

# The Influence of Individual, Environmental, Technology, and Manufacturing Factors on Iraqi Gas and Oil Companies: The Moderating Role of Agile

Azwar M. Q. Agha, Aram H. Massoudi, Muslim N. Zaidan

Department of Business Administration, Cihan University-Erbil,  
Kurdistan Region, Iraq

**Abstract**—Implementation of agile technology and its effects on individuals, the environment, technology, and manufacturing factors are the focus of this study, with a special focus on agile technology's moderating effect. Consequently, this study investigates a unique conceptual framework to extend the notions of agile technology implementation to address this research gap. This conceptual framework has been subjected to empirical testing, with 380 population-representative employees serving as participants. This study establishes the inclusion requirements for Iraqi oil and gas (O&G) firms. Using a self-administered questionnaire, data are collected and analyzed using structural equation modeling partial least squares. The finding shows that there are various factors that have a positive effect on O&G companies in Iraq. The implementation of agile technology also has a partially significant positive moderating effect on these factors, indicating that agile technology can amplify the positive impact of these factors. This can lead to profits and the ability for companies to achieve long-term goals and a competitive advantage in the business environment while achieving sustainability in the O&G field. These findings are significant, as they suggest that the implementation of agile technology can have a positive impact on the O&G industry in Iraq, leading to long-term sustainability and profitability.

**Keywords**—Agile, Environmental, Individual, Manufacturing factors in Iraq, Oil and gas, Technology.

## I. INTRODUCTION

The importance of oil and gas (O&G) resources in promoting global economic and social development is increasing alongside advancements in science and technology. According to BP's June 2018 "Statistical Assessment of World Energy," oil and natural gas constitute 57% of global energy consumption, with global oil consumption growing by 1.8%, exceeding the 1.2% average growth rate for three consecutive years, and natural gas consumption growing by 96 billion cubic meters, the highest growth rate since 2010. Despite efforts to develop alternative energy sources, BP Energy Outlook (2019) edition predicts that O&G will continue to comprise half of the world's energy consumption in 2040, with liquefied natural gas expected to account for 15% of total natural gas demand due to its expanding trade. Consequently, oil and natural gas will maintain their dominance in the global energy market for the next two to three decades. Since O&G resources are so important to the energy industry, their individual variables and technologies have changed quickly over the past few

decades. They anticipated that the Iraqi O&G market would develop at an annual rate of over 2.4% between 2020 and 2025. During the forecast period, Iraq's O&G companies are anticipated to grow due to an increase in O&G production and consumption, upcoming infrastructure projects by the manufacturing sector to improve oil infrastructure and the environment throughout the country, and increased investments in all O&G sectors (Digital Transformation Initiative Oil and Gas Industry, 2017).

This study investigates the factors influencing O&G companies in Iraq's O&G markets. Examining the current status of each factor in Iraq by identifying critical determinants, such as knowledge, circumstances, and capabilities' contribution to the petroleum and natural gas industries (Stark, 2020). This study demonstrates how large O&G companies can enhance their image in the eyes of potential customers (Kraidt et al., 2019). The agility segment investigates the factors influencing O&G companies in the Iraqi market. O&G companies may be significantly impacted by environmental factors such as climate change (wastes and

releases from O&G containing hydrocarbons, heavy metals, radioactive material, salts, and toxic chemicals). By utilizing adaptable technologies, Iraqi O&G companies can effectively manage their refuse. Utilizing technological components allow businesses to reduce expenses, including labor and salary costs. By 2027, it is anticipated that the renewable energy industry will be worth \$1,100 billion. To maintain its competitiveness and adapt to these changes, the O&G industry must endure a digital transformation (Ali et al., 2017). Gas and oil companies in Iraq can take advantage of production factors by automating their work more efficiently and modifying their production so that humans and machinery work together. This year, Iraq has replaced Saudi Arabia as the greatest contributor to OPEC's growth, ranking as the second largest contributor. Analysts are concerned that Iraq's increased output will further saturate an already oversaturated market (2010). Due to low oil prices and political instability, Iraq may fall short of its long-term production goals. Other factors such as individual cyberattacks on infrastructure, wells, and pipelines; environmental impacts such as water and natural habitats; and the financial strength of integrated energy companies all contribute to the scope of the problem and necessitate precise solutions.

The main objective of the study is to Determine the impact of environmental, individual, technological, and production factors on Iraqi O&G companies and, the moderating role of agile technology between the individual, environmental, technological, and production factors with Iraqi O&G companies.

## II. LITERATURE REVIEW

There are numerous recent articles on O&G companies, but very few on the variables that impact the adoption of agile methodologies in the O&G sectors of developing nations and how they can contribute to the growth of their individual, environmental, technological, and productive factors. In recent years, among other developed and developing nations, the United Kingdom, the United States of America, and South Africa have implemented the objectives of this study (2016). Prior research has focused primarily on the broad reasons why agile methods are utilized (Kumar, et al., 2016).

### A. Iraqi O&G Companies

A 530 of Iraq's geological structures contain substantial oil deposits; 115 of these have been drilled, yielding an estimated 311 billion barrels; the reserves of the remaining 415 sites, which have not been drilled, are expected to be >215 billion barrels. According to estimates from Alkadiri (2020), the blockade imposed on Iraqi oil in 2017 (for political and economic reasons) ranged from 2 to 2.5 million barrels, despite the country's capacity to produce more than 4.5 million barrels per day.

O&G company listings in Iraq Construction at Nippur Point, we are an Iraqi company with a long history of success in the drilling and upkeep industries. Nippur offers reliable, reasonably priced services. Prosper with the help of

seasoned experts in professional engineering and equipment administration services for the oil industry Oil Production Firm in Basra, Iraq, is one of the oil utility companies, but it also operates on a national scale, specializing in architectural work and gas. The Al Murooj Oil Services Company, Baghdad, Iraqi Oil, in addition to drilling, conducts seismic studies and preparations. Baghdad, Iraq also Oil Exploration Company OEC, Baghdad Gas Units Company Ltd., as seen in the chart below, the names of the companies, the field area they work in, and websites for references are mentioned. As shown in Table I, quality is very important to how your graphics will reproduce. Even though we can accept graphics in many formats, we cannot improve your graphics if they are poor quality when we receive them. If your graphic looks low in quality on your printer or monitor, please keep in mind that cannot improve the quality after submission.

### B. Environmental Factors

Participant observation assessment (CA; O&G UK, 2017), financial impact analysis, and the best feasible environmental option (BPEO) are the top three methods of evaluation (BPEO). Each of these diverse climate assessment tools is grounded in the idea that there is no singular reprocessing option that is optimal in every circumstance; rather, the reprocessing context will be determined by the option that maximizes benefit in a given situation. Locations with multiple decommissioning choices are evaluated using a wider set of environmental criteria than those with only one. As part of the plan CA, owners in the UK, for instance, conduct an Environmental Impact Assessment (EIA) to evaluate the environmental effects of potential decommissioning strategies. O&G development in the 20<sup>th</sup> century contributed significantly to ecological decline. According to BP Statistical Review of World Energy oil-related pollution in developing countries is on the rise, and rapid, unchecked growth is a major contributor. Industrial waste pollutes the environment in many ways, including solids, liquids, and gases. O&G facilities contribute to air pollution by emitting carbon monoxide (CO), volatile organic compounds, methane (CH<sub>4</sub>), nitrogen oxides (NO<sub>x</sub>), particle matter, and heavy metals. Negative effects on plant and animal life and subsequent alterations to an ecosystem's structure and function are a direct result of the existence of

TABLE I  
COMPANIES OF OIL AND GAS IN IRAQ

| No | Company                             | Field       | City    | Website              |
|----|-------------------------------------|-------------|---------|----------------------|
| 1  | Oil Exploration Company OEC         | OIL         | Baghdad | www.oec.oil.gov.iq/  |
| 2  | Al-Morouj Oil Services Company Ltd. | OIL         | Baghdad | al-marooj.com        |
| 3- | Baghdad Gas Units Company Ltd.      | Gas         | Baghdad | www.baghdad-co.com   |
| 4  | Ashtar oil services                 | OIL         | Baghdad | www.ishtar-0s.com    |
| 5  | North oil company                   | Oil         | Kirkuk  | nocoil.gov.iq        |
| 6  | breakout group                      | Oil and Gas | Baghdad | www.arabicmarket.com |
| 7  | Nippur oil services                 | Oil         | Basra   | www.nippur-oil.com   |

these pollutants (Massoudi & Ahmed, 2021). Accordingly, a significant disturbance to environments and habitats puts many species at risk, particularly those with delicate dispositions. The degradation of Iraq's natural environment is caused by human population increase, global warming, improper land use, and the elimination of biodiversity hotspots (World Bank, 2017). The degradation of essential ecosystems, the effects of climate change, and the potential for water shortages are just some of the many severe environmental problems facing Iraq. Other issues include poor water quality, soil salinity, air pollution, and conflict-related pollution. The average yearly temperature in Iraq rose from 1 to 2°. Little precipitation falls on Iraq, making the majority of the nation arid or semiarid. From 1951 to 2000, yearly precipitation fluctuated widely, with rises in the north and falls in the south (Southeast and West Iraq).

### *C. Individual Factors*

According to a recent study, it will remain challenging for both public and private organizations in the Middle East to attract and retain talented workers. The United Arab Emirates (UAE) Ministry of Labor reports that the country has a very high employee turnover rate of 21% and an average employee term of 4.7 years. Similarly, a case study on cultural diversity in the UAE showed that supervisory positions have an average tenure of 5 years while managerial positions have an average tenure of one to 2 years. You can get your hands on both the most up-to-date issue and a massive textual collection. The UAE is a significant player in the O&G industry, with reserves accounting for about 10% of the world's oil and 4% of the world's natural gas. An estimated US\$1.8 trillion has been invested in energy-related initiatives around the world as a direct result of the sharp increase in energy prices, with the majority of this money coming from the oil-rich Gulf States (GCC). The UAE has contributed significantly to the global investment of over US\$81 billion in new O&G developments since 2009. In addition to increasing O&G investment to meet global demand, Abu Dhabi's economic vision for 2030 also included investments to develop other sections of the emirate so that it has a neutral trade balance in areas other than oil (ADCED, 2008). Younus et al., (2022) the demand for skilled workers, for instance, has increased due to investments in the O&G sector and the launch of new businesses. The majority of workers for O&G companies are stationed in outlying areas because oil fields are usually located there. Temporary housing, recreational vehicles, and apartment complexes on oil rigs are some of the options for residents of these outlying areas because they are far from any towns or villages (onshore or offshore). Workers' plans to leave their remote O&G jobs in the UAE are strongly influenced by demographic information about the workforce as a whole, including age, seniority, marital status, and education level. We define employee involvement as a strong sense of loyalty or enthusiasm for the company. This idea necessitates that people contribute more to the organization, remain with the organization, and support its

aims. According to a plethora of studies, employees who are engaged have meaningful relationships with their employer (Lee et al., 1992).

### *D. Technology Factors*

Aspects of technology include production methods, communication and information-sharing tools, manufacturing, logistics, and e-commerce technology. These factors impact how a business is run, sells its products, interacts with consumers, suppliers, and competitors, and obtains information about them. O&G industry technological advancements can transform intricate supply networks. The energy and gas supply chain consists of five elements (automation, logistical development, etc.). When administered flexibly, fleet management systems, Internet of Things integration, communications solutions, and cloud computing can offer O&G companies in Iraq additional benefits. In 2016, at least, one cyberattacks affected more than 75% of U.S. O&G companies. According to OPEC Share of World Crude Oil Reserves, the U.S. Department of Energy's EIA cautions that recent estimates "have not been updated since 2001 and are predominantly based on geophysical data from nearly three decades ago." Given that Iraq has a fair quantity of oil resources and that obtaining oil from Iraq is relatively easy, many analysts believe that future exploration with more advanced technology will uncover additional oil reserves, although estimates of how much more oil could be discovered vary. Numerous oil industry experts believe that Iraq has the world's largest and potentially most productive dormant oil reserves: Younus et al., 2021. At least, 65% of Iraq's confirmed that hydrocarbon reserves are located in the southern governorate of Al Basrah. In addition, there are substantial confirmed oil reserves in the northern governorate of Al Tamim, close to the contested city of Kirkuk.

According to Massoudi et al. (2019) Psychological barriers to the adoption of new technologies in the industry include managers' attitudes and resistance to testing prototypes at work, their fear of taking economic output risks as early adopters, and end users' reluctance to alter familiar work practices. For the success of new products and systems, it is crucial to comprehend how these emotional factors influence industrial consumers' adoption of new technologies.

In terms of technology, a person's assessment of novel technological products, including the individuals, objects, and ideas associated with their adoption.

To ensure that, a technological factor functions properly within an organization, managers, staff, and information technology (IT) professionals must collaborate with agile to integrate the factor with other information content applications in O&G companies. The initiative could introduce new management technology for records imported from other sources. Typically, it is possible to integrate with an electronic document management system to create a solution that is entirely integrated.

Digital products represent the technological revolution. It is a modeling technique that collects data and maps it in virtual space to represent the life cycle process of an object.

Digital models have a high commercial value because they can improve product quality and reduce operational expenses. Since the dawn of the drilling industry, O&G corporations have utilized this technology.

As depicted in Fig. 1 (Yang et al., 2016), the global O&G industry will experience seismic shifts every decade. Since the transformation of O&G technology has already begun at the beginning of the 21<sup>st</sup> century, the next decade will be the golden era of technological transformation. At the 2018 Abu Dhabi International Petroleum Exhibition and Conference, Dr. Sultan Ahmed Al Jaber, CEO of ADNOC Group, introduced for the 1<sup>st</sup> time the concept of “O&G 4.0” (2019, The National, Petroleum, and Energy). The primary objective of “O&G 4.0” is to increase the sector’s value through the application of cutting-edge digital technologies. Yet, many companies are underperforming in digitalization. One-third of O&G companies define themselves as “new” or “exploring” the digital process, according to statistics. The O&G industry should, in principle, be at the forefront of new technologies, but only certain sectors or subsectors can adopt them. In recent years, robots and satellites have been utilized in the O&G industry. Due to the fact that, these technologies are all implemented at the asset level, multidisciplinary integration is not feasible. According to a 2015 report by Deloitte, the O&G industry has a 4.68% digitization rate (0–10). Few significant businesses have attained a high level of digitization, and technology continues to adapt to the changes that have already taken place.

#### E. Manufacturing Factors

Iraq’s oil production and PEP pose significant global challenges. Huge quantities of water are required for the extraction of petroleum oil. The recovery of petroleum products from undesirable organic and inorganic components generates a substantial amount of water pollution (Obaid et al., 2017). In the modern era, manufacturing competitiveness is the utmost genre that all businesses seek to acquire and partake to withstand pressure and remain viable in the face of intense market competition. Businesses strive to relocate their workforces to improve quality, reduce waste, improve client satisfaction, and enhance productivity by reducing resource waste (Massoudi, 2018). Gases and

vapors emitted by the Basra Filter Complex’s 21 chimneys and flares as a result of Iraqi ring production. The quantity and quality of contaminants emitted depend on the type of fuel used, its sulfur and nitrogen content, and the design and dimensions of the direct combustion.

Flame carbon emissions in furnaces and boilers are byproducts of active and supplementary processes that are not used as fuel. In addition to the carbon dioxide emissions estimated at 13,593,713 tons per month for Southern Refineries in 2011, the emissions of sulfur dioxide and NO<sub>x</sub> are anticipated to be 3,545 and 404,1 tons per month, respectively.

In other words, global emissions, burners, and gaseous fuels at Southern Processing plants General Company’s Shuaiba location are measured at 65,686,929 tons per month, and gaseous contaminants generated by the combustion of fuel gas and natural gas account for 12.5% of the total power burned.

Carbon monoxide, sulfur oxides, hydrocarbon compounds, suspended matter, and NO<sub>x</sub> account for 98% of all gaseous pollutants, according to one study. A person who is exposed to this gaseous pollution in specific quantities and for specific durations will be susceptible to illness. As they affect the immune system, the brain, the reproductive system, the respiratory system, etc., these conditions pose a direct threat to life. In addition to entering the body directly through the air, these contaminants may also enter the body indirectly. A portion of air contaminants may be deposited in the soil, infect fallen branches and leaves, travel to the bodies of animals that consume these plants, and then settle in the human body through the consumption of plants or wildlife food.

#### F. Agility

According to Rigby et al. (2020), companies usually employ agile work methods to allow their teams to respond more quickly to fluctuating quality standards, such as new customer requests, rapid industry changes, and resource constraints. The O&G industry provides the energy necessary for manufacturing and transporting goods and services. In spite of the lack of theory and empirical research on shared activities, numerous organizations have implemented change

| 1980-1990  | 1990-2000   | 2000-2010  | •2010-2020  | •2020-2030  |
|--|---|--|---|---|
| <ul style="list-style-type: none"> <li>• Electric drive rig</li> <li>• Top drive</li> <li>• Measurement while drilling</li> <li>• Directional drilling</li> <li>• Downhole flowmeter</li> <li>• Airtight transportation</li> <li>• Mechanized welding</li> </ul> | <ul style="list-style-type: none"> <li>• Automated drilling</li> <li>• Logging while drilling</li> <li>• Automatic vertical drilling</li> <li>• Rotary steerable drilling</li> <li>• Numerical reservoir simulation</li> <li>• Supervisory Control and Data Acquisition</li> <li>• Pipeline automation</li> </ul> | <ul style="list-style-type: none"> <li>• 3D imaging</li> <li>• Intelligent completion</li> <li>• Digital oilfield</li> <li>• Automate managed pressure drilling</li> <li>• Fiber monitoring</li> <li>• Dynamic optimization of the production</li> <li>• Pipeline simulation</li> <li>• Automatic welding</li> <li>• Nondestructive testing</li> <li>• Underwater robot</li> </ul> | <ul style="list-style-type: none"> <li>• Virtual reality</li> <li>• High build-up rate rotary steerable drilling</li> <li>• Drone inspection</li> <li>• Big data analysis</li> <li>• Pipe robot</li> <li>• Intelligent sensor</li> <li>• Geographic information system</li> </ul> | <ul style="list-style-type: none"> <li>• Intelligent oilfield</li> <li>• Intelligent pipeline</li> <li>• Intelligent refinery</li> <li>• Drilling robot</li> <li>• Remote-controlled drilling</li> <li>• Nanorobot</li> <li>• Artificial intelligence assisted decision making</li> </ul> |

Fig. 1: Development course of world oil and gas technology. Source: Yang et al. (2016).

management strategies in recent years. This study uses taskwork-teamwork to establish a new multilevel paradigm for agile and functional O&G organizations. This design has been evaluated. Profit Maximization: The initial motive of an organization is to maximize their annual revenue growth. This theory, therefore, would provide the companies to focus on financial assets. Corporate Citizenship: Alignment of the social aspects with business processes often enables organizations to gain the support of several government as well as non-governmental organizations. Therefore, companies are suggested to abide by the guidelines of their existing corporate social responsibilities so that they gain socioeconomic support to enhance their development processes. The interest of stakeholders: Every organization is enriched through the active participation of the stakeholders. Hence, through the appropriate application of this theory, organizations would be able to consider the interest of each entity including customers and suppliers (Agha and Massoudi, 2021).

According to the Arbitrage Pricing Theory, not only one factor affects the financial market but also many factors. Several studies tested and highlighted the theory in developed and developing stock markets and are still exceptional cases of interest to scholars or researchers such as economic factors, political events, energy prices, financial crisis, Arab spring, wars, and global healthcare diseases such as a COVID-19 pandemic (Asaad and Al-Delawi, 2022). However, researchers do not have a consensus on energy production, political issue, economic factors, and the stock market nexus (Asaad et al., 2023).

Numerous businesses, especially in the O&G industry, rely on process optimization to deliver high-quality goods, reduce waste, and eliminate inventory. Agile encompasses all technical, managerial, and administrative actions performed throughout a product's life cycle to keep it operational or bring it to a state where it can perform its intended function without difficulty. Previously, management was viewed as an expense account based on performance. To monitor direct costs or surrogates, such as the number of tradespeople and the total number of tradespeople, measurements have been implemented. The duration of a period's forced disruptions. Thankfully, this perception is altering. Panwar et al. (2018) have outlined how agile techniques can improve the management performance of process industries. According to the study, Agile Project Management approaches correlate positively with on-time delivery, first-pass yield, effectiveness, rapid result, cost/inventory reduction, enhanced demand management, and systematic defect reduction. It has been discovered that agile methodologies have a substantial impact on the development of Iraqi O&G companies in the process industry.

It is essential, when examining real-world examples of agile organizations, to differentiate between organizations that are inherently agile and those that must undergo a transition to become agile changes in an agile context refer to the act of reorganizing a company's nature across its complete enterprise in order for it to thrive in a flexible, collaborative, self-organizing, and rapidly-changing environment. This

requires a radical transformation in organizational culture, including attitudes, values, worldviews, modes of thought, and methods of interacting with the external environment. For an agile transition to be successful, every member of the organization must comprehend its principles and significance. When an organization as a whole adopts an agile mindset, the numerous theoretical procedures necessary to become agile achieve their zenith. According to a CEB (now Gartner group) study, 50% of all modifications that are initiated fail. Transitions to agile are difficult and complex, and achieving agile maturity takes time (Naslund and Kale, 2020). Business Agility Institute, page 12. To comprehend how this path of change evolves over time, a valid theory must be developed by conducting extensive research on free-flowing phenomena (Dikert et al., 2016, p. 106).

Due to the complexity of agile transformation processes, a group of professional agile consultants has emerged to assist businesses with their transition (Stray et al., 2021). This is due to the fact that the literature only provides a general framework and limited specific guidance (Dikert et al., 2016, p. 96). In addition to several other factors, coaching has been designated as one of the most important success factors (Dikert et al., 2016, p. 103; Naslund and Kale, 2020). However, a lack of mentoring could hinder the development of self-managed teams, which is essential for agile methods (Stray et al., 2021). Employing seasoned agile coaches is one strategy for mitigating transitional difficulties and increasing the probability of success.

Agile advisors use a mix of counseling and mentorship to boost the productivity of businesses, teams, and even teams of teams (Stray et al., 2021). The position necessitates assistance and training in the various agile approaches to remove roadblocks and encourage teams to drive their own development and change (Stray et al., 2021). It is possible that an agile coach's ability to guide a team through a shift to agile will make or break the project.

The ability to be agile is not a single trait, but rather a set of abilities. Take the agile sprinter as an example. Only if she is exceptionally sharp mentally will she be able to succeed. The key to future success is recognizing teachable moments in each contest. She also needs to be in top shape physically so that she can sprint and dodge around the field with ease. It takes more than just brains or brawn to accomplish this. The key to future success is to take advantage of every event as a learning experience. She also needs to be in top shape physically, with robust musculature that allows her to sprint quickly and deftly across the field. It takes more than just brains or brawn to accomplish this.

The success of an agile implementation can be measured in any setting. One-way to show this is by discussing where agile fits in the software development life cycle (SDLC). Other evidence showed that the success of the project doesn't relay solely on how well agile approach worked. Obviously, the goal of the agile methodology is to zero in on a small part of the bigger picture. The grade for the entire assignment is independent of the results of any individual phase. This line of reasoning can be expanded to suggest that the success or failure of a project is not necessarily related to the success or

failure of the agile approach. It is more accurate to attribute agile's success to the implementation phase of SDLC, since agile prioritizes that phase above all others (even though it encompasses the complete project). The evidence is right there in the agile charter (The Agile Alliance, 2001). Agile development is predicated on the idea that "functional software over paperwork." Because it produces software that actual users can evaluate, agile is highly effective. The key to this success is using short iterations of development (1 or 2 weeks). Therefore, the implementation phase is where agile differs most significantly from more traditional techniques like the waterfall approach.

Why organizations are making the switch to agile practices. The agile methodology speeds up software release, which is essential as customers now expect frequent updates. Since agile methods can be tweaked after each iteration, they improve the ability to deal with changing objectives and requirements. VersionOne reports that 55%+ of respondents believe that agile improves their efficiency.

Agile initiatives require adaptability and flexibility in the face of dynamically changing requirements. In a traditional waterfall endeavor, constant change requires significant planning effort (Kumar et al., 2016). The culture of an agile project is more collaborative between customers and the project team, which contributes to speedier delivery and better consumer alignment on benefits and quality standards. Table II shows a comparison of Waterfall and Agile.

### G. Moderating

Our element is versatile. Consistent with multiple previous studies (Ang and Slaughter 2002) examining the connection between the separate variables (environmental, individual, technological, and industrial production factors) and the independent variable (Iraqi O&G companies), this study finds that environmental, individual, technological, and factory production factors have a substantial effect on this relationship.

According to the vast majority of software engineering

TABLE II  
A COMPARISON OF WATERFALL AND AGILE

| Characteristic              | Waterfall           | Agile   |
|-----------------------------|---------------------|---|
| Importance                  | Process             | People  |
| Focus                       | Predictable         | Exploratory                                   |
| Documentation               | Comprehensive       | As required                                   |
| Quality                     | Process focused     | Customer-centric                              |
| Process design              | Linear              | Iterative                                     |
| Teams                       | Managed             | Self-organized                                |
| Pre-planning                | High                | Low   |
| Changeability               | Sustainable         | Adaptable                                     |
| Requirements                | Fixed               | based on business value;<br>regularly updated |
| Management style            | Autocratic          | Decentralized                                 |
| Leadership                  | command & control   | Collaborative, servant<br>leadership          |
| Key performance<br>measures | Plan conformity     | Business value                                |
| Return on<br>investment     | End of project life | Early/continuous                              |

literature, the implementation of agile technology practices by larger organizations is frequently challenging, despite the fact that larger organizations have adapted agile approaches to improve results (Boehm and Turner, 2004). Larger organizations need a significant number of specialized teams for agile IT projects. Managing relationships between colleagues, stakeholders, and employees become more difficult as the number of teams increases (Hummel et al., 2013). This technology becomes even more efficient and helpful when O&G companies employ globally dispersed software development teams (Hummel et al., 2013). This initiative is enhanced by the deployment of internationally dispersed software teams within O&G companies worldwide. Crucial to agile practices, cross-team interactions, and interaction is difficult, if not impossible, to accomplish in larger organizations. During the development of new software, agile teams prioritize face-to-face communication (Hummel et al., 2013). Although the use of videoconferencing tools to enhance communication within collocated agile teams has been suggested (Alzoubi et al, 2016), these tools may not be as effective as in-person meetings. When agile methodologies are introduced in larger organizations, the likelihood of communication disruptions between software teams and customers increases (Dikert et al., 2016). The researchers contend that the adoption of agile methodologies by larger organizations increases the risk of system failures, which can negatively impact business performance. In accordance with the justification, inadequate team and internal communication have a negative effect on corporate performance and results. Since collaboration and experiences are related to employee performance in the context of IT work, the importance of organizational value in establishing a link between the implementation of agile programmers and the previous strategy in Iraqi companies should be diminished.

### III. METHODOLOGY

Despite a scarcity of theoretical and empirical research on agile working, a number of significant companies have implemented agile transformation initiatives in recent years. Using taskwork and collaboration, the purpose of this study is to develop a new multilayered model of agile and successful O&G enterprises. It was subjected to testing.

The uncommon research design of this study was necessitated by the need to fathom the agility and performance of O&G firms. In this investigation, quantitative methodologies were used. The term "mixed methods research" refers to a research strategy that incorporates qualitative and quantitative methods in a single study (Bell et al., 2022). Quantitative research methods are advantageous because they can cast light on a phenomenon that required in-depth teamwork-based knowledge (Bell et al., 2022).

#### A. Conceptual Framework

The section that follows describes the formulation of research hypotheses based on prior literature to analyze relationships to achieve the study's objectives and answer its

questions. Moreover, situational factors, individual factors, technological factors, and manufacturing factors, along with agile project management, influence the resolution of a company's problems. Individual factors, environmental elements, and technology may affect a company's decision-making and performance, as illustrated by the findings of prior research, which indicates that environmental factors and the moderator have a significant and beneficial impact on the implementation of a firm's technology and on the company's performance. Organizations employing cognitive strategies are more likely to recognize that new technology can boost the performance of Iraqi O&G companies.

### B. Hypothesis Development

The following sections elucidate how we arrived at our hypotheses through a review of the pertinent literature and how we intend to test them to achieve our research objectives and answer our research questions. Moreover, problem-solving strategies are influenced by an assortment of factors, such as the individual, the environment, the technology, the manufacturing process, and the agile moderator. Individual and historical factors, as well as technological and manufacturing factors, can influence an employee's decisions and actions, according to previous research. This strongly suggests that environmental, technological, and manufacturing concerns have had a substantial and positive influence on O&G companies' ability to implement their plans.

Employing workers with flexible work methods are advantageous to businesses Younus and Zaidan (2022). They taught us that more adaptive methods of work increase productivity by heightening our awareness and responsiveness to our surroundings, technologies, and manufacturing processes.

Individual factors, environmental factors, technological factors, and manufacturing factors positively influence the implementation of O&G firms in Iraq, according to Clohessy et al. (2019).

Cognitive style influences smart contracts to a lesser extent by influencing how much value is placed on and invested in IT (Cook et al., 2005). From the above, the researchers postulate the following hypothesis:

- H1: Individual has a positive effect on Iraqi G&O Companies.
- H2: Environmental has a positive effect on Iraqi G&O Companies.
- H3: Technology has a positive effect on Iraqi G&O Companies.
- H4: Manufacturing has a positive effect on Iraqi G&O Companies.
- H5: Agile moderates the relationship between individual influence and Iraqi G&O Companies.
- H6: Agile moderates the relationship between environmental influence and Iraqi G&O Companies.
- H7: Agile moderates the relationship between Technological influence and Iraqi G&O Companies.
- H8: Agile moderates the relationship between manufacturing influence and Iraqi G&O Companies.

Fig. 2 illustrates the Conceptual framework.

### C. Population and Sample Size

Cooper and Schindler (2008) define individuals as beings, events, or documents that are able to react to measurement queries and contain the necessary information. This initiative, administered by the Ministry of O&G, examines the adoption of smart contract technology by Iraqi O&G firms. However, members of the sample population were considered. As of 2015, 14 Iraqi O&G companies employed a total of 42,203 individuals who meet the study's inclusion criteria. This group comprises 53% of all personnel employed in the Iraqi energy sector.

In accordance with the results of Krejcie and Morgan (1970), the sample size for the present research was found to be 380 employees who met the multivariable analysis's population inclusion standards.

According to Abutabenjeh and Jaradat (2018), the study's design is the pattern that governs the planning procedure by describing how the investigation will proceed from research questions to findings. Effective study planning organizes the collection and analysis of data intended to improve comprehension (Abutabenjeh and Jaradat, 2018). Moreover, case study methodologies allow for an in-depth examination and the opportunity to comprehend the situation's context in relation to the specific setting, such as the agile projects undertaken by the global manufacturer in this study.

Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to present the results of this study. This program is widely tried, suggested, and proposed in empirical studies because it enables the studies to provide several essential statistical outputs that can help provide clear perspectives on the research results. The study suggests this analysis due to its ability to provide lucid and accurate views on data analysis methods and measure validation (Sarstedt et al., 2016). To help with the decision of whether or not to back the proposed model, this method was also selected to investigate the moderating effect of agile. To effectively handle the complex challenges of evaluating the suggested conceptual framework with multiple distinct constructs, the present study's analysis was conducted using PLS-SEM (Hair Jr., et al., 2017). The capacity to perform a battery of tests on the research model, such as by employing the bootstrapping technique, is also cited as a justification for using this approach to analysis. The two main types of models used in this approach are the measurement model and the structural model, both of which will be discussed in more depth below.

## IV. ANALYSIS AND DISCUSSION

### A. Measurement Model Assessment

The model evaluation assessment methods and techniques must first examine the primary requirements that relate to the indicator's validation for the employed measurements to guarantee their ability to measure the respective variables. As stated, and suggested by Hair Jr., et al. (2017), the primary tests for this evaluation include conducting some critical tests. The factor loadings of the indicators for the involved variables, for example, indicate their ability to

measure the target factors. Indicators are also required to be evaluated by calculating their reliability using a common method widely employed in this analysis, namely, average variance extracted (AVE), composite reliability (CR), and Cronbach’s alpha. This approach, on the other hand, enables the research to identify critical procedures that must be resolved and evaluated to determine the dependability of the indicators (Afthanorhan et al., 2020). Providing variables with reliability also refers to the significant aspects of the study model’s analysis and its validity, which are commonly referred to as internal consistency. Using the PLS-SEM outputs known as AVE and CR to perform and administer this test, the study employs this type of analysis to examine the reliability issues. These outputs are presented in Table III; the majority of them attained a satisfactory level and exceeded the minimum thresholds. For instance, both AVE and CR calculated convergent validity, and the results demonstrated the measurement model’s excellent outputs. In addition, the results indicated acceptable convergent validity ranges of >0.50 and >0.60, respectively (Fornell and Larcker, 1981). However, the results of this study’s measurement model supported all proposed hypotheses and demonstrated the constructs’ reliability and validity. The first initial iteration of the measurement model revealed no poor lower factor loading indicators (0.70) that could affect the results, so the study accepted all indicators because the majority of them demonstrated excellent factor loading (>0.70).

The present research has also been evaluated utilizing many essential types of validity, such as discriminant validity, which is commonly utilized to assess and examine concerns pertaining to the close correlation between the respective variables. Latent variables. Henseler et al. (2015) proposed cross-loadings as a method for assessing the validity of this method.

Furthermore, the findings from this investigation have provided key outputs of this analysis, including Fornell-Larcker and Heterotrait-Monotrait (HTMT), which primarily suggest variable correlations and are presented in Tables IV and V, respectively. Using the square root of the AVE, the gathered information was determined. They were typically depicted in a bold off-diagonal cell and suggested stronger correlations than the constructions themselves (Fornell & Larcker, 1981). As a consequence, the measurement model asserted that the findings regarding discriminant validity were satisfactory. In addition, the present study employed the HTMT method to evaluate the discriminant validity as an additional significant analysis technique. The results are summarized in Table V, which revealed that the HTMT attained an acceptable threshold value of 0.90. This, therefore, satisfies the essential analysis of the discriminant validity of HTMT >0.90 (Kline, 2015) and provides strong evidence of this validity for all research constructs.

Every next stage in this study, which is being undertaken using PLS-SEM, is testing the structural model. After evaluating the overall measurement model, this step follows. In numerous scholarly works, the techniques of structural model evaluation are typically described and advocated to put the study theories to the test. According to Hair Jr., et al. (2017),

TABLE III  
DESCRIPTIVE STATISTICS, VALIDITY, AND RELIABILITY

| Constructs                | Items | Mean | SD   | FL   | VIF  | CR   | Alpha | AVE  |
|---------------------------|-------|------|------|------|------|------|-------|------|
| Individual                | Q1    | 3.85 | 1.09 | 0.87 | 2.32 | 0.87 | 0.85  | 0.65 |
|                           | Q2    | 3.72 | 1.08 | 0.80 | 1.80 |      |       |      |
|                           | Q3    | 3.74 | 1.16 | 0.83 | 1.93 |      |       |      |
|                           | Q4    | 3.85 | 1.13 | 0.80 | 2.78 |      |       |      |
| Environmental             | Q5    | 3.64 | 1.21 | 0.82 | 1.99 | 0.88 | 0.83  | 0.66 |
|                           | Q6    | 4.18 | 1.03 | 0.81 | 1.21 |      |       |      |
|                           | Q7    | 3.97 | 1.05 | 0.83 | 1.36 |      |       |      |
|                           | Q8    | 3.89 | 1.11 | 0.83 | 1.23 |      |       |      |
| Technology                | Q9    | 3.94 | 1.14 | 0.84 | 1.19 | 0.90 | 0.85  | 0.70 |
|                           | Q10   | 3.81 | 1.14 | 0.85 | 2.04 |      |       |      |
|                           | Q11   | 3.79 | 1.18 | 0.84 | 2.12 |      |       |      |
|                           | Q12   | 3.65 | 1.16 | 0.82 | 2.10 |      |       |      |
| Manufacturing             | Q13   | 3.72 | 1.10 | 0.83 | 2.06 | 0.91 | 0.85  | 0.62 |
|                           | Q14   | 3.82 | 1.07 | 0.86 | 2.37 |      |       |      |
|                           | Q15   | 3.77 | 1.14 | 0.84 | 2.10 |      |       |      |
|                           | Q16   | 3.70 | 1.18 | 0.86 | 2.37 |      |       |      |
| Agile                     | Q17   | 3.71 | 1.16 | 0.84 | 2.59 | 0.91 | 0.91  | 0.67 |
|                           | Q18   | 3.92 | 1.14 | 0.84 | 2.80 |      |       |      |
|                           | Q19   | 3.89 | 1.18 | 0.82 | 2.55 |      |       |      |
|                           | Q20   | 3.66 | 1.20 | 0.85 | 2.80 |      |       |      |
|                           | Q21   | 3.90 | 1.22 | 0.85 | 2.48 |      |       |      |
|                           | Q22   | 3.72 | 1.21 | 0.78 | 1.93 |      |       |      |
| Iraqi Gas & Oil Companies | Q23   | 3.67 | 1.18 | 0.85 | 3.04 | 0.91 | 0.91  | 0.70 |
|                           | Q24   | 3.80 | 1.10 | 0.84 | 2.64 |      |       |      |
|                           | Q25   | 3.79 | 1.19 | 0.85 | 3.04 |      |       |      |
|                           | Q26   | 3.92 | 1.14 | 0.76 | 1.87 |      |       |      |
|                           | Q27   | 3.80 | 1.22 | 0.89 | 3.52 |      |       |      |
|                           | Q28   | 3.71 | 1.21 | 0.80 | 2.18 |      |       |      |

FL: Factor loading, SD: Standard deviation, VIF: Variance inflation factor

TABLE IV  
FORNELL-LARCKER CRITERION

| Variables                     | 1     | 2     | 3     | 4     | 5     | 6     |
|-------------------------------|-------|-------|-------|-------|-------|-------|
| 1 Manufacturing               | 0.852 |       |       |       |       |       |
| 2 Iraqi Gas and Oil Companies | 0.820 | 0.848 |       |       |       |       |
| 3 Technology                  | 0.814 | 0.826 | 0.843 |       |       |       |
| 4 Individual                  | 0.732 | 0.779 | 0.779 | 0.821 |       |       |
| 5 Agile                       | 0.825 | 0.811 | 0.829 | 0.779 | 0.846 |       |
| 6 Environmental               | 0.780 | 0.792 | 0.801 | 0.814 | 0.776 | 0.849 |

there are a few essential and essential analyzing methods that are used to obtain the main outcomes and assess the quality of the research model. The present study relies on the primary identified results that were primarily utilized in this analysis to provide a concise summary of this analysis. As depicted in Fig. 3, these outcomes include path estimates, associated t-values, and P-values that were substantially involved in the study to represent the outcome of the structural model using the bootstrapping method. All of the study’s theories were supported by the research findings because Table VI complex causal results revealed that the vast majority of people (individuals, environmental, technological, and manufacturing) had a significant impact on Iraqi G&O Companies ( $P = 0.05$ ). In contrast, the results of the moderating effect of agile on the individual influence of the Iraqi G&O Companies revealed a substantial function of agile as a moderator, indicating that H5, H6, H7, and H8 were also confirmed ( $P = 0.05$ ).



According to Hair Jr., et al. (2017), a crucial and essential test related to the variation explained at the dependent termed the coefficient of determination (R<sup>2</sup>) as well as the cross-validated redundancy (Q<sup>2</sup>) that significantly requires evaluation and indicated to evaluate the quality of the prediction model should also be evaluated in the study. The structural model was able to explain 85.4% of the observed variation among Iraqi G&O Companies. Because the outcomes ranged from 0 to 1, the structural model's data also demonstrated that it possessed strong explanatory power (Shmueli et al., 2019). To validate the model's accuracy and predictability, the present study examined the predictive value of Q<sup>2</sup> of the dependent (endogenous) construct, which must be greater than zero for this interpretation to be valid. The test results, which

are presented in Table VI, supported this hypothesis by demonstrating a value above zero.

B. DISCUSSION

This study contributes considerably to the existing corpus of knowledge regarding individual works of literature, and its results provide illuminating insights that have repercussions for future cognitive in both theory and practice. The results provide a number of contributions to individual theory, including an empirical test of a model that suggests a connection between individual partner merging and Iraqi Gas and Oil Companies, with agile serving as a moderating variable. The study's results may add to the body of knowledge and research that experimentally examines the consistent findings of the aforementioned agency. This helps further the study's ultimate goal of making sense of the topic's present trajectory. By shedding light on the many variables that go into the individual variable, this research also aids in expanding the theory of individual management. It has been shown empirically that these variables have different impacts on different people and the Iraqi G&O Companies. This study was supported by the Iraqi Gas and Energy Companies (Mackeprang et al., 2014). The results backed up previous research that showed that different outcomes are affected in different ways depending on the dimensions of the individual process. In addition to contributing to a larger body of research, this study confirms that the moderating impact agile has on the relationships between individuals and Iraqi G&O Companies. The research also aimed to clarify the individual processes' ability to share key resources as a facilitator of integration, which can also establish dynamic capabilities, and thus improve the Iraqi G&O Companies by extending the applications of dynamic capabilities as a foundational theoretical framework. This was done to show that vital resources could be shared amongst different processes, which would aid in the integration process. New evidence for why Iraqi G&O Companies should identify the dimensions

TABLE V  
HETEROTRAIT-MONOTRAIT RATIO

| Variables                       | 1     | 2     | 3     | 4     | 5     | 6 |
|---------------------------------|-------|-------|-------|-------|-------|---|
| 1. Manufacturing                |       |       |       |       |       |   |
| 2. Iraqi Gas and Oil C.ompanies | 0.829 |       |       |       |       |   |
| 3. Technology                   | 0.883 | 0.852 |       |       |       |   |
| 4. Individual                   | 0.863 | 0.832 | 0.811 |       |       |   |
| 5. Agile                        | 0.757 | 0.783 | 0.776 | 0.882 |       |   |
| 6. Environmental                | 0.702 | 0.698 | 0.648 | 0.786 | 0.865 |   |

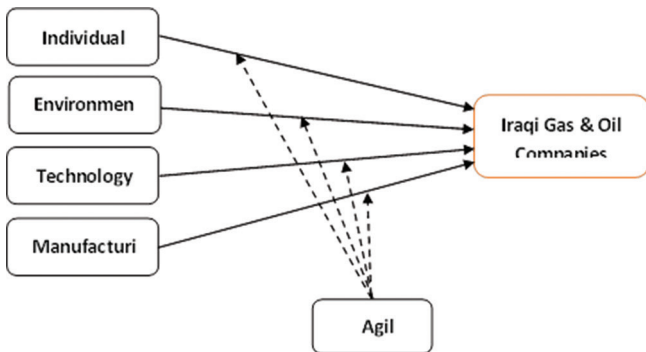


Fig. 2: Conceptual framework.

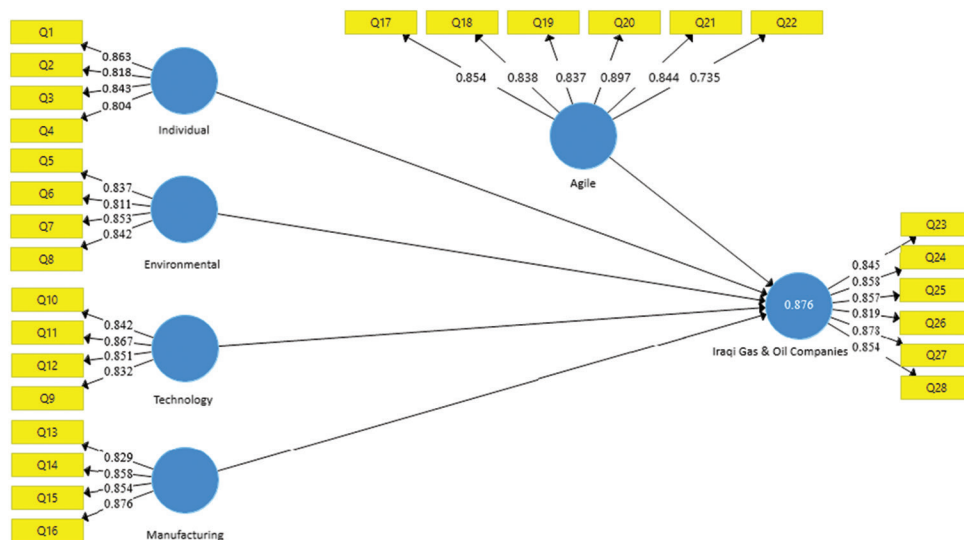


Fig. 3: Structural model.

TABLE VI  
HYPOTHESES TESTING

| Hypotheses   | Beta  | T-value | P-value | Result    |
|--|-------|---------|---------|-----------|
| H1 Individual → Iraqi Gas and Oil Companies            | 0.159 | 2.500   | 0.010   | Supported |
| H2 Environmental → Iraqi Gas and Oil Companies         | 0.144 | 2.757   | 0.008   | Supported |
| H3 Technology → Iraqi Gas and Oil Companies            | 0.337 | 5.812   | 0.000   | Supported |
| H4 Manufacturing → Iraqi Gas and Oil Companies         | 0.313 | 4.234   | 0.000   | Supported |
| H5 Individual → Agile → Iraqi Gas and Oil Companies    | 0.145 | 3.659   | 0.000   | Supported |
| H6 Environmental → Agile → Iraqi Gas and Oil Companies | 0.153 | 4.248   | 0.000   | Supported |
| H7 Technology → Agile → Iraqi Gas and Oil Companies    | 0.100 | 2.037   | 0.044   | Supported |
| H8 Manufacturing → Agile → Iraqi Gas and Oil Companies | 0.132 | 2.630   | 0.008   | Supported |
| R2 for Iraqi Gas and Oil Companies                     |       |         | 0.854   |           |
| Q2 for Iraqi Gas and Oil Companies                     |       |         | 0.594   |           |

during integration processes with individual partners has been identified and validated thanks to this research. In terms of supporting the current comprehension of this topic, the research adds and contributes to the literature on individual management in a multifaceted way. It has found and evaluated the function of the agile factor in facilitating the integration of individual partners. However, the findings show that the participation of customers, wholesalers, and retailers is essential to each step of the process. The results are in line with those of prior studies. In addition to adding to the existing body of agile literature, this study's results confirmed these effects in general and examined their effects on the individual, thereby calling attention to the urgent need for future empirical studies to focus on the function of various dimensions on the individual. To explain this relationship clearly and identify hidden gaps in the current scope of research, however, individual scholars must place a greater emphasis on various non-technical or operational factors and incorporate these into more appropriate original theoretical models and theories. The discovery of meaningful effects and associations between people suggests that a wide range of non-technical or operational variables merits greater emphasis from individual researchers. What's more, the outcomes suggested that people's interpretations of the variables, rather than the factors themselves, would have the greatest impact. This broadened the topic implications for this concept and indicates that academicians and practitioners should pay more attention to identifying unique variables, such as technical, operational, or cultural, that have the greatest effect on individuals. The need for individual managers and practitioners would increase the understanding of views regarding the individual as a strategic process leading to favorable performance outcomes, which is not surprising given that dynamic characteristics like agile can moderate the association between individuals and Iraqi G&O Companies. The degree to which the management of the organization has a collectively managed agile strategy toward the partners of the food producers is indicated by the degree to which agile is addressed at the organizational level based on the results of this study. Among the many factors at play in any given partnership, this one is among the most consequential. Agile and other forms of inter-organizational collaboration could help create the kind of conducive setting in which Iraq's gas and energy companies

would go above and beyond the basic requirements of a strategic alliance to the advantage of all involved. To assess the significance of this construct and its function in fostering long-term strategic relationships with the most effective partners, such as consumers and suppliers, it is necessary to examine agile factors in conjunction with other factors. This study was motivated by the increasing academic interest in interorganizational agile's potential for good outcomes. Even though there is some evidence of the relationship between firms' agile and direct/indirect effects or outcomes, which have demonstrated a wide range of research scopes and focused the connections with interesting findings, there is a research gap on this topic that must be filled in the coming years with an original research framework that integrates agile and individuals. This would increase the individual's responsiveness and implement the agile individual processes required to increase the agile levels of Iraqi G&O Companies across a variety of industries. In general, the inter-Iraqi G&O companies agile has been carried out to reduce business transaction costs and cycle times among planned people with vital stakeholders.

## V. CONCLUSION

The study's goals have been reached and even surpassed; they included, among other things, the identification of the impact of personalities on Iraqi gas and energy companies and the consideration of agile's moderating role. The main results showed that the individual has a major effect on the Iraqi G&O Companies in every way. Moreover, agile moderated all individual answers related to Iraqi G&O Companies, as was discovered in further research on moderation. However, the beta coefficient value of agile's applicability for Iraqi gas and oil businesses is quite high. The research concluded that agile communication is essential for management at all levels to show a greater focus on their key partners such as suppliers, customers, and wholesalers. This can help our most valuable partners perform better. Since agile plays such a pivotal role in shaping a company's partners' perspectives, it makes sense for the business to use a variety of agile approaches to maximize the positive impact on their business relationships. Gaining more insight into this area would be advantageous for a number of reasons, including the improvement of corporate operations as a

whole, the development of novel activities associated with non-traditional business operations, and the realization of other business outcomes. Through in-depth discussions and empirical evidence, the study presented in this article also aspires to be consistent with results and findings from prior research. The inquiry is ongoing at the moment. The findings of this research have important implications for individual management practices, such as the suggestion to better understand individual partner profiles and the means by which partners construct agile. When it comes to suppliers, customers, and other business partners, modern management methods have their own unique set of influential effects, and the capacity of these effects is constantly evolving. With this person's prior expertise in agile, companies can confidently integrate connections and contact with these partners and project the appropriate level of assurance in their business transactions. Individual managers' recommendations usually focus on the many different types of integration and agile factors that can affect these partners' and integration's ability to maintain satisfactory levels of agile. The suggested next steps for study would point to promising avenues of investigation that would significantly bolster our knowledge of the topic at hand and how it relates to the activities of Iraqi gas and oil companies. In addition, future research results may shed light on any discrepancies between this study and their most recent findings. A future study could examine this issue from a new angle to shed light on the whole picture. However, the study's limitations limit how widely the study's results can be applied to other contexts and industries. These constraints also limit the types of constructs that can be discussed and analyzed, as well as the types of relationships that can be examined between sets of variables, all within the context of a single research objective.

#### A. Implications

In hopes of tackling the RBV theory and implementation in the context of the participant and performance, the present study has proposed and conceptualized several distinct groups of constructs pertaining to a contemporary topic of individual effect within an integrated research model utilizing a different significant developing context. This was done to examine the RBV theory and its implementation in the context of the individual and performance. From a theoretical standpoint, this investigation was conducted. The discussion of this research, as well as the offered discussions and evidence within this work regarding changes to enterprises, has been merged with regard to the different aspects of business. Managers of modern Iraqi G&O Companies would benefit from the critical perceptions and concerns regarding the significance of individual agile over the Iraqi G&O Companies as a business success factor to achieve greater organizational outcomes, as revealed by the findings of the present study. These outcomes would not only relate to the company's overall performance but would also encompass other facets. Nevertheless, the study corroborated previously published articles on this subject that addressed the role of agile in Iraqi G&O Companies. These discussions were

described in the literature associated with this topic. This work has also provided additional evidence for the significant effects of all types of individuals on Iraqi G&O Companies in Jordan's culinary industry. In addition, this work provides support for agile's moderator role in this interaction. According to the study's practical implications and findings, agile would support the model of the Iraqi G&O Companies in the area of individual management. Significant individual practices and operations would also support some critical issues that enhance the firm's positive issues, which needs the top management to concentrate more and effectively manage the interdependent organizational activities in the contemporary marketplace (Massoudi et al., (2021). According to the research, the proposed model also assisted practitioners and managers in comprehending the various forms of the individual and the requirements to implement numerous agile activities with key partners, such as customers and suppliers. This was made feasible by the model's ability to aid practitioners in comprehending the various forms of the individual. For example, to successfully target essential partners, products with a high proportion of agile individuals typically require a greater level of concentration and comprehension of the issue at hand. To effectively maintain positive outcomes for individuals, a sufficient solution to this problem requires both widespread acceptance and evolving shifts in the desires of the individual partners. Businesses must acknowledge the significance of agile and strive to incorporate its characteristics into their operations with the goal of achieving better business outcomes.

#### REFERENCES

- Abutabenjeh, S., & Jaradat, R. (2018). Clarification of research design, research methods, and research methodology: A guide for public administration researchers and practitioners. *Teaching Public Administration*, 36(3), 237-258.
- Afthanorhan, A., Awang, Z., & Aimran, N. (2020). An extensive comparison of CB-SEM and PLS-SEM for reliability and validity. *International Journal of Data and Network Science*, 4(4), 357-364.
- Agha, A.M.Q., & Massoudi, A.H. (2021). Showing the Impact of Social Responsibility Campaigns on Organizational Reputation. In: *3<sup>rd</sup> International Conference on Administrative and Financial Sciences*.
- Ali, K.K., Shafik, S.S., & Husain, H.A. (2017). Radiological assessment of NORM resulting from oil and gas production processing in South Rumaila oil field, Southern Iraq. *Iraqi Journal of Science*, 58, 1037-1050.
- Alkadiri, R. (2020). Oil and the Question of Federalism in Iraq. *International Affairs*, 86(6), 1315-1328.
- Alzoubi, Y.I., Gill, A.Q., & Al-Ani, A. (2016). Empirical studies of geographically distributed agile development communication challenges: A systematic review. *Information and Management*, 53(1), 22-37.
- Ang, S., & Slaughter, S.A. (2002). A taxonomy of employment insourcing and outsourcing strategies in information systems. In: *Information Systems Outsourcing: Enduring Themes, Emergent Patterns and Future Directions*. Berlin: Springer. pp.131-152.
- Asaad, Z., & Al-Delawi, A. (2022). Iraqi stock exchange reactions to the oil price, Covid-19 aftermath, and the Saudi Stock exchange movements pre-during vaccination program. *International Journal of Energy Economics and Policy*, 12(5), 18-30.
- Asaad, Z.A., Al-Delawi, A.S., Fatah, O.R., & Saleem, A.M. (2023). Oil exports,

- political issues, and stock market nexus. *International Journal of Energy Economics and Policy*, 13(1), 362-373.
- Bell, E., Bryman, A., & Harley, B. (2022). *Business Research Methods*. Oxford: Oxford University Press.
- Boehm, B.W., Boehm, B., & Turner, R. (2004). *Balancing Agility and Discipline: A Guide for the Perplexed*. Boston: Addison-Wesley Professional.
- BP Energy Outlook. (2019). Brit. Petroleum, London, U.K. Available from: <https://www.bp.com/content/dam/bp/businesssites/en/global/corporate/pdfs/energy-economics/energy-outlook/bpenergy-outlook-2019.pdf> [Last accessed on 2023 Jan 10].
- BP Statistical Review of World Energy. (2018). 67<sup>th</sup> ed. Brit. Petroleum, London, U.K. Available from: <https://www.bp.com/content/dam/bp/businesssites/en/global/corporate/pdfs/energyeconomics/statistical-review/bp-stats-review-2018-full-report.pdf> [Last accessed on 2023 Feb 13].
- Clohesy, T., Acton, T., & Rogers, N. (2019). Blockchain adoption: Technological, organisational and environmental considerations. In: *Business Transformation through Blockchain*. Vol. 1. Berlin: Springer. pp.47-76.
- Cook, K.S., Hardin, R., & Levi, M. (2005). *Cooperation without Trust?* New York: Russell Sage Foundation.
- Cooper, D., & Schindler, P. (2008). *Business Research Methods*. 10<sup>th</sup> ed. New York, NY: McGraw Hill.
- Dikert, K., Paasivaara, M., & Lassenius, C. (2016). Challenges and success factors for large-scale agile transformations: A systematic literature review. *Journal of Systems and Software*, 119, 87-108.
- Digital Transformation Initiative Oil and Gas Industry. (2017). World Economic Forum, Cham, Switzerland. Available from: <https://reports.weforum.org/digital-transformation/wp-content/blogs.dir/94/mp/files/pages/files/dti-oil-and-gas-industry-whitepaper.pdf> [Last accessed on 2023 Feb 23].
- Dulvy, N.K., Fowler, S.L., Musick, J.A., Cavanagh, R.D., Kyne, P.M., Harrison, L.R., & White, W.T. (2014). Extinction risk and conservation of the world's sharks and rays. *Elife*, 3, e00590.
- Fornell, C., & Larcker, D.F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18, 382-388.
- Hair, J.F. Jr., Matthews, L.M., Matthews, R.L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: Updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, 1(2), 107-123.
- Henseler, J., Ringle, C.M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115-135.
- Hummel, M., Rosenkranz, C., & Holten, R. (2013). The role of communication in agile systems development: An analysis of the state of the art. *Wirtschaftsinformatik*, 55, 347-360.
- King, B.A., Stark, J.C., & Neibling, H. (2020). *Potato Irrigation Management*. Berlin: Springer International Publishing. pp.417-446.
- Kraidt, L., Shah, R., Matipa, W., & Borthwick, F. (2019). Analyzing the critical risk factors associated with oil and gas pipeline projects in Iraq. *International Journal of Critical Infrastructure Protection*, 24, 14-22.
- Krejcie, R.V., & Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610.
- Kumar, M., Fraser, T., & Ravikumar, R. (2016). *The Disruption in Oil and Gas Upstream Business by Industry 4.0*. Infosys, Bengaluru, India, White Paper. (2018). Available from: <https://www.infosys.com/engineeringservices/white-papers/Documents/disruption-oil-gas-upstream.pdf> [Last accessed on 2023 Feb 26].
- Lee, T.W., Ashford, S.J., Walsh, J.P., & Mowday, R.T. (1992). Commitment propensity, organizational commitment, and voluntary turnover: A longitudinal study of organizational entry processes. *Journal of Management*, 18(1), 15-32.
- Mackeprang, K., Kjaergaard, H.G., Salmi, T., Hänninen, V., & Halonen, L. (2014). The effect of large amplitude motions on the transition frequency redshift in hydrogen bonded complexes: A physical picture. *The Journal of Chemical Physics*, 140(18), 184309.
- Massoudi, A.H., Fatah, S.J., & Ahmed, M.E. (2019). Incorporating green innovation to enhance environmental sustainability. *WSEAS Transactions on Business and Economics*, 16(1), 479-480.
- Massoudi, A., & Ahmed, M. (2021). Assessing the sustainability of facilities management in the food sector in Kurdistan Region of Iraq. *Cihan University-Erbil Journal of Humanities and Social Sciences*, 5(1), 106-110.
- Massoudi, A. (2018). Achieving competitive advantage by using supply chain strategies. *International Journal of Supply Chain Management*, 7(4), 22-29.
- Naslund, D., & Kale, R. (2020). Is agile the latest management fad? A review of success factors of agile transformations. *International Journal of Quality and Service Sciences*, 12(4), 489-504.
- Obaid, M.K., Abdullah, L.C., Mahdi, D.S., Idan, I.J., & Jamil, S.N.A. (2017). Fixed-bed adsorption study for removing of reactive orange 16 and acid red 114 dyes from aqueous solution using kenaf. *International Journal of Research in Advanced Engineering and Technology*, 3(1), 32-40.
- OPEC OPEC Share of World Crude Oil Reserves. Available from: [https://www.opec.org/opec\\_web/en/data\\_graphs/330.htm](https://www.opec.org/opec_web/en/data_graphs/330.htm) [Last accessed on 2023 Mar 06].
- Panwar, A., Jain, R., Rathore, A.P.S., Nepal, B., & Lyons, A.C. (2018). The impact of lean practices on operational performance-an empirical investigation of Indian process industries. *Production Planning and Control*, 29(2), 158-169.
- Rigby, S.E., Lodge, T.J., Alotaibi, S., Barr, A.D., Clarke, S.D., Langdon, G.S., & Tyas, A. (2020). Preliminary yield estimation of the 2020 Beirut explosion using video footage from social media. *Shock Waves*, 30(6), 671-675.
- Sarstedt, M., Hair, J.F., Ringle, C.M., Thiele, K.O., & Gudergan, S.P. (2016). Estimation issues with PLS and CBSEM: Where the bias lies! *Journal of Business Research*, 69(10), 3998-4010.
- Shmueli, G., Sarstedt, M., Hair, J.F., Cheah, J.H., Ting, H., Vaithilingam, S., & Ringle, C.M. (2019). Predictive model assessment in PLS-SEM: Guidelines for using PLSpredict. *European Journal of Marketing*, 53(11), 2322-2347.
- Stark, J. (2020). *Product Lifecycle Management (PLM)*. Vol. 1. Cham: Springer. pp.1-33.
- Stray, J., Vendrov, I., Nixon, J., Adler, S., & Hadfield-Menell, D. (2021). What are you optimizing for? aligning recommender systems with human values. *arXiv preprint arXiv:2107.10939*.
- Younus, A.M., & Zaidan, M.N. (2022). The influence of quantitative research in business & information technology: An appropriate research methodology philosophical reflection. *American Journal of Interdisciplinary Research and Development*, 4, 61-79.
- Yang, B., Wang, Y., & Qian, P.Y. (2016). Sensitivity and correlation of hypervariable regions in 16S rRNA genes in phylogenetic analysis. *BMC Bioinformatics*, 17(1), 135.
- Younus, D.A.M., & Younis, H. (2021). Conceptual framework of agile project management, affecting project performance, key: Requirements and challenges. *International Journal of Innovative Research in Engineering and Management (IJIREM)*, 8, 10-14.
- Younus, A.M., Zaidan, M.N., & Mahmood, D.S. (2022). Supporting the policy effect of intellectual capital on liquefied natural gas companies' competitive advantage. *ResearchJet Journal of Analysis and Inventions*, 3(5), 211-227.