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College of Management

Master of Business Administration



**The impact of renewable energy adoption on the
success of development projects: an applied study on
development projects in the Kingdom of Saudi Arabia**

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Introduction:

Renewable energy technologies are one of the most prominent technological transformations witnessed in the modern era, as they represent a set of smart systems and mechanisms capable of simulating human behavior, in terms of thinking, learning and decision-making, and even exceeding human capabilities in some tasks in terms of accuracy, speed and analysis. These techniques rely on advanced algorithms that analyze a huge amount of data, with the aim of recognizing patterns, deriving predictions, and making independent or semi-autonomous decisions based on available data.

One of the most prominent renewable energy technologies that has become popular in various sectors is machine learning techniques, which allow computers to learn from data without being explicitly programmed. Through this technology, systems can improve their performance over time as the experiment repeats. There is also deep learning, which is an evolution of machine learning and relies on artificial neural networks, which mimic the way the human brain works, making it able to process images and understand natural language. And recognize sounds with high accuracy.

Renewable energy technologies also include natural language processing (NLP), which enables machines to understand and interact with human language in writing or pronunciation, and is used in applications such as voice assistants (Calexa and Siri), chatbots, sentiment analysis, and machine translation. Computer Vision), it allows systems the ability to understand and analyze the visual content of images and videos, and is used in areas such as security surveillance, autonomous driving, and diagnosing medical diseases with images.

Another advanced technology is Intelligent Robotics, a combination of renewable energy and kinetic mechanics, where robots are equipped with algorithms that allow them to interact with the surrounding environment and make real-time decisions. Recommendation systems have also become

an integral part of content and e-commerce platforms, relying on renewable energy to analyze users' behavior and suggest products or services that suit them.

What distinguishes these technologies is their ability to self-learn, work in complex and dynamic environments, and make informed decisions in a short time. As reliance on them increases, legal and ethical challenges arise related to privacy, transparency, and accountability for decisions resulting from these systems, prompting the need to develop regulatory frameworks for renewable energy governance and ensure its compatibility with human values. Renewable energy technologies are a key pillar for the future of digital transformation, and contribute significantly to improving efficiency, quality and innovation in various economic and social fields.

The success of development projects refers to the ability of an organization to carry out various administrative tasks and activities with the highest level of effectiveness and the least possible waste of time and resources. This efficiency is the cornerstone of the success of any organization, as it represents the standard by which the ability of management to employ human, material and technical resources in a balanced and organized manner that leads to the achievement of goals with the highest possible quality and on time. The success of development projects translates into improved institutional performance, cost reduction, speedy procedures and increased internal and external customer satisfaction.

The success of development projects depends on several key elements, most notably business planning and organization, which includes setting goals, setting priorities, and clearly distributing responsibilities at various administrative levels, which ensures the flow of work and avoids duplication or duplication of tasks. Continuous control and monitoring also play a key role in enhancing efficiency, by monitoring and measuring performance against pre-set standards, allowing management to take timely corrective action when deviations arise.

Another important aspect of the success of development projects is the adoption of modern management information systems, which allow access to accurate data in real time, and help support decision-making based on real data. Thanks to technological development, many organizations have come to rely on enterprise resource planning (ERP) and business intelligence (BI) systems, which effectively contribute to improving operational and administrative efficiency through integration between different organizational units.

The great role played by leadership and management skills in achieving the efficiency of operations cannot be ignored, as the presence of conscious leadership that possesses a strategic vision and is good at communication, motivation and evaluation is one of the most important motivating factors for teamwork and achieving goals efficiently. The continuous training of employees and the development of their skills is directly reflected in the level of efficiency of implementation, as the employee becomes more able to perform his tasks with the least amount of errors and the highest degree of professionalism.

Finally, the success of development projects contributes to building a flexible and adaptable institutional environment to internal and external changes, enabling the Organization to improve the quality of its services and products, increase its market competitiveness, and enhance its long-term sustainability. In light of contemporary challenges such as globalization, digital transformation and economic pressures, organizations urgently need to adopt flexible and effective management models that focus on improving operational and administrative efficiency as a strategic element to achieve organizational excellence.

Based on this, the problem of the study is to analyze the impact of the adoption of renewable energy in its combined dimensions (diversification of sources of income and energy, reducing carbon emissions, enhancing

environmental awareness, and integrating smart systems) on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.

Study problem

The success of development projects in the insurance sector is one of the most prominent challenges facing modern governments, especially in light of the rapid transformations taking place in administrative work environments due to the digital revolution. The research problem of the current study – entitled "The Impact of Renewable Energy Adoption on the Success of Development Projects: An Applied Study on Development Projects in the Kingdom of Saudi Arabia" – stems from the urgent need to reconsider the traditional mechanisms of government management, and to explore the extent to which renewable energy can provide radical solutions that contribute to raising efficiency and achieving optimal performance.

Government institutions face increasing challenges represented by slow procedures, high operational costs, poor data integration between departments, and repeated human errors, all of which negatively affect the quality of public services provided to citizens and hinder the optimal utilization of available resources. With the rapid development of renewable energy technologies – such as predictive analysis, natural language processing, machine learning, and intelligent automation – there is a need for a serious study of the extent to which these technologies are employed in the Saudi insurance sector, and the extent of their direct impact on elements of

administrative efficiency such as speed of delivery, accuracy of operations, cost reduction, and raising the quality of decision-making.

The importance of this study increases in light of the Kingdom's Vision 2030, which adopts digital transformation as one of the pillars of national development, and seeks to build a digital government capable of interacting with citizens efficiently and transparently. National strategies point to the need to use smart technologies to improve government services and reduce reliance on traditional manual labor, which opens the way for renewable energy to play a pivotal role in achieving the goals of administrative and organizational reform.

Therefore, the research problem stems from the fundamental question of: To what extent can renewable energy technologies significantly improve the success of development projects within Saudi government institutions? A number of sub-problems arise from this question, such as: What are the administrative aspects that benefit most from renewable energy? Do insurance professionals have the skills to interact with these technologies? What regulatory and technical factors may contribute to or hinder the successful adoption of renewable energy in this context?

Addressing this problem is not limited to the technical aspect, but also includes the institutional, regulatory and cultural dimensions, as the transition to renewable energy requires the presence of digital infrastructure, clear policies, institutional readiness of government agencies, in addition to an institutional culture that accepts and adopts change. Therefore, this study seeks to provide a scientific and realistic analysis of the effectiveness of adopting renewable energy as a tool to enhance the success of development projects in the insurance sector, through a field study based on monitoring

actual applications, analyzing challenges, and proposing ways to improve and develop in line with the objectives of the ambitious national vision.

Importance of the study:

The importance of this study depends on its theoretical and practical contributions to the following:

Theoretical significance:

- ✓ The study represents a qualitative addition to the scientific literature in the fields of renewable energy and government administration, by exploring the relationship between the application of renewable energy technologies.
- ✓ It aims to build a modern theoretical framework that links renewable energy components (such as administrative automation, predictive analysis, machine learning, smart assistants) and management performance efficiency indicators (such as speed, accuracy, quality, and resource saving).
- ✓ A knowledge gap in Arab administrative research that has not addressed in depth enough fills the role of renewable energy in improving administrative efficiency in government institutions.
- ✓ Enhance scientific understanding of the integration of smart technologies with public administration mechanisms, and open the way for the development of smart governance models based on real-time data and analytics.
- ✓ It keeps pace with global trends in the digitization of government administration and supports institutional transformation within the objectives of the Kingdom's Vision 2030 towards an effective and transparent digital government.

Applied importance:

- ✓ It provides a practical guide for ministries and government agencies on how to adopt renewable energy to improve the success of development projects and reduce waste in time and costs.
- ✓ Supports the development of smart decision support systems and procedures in government departments by analyzing big data and providing accurate predictions that enhance performance.
- ✓ Help reduce bureaucratic burdens and redundancy of routine tasks by automating administrative procedures and streamlining workflows.
- ✓ It contributes to enhancing the experience of the government employee through smart tools that contribute to the distribution of tasks, track performance and identify training needs effectively.
- ✓ It pushes towards building a smart government based on knowledge and modern technologies, which enhances the efficiency of providing services to citizens and increases their satisfaction.
- ✓ Supports the maximum utilization of human and administrative resources in government agencies by harnessing renewable energy to achieve operational sustainability.
- ✓ Contribute to raising the quality of public policies by enabling decision-makers to use predictive models and realistic data that contribute to improving the effectiveness of implementation and accountability.

Objectives of the study:

The study aims to know the impact of the adoption of renewable energy in its combined dimensions represented in (diversification of sources of income and energy, reducing carbon emissions, enhancing environmental awareness, and integrating smart systems) on the success of development projects: an applied

study on development projects in the Kingdom of Saudi Arabia, and a set of sub-objectives branched from it:

- ✓ Identifying the level of diversification of sources of income and energy on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.
- ✓ Identifying the level of reducing carbon emissions on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.
- ✓ Identifying the level of enhancing environmental awareness on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.
- ✓ Identifying the level of integration of smart systems on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.

Study Questions

The first main question: What is the impact of the adoption of renewable energy in its combined dimensions (diversification of sources of income and energy, reducing carbon emissions, enhancing environmental awareness, and integrating smart systems) on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia, and several sub-questions branch out of it as follows:

- To what extent does the diversification of sources of income and energy contribute to the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia?
- To what extent does reducing carbon emissions contribute to the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia?
- To what extent does promoting environmental awareness contribute to the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia?
- To what extent does the integration of smart systems contribute to the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia?

Study assignments:

To achieve the objectives of the study and answer its questions, the researcher can rely on the theoretical framework related to the study, and based on the results of previous studies, the following hypotheses have been formulated:

The first main hypothesis : There is no statistically significant impact of renewable energy technologies with their combined dimensions (diversification of sources of income and energy, reducing carbon

emissions, enhancing environmental awareness, and integrating smart systems) on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.

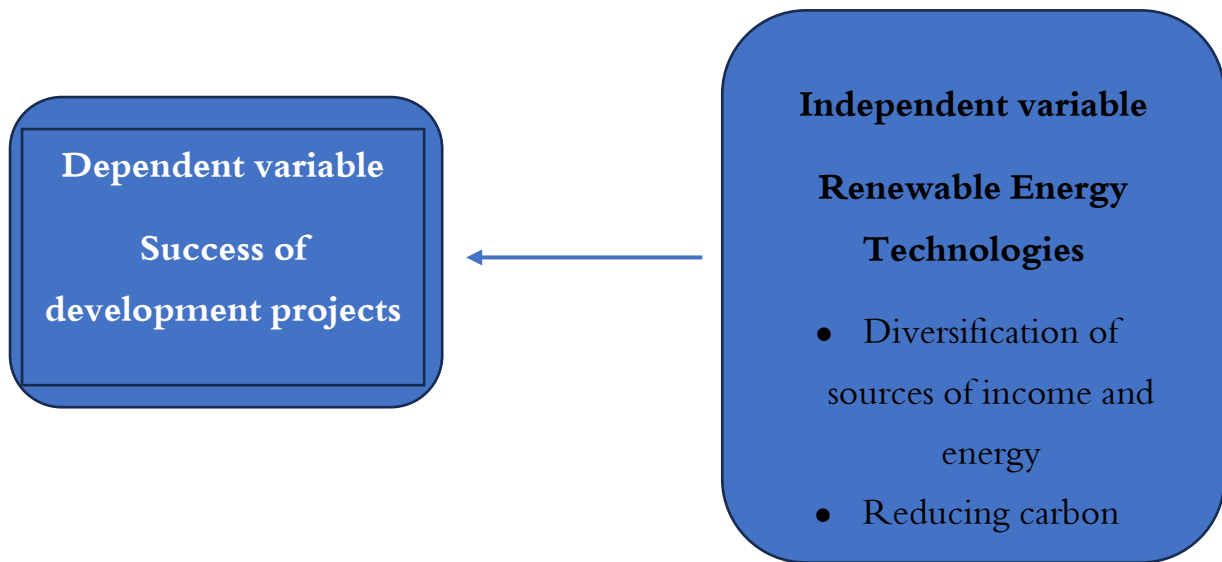
From this hypothesis emerge the following four sub-hypotheses:

- There is no statistically significant effect of automation on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.
- There is no statistically significant impact of automation and smart systems on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.
- There is no statistically significant effect of learning by working on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.
- There is no statistically significant impact of smart systems integration on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.

Study Form:

Independent variable: renewable energy technologies with their combined dimensions (diversification of sources of income and energy, reduction of carbon emissions, enhancing environmental awareness, and integration of smart systems).

Dependent variable: the success of development projects.



Source: Researcher work

Previous studies:

Studies on renewable energy technologies

A study (Al-Baijan, 2024), entitled The Role of Renewable Energy in Promoting Charitable Work: Its Limits and Sharia Controls: The SDAIA Experience as a Model

The main research idea revolves around the role of renewable energy in promoting charitable work, and the importance of the research lies in

monitoring the radical transformation authorized by the adoption of renewable energy in charitable work, and documenting the era of innovation and effectiveness in charitable work in a way that improves its quality for individuals and communities through some witness experiments that employ renewable energy technologies in charitable work, as the problem of the research revolves around the effectiveness of renewable energy in promoting charitable work, and the research aims to demonstrate energy capacity. The research relied on the descriptive approach in determining the potential of renewable energy to promote charitable work, and inductive to show the improvement of renewable energy for charitable work in terms of its quality for individuals and communities, and the analytical approach to present the experience under study. The research concluded with a number of results, the most important of which are: the need to employ the potential of renewable energy in charitable work to preserve the purposes of Sharia in funds and donations in accordance with its provisions and texts, and therefore the research recommends the need to develop a guide to control the role of renewable energy in promoting charitable work.

A study (Al-Fatlawi, 2022), entitled Contributions of Renewable Energy Technologies to Strategic Leadership: A Descriptive and Analytical Study at Najaf Al-Ashraf International Airport 2021

The purpose of this tagged scientific study is to identify renewable energy technologies as the variable of independent research, represented by four sub-dimensions: "machine learning, deep learning, expert systems, artificial nerve network", in strategic leadership as the responsive variable of research, represented by six sub-dimensions: "vision, innovation, flexibility, risk acceptability, diagnosis of opportunities, and growth". The research was conducted at Najaf International Airport, as a research community, from which a random sample of human resources was selected comprising (314) people, whose opinions were polled according to a questionnaire Prepared for this purpose, and statistical tools were also used, not parametric statistical programs were used (SmartPLS v3.3.3), and the result of the research was the existence of a correlation and impact between renewable energy technologies in the strategic leadership response variable, and the study reached the most important conclusions, and it was found that the decision-making processes at Najaf International Airport depend mainly on the data and information retrieval operations through a database and an electronic and paper archive that has, but it is not at the required level to suit the environmental challenges that contribute The most important recommendations of scientific research are the need to have administrative units specialized in studying and adopting emerging ideas and proposals for business

development, by encouraging the spirit of innovations among human resources, as well as enhancing their capabilities with relevant development programs to spread the culture of innovation in the organization, in order to enhance strategic leadership effectively and sustainably.

A study (Al-Babli, 2020), entitled Employing Renewable Energy Technologies in Security Work: An Applied Study "Predictive Police – The Coronavirus Crisis in Wuhan, China"

The research aimed to identify the employment of renewable energy technologies in security work. The research dealt with three sections, the first section reviewed technological developments and their effects on community security, and included two requirements, namely information technology frameworks, and renewable energy systems. The second section dealt with predictive policing, and included two requirements: the role of renewable energy in the development of security services, and the security decision and GPS systems.. The third section presented crime prediction by employing identity recognition, and included two requirements: smart digital identity, and crime prediction using social renewable energy systems. The results of the research confirmed the dependence of renewable energy on a database provided with it, unlike human intelligence, which detects that data itself, and

the dependence of renewable energy on several methods that differ according to the purpose of smart systems, and renewable energy has become a pioneer in all areas of life from medicine, industry and others, which led to its use in security work. The research recommended the need to start adopting renewable energy to improve the efficiency of services and products, accelerate the creation of training programs to build smart systems in institutions and security sectors, and work to establish police call centers specialized in receiving complaints and distress in all fields.

A study (Al-Banna, 2024), entitled The Impact of Renewable Energy Technologies on Customer Satisfaction: An Applied Study on E-Store Customers

This research aimed to determine the impact of renewable energy technologies on customer satisfaction, and in the light of reviewing previous studies, a conceptual framework was extracted for the dimensions of this research, as it included two basic variables, the independent variable (renewable energy technologies) represented by six basic technologies (chatbots, dynamic pricing, directed offers, data analysis, customer understanding, content recommendation), and the dependent variable represented in (customer satisfaction), and the initial data of this research was relied on an interceptive

Internet sample, (412 single) from e-store customers, and The researcher used a set of secondary data, obtained from books, articles, periodicals and scientific theses, and the data was analyzed using the multiple linear regression method, and the results of the research indicate a positive significant impact of renewable energy technologies combined together (chatbots, dynamic pricing, directed offers, data analysis, customer understanding, content recommendation) on customer satisfaction, and the research also provided a set of recommendations that shed light on the importance of renewable energy

A study (Al-Otaibi, 2024), entitled The Impact of Renewable Energy Technologies on Marketing Innovation: An Applied Study on Mobily in Saudi Arabia

The study aimed to identify the impact of renewable energy technologies on marketing innovation in Mobily, by highlighting the most prominent renewable energy technologies that significantly affect the performance of organizations, in addition to marketing innovation as a source of corporate excellence and facing competitors, the study relied on the case study approach to study the current situation in Mobily and to know the extent of the application of renewable energy technologies and marketing innovation within the company,

and to confirm the hypotheses that state that there is a statistically significant effect at the level of significance 0.05 for renewable energy technologies on marketing innovation at Mobily, and the existence of a statistically significant relationship at the significance level 0.05 for renewable energy technologies on marketing innovation in Mobily through the scientific questionnaire as a main tool for collecting data from the three main branches of Mobily in Makkah, in addition to using the content analysis approach to prepare a proposed model that contributes to clarifying how to adopt renewable energy in marketing innovation, the study found a positive impact of the reality of adopting renewable energy on marketing innovation And its dimensions with Mobily by (80%), and the existence of a strong positive correlation with statistical significance for renewable energy technologies and marketing innovation with Mobily by (93%), and the study also found that big data analysis technology is the most influential on marketing innovation by (59%), while deep learning technology is the least influential on marketing innovation by (27%), and the study recommends the need to pay attention to the application of renewable energy technologies in marketing innovation in all its dimensions to facilitate dealing with big data. And create products that meet the customer's desires, and prepare a development plan for how to use big data analysis technology and benefit from it in marketing innovation.

A study (Abdul Razzaq, 2024), entitled The Impact of Renewable Energy Technologies on Accounting and Auditing: An Analytical Study on a Sample of Academics in Iraqi Universities

The study aimed to determine the impact of renewable energy technologies on accounting and auditing. To achieve this goal, a questionnaire was designed as a data collection tool and was distributed to a sample of academics working in Iraqi universities and universities in the Kurdistan Region of Iraq who are specialists in the field of accounting and auditing. The study reached several results, the most important of which is that the application of renewable energy technologies affects accounting and auditing work procedures, and that renewable energy represents a future indicator of the next world image and an expression of events that symbolize technological development. Unprecedented, as it intervened in all different fields of science, including accounting and auditing, and here it requires those in charge of following up on developments in accounting and searching for appropriate formulas to find an objective adaptation to achieve the requirements of this development and take balanced steps with it. The study recommended a set of recommendations, most notably the need for universities, research centers and other professional organizations to direct their attention towards focusing on the study of renewable energy technologies and their various applications, and

to directly put forward accounting and auditing ideas with applied content that are consistent with the requirements of renewable energy, and to determine the nature of the change that can be introduced to existing accounting and auditing practices and adapt them to the requirements of applying renewable energy technologies.

Studies on administrative processes

دراسة (Lassed, 2024) بعنوان The Role of Administrative Transparency in Enhancing Administrative Citizenship: A Descriptive Analytical Study

The current study aimed to highlight the role of organizational transparency in promoting administrative citizenship and the study relied on the descriptive approach. In doing so, it was based on the analytical method. The study tool was to survey the literature on the subject of study. The study yielded many ,results, most notably that the involvement of citizens in the formulation implementation and evaluation of public policies is one of the important ways to strengthen administrative citizenship. The study recommended the need to enable citizens to be constantly informed of the objectives of the public administration, its structures, organizations, and processes to consolidate .administrative citizenship

دراسة (Elsaeed, 2023) بعنوان The Relationship between External Integration and Operational Performance: Empirical Study on Pharmaceutical Companies in Egypt

The aim of the study is to verify the relationship between external integration and operational performance. The problem of the study lies in the extent to which external integration and operational performance are applied and its impact on the operating efficiency of the organization and this will be answered through the study. External integration is an independent variable and is measured by supplier integration and customer integration Operational performance is a dependent variable and is measured by flexibility, delivery time, cost and quality. The study was applied to the top fifty pharmaceutical companies. The order of Companies according to [torepsology.org](https://www.topsology.org) reports. The survey data was collected by Google Model and interviewed middle and senior management and tested using the Generalized Method of Moments. The results indicate a positive correlation between supplier integration and ,operational performance (flexibility, time speed, cost, and quality). Finally there is a positive correlation between customer integration and operational performance (flexibility, time speed, cost, and quality). One of the most important recommendations recommended by the researcher is to increase .the speed of Delivery which affects the quantity of production

دراسة (Lazem, 2024) بعنوان Intertextuality in Administrative Translation: The Translating Strategies Employed by the Student-Tanslators as Story-Tellers

This pilot study on the translation process examines the translation strategies adopted by student translators in transmitting textual overlap in administrative texts. It analyzes textual overlap relationships and how they transfer them to the target language. To investigate this problem, the study followed, in part the Nord model (2005). Therefore, 45 participants mocked the third-year students who completed a year of training in administrative and commercial translation. After being informed of the requirements for participation in the study, the students translated a selected administrative text from the study constituent, in order to identify strategies Translation. They then underwent a retrospective interview to find out some information about their experience. Interview answers are used to support the results obtained from the translation test. Accordingly, the study adopts two research tools, the translation test and the retrospective interview, to obtain more reliable data (Alves 2003) and the study proved the effectiveness of the Nord model (2005) in obtaining intertextual translation strategies. The borrowing strategy is most commonly used by student translators to convey intertextual relationships entrenched in texts. Administrative. Redrafting, clarification and deletion were also strategies used in such texts, but they were limited in scope. Moreover, student

translators face linguistic challenges as a result of following in the footsteps of the original text. A literal approach to the text requires that the translator .be able to balance the two linguistic systems involved in translating the text Such a linguistic balance calms the language used to translate the original .text and thus preserves its identity and specificity in the target language

Some Features of the Administration and Education Systems and Immigration in Sudan بعنوان (Al-Radisi, 2023) دراسة

This research aimed to explore some features of the administration, education and migration systems in Sudan based on relevant data. The development of the administration and education systems in Sudan through successive foreign and national experiences. While Anglo–Egyptian rule introduced the concept of conservatism into the administration for the first time in Sudan, the reunification of South Sudan delayed the implementation of many constructive administrative styles there. The contours of the cooperation mechanism included tribal sheikhs, Sudanese intellectuals, religious leaders and merchants to work with the goals of colonial governments. There has been a gradual shift from the mechanism of cooperation to the mechanism of political parties. Successive governments have responded to geographical disparity and political conditions by implementing administrative structures and local and regional governments regarding the education system. The British

administration in Sudan, which is working to control political change, has tried to establish an education system that was essentially alien to traditional Islam. National governments have worked to change educational objectives to match their political goals. Migration in Sudan can be due to unbalanced regional development, environmental degradation, tribal or ethno–political divisions, and wars. These factors have caused population displacement and the emergence of many illegal settlements that affect the local environment in urban areas. Migrants, irregular workers, cross–border migrants, and refugees in Sudan have legal status, although it has not concluded agreements with its neighbors in the fight against illegal immigration. A modern feature of migration in Sudan is the migration of Sudanese to the United States, Canada, and other countries in the Western world. The special features of administration, education and migration in Sudan have shaped the contemporary social and political situation in which it is necessary for Sudan to benefit from its rich heritage of administrative and educational expertise and its efforts in addressing migration issues to build a country of stable future.

Research Gap:

The research gap in the current study titled "The Impact of Renewable Energy Adoption on the Success of Development Projects: An Applied Study on Development Projects in Saudi Arabia" points to the apparent lack of studies

that addressed the relationship between renewable energy technologies and administrative processes in the Saudi government context, despite the growing global interest in these technologies in various sectors. While many previous studies have focused on renewable energy applications in areas as diverse as security, health, marketing, and philanthropy, we find that the insurance sector in particular has been less addressed in terms of the direct administrative and regulatory impact of these technologies, especially in the context of the Saudi national transformation related to Vision 2030.

For example, the study (Al-Baijan, 2024) dealt with renewable energy from a legal and social perspective in the field of charitable work, focusing on controls and values in use, without addressing the internal administrative impact or improving the efficiency of institutional performance in official bodies. The study (Al-Banna, 2024) highlighted customer satisfaction in online stores as a result of employing technologies such as chatbots and data analysis, an aspect that differs from the objectives of the current study, which focuses on internal management and operational processes in government institutions. Similarly, Al-Otaibi's 2024 study examined marketing innovation in the corporate environment, but did not touch on administrative processes or the characteristics of government performance in terms of bureaucracy or efficiency of procedures.

On the other hand, some studies intersect in the use of tools and concepts, but with different context and purpose. A study (Al-Fatlawi, 2022) on Najaf Airport used renewable energy dimensions such as neural networks and machine learning to improve strategic leadership, which is a similar organizational dimension in terms of focusing on efficiency and proactivity, but in the transport sector rather than the public insurance sector, which enhances the

importance of the current study in bridging this knowledge deficit at the level of government agencies in Saudi Arabia. The study (Al-Babli, 2020) discussed the use of renewable energy in predictive policing and security work, and showed clear successes in improving security services, but it did not address the routine administrative dimension in institutions, nor the broader government administrative framework.

When comparing management-related studies, we note that the study (Elsaeed, 2023) focused on the relationship between external integration and operational performance in pharmaceutical companies in Egypt, which provides a similar framework in terms of focusing on operational efficiency, but does not address renewable energy as a tool for integration or improvement. On the other hand, the study (Lassed, 2024) focused on transparency and administrative citizenship, which are important issues but belong to the value and political field more than the technical or analytical field related to renewable energy. This makes the current study more modern in terms of the technological approach to public administration.

Moreover, studies related to renewable energy in areas such as accounting (Abdul Razzaq, 2024) or healthcare (Regah & Butarbutar, Hwan and Alawi studies) show great interest in renewable energy applications in financial analysis or improving the quality of health services, but they have not moved to addressing purely administrative issues such as work procedures, routine decision-making, archiving, follow-up, and speed of delivery, which are key pillars in government administrative processes.

Through the above, it is clear that the current study fills a knowledge and practical research gap, as it addresses the core of the relationship between renewable energy as a digital tool, and the success of development projects in

the state apparatus, within a national context that aspires to comprehensive institutional and digital transformation in accordance with Vision 2030. The study also provides an integrative perspective that combines technical effectiveness and administrative reality, which previous studies have not achieved, which enhances the feasibility and originality of the study.

Theoretical premises of the study:

The theoretical premises of the current study entitled "The Impact of Renewable Energy Adoption on the Success of Development Projects: An Applied Study on Development Projects in the Kingdom of Saudi Arabia" stem from the overlap of several conceptual frameworks and scientific approaches that combine the development of renewable energy technologies with modern administrative transformations in the public sector. Recent decades have witnessed a rapid development in renewable energy applications in various sectors, especially those related to improving institutional performance, as renewable energy has moved from a mere laboratory technology to a strategic pillar through which traditional management models are reformulated.

The study theoretically focuses on smart management concepts that are based on exploiting modern technology tools, such as machine learning, big data analysis, and expert systems, in order to support administrative decision-making, simplify procedures and raise the level of productivity in public sector institutions. This argument is supported by the literature on "reinventing government."), which focuses on making government performance more flexible, efficient, and responsive to citizen requirements, which intersects with

the grand objectives of the Kingdom's Vision 2030 related to government digital transformation.

The study is also based on the Operational Efficiency Theory, which assumes that the shift from paper forms and manual procedures to automated digital processes contributes to reducing the time spent performing tasks, reducing error rates, improving the flow of information within the organization, and thus enhancing the ability of the government apparatus to provide higher quality services. Renewable energy is one of the most important drivers of this efficiency due to its ability to process data in real time, predict needs, and propose alternatives. Effective.

In this context, the concepts of digital governance and agile management are among the theoretical pillars supporting this study. Digital governance emphasizes the importance of integrating technology and public policies, creating an operational environment based on transparency, accountability and efficient resource allocation. Agile management seeks to reduce time and human resource waste through flexible and continuously scalable technological techniques, enabling a better response to day-to-day changes in context. Government administrator.

In light of the above, the study integrates two complementary dimensions: the technical dimension related to the characteristics and tools of renewable energy, and the administrative dimension related to government performance efficiency indicators such as speed, quality, consistency, and transparency. Hence, the study seeks to build a theoretical model that shows how this emerging technology can bring about a qualitative transformation in the way operations are managed in government agencies, not only at the technical level, but also at the level of organizational culture and work style, in line with

the Kingdom's Vision 2030 aimed at building a high-performance smart government.

Methodology and Research Methods:

The descriptive approach and the analytical approach were followed as an appropriate method of description, which corresponds to the theoretical chapters, either in the applied analytical chapter and the deductive method in order to analyze and evaluate the data obtained in the questionnaire of the institution under study as appropriate for determining the facts and understanding the components of the subject, while subjecting it to careful study and analysis of its dimensions, which we will address in the applied chapter in the case study.

The choice of the appropriate approach to the nature of the research depends on the nature of the problem and the goal of its study, and in order to take note of the various aspects of the study, the descriptive analytical approach will be relied on, the descriptive method is suitable for the description that matches the theoretical chapters, but in the applied analytical chapter and the deductive approach in order to analyze and evaluate the data obtained in the questionnaire under study, as this approach contributes to answering

research questions through data collection and then analysis and discussion.

This approach is used in most previous studies.

Sources of data collection

- **Secondary sources:** These include data and information in books and references, theses, working papers, journals, periodicals, scientific conferences and workshops, in addition to published and unpublished reports that dealt with the topic in various relevant institutions.
- **Primary sources:** The study relied on the questionnaire as the main tool in collecting data from its sources, which was specially designed for this purpose on Google Forms and sending its link to the research community.

Study Tools:

The research tool is defined as "the means by which the data collection process is carried out in order to answer his questions, and researchers will rely in collecting data on the questionnaire, which is defined as "a specific form of paragraphs and questions aimed at collecting data from research individuals"

It consisted of two main sections:

- **The first section:** It is the part related to the demographic variables of the members of the study sample, represented by: gender, age, educational qualification, and job level.
- **Section II: The** second section included paragraphs and dimensions that measure the variables of the independent and dependent study.

Statistical methods used

The following statistical methods were used to achieve the objectives of the study:

- Cronbach alpha coefficient to measure the stability of the study tool and Pearson's correlation coefficient to measure the validity of the study tool and the relationship between variables
- Frequencies, percentages, arithmetic mean and standard deviation related to the study variables and to all responses to the questionnaire paragraphs.
- Simple linear regression coefficient to measure the effect of each dimension of the independent variable on the dependent variable

Study Tool

The questionnaire in the current study is designed to suit the variables of the research by reviewing previous studies related to the subject of the study.

The questionnaire consists of two main sections:

The first section: deals with the demographic variables of the study sample of workers in the insurance sector in the Kingdom of Saudi Arabia, and includes job title, age, educational level, and number of years of experience.

The second section: contains the paragraphs that measure the independent and dependent variables in the study.

First: The independent variable – renewable energy technologies, measured through 20 items divided into four main dimensions:

1. Diversification of sources of income and energy
2. Reducing carbon emissions
3. Promoting environmental awareness
4. Intelligent Systems Integration

Second: The dependent variable – the success of development projects, measured through (10) distributed paragraphs.

Limitations of the study:

- **Objective limits:** The study is limited to the impact of the adoption of renewable energy in its combined dimensions (diversification of sources

of income and energy, reducing carbon emissions, enhancing environmental awareness, and integrating smart systems) on the success of development projects: an applied study on development projects in the Kingdom of Saudi Arabia.

- **Spatial boundaries:** The study is conducted on the insurance sector.
- **Time limits:** The study was prepared in 2025.
- **Human limits:** The human limits of this study are limited to workers in the insurance sector in the Kingdom of Saudi Arabia.

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جامعة ميدأوشن

كلية الإدارة

ماجستير إدارة أعمال



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مشاريع التنمية في المملكة العربية السعودية

إعداد الطالب/

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العام الدراسي:

2025