. P., Odom, S. F., & Perdue, E. R. (2016). Influence of formal academic leadership programs on undergraduates' leadership mindset: An assessment of a Corps of Cadets program. Journal of Leadership Education, 15(4), 57-74.

125. Eastburn, R.W. and Sharland, A., 2017. Risk management and managerial mindset. *The journal of risk finance*.

126. Ebadi, A.G., Toughani, M., Najafi, A. and Babaee, M., 2020. A brief overview on current environmental issues in Iran. *Central Asian Journal of Environmental Science and Technology Innovation*, *1*(1), pp.1-11.

127. Eikelenboom, M. and de Jong, G., 2019. The impact of dynamic capabilities on the sustainability performance of SMEs. *Journal of Cleaner Production*, *235*, pp.1360-1370.

128. Eisenberg, J. and DiTomaso, N., 2021. Structural decisions about configuration, assignments, and geographical distribution in teams: Influences on team communications and trust. *Human Resource Management Review*, *31*(2), p.100739.

129. El Khatib, M., Al Hammadi, A., Al Hamar, A., Oraby, K. and Abdulaziz, M., 2022. How Global Supply Chain Management Is Disrupting Local Supply Chain Management Case of Oil and Gas Industry in UAE. *American Journal of Industrial and Business Management*, *12*(5), pp.1067-1078.

130. El-Aidie, S., Alseiari, H.A.S.M. and Khalifa, G.S., 2021. Tourism Sustainability and Competitiveness: A strategic platform. *City University eJournal of Academic Research*, *3*(2), pp.1-19.

131. Elbanna, S. and Abdel-Maksoud, A., 2020. Organisational resources and performance: The case of an oil-rich country. *Public Performance & Management Review*, *43*(3), pp.713-739.

132. Elbashir, M.Z., Sutton, S.G., Mahama, H. and Arnold, V., 2021. Unravelling the integrated information systems and management control paradox: enhancing dynamic capability through business intelligence. *Accounting & Finance*, *61*, pp.1775-1814.

133. Elgohary, E. and Abdelazyz, R., 2020. The impact of employees' resistance to change on implementing e-government systems: An empirical study in Egypt. *The Electronic Journal of Information Systems in Developing Countries*, *86*(6), p.e12139.

134. Elhuni, R.M. and Ahmad, M.M., 2017. Key performance indicators for sustainable production evaluation in oil and gas sector. *Procedia Manufacturing*, *11*, pp.718-724.

135. Engelsberger, A., Halvorsen, B., Cavanagh, J. and Bartram, T., 2021. Human resources management and open innovation: the role of open innovation mindset. *Asia Pacific Journal of Human Resources*.

136. Engert, S., Rauter, R. and Baumgartner, R.J., 2016. Exploring the integration of corporate sustainability into strategic management: A literature review. *Journal of cleaner production*, *112*, pp.2833-2850.

137. Epstein, M.J., Elkington, J. and Herman, B., 2018. *Making sustainability work: Best practices in managing and measuring corporate social, environmental and economic impacts*. Routledge.

138. Escrig-Tena, A.B., Segarra-Ciprés, M., García-Juan, B. and Beltrán-Martín, I., 2018. The impact of hard and soft quality management and proactive behaviour in determining innovation performance. *International Journal of Production Economics*, *200*, pp.1-14.

139. Estdale, J. and Georgiadou, E., 2018, August. Applying the ISO/IEC 25010 quality models to software product. In European Conference on Software Process Improvement (pp. 492-503). Cham: *Springer International Publishing*.

140. Fainshmidt, S., Wenger, L., Pezeshkan, A. and Mallon, M.R., 2019. When do dynamic capabilities lead to competitive advantage? The importance of strategic fit. *Journal of Management Studies*, *56*(4), pp.758-787.

141. Fatimah, Y.A., Govindan, K., Murniningsih, R. and Setiawan, A., 2020. Industry 4.0 based sustainable circular economy approach for smart waste management system to achieve sustainable development goals: A case study of Indonesia. *Journal of Cleaner Production*, *269*, p.122263.

142. Fedyk, M. and Xu, F., 2018. The epistemology of rational constructivism. *Review of Philosophy and Psychology*, *9*(2), pp.343-362.

143. Feil, A.A. and Schreiber, D., 2017. Sustainability and sustainable development: unraveling overlays and scope of their meanings. *Cadernos Ebape. br*, *15*, pp.667-681.

144. Feliciano, D., 2019. A review on the contribution of crop diversification to Sustainable Development Goal 1 "No poverty" in different world regions. *Sustainable development*, *27*(4), pp.795-808.

145. Ferguson, M.A., 2018. Building theory in public relations: Interorganisational relationships as a public relations paradigm. *Journal of public relations research*, *30*(4), pp.164-178.

146. Fernandes, A.A.R., 2018. The effect of organisation culture and technology on motivation, knowledge asset and knowledge management. *International journal of Law and Management*.

147. Fernandes, C.I., Ferreira, J.J., Lobo, C.A. and Raposo, M., 2020. The impact of market orientation on the internationalisation of SMEs. *Review of International Business and Strategy*.

148. Ferreira, J., Coelho, A. and Moutinho, L., 2020. Dynamic capabilities, creativity and innovation capability and their impact on competitive advantage and firm performance: The moderating role of entrepreneurial orientation. *Technovation*, *92*, p.102061.

149. Flett, A., 2020, July. Global Mindset-A Complex Cognitive Model Used for Global Leadership Decision-Making When Working Across Geographical Boundaries. In *International Conference on Human-Computer Interaction* (pp. 190-201). Springer, Cham.

150. Fonseca, L. M. (2015). Relationship between ISO 9001 certification maturity and EFQM business excellence model results. Quality Innovation Prosperity, 19(1), 85-102.

151. Foster, S.T. and Gardner, J.W., 2022. *Managing quality: Integrating the supply chain*. John Wiley & Sons.

152. Freeman, R.E., Parmar, B.L. and Martin, K., 2020. BUSINESS AND ETHICS. In *The Power of And* (pp. 129-140). Columbia University Press.

153. Gadenne, D., Mia, L., Sands, J., Winata, L. and Hooi, G., 2012. The influence of sustainability performance management practices on organisational sustainability performance. *Journal of Accounting & Organisational Change*.

154. Galanti, T., Guidetti, G., Mazzei, E., Zappalà, S. and Toscano, F., 2021. Work from home during the COVID-19 outbreak: The impact on employees' remote work productivity, engagement, and stress. *Journal of occupational and environmental medicine*, *63*(7), p.e426.

155. García-Holgado, A., García-Peñalvo, F.J. and Rodríguez-Conde, M.J., 2015, October. Definition of a technological ecosystem for scientific knowledge management in a PhD Programme. In *Proceedings of the 3rd International Conference on Technological Ecosystems for Enhancing Multiculturality* (pp. 695-700).

156. Garrido Azevedo, S., Ferreira, J. and Leitão, J., 2007. The role of logistics' information and communication technologies in promoting competitive advantages of the firm.

157. George, R.A., Siti-Nabiha, A.K., Jalaludin, D. and Abdalla, Y.A., 2016. Barriers to and enablers of sustainability integration in the performance management systems of an oil and gas company. *Journal of cleaner production*, *136*, pp.197-212.

158. Gerged, A.M., Cowton, C.J. and Beddewela, E.S., 2018. Towards sustainable development in the Arab Middle East and North Africa region: A longitudinal analysis of environmental disclosure in corporate annual reports. *Business Strategy and the Environment*, *27*(4), pp.572-587.

159. Ghasemaghaei, M. and Calic, G., 2019. Can big data improve firm decision quality? The role of data quality and data diagnosticity. *Decision Support Systems*, *120*, pp.38-49.

160. Ghobakhloo, M., 2020. Determinants of information and digital technology implementation for smart manufacturing. *International Journal of Production Research*, *58*(8), pp.2384-2405.

161. Ghobakhloo, M., Iranmanesh, M., Grybauskas, A., Vilkas, M. and Petraitė, M., 2021. Industry 4.0, innovation, and sustainable development: A systematic review and a roadmap to sustainable innovation. Business Strategy and the Environment, 30(8), pp.4237-4257.

162. Gilaninia, S., Taleghani, M. and Mohammadi, M.E., 2013. The role of public relations in organisation. *Arabian Journal of Business and Management Review (Nigerian Chapter) Vol*, *1*(10).

163. Gil-Marques, M. and Moreno-Luzon, M.D., 2013. Driving human resources towards quality and innovation in a highly competitive environment. *International Journal of Manpower*.

164. Giones, F., Brem, A., & Berger, A. (2018). Leading organisational change for innovation in turbulent times: lessons learned from the energy industry.

165. Gisi, P.J., 2018. *Sustaining a culture of process control and continuous improvement: The roadmap for efficiency and operational excellence*. CRC Press.

166. Glyptis, L., Christofi, M., Vrontis, D., Del Giudice, M., Dimitriou, S. and Michael, P., 2020. E-Government implementation challenges in small countries: The project manager's perspective. *Technological Forecasting and social change*, *152*, p.119880.

167. Goertzen, M.J., 2017. Introduction to quantitative research and data. *Library Technology Reports*, *53*(4), pp.12-18.

168. Goleman, D., 2017. Leadership that gets results. In *Leadership perspectives* (pp. 85-96). Routledge.

169. Gorla, N., Somers, T.M. and Wong, B., 2010. Organizational impact of system quality, information quality, and service quality. *The journal of strategic information systems*, 19(3), pp.207-228.

170. Gould, W.T., 2015. *Population and development*. Routledge.

171. Gouveia, V.V., Milfont, T.L. and Guerra, V.M., 2014. Functional theory of human values: Testing its content and structure hypotheses. *Personality and Individual Differences*, *60*, pp.41-47.

172. Goxe, F. and Belhoste, N., 2019. Be global or be gone: Global mindset as a source of division in an international business community. *European Management Review*, *16*(3), pp.617-632.

173. Grant, R.M., 2013. The development of knowledge management in the oil and gas industry. *Universia Business Review*, (40), pp.92-125.

174. Gregor, S. (2006). The nature of theory in information systems. MIS Quarterly, 30(3), 611–642.

175. Gretzel, U., Davis, E.B., Bowser, G., Jiang, J. and Brown, M., 2014. Creating global leaders with sustainability mindsets–Insights from the RMSSN summer academy. *Journal of Teaching in Travel & Tourism*, 14(2), pp.164-183.

176. Grogaard, B., Colman, H.L. and Stensaker, I.G., 2019. Legitimizing, leveraging, and launching: Developing dynamic capabilities in the MNE. *Journal of International Business Studies*, pp.1-21.

177. Guerci, M., Radaelli, G., Siletti, E., Cirella, S. and Rami Shani, A.B., 2015. The impact of human resource management practices and corporate sustainability on organisational ethical climates: An employee perspective. *Journal of Business Ethics*, *126*, pp.325-342.

178. Gunasekaran, A., Patel, C. and Tirtiroglu, E., 2001. Performance measures and metrics in a supply chain environment. *International journal of operations & production Management*, *21*(1/2), pp.71-87.

179. Gunasekaran, A., Subramanian, N., & Papadopoulos, T. (2017). Information technology for competitive advantage within logistics and supply chains: A review. Transportation Research Part E: Logistics and Transportation Review, vol. 99, pp. 14-33.

180. Gutierrez, A., Boukrami, E. and Lumsden, R., 2015. Technological, organisational and environmental factors influencing managers' decision to adopt cloud computing in the UK. *Journal of enterprise information management*, *28*(6), pp.788-807.

181. Guzansky, Y., Fadlon, T. and Rakov, D., 2021. Oil, Economics, and Geopolitics: Relations between Saudi Arabia and UAE. *JSTOR Security Studies Collection*.

182. Hadi, T.P. and Tola, B., 2019. The Effect of Transformational Leadership and Work Motivation on Innovative Behaviour. *IJHCM (International Journal of Human Capital Management)*, *3*(2), pp.100-108.

183. Hajjar, S.T., 2018. Statistical analysis: Internal-consistency reliability and construct validity. *International Journal of Quantitative and Qualitative Research Methods*, *6*(1), pp.27-38.

184. Hall, M., 2016. Realising the richness of psychology theory in contingency-based management accounting research. *Management Accounting Research*, *31*, pp.63-74.

185. Hamdoun, M., Jabbour, C.J.C. and Othman, H.B., 2018. Knowledge transfer and organisational innovation: Impacts of quality and environmental management. *Journal of cleaner production*, *193*, pp.759-770.

186. Hanga, K.M. and Kovalchuk, Y., 2019. Machine learning and multi-agent systems in oil and gas industry applications: A survey. *Computer Science Review*, *34*, p.100191.

187. Harmon, P., 2019. *Business process change: a business process management guide for managers and process professionals*. Morgan Kaufmann.

188. Harmon, P., 2019. *Business process change: a business process management guide for managers and process professionals*. Morgan Kaufmann.

189. Haseeb, M., Hussain, H.I., Kot, S., Androniceanu, A. and Jermsittiparsert, K., 2019. Role of social and technological challenges in achieving a sustainable competitive advantage and sustainable business performance. *Sustainability*, *11*(14), p.3811.

190. Hasegawa, M., Komoto, S., Shiroiwa, T. and Fukuda, T., 2020. Formal implementation of cost-effectiveness evaluations in Japan: a unique health technology assessment system. *Value in Health*, *23*(1), pp.43-51.

191. Hashim, N.A.B., Raza, S. and Minai, M.S., 2018. Relationship between entrepreneurial competencies and small firm performance: are dynamic capabilities the missing link?. *Academy of Strategic Management Journal*, 17(2), pp.1-10.

192. Hawash, B., Mokhtar, U.A. and Yusof, Z.M., 2019, September. The primarily study of electronic records management system (ERMS) for Yemen Oil and Gas Corporation (YOGC) subsidiaries. In *2019 International Conference on Cybersecurity (ICoCSec)* (pp. 13-19). IEEE.

193. He, J., Morrison, A.M. and Zhang, H., 2021. Being sustainable: The three-way interactive effects of CSR, green human resource management, and responsible leadership on employee green behaviour and task performance. *Corporate Social Responsibility and Environmental Management*, *28*(3), pp.1043-1054.

194. Heim, I., Vigneau, A.C. and Kalyuzhnova, Y., 2023. Environmental and socio-economic policies in oil and gas regions: triple bottom line approach. *Regional Studies*, 57(1), pp.181-195.

195. Hemel, C.V.D. and Rademakers, M.F., 2016. Building customer-centric organisations: Shaping factors and barriers. *Journal of Creating Value*, *2*(2), pp.211-230.

196. Hickman, C. R., & Silva, M. A. (2018). Creating excellence: Managing corporate culture, strategy, and change in the new age. Routledge.

197. Hildebrandt, Y. and Beimborn, D., 2021, June. The Intangible Key for Digitalization: Conceptualizing and Measuring the" Digital Mindset". In *Proceedings of the 2021 on Computers and People Research Conference* (pp. 89-91).

198. Hoda, R., Salleh, N. and Grundy, J., 2018. The rise and evolution of agile software development. *IEEE software*, *35*(5), pp.58-63.

199. Hoffmann, J.P., 2021. Linear regression models: applications in R. *Chapman and Hall/CRC*.

200. Hojnik, J. and Ruzzier, M., 2016. The driving forces of process eco-innovation and its impact on performance: Insights from Slovenia. *Journal of cleaner production*, *133*, pp.812-825.

201. Hossain, U. and Roy, I., 2016. Human capital management: The new competitive approach. *International Journal of Economics, Commerce and Management*, *4*(5), pp.1020-1034.

202. Hsu, C.W. and Yeh, C.C., 2017. Understanding the factors affecting the adoption of the Internet of Things. *Technology analysis & strategic management*, *29*(9), pp.1089-1102.

203. Hu, Q., Dinev, T., Hart, P. and Cooke, D., 2012. Managing employee compliance with information security policies: The critical role of top management and organisational culture. *Decision Sciences*, *43*(4), pp.615-660.

204. Huang, L., Dong, X. and Clee, T.E., 2017. A scalable deep learning platform for identifying geologic features from seismic attributes. *The Leading Edge*, *36*(3), pp.249-256.

205. Hwang, W.S., Choi, H. and Shin, J., 2020. A mediating role of innovation capability between entrepreneurial competencies and competitive advantage. *Technology Analysis & Strategic Management*, 32(1), pp.1-14.

206. Ibrahim, R., Boerhannoeddin, A. and Bakare, K.K., 2017. The effect of soft skills and training methodology on employee performance. *European Journal of Training and Development*, *41*(4), pp.388-406.

207. Ikerd, J.E., 2012. *The essentials of economic sustainability*. Bloomfield, CT: Kumarian Press.

208. Imran, F., Shahzad, K., Butt, A. and Kantola, J., 2021. Digital transformation of industrial organisations: Toward an integrated framework. *Journal of change management*, *21*(4), pp.451-479.

209. In, J., 2017. Introduction of a pilot study. *Korean journal of anesthesiology*, *70*(6), pp.601-605.

210. Indreswari, T.L., 2018. The Dominance and Influence of Positivism Paradigm on Judicial Decision Making. In *SHS Web of Conferences* (Vol. 54, p. 07004). EDP Sciences.

211. Ishak, N.A., Islam, M.Z. and Sumardi, W.A., 2021. Human resource management practices in creating a committed workforce for fostering knowledge transfer: a theoretical framework. *VINE Journal of Information and Knowledge Management Systems*.

212. Iyamu, T. and Batyashe, N.R., 2020. Implementation of the Information Technology strategy in an organisation. *Journal of Contemporary Management*, *17*(2), pp.198-224.

213. Jackson, P.T. and Dolan, L., 2021. Positivism, Post-positivism, and Social Science. *Research Methods in the Social Sciences: an AZ of Key Concepts*, 214.

214. Jacob, C., Sanchez-Vazquez, A. and Ivory, C., 2020. Social, organisational, and technological factors impacting clinicians' adoption of mobile health tools: systematic literature review. *JMIR mHealth and uHealth*, *8*(2), p.e15935.

215. Jamieson, M. and Donald, J., 2020. Building the engineering mindset: Developing leadership and management competencies in the engineering curriculum. *Proceedings of the Canadian Engineering Education Association (CEEA)*.

216. Jantunen, A., Tarkiainen, A., Chari, S. and Oghazi, P., 2018. Dynamic capabilities, operational changes, and performance outcomes in the media industry. *Journal of Business Research*, *89*, pp.251-257.

217. Javaid, M., Haleem, A., Vaishya, R., Bahl, S., Suman, R. and Vaish, A., 2020. Industry 4.0 technologies and their applications in fighting COVID-19 pandemic. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 14(4), pp.419-422.

218. Javidan, M. and Walker, J.L., 2012. A whole new global mindset for leadership. *People and Strategy*, *35*(2), p.36.

219. Jayatilleke, S. and Lai, R., 2018. A systematic review of requirements change management. *Information and Software Technology*, *93*, pp.163-185.

220. Jiang, F., Ananthram, S. and Li, J., 2018. Global mindset and entry mode decisions: Moderating roles of managers' decision-making style and managerial experience. *Management International Review*, *58*(3), pp.413-447.

221. Jiang, W., Mavondo, F. and Zhao, W., 2020. The impact of business networks on dynamic capabilities and product innovation: The moderating role of strategic orientation. *Asia Pacific Journal of Management*, *37*(4), pp.1239-1266.

222. Jin, C. and Zhang, Z., 2018, November. Regarding the role of oil & gas industry on social infrastructure development in Azerbaijan and the solution of ecological problems. In *IOP Conference Series: Earth and Environmental Science* (Vol. 189, No. 5, p. 052004). IOP Publishing.

223. Jorgensen, T. H., Remmen, A., & Mellado, M. D. (2006). Integrated management systems–three different levels of integration. Journal of cleaner production, 14(8), 713-722.

224. Junior, B.A., Majid, M.A. and Romli, A., 2018. Green information technology for sustainability elicitation in government-based organisations: an exploratory case study. *International Journal of Sustainable Society*, *10*(1), pp.20-41.

225. Kang, M. and Sung, M., 2017. How symmetrical employee communication leads to employee engagement and positive employee communication behaviours: The mediation of employee-organisation relationships. *Journal of Communication Management*.

226. Kaplan-Hallam, M. and Bennett, N.J., 2018. Adaptive social impact management for conservation and environmental management. *Conservation Biology*, *32*(2), pp.304-314.

227. Karman, A. and Savanevičienė, A., 2020. Enhancing dynamic capabilities to improve sustainable competitiveness: insights from research on organisations of the Baltic region. *Baltic Journal of Management*.

228. Kazim, F.A., 2019. Digital transformation and leadership style: A multiple case study. *The ISM journal of international business*, 3(1), pp.24-33.

229. Kelly, J.T., Campbell, K.L., Gong, E. and Scuffham, P., 2020. The Internet of Things: Impact and implications for health care delivery. *Journal of medical Internet research*, *22*(11), p.e20135.

230. Khan, O., Daddi, T. and Iraldo, F., 2020. Microfoundations of dynamic capabilities: Insights from circular economy business cases. *Business Strategy and the Environment*, *29*(3), pp.1479-1493.

231. Khan, O., Daddi, T. and Iraldo, F., 2021. Sensing, seizing, and reconfiguring: Key capabilities and organisational routines for circular economy implementation. *Journal of Cleaner Production*, *287*, p.125565.

232. Khan, S.Z., Yang, Q. and Waheed, A., 2019. Investment in intangible resources and capabilities spurs sustainable competitive advantage and firm performance. *Corporate Social Responsibility and Environmental Management*, *26*(2), pp.285-295.

233. Khasawneh, M.A.S., 2021. Attitudes of teachers of learning disabilities in English language towards the use of information technology in Irbid from their point of view. *Journal of Advances in Social Science and Humanities*, *7*(10), pp.1957-1966.

234. Khondaker, A.N., Hasan, M.A., Rahman, S.M., Malik, K., Shafiullah, M. and Muhyedeen, M.A., 2016. Greenhouse gas emissions from energy sector in the United Arab Emirates–An overview. *Renewable and Sustainable Energy Reviews*, *59*, pp.1317-1325.

235. Khuntia, J., Saldanha, T.J., Mithas, S. and Sambamurthy, V., 2018. Information technology and sustainability: Evidence from an emerging economy. *Production and Operations Management*, *27*(4), pp.756-773.

236. Kim, M., Song, J. and Triche, J., 2015. Toward an integrated framework for innovation in service: A resource-based view and dynamic capabilities approach. *Information Systems Frontiers*, *17*, pp.533-546.

237. Kinsinger, P., & Walch, K. (2012). Living and leading in a VUCA world. Thunderbird University, 1-4.

238. Kis, Y., Chyrun, L., Tsymbaliak, T. and Chyrun, L., 2019, May. Development of system for managers relationship management with customers. In *International Scientific Conference "Intellectual Systems of Decision Making and Problem of Computational Intelligence"* (pp. 405-421). Springer, Cham.

239. Kitsios, F. and Kamariotou, M., 2018. Decision support systems and strategic planning: information technology and SMEs' performance. *International Journal of Decision Support Systems*, *3*(1-2), pp.53-70.

240. Kokkaew, N., Jokkaw, N., Peansupap, V. and Wipulanusat, W., 2022. Impacts of human resource management and knowledge management on non-financial organisational performance: Evidence of Thai infrastructure construction firms. *Ain Shams Engineering Journal*, *13*(6), p.101750.

241. Kolbjornsrud, V., Amico, R. and Thomas, R.J., 2016. The promise of artificial intelligence. *Accenture: Dublin, Ireland*.

242. Koshesh, O.S. and Jafari, H.R., 2019. The environmental strategic analysis of oil & gas industries in the Kurdistan Region using PESTLE, SWOT and FDEMATEL. *Pollution*, *5*(3), pp.537-554.

243. Kouzes, T.K. and Posner, B.Z., 2019. Influence of managers' mindset on leadership behaviour. *Leadership & Organisation Development Journal*.

244. Krzymowski, A., 2020. Sustainable development goals in Arab region–United Arab Emirates' case study. *Problemy Ekorozwoju*, *15*(1), pp.211-220.

245. Kumar, V. and Garg, M.L., 2018. Predictive analytics: a review of trends and techniques. *International Journal of Computer Applications*, *182*(1), pp.31-37.

246. Kunz, I., & Stephanow, P. (2017, March). A process model to support continuous certification of cloud services. In Advanced Information Networking and Applications (AINA), 2017 IEEE 31st International Conference on (pp. 986-993). IEEE.

247. Kuo, R. Z. 2018. EMRS Adoption: Exploring the effects of information security management awareness and perceived service quality. Health Policy and Technology, 7(4), 365-373.

248. Kuuluvainen, A., 2012. How to concretize dynamic capabilities? *Theory and examples. Journal of Strategy and management*, 5(4), pp.381-392.

249. Lambin, E.F. and Thorlakson, T., 2018. Sustainability standards: Interactions between private actors, civil society, and governments. *Annual Review of Environment and Resources*, *43*(1), pp.369-393.

250. Lamm, E., Tosti-Kharas, J. and King, C.E., 2015. Empowering employee sustainability: Perceived organisational support toward the environment. *Journal of Business Ethics*, *128*, pp.207-220.

251. Lamprinou, V.D.I., Tasoulis, K. and Kravariti, F., 2021. The impact of servant leadership and perceived organisational and supervisor support on job burnout and work–life balance in the era of teleworking and COVID-19. *Leadership & Organisation Development Journal*.

252. Lankshear, C., Peters, M. and Knobel, M., 2013. Information, knowledge and learning. *Distributed learning: Social and cultural approaches to practice*, *16*.

253. Laufer, M., Deacon, B., Mende, M.A. and Schäfer, L.O., 2025. Leading with trust: How university leaders can foster innovation with educational technology through organizational trust. *Innovative Higher Education*, 50(1), pp.303-327.

254. Lee, I. and Shin, Y.J., 2018. Fintech: Ecosystem, business models, investment decisions, and challenges. *Business horizons*, *61*(1), pp.35-46.

255. Lee, M., Yun, J.J., Pyka, A., Won, D., Kodama, F., Schiuma, G., Park, H., Jeon, J., Park, K., Jung, K. and Yan, M.R., 2018. How to respond to the fourth industrial revolution, or the second information technology revolution? Dynamic new combinations between technology, market, and society through open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, *4*(3), p.21.

256. Lee, Y., Kim, K.H. and Kim, J.N., 2019. Understanding the impacts of issue types and employee–organisation relationships on employees' problem perceptions and communicative behaviours. *Corporate Communications: An International Journal*.

257. Lemon, L.L. and Palenchar, M.J., 2018. Public relations and zones of engagement: Employees' lived experiences and the fundamental nature of employee engagement. *Public Relations Review*, *44*(1), pp.142-155.

258. Levy, O., 2000. Managerial cognitive orientation and demographic characteristics: A study of the relationships between global mindset, team heterogeneity, and global strategic posture. The University of Wisconsin-Madison.

259. Lightfoot, H.W., Baines, T. and Smart, P., 2011. Examining the information and communication technologies enabling servitized manufacture. *Proceedings of the institution of mechanical engineers, part b: journal of engineering manufacture*, *225*(10), pp.1964-1968.

260. Liu, G. H., & Chua, C. E. (2019). Romancing Top Management: The Politics of Top Management Support in Large Information System Projects'. Politics and Technology in the Post-Truth Era (Emerald Studies in Politics and Technology). Emerald Publishing Limited, 245-258.

261. Lopez Hernandez, A.K., Fernandez-Mesa, A. and Edwards-Schachter, M., 2018. Team collaboration capabilities as a factor in startup success. *Journal of technology management & innovation*, *13*(4), pp.13-23.

262. López-Ortega, E. T. 2004. *Technology Intelligence System Implementation: The Mexican Institute of Engineering Experience*. Proceedings of the IAMOT

263. Lowe, N.K., 2019. What is a pilot study?. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *48*(2), pp.117-118.

264. Lu, H., Guo, L., Azimi, M. and Huang, K., 2019. Oil and Gas 4.0 era: A systematic review and outlook. *Computers in Industry*, *111*, pp.68-90.

265. Lu, H., Huang, K., Azimi, M. and Guo, L., 2019. Blockchain technology in the oil and gas industry: A review of applications, opportunities, challenges, and risks. *Ieee Access*, *7*, pp.41426-41444.

266. Lubis, F., Rony, Z. and Santoso, B., 2020, March. Digital leadership in managing employee work motivation (case study: oil and gas industry in Indonesia). In *Proceedings of the 2nd International Conference on Social Sciences, ICSS 2019, 5-6 November 2019, Jakarta, Indonesia*.

267. Luna–Arocas, R. and Morley, M.J., 2015. Talent management, talent mindset competency and job performance: the mediating role of job satisfaction. *European Journal of International Management*, *9*(1), pp.28-51.

268. Lyver, M.J. and Lu, T.J., 2018. Sustaining innovation performance in SMEs: Exploring the roles of strategic entrepreneurship and IT capabilities. *Sustainability*, *10*(2), p.442.

269. Madichie, N.O. and Kolo, J., 2013. An exploratory enquiry into the internationalisation of higher education in the United Arab Emirates. *Marketing Review*, *13*(1).

270. Maier, A., Brad, S., Nicoară, D. and Maier, D., 2014. Innovation by developing human resources, ensuring the competitiveness and success of the organisation. *Procedia-Social and Behavioural Sciences*, *109*, pp.645-648.

271. Maleh, Y. and Sahid, A. eds., 2024. Navigating IT governance for resilient organizations. *IGI Global.*

272. Mardani, A., Kannan, D., Hooker, R.E., Ozkul, S., Alrasheedi, M. and Tirkolaee, E.B., 2020. Evaluation of green and sustainable supply chain management using structural equation modelling: A systematic review of the state of the art literature and recommendations for future research. *Journal of cleaner production*, *249*, p.119383.

273. Mariano, M.J., Villano, R. and Fleming, E., 2012. Factors influencing farmers' adoption of modern rice technologies and good management practices in the Philippines. *Agricultural systems*, *110*, pp.41-53.

274. Martins, A.L. and Picoto, W.N., 2019. Tax compliance as a driver for adopting information technologies–effect on competencies development and on competitive advantages. *Journal of Systems and Information Technology*.

275. Masters, T., 2020. Standards capture stranded data, help with device design, data integration: Integrated systems and standards help support advanced information technology (IT) and operations technology (OT) collaboration and optimization in three key ways. Also see four advantages of future process automation facilities. *Control Engineering*, *67*(3), pp.28-31.

276. Matarazzo, M., Penco, L., Profumo, G. and Quaglia, R., 2021. Digital transformation and customer value creation in Made in Italy SMEs: A dynamic capabilities perspective. *Journal of Business Research*, *123*, pp.642-656.

277. Mathur, P., Chun, H.H. and Maheswaran, D., 2016. Consumer mindsets and self-enhancement: Signaling versus learning. *Journal of Consumer Psychology*, *26*(1), pp.142-152.

278. Mauerhoefer, T., Strese, S. and Brettel, M., 2017. The impact of information technology on new product development performance. *Journal of Product Innovation Management*, *34*(6), pp.719-738.

279. Mazorodze, A.H. and Buckley, S., 2019. Knowledge management in knowledge-intensive organisations: Understanding its benefits, processes, infrastructure and barriers. *South African Journal of Information Management*, *21*(1), pp.1-6.

280. Mechanism for Enhancing High Risk Projects Success. In 2019 Portland International Conference on Management of Engineering and Technology (PICMET) (pp. 1-4). IEEE.

281. Mellikeche S, Boussekey O, Martin G, Campoy E, Lajonchère J-P, & Degoulet P. (2018) Evaluation of the unified model of information systems continuance (UMISC) in two hospital environments. Int J Med Inform117:66–81.

282. Merlo, O., Eisingerich, A., Auh, S. and Levstek, J., 2018. The benefits and implementation of performance transparency: The why and how of letting your customers 'see through'your business. *Business Horizons*, 61(1), pp.73-84.

283. Meyers, D.C., Durlak, J.A. and Wandersman, A., 2012. The quality implementation framework: a synthesis of critical steps in the implementation process. *American journal of community psychology*, *50*, pp.462-480.

284. Michaelis, B., Rogbeer, S., Schweizer, L. and Özleblebici, Z., 2021. Clarifying the boundary conditions of value creation within dynamic capabilities framework: a grafting approach. *Review of Managerial Science*, *15*(6), pp.1797-1820.

285. Mihailova, M., 2020. The state of agriculture in Bulgaria–PESTLE analysis. *Bulgarian Journal of Agricultural Science*, *26*(5), pp.935-943.

286. Mikalef, P. and Pateli, A., 2017. Information technology-enabled dynamic capabilities and their indirect effect on competitive performance: Findings from PLS-SEM and fsQCA. *Journal of Business Research*, 70, pp.1-16.

287. Miseviciene, R., Sutiene, K., Ambraziene, D., & Makackas, D. 2018. Enhancing University Competitiveness through ICT Infrastructure: the Case of Kaunas University of Technology. Baltic Journal of Modern Computing, vol. 6(2), pp. 137-145.

288. Mitreva, E., Taskov, N., Sazdova, J., Gjeorgieva, I., & Gjorshevski, H. (2015). The Need for Implementation of Integrated Management Systems (IMS) in Macedonian Companies. Calitatea-acces la succes (Quality-Access to Success), 16(147), 62-65.

289. Mntonintshi, O. and Mtembu, V., 2018. When performance management fails: attitudes and perceptions of staff at a Higher Education Institution. *Journal of Economics and Behavioural Studies*, *10*(6A (J)), pp.131-140.

290. Moeller, R.R., 2013. *Executive's guide to IT governance: improving systems processes with service management, COBIT, and ITIL* (Vol. 637). John Wiley & Sons.

291. Mohan, R., Hussein, A., Mawlod, A., Al Jaberi, B., Vesselinov, V., Salam, F.A., Al Hadidy, K., Pal, A., Al Yazeedi, H., Al Daghar, K. and Mustapha, H., 2020, November. Data driven and ai methods to enhance collaborative well planning and drilling risk prediction. In *Abu Dhabi International Petroleum Exhibition & Conference*. OnePetro.

292. Monteiro, S., Ferreira, J.A. and Almeida, L.S., 2020. Self-perceived competency and self-perceived employability in higher education: the mediating role of career adaptability. *Journal of Further and Higher Education*, *44*(3), pp.408-422.

293. Montgomery, D.C., Peck, E.A. and Vining, G.G., 2021. Introduction to linear regression analysis. *John Wiley & Sons*.

294. Mora, M., Gelman, O., Cervantes, F., Mejía, M., & Weitzenfeld, A. (2003). A systemic approach for the formalisation of the information systems concept: why information systems are systems? In J. J. Cano (Ed.), Critical Reflections on Information Systems: A Systemic Approach (pp. 31–45). Hershey, PA: Idea Group Inc.

295. Morato, E. A. (2013). A Trilogy on Entrepreneurship: Preparing for Entrepreneurship. [Accessed: March 20, 2019] Available at: eBookIt. com.

296. Muller, J.M., Kiel, D. and Voigt, K.I., 2018. What drives the implementation of Industry 4.0? The role of opportunities and challenges in the context of sustainability. *Sustainability*, *10*(1), p.247.

297. Munir, M. and Elhuni, R., 2014. Critical quality factors for successful TQM implementation in Libyan oil and gas sector. *Benchmarking: An International Journal*, *21*(5), pp.713-733.

298. Murphy, M.C. and Dweck, C.S., 2016. Mindsets shape consumer behaviour. *Journal of Consumer Psychology*, *26*(1), pp.127-136.

299. Nainaar, D., & Masson, J. (2018). An Investigation Into Technology Management To Create Sustainable Competitive Advantage Within The Fast Moving Consumer Goods (Fmcg) Beverage Industry. *European Journal of Engineering and Technology*, vol, 6(2), pp.38.

300. Nair, K., James, W. and Shilbayeh, S.S., 2019. An Analysis of the Role of Motivation in Leadership Styles Utilized by Today's Leaders in the "SMART" Organisations in the United Arab Emirates. *American Journal of Business and Management*, *8*(1), pp.11-17.

301. Nakagawa, S., Johnson, P.C. and Schielzeth, H., 2017. The coefficient of determination R 2 and intra-class correlation coefficient from generalized linear mixed-effects models revisited and expanded. *Journal of the Royal Society Interface*, *14*(134), p.20170213.

302. Namada, J.M., 2018. Organisational learning and competitive advantage. In *Handbook of research on knowledge management for contemporary business environments* (pp. 86-104). IGI Global.

303. Naqshbandi, M.M. and Jasimuddin, S.M., 2018. Knowledge-oriented leadership and open innovation: Role of knowledge management capability in France-based multinationals. International Business Review, 27(3), pp.701-713.

304. Navimipour, N.J. and Soltani, Z., 2016. The impact of cost, technology acceptance and employees' satisfaction on the effectiveness of the electronic customer relationship management systems. *Computers in Human Behaviour*, *55*, pp.1052-1066.

305. Neill, M.S., 2018. Change management communication: Barriers, strategies & messaging. *Public Relations Journal*, *12*(1), pp.1-26.

306. Ngobe, E.K., 2020. Information technology: A sustainable competitive advantage trend in Nigerian oil and gas industry. *International Journal of Business & Law Research*, *8*(3), pp.100-108.

307. Nguyen, T., Gosine, R.G. and Warrian, P., 2020. A systematic review of big data analytics for oil and gas industry 4.0. *IEEE access*, *8*, pp.61183-61201.

308. Nicuta, A.M., Luca, F.A. and Apetrei, A., 2018. Innovation And Trends In Crm-Customer Relationship Management. *Network Intelligence Studies*, *6*(11), pp.21-25.

309. Nielsen, R.K., 2018. Managerial practices of strategic global mindset: Forging the connection between individual competence and organizational capability. In Advances in global leadership (Vol. 11, pp. 145-172). *Emerald Publishing Limited*.

310. Nielsen, R.K., 2018. Managerial practices of strategic global mindset: Forging the connection between individual competence and organisational capability. In *Advances in global leadership*. Emerald Publishing Limited.

311. Nkasu, M.M., 2020. Investigation of the effects of critical success factors on Enterprise Resource Planning (ERP) systems implementation in the United Arab Emirates. In *Smart Intelligent Computing and Applications: Proceedings of the Third International Conference on Smart Computing and Informatics, Volume 1* (pp. 611-623). Springer Singapore.

312. Nkasu, M.M., Trendova, K., Kumar, S. and Alghamdi, A., 2022, February. A Framework for Enterprise Resource Planning Systems in the United Arab Emirates. In *2022 Advances in Science and Engineering Technology International Conferences (ASET)* (pp. 1-6). IEEE.

313. Nor-Aishah, H., Ahmad, N.H. and Thurasamy, R., 2020. Entrepreneurial leadership and sustainable performance of manufacturing SMEs in Malaysia: The contingent role of entrepreneurial bricolage. *Sustainability*, *12*(8), p.3100.

314. Nummela, N., Saarenketo, S. and Puumalainen, K., 2004. A global mindset—a prerequisite for successful internationalization?. Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration, 21(1), pp.51-64.

315. Ogbeibu, S., Emelifeonwu, J., Senadjki, A., Gaskin, J. and Kaivo-oja, J., 2020. Technological turbulence and greening of team creativity, product innovation, and human resource management: Implications for sustainability. *Journal of Cleaner Production*, *244*, p.118703.

316. Oliver RL. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. J Mark Res,17(4):460–9.

317. Olszak, C.M. and Zurada, J., 2015. Information technology tools for Business Intelligence development in organisations. *Polish Journal of Management Studies*, *12*.

318. OPEC. (2016), Organisation of the Petroleum Exporting Countries (OPEC), *Annual Report*.

319. Opoku, M.O., 2015. Information management and organisational performance: A review of literature. *Mediterranean Journal of Social Sciences*, *6*(6 S1), p.62.

320. Ozturk, B. and asghar, s., 2023. eco-design: an approach to design products by using eco-friendly or reusable materials. *international studies in architecture, planning and design*, p.79.

321. Panhwar, A.H., Ansari, S. and Shah, A.A., 2017. Post-positivism: An effective paradigm for social and educational research. *International Research Journal of Arts and Humanities*, 45(45), pp.253-259.

322. Papuziński, A., 2018. The Enlightenment Assumptions of the Brundtland Report. *Problemy Ekorozwoju*, *13*(1).

323. Pathak, K.P. and Thapaliya, S., 2022. *Some philosophical paradigms and their implications in health*.

324. Pathak, S., 2018. Encouraging development of a global mindset among students in online international Management courses. *Journal of Teaching in International Business*, *29*(1), pp.20-48.

325. Patton, W. and McMahon, M., 2021. Career development and systems theory: Connecting theory and practice. *In Career Development and Systems Theory*. Brill.

326. Peltier, T.R., 2016. *Information Security Policies, Procedures, and Standards: guidelines for effective information security management*. CRC press.

327. Perez, J.R., 2017. Global leadership and the impact of globalization. *Journal of Leadership, Accountability and Ethics*, *14*(3), pp.48-52.

328. Pérez-Aróstegui, M. N., Bustinza-Sánchez, F., & Barrales-Molina, V. (2015). Exploring the relationship between information technology competence and quality management. BRQ Business Research Quarterly, 18(1), 4-17.

329. Petrova, E., Dewing, J. and Camilleri, M., 2016. Confidentiality in participatory research: Challenges from one study. *Nursing ethics*, *23*(4), pp.442-454.

330. Pezzullo, R.D.S.P.C., 2007. *Environmental justice and environmentalism: The social justice challenge to the environmental movement*. MIT press.

331. Pham, L.T.M., 2018. Qualitative approach to research a review of advantages and disadvantages of three paradigms: Positivism, interpretivism and critical inquiry. *University of Adelaide*.

332. Pidduck, R.J., Clark, D.R. and Lumpkin, G.T., 2023. Entrepreneurial mindset: Dispositional beliefs, opportunity beliefs, and entrepreneurial behaviour. *Journal of Small Business Management*, *61*(1), pp.45-79.

333. Pomaquero, J.C., Lopez, J.F. And Lopez, J.L., 2019. Technological management and innovation in organisations. A systematic review of the literature. *Revista ESPACIOS*, *40*(13).

334. Prajogo, D. and Olhager, J., 2012. Supply chain integration and performance: The effects of long-term relationships, information technology and sharing, and logistics integration. *International Journal of Production Economics*, *135*(1), pp.514-522.

335. Prakash, G., 2018. Understanding service quality: insights from the literature. *Journal of Advances in Management Research*.

336. Pryiatelchuk, O.A. and Amirabbas, S., 2021. Renewable energy for sustainable development in Middle East. *Actual Problems of International Relations*, *1*(148), pp.70-80.

337. Putra, D.G., Rahayu, R. and Putri, A., 2021. The influence of Enterprise Resource Planning (ERP) implementation system on company performance mediated by organisational capabilities. *Journal of Accounting and Investment*, *22*(2), pp.221-241.

338. Queirós, A., Faria, D. and Almeida, F., 2017. Strengths and limitations of qualitative and quantitative research methods. *European Journal of Education Studies*.

339. Rajadhyaksha, U., 2005. Managerial competence: do technical capabilities matter?. *Vikalpa*, 30(2), pp.47-56.

340. Rajaraman, V., 2018. *Introduction to information technology*. PHI Learning Pvt. Ltd..

341. Rakhmonov, I.U. and Kurbonov, N.N., 2020. Analysis of automated software for monitoring energy consumption and efficiency of industrial enterprises. In *E3S Web of Conferences* (Vol. 216, p. 01178). EDP Sciences.

342. Ramachandran, S.D., Chong, S.C. and Wong, K.Y., 2013. Knowledge management practices and enablers in public universities: A gap analysis. *Campus-Wide Information Systems*.

343. Ramchurn, S. D., Vytelingum, P., Rogers, A., & Jennings, N. R., (2012). Putting the'smarts' into the smart grid: a grand challenge for artificial intelligence. Communications of the ACM, vol. 55(4), pp. 86-97.

344. Randhawa, J.S. and Ahuja, I.S., 2017. 5S–a quality improvement tool for sustainable performance: literature review and directions. *International Journal of Quality & Reliability Management*, *34*(3), pp.334-361.

345. Rasche, A., Waddock, S. and McIntosh, M., 2013. The United Nations global compact: Retrospect and prospect. *Business & Society*, *52*(1), pp.6-30.

346. Rees, C.J., Mamman, A. and Braik, A.B., 2007. Emiratization as a strategic HRM change initiative: case study evidence from a UAE petroleum company. *The International Journal of Human Resource Management*, *18*(1), pp.33-53.

347. Rejeb, A., Keogh, J.G. and Treiblmaier, H., 2019. Leveraging the internet of things and blockchain technology in supply chain management. *Future Internet*, *11*(7), p.161.

348. Ren, S., Li, X., Yuan, B., Li, D. and Chen, X., 2018. The effects of three types of environmental regulation on eco-efficiency: A cross-region analysis in China. *Journal of cleaner production*, *173*, pp.245-255.

349. Rengkung, L.R., 2018. Modelling of dynamic capabilities: A system dynamics approach. *Academy of Strategic Management Journal*, *17*(5), pp.1-14.

350. Rentizelas, A., de Sousa Jabbour, A.B.L., Al Balushi, A.D. and Tuni, A., 2020. Social sustainability in the oil and gas industry: institutional pressure and the management of sustainable supply chains. *Annals of Operations Research*, *290*, pp.279-300.

351. Rezvani A Khosravi P, Dong L. (2017) Motivating users toward continued usage of information systems: self-determination theory perspective. Comput Hum Behav, 76:263–75.

352. Rimanoczy, I., 2020. *The sustainability mindset principles: A guide to developing a mindset for a better world*. Routledge.

353. Ringberg, T., Reihlen, M. and Rydén, P., 2019. The technology-mindset interactions: Leading to incremental, radical or revolutionary innovations. *Industrial Marketing Management*, *79*, pp.102-113.

354. Roberts, R., Flin, R. and Corradi, L., 2021, September. Accelerating technology adoption: a benchmarking study of organisational innovation adoption culture in upstream oil and gas. *In SPE Offshore Europe Conference and Exhibition* (p. D021S004R001). SPE.

355. Roberts, R., Flin, R., Millar, D. and Corradi, L., 2021. Psychological factors influencing technology adoption: A case study from the oil and gas industry. *Technovation*, *102*, p.102219.

356. Robertson, O. and Evans, M.S., 2020. Just how reliable is your internal reliability? An overview of Cronbach's alpha (α). *Also in this issue: Towards*, p.23.

357. Rui, Z., Cui, K., Wang, X., Chun, J.H., Li, Y., Zhang, Z., Lu, J., Chen, G., Zhou, X. and Patil, S., 2018. A comprehensive investigation on performance of oil and gas development in Nigeria: Technical and non-technical analyses. *Energy*, *158*, pp.666-680.

358. Rutberg, S. and Bouikidis, C.D., 2018. Focusing on the fundamentals: A simplistic differentiation between qualitative and quantitative research. *Nephrology Nursing Journal*, *45*(2), pp.209-213.

359. Ryssel, R., Ritter, T. and Gemünden, H.G., 2004. The impact of information technology deployment on trust, commitment and value creation in business relationships. *Journal of business & industrial marketing*.

360. Sadeh, A., Zwikael, O., & Dvir, D. (2019). Organisational Support as an Efficient Mechanism for Enhancing High Risk Projects Success. In *2019 Portland International Conference on Management of Engineering and Technology (PICMET)* (pp. 1-4). IEEE.

361. Saebi, T., Lien, L. and Foss, N.J., 2017. What drives business model adaptation? The impact of opportunities, threats and strategic orientation. *Long range planning*, *50*(5), pp.567-581.

362. Saeed, B.B., Afsar, B., Hafeez, S., Khan, I., Tahir, M. and Afridi, M.A., 2019. Promoting employee's proenvironmental behaviour through green human resource management practices. *Corporate Social Responsibility and Environmental Management*, *26*(2), pp.424-438.

363. Salazar, R., Rauniar, R. and Blodgett, J., 2021. Determinants of technology adoption in US oil and gas industry. *International Journal of Technology, Policy and Management*, 21(2), pp.104-127.

364. Salimi, M., Hosseinpour, M. and N. Borhani, T., 2022. Analysis of solar energy development strategies for a successful energy transition in the UAE. *Processes*, *10*(7), p.1338.

365. Sallis, J.E., Gripsrud, G., Olsson, U.H. and Silkoset, R., 2021. Research methods and data analysis for business decisions. *Springer International Publishing*.

366. Salminen, J., Guan, K., Jung, S.G., Chowdhury, S.A. and Jansen, B.J., 2020, April. A literature review of quantitative persona creation. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1-14).

367. Salvato, C. and Vassolo, R., 2018. The sources of dynamism in dynamic capabilities. *Strategic management journal*, 39(6), pp.1728-1752.

368. Salvato, C. and Vassolo, R., 2018. The sources of dynamism in dynamic capabilities. *Strategic Management Journal*, *39*(6), pp.1728-1752.

369. Salvato, C. and Vassolo, R., 2018. The sources of dynamism in dynamic capabilities. *Strategic Management Journal*, *39*(6), pp.1728-1752.

370. Sarafrazi, S., Al Manafi, S. A., & Doorche, A. S. N. (2016). Diagnosis Integrated Management System (IMS) and ways to improve the refinery in Abadan using TOPSIS. *International Journal of Humanities and Cultural Studies (IJHCS) ISSN 2356-5926*, 1(1), 316-333.

371. Sarkar, B., Sarkar, M., Ganguly, B. and Cárdenas-Barrón, L.E., 2021. Combined effects of carbon emission and production quality improvement for fixed lifetime products in a sustainable supply chain management. *International Journal of Production Economics*, *231*, p.107867.

372. Sarker, M.N.I., Wu, M. and Hossin, M.A., 2018, May. Smart governance through bigdata: Digital transformation of public agencies. In *2018 international conference on artificial intelligence and big data (ICAIBD)* (pp. 62-70). IEEE.

373. Saunders, A. and Brynjolfsson, E., 2016. Valuing information technology related intangible assets. *Mis Quarterly*, *40*(1), pp.83-110.

374. Saunders, MNK & Rojon, C., (2014). There's no madness in my method: Explaining how your research findings are built on firm foundations, Coaching: An International Journal of Theory, Research and Practice, vol. 7(1), pp. 74-83.

375. Schaltegger, S. and Wagner, M. eds., 2017. *Managing the business case for sustainability: The integration of social, environmental and economic performance*. Routledge.

376. Schein, E.H. and Schein, P.A., 2018. *Humble leadership: The power of relationships, openness, and trust*. Berrett-Koehler Publishers.

377. Schober, P., Boer, C. and Schwarte, L.A., 2018. Correlation coefficients: appropriate use and interpretation. *Anesthesia & analgesia*, *126*(5), pp.1763-1768.

378. Schoemaker, P.J., Heaton, S. and Teece, D., 2018. Innovation, dynamic capabilities, and leadership. *California Management Review*, *61*(1), pp.15-42.

379. Seele, P., 2018. What makes a business ethicist? A reflection on the transition from applied philosophy to critical thinking. *Journal of Business Ethics*, *150*, pp.647-656.

380. Sekaran, U., (2003). Research methods for business, 4th edition, John Wiley and Sons, Hoboken, NJ.

381. Shahbaz, M., Gozgor, G. and Hammoudeh, S., 2019. Human capital and export diversification as new determinants of energy demand in the United States. *Energy Economics*, *78*, pp.335-349.

382. Shamim, S., Cang, S. and Yu, H., 2019. Impact of knowledge oriented leadership on knowledge management behaviour through employee work attitudes. The International Journal of Human Resource Management, 30(16), pp.2387-2417.

383. Sharma, M.C. and Sharma, A., 2013. Role of information technology in indian banking sector. *International Journal in Multidisciplinary and Academic Research*, *2*(1), pp.1-12.

384. Sheffield, J., Sankaran, S. and Haslett, T., 2012. Systems thinking: Taming complexity in project management. *On the Horizon*, 20(2), pp.126-136.

385. Shen, Y.C., Chen, P.S. and Wang, C.H., 2016. A study of enterprise resource planning (ERP) system performance measurement using the quantitative balanced scorecard approach. *Computers in industry*, *75*, pp.127-139.

386. Sheveleva, A., Tyaglov, S. and Khaiter, P., 2021. Digital transformation strategies of oil and gas companies: preparing for the fourth industrial revolution. *Digital strategies in a global market: navigating the fourth industrial revolution*, pp.157-171.

387. Shqairat, A. and Sundarakani, B., 2018. An empirical study of oil and gas value chain agility in the UAE. *Benchmarking: An International Journal*.

388. Shqairat, A. and Sundarakani, B., 2018. An empirical study of oil and gas value chain agility in the UAE. *Benchmarking: An International Journal*, *25*(9), pp.3541-3569.

389. Shqairat, A. and Sundarakani, B., 2018. An empirical study of oil and gas value chain agility in the UAE. *Benchmarking: An International Journal*, *25*(9), pp.3541-3569.

390. Shuen, A., Feiler, P. F., & Teece, D. J. (2015). Dynamic capabilities in the upstream oil and gas sector: Managing next generation competition. Energy Strategy Reviews, 3, 5-13.

391. Shuen, A., Feiler, P.F. and Teece, D.J., 2014. Dynamic capabilities in the upstream oil and gas sector: Managing next generation competition. *Energy Strategy Reviews*, 3, pp.5-13.

392. Silvestre, B.S. and Gimenes, F.A.P., 2017. A sustainability paradox? Sustainable operations in the offshore oil and gas industry: The case of Petrobras. *Journal of Cleaner Production*, *142*, pp.360-370.

393. Silvestre, B.S. and Gimenes, F.A.P., 2017. A sustainability paradox? Sustainable operations in the offshore oil and gas industry: The case of Petrobras. *Journal of Cleaner Production*, *142*, pp.360-370.

394. Silvestre, B.S. and Ţîrcă, D.M., 2019. Innovations for sustainable development: Moving toward a sustainable future. *Journal of cleaner production*, *208*, pp.325-332.

395. Simões, E.N., 2020. *A decision support system application module-for PESTLE analysis-competitive intelligence algorithm* (Doctoral dissertation).

396. Singh, A. and Shaurya, A., 2021. Impact of Artificial Intelligence on HR practices in the UAE. *Humanities and Social Sciences Communications*, *8*(1), pp.1-9.

397. Sirkemaa, S., 2002, April. IT infrastructure management and standards. In *Proceedings. International Conference on Information Technology: Coding and Computing* (pp. 201-206). IEEE.

398. Sivabagyam, K.R., Akhila, S. and Manikandan, C., 2018. An analysis of online shopping and its contribution towards business development from customer's perspective with special reference to Coimbatore city. *IJAR*, *4*(5), pp.135-139.

399. Sobhani, A., Shokoohyar, S. and Sobhani, A., 2021. Investigating the effects of information technology investment on the performance of telecommunication companies. *International Journal of Applied Decision Sciences*, *14*(3), pp.343-360.

400. Soloducho-Pelc, L. and Sulich, A., 2020. Between sustainable and temporary competitive advantages in the unstable business environment. *Sustainability*, *12*(21), p.8832.

401. Song, Z. and Wang, X., 2018, October. Study on the Internationalization of Standards Bodies: Based on the Strategy Evolution of BSI. In *2018 9th International Conference on Information Technology in Medicine and Education (ITME)* (pp. 1037-1043). IEEE.

402. Soto-Acosta, P., Popa, S. and Martinez-Conesa, I., 2018. Information technology, knowledge management and environmental dynamism as drivers of innovation ambidexterity: a study in SMEs. *Journal of Knowledge Management*, *22*(4), pp.824-849.

403. Sridhar, R., Sachithanandam, V., Mageswaran, T., Purvaja, R., Ramesh, R., Senthil Vel, A. and Thirunavukkarasu, E., 2016. A Political, Economic, Social, Technological, Legal and Environmental (PESTLE) approach for assessment of coastal zone management practice in India. *International Review of Public Administration*, *21*(3), pp.216-232.

404. Stein, J.C., 2003. Agency, information and corporate investment. *Handbook of the Economics of Finance*, *1*, pp.111-165.

405. Stein, J.C., 2003. Agency, information and corporate investment. *Handbook of the Economics of Finance*, *1*, pp.111-165.

406. Strezov, V., Evans, A. and Evans, T.J., 2017. Assessment of the economic, social and environmental dimensions of the indicators for sustainable development. *Sustainable development*, *25*(3), pp.242-253.

407. Su, H.N. and Moaniba, I.M., 2017. Investigating the dynamics of interdisciplinary evolution in technology developments. *Technological Forecasting and Social Change*, *122*, pp.12-23.

408. Suryawan, A.D., 2018, September. Information Technology Service Performance Management Using COBIT and ITIL Frameworks: A Case Study. In *2018 International Conference on Information Management and Technology (ICIMTech)* (pp. 223-228). IEEE.

409. Suwanto, S., Sunarsi, D. and Achmad, W., 2022. Effect of transformational leadership, servant leadershi, and digital transformation on MSMEs performance and work innovation capabilities. *Central European Management Journal*, *30*(4), pp.751-762.

410. Taherdangkoo, M., Mona, B. and Ghasemi, K., 2019. The role of industries' environmental reputation and competitive intensity on sustainability marketing strategy: Customers' environmental concern approach. *Spanish Journal of Marketing-ESIC*.

411. Tanriverdi, H. and Du, K., 2020. Corporate Strategy Changes and Information Technology Control Effectiveness in Multibusiness Firms. *MIS Quarterly*, *44*(4).

412. Tao, W., Song, B., Ferguson, M.A. and Kochhar, S., 2018. Employees' prosocial behavioural intentions through empowerment in CSR decision-making. *Public Relations Review*, *44*(5), pp.667-680.

413. Tarigan, Z., Mochtar, J., Basana, S. and Siagian, H., 2021. The effect of competency management on organisational performance through supply chain integration and quality. *Uncertain Supply Chain Management*, *9*(2), pp.283-294.

414. Tavanti, M. and Davis, E.B., 2018. Integrating sustainability mindset and impact competencies in management education: Directions, models, and strategies. *Fostering sustainability by management education*, pp.223-241.

415. Teece, D.J., 2009. *Dynamic capabilities and strategic management: Organizing for innovation and growth*. Oxford University Press on Demand.

416. Teece, D.J., 2014. The foundations of enterprise performance: Dynamic and ordinary capabilities in an (economic) theory of firms. *Academy of management perspectives*, *28*(4), pp.328-352.

417. Teece, D.J., 2016. Dynamic capabilities and entrepreneurial management in large organisations: Toward a theory of the (entrepreneurial) firm. *European Economic Review*, *86*, pp.202-216.

418. Teece, D.J., 2018. Dynamic capabilities as (workable) management systems theory. *Journal of Management & Organisation*, 24(3), pp.359-368.

419. Theriou, G.N. and Chatzoglou, P.D., 2008. Enhancing performance through best HRM practices, organisational learning and knowledge management: A conceptual framework. European Business Review, 20(3), pp.185-207.

420. Thurley, C., Stewart, D., Williams, G., Cox, E., Sarssam, M. and Kierdorf, C., 2022. Tectonostratigraphic evolution of the Sohar Basin, exploration concepts and emerging plays offshore on the UAE's east coast. *Marine and Petroleum Geology*, *143*, p.105807.

421. Tigre-O, F., Tubón-Núñez, E.E., Carrillo, S., Buele, J. and Salazar-L, F., 2019, June. Quality management system based on the ISO 9001: 2015: Study case of a coachwork company. In *2019 14th Iberian Conference on Information Systems and Technologies (CISTI)* (pp. 1-6). IEEE.

422. Tollin, K. and Vej, J., 2012. Sustainability in business: understanding meanings, triggers and enablers. *Journal of Strategic Marketing*, 20(7), pp.625-641.

423. Tomlinson, K., 2017. *Oil and gas companies and the management of social and environmental impacts and issues: The evolution of the industry's approach* (No. 2017/22). WIDER Working Paper.

424. Torkkeli, L., Nummela, N. and Saarenketo, S., 2018. A global mindset–still a prerequisite for successful SME internationalisation?. In *Key success factors of SME internationalisation: A cross-country perspective*. Emerald Publishing Limited.

425. Tortorella, G., Miorando, R., Caiado, R., Nascimento, D. and Portioli Staudacher, A., 2021. The mediating effect of employees' involvement on the relationship between Industry 4.0 and operational performance improvement. *Total Quality Management & Business Excellence*, *32*(1-2), pp.119-133.

426. Tortorella, G.L., Giglio, R. and Van Dun, D.H., 2019. Industry 4.0 adoption as a moderator of the impact of lean production practices on operational performance improvement. *International journal of operations & production management*.

427. Tres, N., Dalla Porta, C., Mazzioni, S., Dal Magro, C.B. and Di Domenico, D., 2022. Socio environmental responsibility practices and organisational performance in public companies. *REVISTA AMBIENTE CONTÁBIL-Universidade Federal do Rio Grande do Norte-ISSN 2176-9036*, *14*(1).

428. Trindade, D.N., Duarte, L.G., Perico, I. and Bandeira, G.L., 2023, October. Driving change in the oil and gas industry: A digital transformation framework. *In Offshore Technology Conference Brasil* (p. D031S031R002). OTC.

429. Trindade, D.N., Duarte, L.G., Perico, I. and Bandeira, G.L., 2023, October. Driving Change in the Oil and Gas Industry: A Digital Transformation Framework. In *Offshore Technology Conference Brasil* (p. D031S031R002). OTC.

430. Turnbull, D., Chugh, R. and Luck, J., 2020. Learning management systems, an overview. *Encyclopedia of education and information technologies*, pp.1052-1058.

431. Turulja, L. and Bajgoric, N., 2018. Information technology, knowledge management and human resource management: Investigating mutual interactions towards better organisational performance. *VINE Journal of Information and Knowledge Management Systems*.

432. Uddin, M.J., Luva, R.H. and Hossian, S.M.M., 2013. Impact of organisational culture on employee performance and productivity: A case study of telecommunication sector in Bangladesh. *International Journal of Business and Management*, *8*(2), p.63.

433. Ungson, G.R. and Wong, Y.Y., 2014. *Global strategic management*. Routledge.

434. Usheva, M., 2016. Team and teamwork in modern european HR management.

435. Vahdat, S., 2021. The role of IT-based technologies on the management of human resources in the COVID-19 era. *Kybernetes*.

436. Van Grinsven, M. and Visser, M., 2011. Empowerment, knowledge conversion and dimensions of organisational learning. *The learning organisation*.

437. Van Wart, M., Roman, A., Wang, X. and Liu, C., 2017. Integrating ICT adoption issues into (e-) leadership theory. *Telematics and Informatics*, *34*(5), pp.527-537.

438. Vázquez-Ingelmo, A., García-Holgado, A., García-Peñalvo, F.J. and Therón, R., 2019. Dashboard meta-model for knowledge management in technological ecosystem: a case study in healthcare. In *Multidisciplinary Digital Publishing Institute Proceedings* (Vol. 31, No. 1, p. 44).

439. Voronkova, O.V., Kurochkina, A.A., Firova, I.P. And Bikezina, T.V., 2017. Implementation of an information management system for industrial enterprise resource planning. *Revista Espacios*, *38*(49).

440. Vuong, Q.H., 2016. Global mindset as the integration of emerging socio-cultural values through mindsponge processes. *Global Mindsets: Exploration and Perspectives*, pp.109-126.

441. Waller, W., 2020. The nature of social reality: Issues in social ontology, by Tony Lawson.

442. Warner, K.S. and Wäger, M., 2019. Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long range planning*, *52*(3), pp.326-349.

443. Waterworth, A. and Bradshaw, M.J., 2018. Unconventional trade-offs? National oil companies, foreign investment and oil and gas development in Argentina and Brazil. *Energy policy*, *122*, pp.7-16.

444. Waxin, M.F. and Bateman, R.E., 2016. Human resource management in the United Arab Emirates. In *Handbook of human resource management in the Middle East*. Edward Elgar Publishing.

445. Weiss, J.W., 2021. *Business ethics: A stakeholder and issues management approach*. Berrett-Koehler Publishers.

446. Wicks, A.C., Keevil, A. and Parmar, B., 2012. Sustainable business development and management theories: A mindset approach. *Business & Professional Ethics Journal*, pp.375-398.

447. Widya Yudha, S., Tjahjono, B. and Kolios, A., 2018. A PESTLE policy mapping and stakeholder analysis of Indonesia's fossil fuel energy industry. *Energies*, *11*(5), p.1272.

448. Wielkiewicz, R. M. (2002). Validity of the leadership attitudes and beliefs scale: Relationships with personality, communal orientation, and social desirability. Journal of College Student Development, 43(1), 108–118.

449. Wilhelm, S., Förster, R. and Zimmermann, A.B., 2019. Implementing competence orientation: Towards constructively aligned education for sustainable development in university-level teaching-and-learning. *Sustainability*, *11*(7), p.1891.

450. Williams, M.L., Burnap, P., Sloan, L., Jessop, C. and Lepps, H., 2017. Users' views of ethics in social media research: Informed consent, anonymity, and harm. In *The ethics of online research*. Emerald Publishing Limited.

451. Winter, S.G., 2003. Understanding dynamic capabilities. *Strategic management journal*, *24*(10), pp.991-995.

452. Woo, E.J. and Kang, E., 2020. Environmental issues as an indispensable aspect of sustainable leadership. *Sustainability*, *12*(17), p.7014.

453. World Business Council for Sustainable Development. WBCSD. Available at: https://www.wbcsd.org/Projects/Education/Resources/Eco-efficiency-Learning-Module [Accessed November 23, 2021].

454. Wu, C.H., Deng, H. and Li, Y., 2018. Enhancing a sense of competence at work by engaging in proactive behaviour: the role of proactive personality. *Journal of Happiness Studies*, *19*(3), pp.801-816.

455. Xie, X., Siau, K. and Nah, F.F.H., 2020. COVID-19 pandemic–online education in the new normal and the next normal. *Journal of information technology case and application research*, *22*(3), pp.175-187.

456. Xu, J., Wei, J. and Lu, L., 2019. Strategic stakeholder management, environmental corporate social responsibility engagement, and financial performance of stigmatized firms derived from Chinese special environmental policy. *Business Strategy and the Environment*, *28*(6), pp.1027-1044.

457. Yang, L.R., Chen, J.H. and Wang, H.W., 2012. Assessing impacts of information technology on project success through knowledge management practice. *Automation in construction*, *22*, pp.182-191.

458. Yao, W. and Li, L., 2014. A new regression model: modal linear regression. *Scandinavian Journal of Statistics*, *41*(3), pp.656-671.

459. Yari, N., Lankut, E., Alon, I. and Richter, N.F., 2020. Cultural intelligence, global mindset, and cross-cultural competencies: a systematic review using bibliometric methods. *European Journal of International Management*, *14*(2), pp.210-250.

460. Yin, E., Johnson, J. and Bao, Y., 2008, October. Global mindedness and the performance of Chinese multinationals. In *China goes global Conference*.

461. Yolles, M. and Fink, G., 2013. An Introduction to Mindset Theory. *Available at SSRN 2348622*.

462. Yusop, Z.B.M., 2018. PESTEL analysis. *COMRAP 2018*, p.34.

463. Zahra, M., Hameed, W.U., Fiaz, M. and Basheer, M.F., 2019. Information technology capability a tool to expedite higher organisational performance. *UCP Management Review (UCPMR)*, *3*(1), pp.94-112.

464. Zaidan, E., Al-Saidi, M. and Hammad, S.H., 2019. Sustainable development in the Arab world–is the Gulf Cooperation Council (GCC) region fit for the challenge?. *Development in Practice*, *29*(5), pp.670-681.

465. Zhang, Y., Khan, U., Lee, S. and Salik, M., 2019. The influence of management innovation and technological innovation on organisation performance. A mediating role of sustainability. *Sustainability*, *11*(2), p.495.

466. Zimmerman, S. and Bell, J., 2014. *The sustainability mindset: Using the matrix map to make strategic decisions*. John Wiley & Sons.

467. Zina, O., 2021. *The essential guide to doing your research project*. Sage.

468. Zollo, M. and Winter, S.G., 2002. Deliberate learning and the evolution of dynamic capabilities. *Organisation science*, *13*(3), pp.339-351.

469. Zollo, M. and Winter, S.G., 2002. Deliberate learning and the evolution of dynamic capabilities. Organisation science, 13(3), pp.339-351.

470. Zonnenshain, A. and Kenett, R.S., 2020. Quality 4.0—the challenging future of quality engineering. *Quality Engineering*, *32*(4), pp.614-626.

Appendices

Appendix 1: Research questionnaire (English version)

Dear participant,

Thank you for taking part in this research project and your participation is much appreciated. I am carrying out a research about "**Supportive Management Mindset Model for IT System Implementation: A Case Study of the UAE Oil and Gas Sector***"*. The research focuses on supportive management mindset and how does it affect the IT system implementation in your organisation.

The information provided will be used for my research purposes only. It will be deleted on completion of my studies. Your knowledge and experience represent an important part of enhancing the research findings and recommendations. The contribution of the participation is valuable and voluntary. Your private and sensitive data will not be required. Moreover, the answers of the entire research online questionnaire will remain anonymous confidential.

If you need to contact me for any reason related to this research or if you need to receive a summary of the research results and recommendations do not hesitate to contact me via my email address.

Alternatively, you can contact my supervisor: Reza Abdi or Amir Modjtahedi.

Ahmed Al-Shagga

RESEARCH QUESTIONNAIRE

First part: Demographic Questions

Q1: What is your gender	☐ Male ☐ Female ☐ Prefer not to say

Q2: What is your age category	☐ 18 to 24		☐ 45 to 64	
	☐ 25 to 34		☐ 65 or more	
	☐ 35 t0 44		☐ prefer not to say	

Q3: What is your work position	…… …… ……

Q4: What is your work experience	☐ less than 3		☐ 11 to 14	
	☐ 4 to 7		☐ 15 or more	
	☐ 8 t0 10		☐ prefer not to say	

Q5: Have you taken any relevant training related to management, human resources, and IT? (please indicate)	…… …… …… ……

Second part: Research Statements

The following statements represent the essential elements of the study:

	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
P 1 A	**Management mindset and technology system implementation**					
Q 1	I feel that management mindset (competences, beliefs and characteristics) is perceived and understood by individuals in terms of its significant roles played within the organisation.	◯	◯	◯	◯	◯
Q 2	I feel that management mindset (competences, beliefs and characteristics) and technology software systems are critical for the success and sustainability of organisational production and services provided and the improvement initiatives within the organisation.	◯	◯	◯	◯	◯
P 1.1 A	**The internal factors of management mindset including (IT competencies, the awareness of systems and operations and leadership) and technology software system implementation**					
Part 1.1.1 A	The following IT competencies can affect technology software system implementation.					
Q 3	Individuals' IT background	◯	◯	◯	◯	◯
Q 4	Employees' acquired IT skills and qualifications	◯	◯	◯	◯	◯
Q 5	IT training, courses and programmes provided by management	◯	◯	◯	◯	◯
Part 1.1.2 A	The awareness of the following software systems and operations can affect technology software system implementation in Oil & Gas:					
Q 6	Exploration, geology and seismic software	◯	◯	◯	◯	◯
Q 7	Production and engineering software	◯	◯	◯	◯	◯
Q 8	ERP (Enterprise Resource Planning) software	◯	◯	◯	◯	◯
Part 1.1.3 A	Leadership can affect technology software system implementation in terms of which of the following factors:					
Q 9	Leadership styles and characteristics	◯	◯	◯	◯	◯

	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q 10	Leadership capabilities and systems' compatibility, monitoring and control	◯	◯	◯	◯	◯
Q 11	The cooperative and flexible practices and relationships between leaders and subordinates	◯	◯	◯	◯	◯
P 1.2 A	**The external factors of management mindset including (PESTLE factors (Political, Economic, Sociological, Technological, Legal and Environmental), competition and customers) and technology system implementation**					
Part 1.2.1 A	The following factors can determine and analyse the quality and effectiveness of implanting technology software system.					
Q 12	Political dimensions (government policy, political stability or instability in overseas markets, foreign trade policy, tax policy, labor law, environmental law, trade restrictions and so on)	◯	◯	◯	◯	◯
Q 13	Economic dimensions (economic growth, interest rates, exchange rates, inflation, disposable income of consumers and businesses and so on)	◯	◯	◯	◯	◯
Q 14	Social dimensions (population growth, age distribution, health consciousness, career attitudes and so on)	◯	◯	◯	◯	◯
Q 15	Technological dimensions	◯	◯	◯	◯	◯
Q 16	Legal dimensions	◯	◯	◯	◯	◯
Q 17	Environmental dimensions	◯	◯	◯	◯	◯
Part 1.2.2 A	Competition can affect technology software system implementation regarding:					
Q 18	Management approaches towards competitors using technological software systems	◯	◯	◯	◯	◯
Q 19	Market shares, organisational performance and technology monitoring comparing with competitors	◯	◯	◯	◯	◯
Q 20	The competitive employees' IT skills and capabilities	◯	◯	◯	◯	◯
Part 1.2.3 A	Customers (internal and external) can affect technology software system implementation regarding:					
Q 21	Customers' attitudes, needs, demands and customer services	◯	◯	◯	◯	◯
Q 22	Quality requirements and the specifications of services and products	◯	◯	◯	◯	◯
Q 23	Customers' attraction and expectations to improve productivity and profitability	◯	◯	◯	◯	◯
P 1 B	**Technology software system implementation**					

	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q 24	The implementation of technological systems can be determined by the existing competencies within the company	◯	◯	◯	◯	◯
Q 25	The technological systems applied in the company such as exploration, geology and seismic software, production and engineering software and ERP software are characterised by the ability to update according to the requirements of the operations	◯	◯	◯	◯	◯
Q 26	The operational system for drilling and production operations can be developed by appointing more qualified personnel in the field of IT	◯	◯	◯	◯	◯
Q 27	The awareness of employees of the importance of applying contemporary technological systems and keeping pace with the development witnessed by the oil sector is an essential pillar in the implementation	◯	◯	◯	◯	◯
Q 28	Employees can develop their own capabilities through advanced training courses in the field of IT	◯	◯	◯	◯	◯
Q 29	Interactive processes, from exploration to production, require a coherent and easy-to-understand technological software systems	◯	◯	◯	◯	◯
Q 30	Implementation of technological work systems can be more efficient through an effective leadership vision	◯	◯	◯	◯	◯
Q 31	There is a positive interaction between the leadership within the company and the importance of accurately implementing technological systems	◯	◯	◯	◯	◯
Q 32	There is an impact, motivation and inspiration by the leadership practices of employees in the IT departments	◯	◯	◯	◯	◯
P 2 A	**Management mindset**					
Q 33	I feel that management mindset practices can be the main determinant of achieving IT system implementation through effective implementation of the dynamic work capabilities	◯	◯	◯	◯	◯
Q 34	I feel that management mindset can significantly contribute to the IT system implementation through implementation of IT quality standards	◯	◯	◯	◯	◯
P 2.1 A	Management mindset has an impact on IT system implementation through dynamic capabilities in terms of:					

	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q 35	Dealing with technology development enhancement	◯	◯	◯	◯	◯
Q 36	Investing additional capabilities for sustainable purposes	◯	◯	◯	◯	◯
Q 37	Promoting behaviour and skills of change and innovation	◯	◯	◯	◯	◯
Q 38	Enhancing the mechanisms of learning and knowledge governance	◯	◯	◯	◯	◯
Q 39	Enhancing adaptive, absorptive and innovative capabilities related to sustainable strategies	◯	◯	◯	◯	◯
P 2.2 A	Management mindset has an impact on IT system implementation through implementation of IT quality standards in terms of:					
Q 40	IT structural and procedural quality that enhances IT system implementation	◯	◯	◯	◯	◯
Q 41	IT services and products' quality which are compatible with sustainability requirements	◯	◯	◯	◯	◯
Q 42	Efficiency and effectiveness standards of IT practices	◯	◯	◯	◯	◯
Q 43	IT capabilities and resources standards related to IT system implementation	◯	◯	◯	◯	◯
Q 44	Legal, ethical adequacy standards related to IT system implementation	◯	◯	◯	◯	◯
P 2 B	**IT system implementation**					
Q 45	There is an understanding and awareness among managers and employees of the impact of the management mindset on achieving effective IT system implementation	◯	◯	◯	◯	◯
Q 46	IT system implementation can be achieved by supporting the company's dynamic competencies	◯	◯	◯	◯	◯
Q 47	IT system implementation can be enhanced by adopting the most important and latest quality standards in operational and managerial processes	◯	◯	◯	◯	◯
Q 48	IT system implementation is achieved in technological processes by keeping pace with global developments in the field of technology	◯	◯	◯	◯	◯

	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q 49	The goals of the organisation can be associated with IT system implementation more effectively through positive interaction between leadership and employees	◯	◯	◯	◯	◯

Appendix 2: Research questionnaire (Arabic version)

عزيزي المشارك،

شكرًا لك على المشاركة في مشروع البحث هذا، ومشاركتك موضع تقدير كبير. أقوم بإجراء بحث حول "**نموذج عقلية الإدارة الداعمة لتطبيق نظام تكنولوجيا المعلومات: دراسة حالة قطاع النفط والغاز في الإمارات العربية المتحدة**". يركز البحث على عقلية الإدارة الداعمة وكيف تؤثر على تطبيق نظام تكنولوجيا المعلومات في مؤسستك.

ستُستخدم المعلومات المقدمة لأغراض البحث فقط. سيتم حذفها عند الانتهاء من دراستي. تمثل معرفتك وخبرتك جزءًا مهمًا من تعزيز نتائج البحث والتوصيات. مساهمتك ستكون قيمة وطوعية. لن تكون هناك حاجة لبياناتك الخاصة والحساسة. علاوة على ذلك، ستظل إجابات الاستبيان البحثي عبر الإنترنت بالكامل سرية.

إذا كنت بحاجة إلى الاتصال بي لأي سبب يتعلق بهذا البحث أو إذا كنت بحاجة إلى تلقي ملخص لنتائج البحث والتوصيات، فلا تتردد في الاتصال بي عبر عنوان بريدي الإلكتروني.

بدلاً من ذلك، يمكنك الاتصال بمشرفي: رضا عبدي أو أمير مودجتاهيدي.

أحمد الشقاع

الاستبيـــان

الجزء الأول: الأسئلة الديموغرافية

س1: ما هو جنسك؟	☐ ذكر ☐ أنثى ☐ يفضل عدم الافصاح

س2: ما هي الفئة العمرية الخاصة بك؟	☐18 to 24		☐45 to 64	
	☐25 to 34		☐ 65 أو أكثر	
	☐35 to 44		☐ يفضل عدم الافصاح	

س3: ما هو منصبك الوظيفي؟	....

س4: ما هي خبرتك العملية؟	☐ أقل من 3		☐11 to 14	
	☐4 to 7		☐ 15 أو أكثر	
	☐8 to 10		☐ يفضل عدم الافصاح	

س5: هل حصلت على أي تدريب ذي صلة بالإدارة والموارد البشرية وتكنولوجيا المعلومات؟ *(يرجى الإشارة)*	....

الجزء الثاني: عبارات البحث

تمثل العبارات التالية العناصر الأساسية للدراسة:

	العبارة	موافق بشدة	موافق	محايد	معارض	معارض بشدة
P 1 A	عقلية الإدارة وتنفيذ نظام التكنولوجيا					
Q 1	أشعر أن عقلية الإدارة (الكفاءات والمعتقدات والخصائص) يدركها ويفهمها الأفراد من حيث الأدوار المهمة التي تلعبها داخل المنظمة.	○	○	○	○	○
Q 2	أشعر أن عقلية الإدارة (الكفاءات والمعتقدات والخصائص) وأنظمة البرمجيات التكنولوجية تشكل أهمية بالغة لنجاح واستدامة الإنتاج التنظيمي والخدمات المقدمة ومبادرات التحسين داخل المنظمة.	○	○	○	○	○
P 1.1 A	**العوامل الداخلية لعقلية الإدارة بما في ذلك (كفاءات تكنولوجيا المعلومات، والوعي بالأنظمة والعمليات والقيادة) وتنفيذ أنظمة برامج التكنولوجيا**					
Part 1.1.1 A	يمكن أن تؤثر الكفاءات التالية في مجال تكنولوجيا المعلومات على تنفيذ نظام برامج التكنولوجيا.					
Q 3	خلفية تكنولوجيا المعلومات لدى الأفراد	○	○	○	○	○
Q 4	مهارات ومؤهلات تكنولوجيا المعلومات التي اكتسبها الموظفون	○	○	○	○	○
Q 5	التدريب والدورات والبرامج في مجال تكنولوجيا المعلومات التي تقدمها الإدارة	○	○	○	○	○
Part 1.1.2 A	إن الوعي بأنظمة وعمليات البرمجيات التالية يمكن أن يؤثر على تنفيذ أنظمة البرمجيات التكنولوجية في النفط والغاز:					
Q 6	برامج الاستكشاف والجيولوجيا والزلازل	○	○	○	○	○
Q 7	برمجيات الإنتاج والهندسة	○	○	○	○	○
Q 8	برنامج تخطيط موارد المؤسسات (ERP)	○	○	○	○	○
Part 1.1.3 A	يمكن أن تؤثر القيادة على تنفيذ نظام البرمجيات التكنولوجية من خلال أي من العوامل التالية:					
Q 9	أنماط وخصائص القيادة	○	○	○	○	○
Q 10	قدرات القيادة وتوافق الأنظمة والرقابة والمراقبة	○	○	○	○	○

	العبارة	موافق بشدة	موافق	محايد	معارض	معارض بشدة
Q 11	الممارسات والعلاقات التعاونية والمرنة بين القادة والمرؤوسين	○	○	○	○	○
P 1.2 A	**العوامل الخارجية لعقلية الإدارة بما في ذلك عوامل PESTLE (السياسية والاقتصادية والاجتماعية والتكنولوجية والقانونية والبيئية) والمنافسة والعملاء وتنفيذ نظام التكنولوجيا**					
Part 1.2.1 A	يمكن للعوامل التالية تحديد وتحليل جودة وفعالية نظام برمجيات تكنولوجيا الزرع.					
Q 12	الأبعاد السياسية (السياسة الحكومية، الاستقرار السياسي أو عدم الاستقرار في الأسواق الخارجية، سياسة التجارة الخارجية، السياسة الضريبية، قانون العمل، قانون البيئة، القيود التجارية وما إلى ذلك)	○	○	○	○	○
Q 13	الأبعاد الاقتصادية (النمو الاقتصادي، أسعار الفائدة، أسعار الصرف، التضخم، الدخل المتاح للمستهلكين والشركات وما إلى ذلك)	○	○	○	○	○
Q 14	الأبعاد الاجتماعية (نمو السكان، توزيع الأعمار، الوعي الصحي، مواقف المهنة وما إلى ذلك)	○	○	○	○	○
Q 15	الأبعاد التكنولوجية	○	○	○	○	○
Q 16	الأبعاد القانونية	○	○	○	○	○
Q 17	الأبعاد البيئية	○	○	○	○	○
Part 1.2.2 A	يمكن أن تؤثر المنافسة على تنفيذ أنظمة البرمجيات التكنولوجية فيما يتعلق بما يلي:					
Q 18	أساليب الإدارة في التعامل مع المنافسين باستخدام أنظمة البرمجيات التكنولوجية	○	○	○	○	○
Q 19	حصص السوق والأداء التنظيمي ومراقبة التكنولوجيا مقارنة بالمنافسين	○	○	○	○	○
Q 20	مهارات وقدرات تكنولوجيا المعلومات لدى الموظفين المنافسين	○	○	○	○	○
Part 1.2.3 A	يمكن للعملاء (الداخليين والخارجيين) التأثير على تنفيذ نظام برامج التكنولوجيا فيما يتعلق بما يلي:					
Q 21	مواقف العملاء واحتياجاتهم ومتطلباتهم وخدماتهم	○	○	○	○	○
Q 22	متطلبات الجودة ومواصفات الخدمات والمنتجات	○	○	○	○	○
Q 23	جذب العملاء وتوقعاتهم لتحسين الإنتاجية والربحية	○	○	○	○	○
P 1 B	**تنفيذ نظام البرمجيات التكنولوجية**					
Q 24	يمكن تحديد تنفيذ الأنظمة التكنولوجية من خلال الكفاءات الموجودة داخل الشركة	○	○	○	○	○
Q 25	تتميز الأنظمة التكنولوجية المطبقة في الشركة مثل برامج الاستكشاف والجيولوجيا والزلازل وبرامج الإنتاج والهندسة وبرامج تخطيط موارد المؤسسات بقدرتها على التحديث وفقًا لمتطلبات العمليات	○	○	○	○	○
Q 26	يمكن تطوير النظام التشغيلي لعمليات الحفر والإنتاج من خلال تعيين موظفين أكثر تأهيلاً في مجال تكنولوجيا المعلومات	○	○	○	○	○

	العبارة	موافق بشدة	موافق	محايد	معارض	معارض بشدة
Q 27	إن وعي الموظفين بأهمية تطبيق الأنظمة التكنولوجية المعاصرة ومواكبة التطور الذي يشهده قطاع النفط يشكل ركيزة أساسية في التنفيذ	○	○	○	○	○
Q 28	يمكن للموظفين تطوير قدراتهم الذاتية من خلال دورات تدريبية متقدمة في مجال تكنولوجيا المعلومات	○	○	○	○	○
Q 29	تتطلب العمليات التفاعلية من الاستكشاف إلى الإنتاج أنظمة برمجية تكنولوجية متماسكة وسهلة الفهم	○	○	○	○	○
Q 30	يمكن أن يكون تنفيذ أنظمة العمل التكنولوجية أكثر كفاءة من خلال رؤية قيادية فعالة	○	○	○	○	○
Q 31	هناك تفاعل إيجابي بين القيادة داخل الشركة وأهمية تنفيذ الأنظمة التكنولوجية بدقة	○	○	○	○	○
Q 32	هناك تأثير وتحفيز وإلهام من خلال ممارسات القيادة للموظفين في أقسام تكنولوجيا المعلومات	○	○	○	○	○
P 2 A	**عقلية الإدارة**					
Q 33	أشعر أن ممارسات عقلية الإدارة يمكن أن تكون العامل الرئيسي في تحقيق تنفيذ نظام تكنولوجيا المعلومات من خلال التنفيذ الفعال لقدرات العمل الديناميكية	○	○	○	○	○
Q 34	أشعر أن عقلية الإدارة يمكن أن تساهم بشكل كبير في تنفيذ نظام تكنولوجيا المعلومات من خلال تنفيذ معايير جودة تكنولوجيا المعلومات	○	○	○	○	○
P 2.1 A	تؤثر عقلية الإدارة على تنفيذ نظام تكنولوجيا المعلومات من خلال القدرات الديناميكية من حيث:					
Q 35	التعامل مع تعزيز تطوير التكنولوجيا	○	○	○	○	○
Q 36	استثمار القدرات الإضافية لأغراض مستدامة	○	○	○	○	○
Q 37	تعزيز سلوكيات ومهارات التغيير والابتكار	○	○	○	○	○
Q 38	تعزيز آليات التعلم وحوكمة المعرفة	○	○	○	○	○
Q 39	تعزيز القدرات التكيفية والاستيعابية والإبداعية المتعلقة بالاستراتيجيات المستدامة	○	○	○	○	○
P 2.2 A	تؤثر عقلية الإدارة على تنفيذ نظام تكنولوجيا المعلومات من خلال تطبيق معايير جودة تكنولوجيا المعلومات من حيث:					
Q 40	جودة البنية الإجرائية والهيكلية لتكنولوجيا المعلومات التي تعزز تنفيذ نظام تكنولوجيا المعلومات	○	○	○	○	○
Q 41	جودة خدمات ومنتجات تكنولوجيا المعلومات المتوافقة مع متطلبات الاستدامة	○	○	○	○	○

	العبارة	موافق بشدة	موافق	محايد	معارض	معارض بشدة
Q 42	معايير كفاءة وفعالية ممارسات تكنولوجيا المعلومات	○	○	○	○	○
Q 43	معايير قدرات وموارد تكنولوجيا المعلومات المتعلقة بتنفيذ نظام تكنولوجيا المعلومات	○	○	○	○	○
Q 44	معايير الملاءمة القانونية والأخلاقية المتعلقة بتنفيذ نظام تكنولوجيا المعلومات	○	○	○	○	○
P 2 B	**تنفيذ نظام تكنولوجيا المعلومات**					
Q 45	هناك فهم ووعي بين المديرين والموظفين لتأثير عقلية الإدارة في تحقيق التنفيذ الفعال لنظام تكنولوجيا المعلومات	○	○	○	○	○
Q 46	يمكن تحقيق تنفيذ نظام تكنولوجيا المعلومات من خلال دعم الكفاءات الديناميكية للشركة	○	○	○	○	○
Q 47	يمكن تعزيز تنفيذ نظام تكنولوجيا المعلومات من خلال تبني أهم وأحدث معايير الجودة في العمليات التشغيلية والإدارية	○	○	○	○	○
Q 48	يتم تحقيق تنفيذ نظام تكنولوجيا المعلومات في العمليات التكنولوجية من خلال مواكبة التطورات العالمية في مجال التكنولوجيا	○	○	○	○	○
Q 49	يمكن ربط أهداف المنظمة بتنفيذ نظام تكنولوجيا المعلومات بشكل أكثر فعالية من خلال التفاعل الإيجابي بين القيادة والموظفين	○	○	○	○	○

Appendix 3: Consent form

Privacy Notice

- Thank you for agreeing to take part in this research project.
- This research will be used by the researcher and their supervisor only in the context of their research and to meet the requirements of their studies at the University of Derby. The University of Derby is the data controller.
- Data taken from the research will be securely destroyed
- We retain the data and any recording until the completion of the current research, and after such time it will be securely destroyed. Our lawful basis for processing this data is your explicit consent.

I give my explicit consent for my details to be used as stipulated above Yes ☐ No ☐

- As a data subject you can request withdrawal of consent at any time up to the completion of this research. by contacting gdpr@derby.ac.uk
- Our Data Protection Officer (DPO) is Mrs Helen Selby on 01332 591954. Alternatively you can email gdpr@derby.ac.uk.

Research consent

I confirm I have been given an information sheet explaining the purposeof this research and contact details of the researcher.	Yes ☐	No ☐
I understand that the data and answers I provide will be stored securely,used only by the research team, and anonymised before publication	Yes ☐	No ☐
I understand that my participation is voluntary, that I do not have to takepart, that I can refuse to answer any questions, and what my rights to withdraw are	Yes ☐	No ☐
I have been given the chance to ask questions and if I have asked questions I have been given a satisfactory answer	Yes ☐	No ☐
I understand this study is related to the above named researcher for thepurpose of their academic assessment	Yes ☐	No ☐

You can withdraw your data up to the completion of data collection stage. after your participation. After this time your data will be anonymised and the original, identifiable,

data destroyed. Pleaseprovide an ID below which we will use to remove your data if requested.

Chosen identifier (3 letters and 3 numbers; do not use your name or birthdate, etc.):

I give my consent to participate in this study:

Name

Signed

Date:

Signed by the researcher:

Signed

Date

Appendix 4: Participant Information Sheet

PARTICIPANT INFORMATION SHEET

Study title: "Supportive Management Mindset Model for IT System Implementation: A Case Study of the UAE Oil and Gas Sector"

You are being invited to take part in a research study. Before you decide, it is important for you to understand about the purpose of the research, why the research is being done and what it will involve. You might have questions about your participation including process of research, data handling and dissemination of the study results. Please take time to read the following information carefully and feel free to ask the researcher if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part. Thank you for taking the time to read this information.

Researcher:

Ahmed Alshagga.

What is the purpose of the research?

The research aims to develop a supportive management mindset model for IT system implementation in the oil and gas sector.

Why have I been chosen?

You have been chosen to participate in this research as you are one of the research sample working in the oil and gas sector.

Do I have to take part?

Your participation of this research is voluntary. In this regard, it is your decision to take part of this study and you have the right to withdraw from this participation. The data that will be

given will be confidential and anonymous and will be only used for academic purposes and it will not be shared with other parties.

What will happen if I decide to take part?

If you decide to take part, the consent form will be provided, and the questionnaire will be given to you to fill in with clear instructions.
What are the potential benefits and risks of taking part?

Your valuable participation will be beneficial for the research and your organisations as the research aims to develop the current practices in order to increase the effectiveness and the positivity of work in the oil and gas sector. The research does not involve any risks to the participants.

What if there is a problem?

In case, there is any problem with the questionnaire, you can contact the researcher via the email. In addition, the participant has the right to withdraw at any time during the data collection stage.

Will my taking part in the study be kept confidential?

Taking part in the study will be kept confidential and anonymous.

What will happen to the results of the research study?

The data of the research will be deleted when completing the research.

Who has reviewed the study?

The study data will be reviewed only by the researcher and other authorised individuals a the University of Derby including leaders, independent study supervisors, CRECs, CRCs, URC and UREC.

If I decide to take part, what do I have to do?

You will receive an online invitation and link of the questionnaire and you should start filling in the questionnaire and submit it.