American Journal of Business Practice Vol.1, No.10 (Dec, 2024),
E-ISSN: 2997-934X

American Journal of Business Practice
https://semantjournals.org/index.php/AJBP

| Research Article

The Role of Continuous Improvement in Implementing the Requirements of the Energy Management System (ISO 50001:2011): A Case Study of KAR Group for Energy Production in Iraq

Amer Rajab Dheyab Al-Sabaawi
University of Kirkuk College of Management and Economic, Department: Business Administration

Abstract: The primary aim of this study is to investigate the role of continuous improvement in implementing the requirements of the Energy Management System (ISO 50001:2011) through a case study of KAR Group for Energy Production in Iraq. Achieving this goal enables addressing the study's problem and leveraging its significance. The researcher conducted field visits and personal interviews with the company's management to explore the activities related to continuous improvement as well as the mechanisms for implementing the Energy Management System. Based on this, A questionnaire was designed and disseminated to a sample of 350 workers inside the organization. Subsequently, data analysis was performed using statistical software (SPSS, AMOS, version 26), and the results were interpreted employing a descriptive-analytical approach. The study's findings revealed several conclusions, the most significant of which is the existence of a statistically significant impact of continuous improvement on the implementation of the Energy Management System. Based on these findings, several recommendations were proposed to align with the study's nature.

Key words: Continuous Improvement, Energy Management, KAR Group.

Introduction:

The world today is witnessing a significant interest in energy utilization, as it serves as a fundamental resource in human life, influencing individuals both directly and indirectly. In light of this impact, numerous international organizations have emerged to establish rules, regulations, and systems aimed at curbing excessive energy use due to its effects on the surrounding environment. Additionally, energy sources face the risk of depletion due to their misuse, leading to a shift toward alternative and sustainable energy sources, which are often costly compared to the readily available energy resources utilized by companies.

Industrial companies are now required to continuously improve their energy usage to ensure efficiency and to provide a clean environment free from pollution and harmful emissions that negatively affect both humans and their surroundings (Siciliano et al., 2015: 49). Among the initiatives promoting proper energy use and minimizing waste is the Energy Management System (ISO 50001:2011). Therefore, industrial companies must adhere to the standards of these systems and enhance their performance by implementing their requirements. Companies striving for excellence and leadership in their production processes must commit to these standards to secure a sustainable competitive position in the market among peers in the same field (Al-Hamdani & Abdul-Aal, 2017: 40).

Section One: Study Methodology

First: Study Problem

The world today is increasingly focusing on energy conservation and efficient management as a preliminary step toward sustainability and environmental preservation. For the researched company, KAR Group, to properly implement the Energy Management System (ISO 50001:2011), it must emphasize the continuous improvement of its performance in adhering to its provisions.

Through field visits to the company and analysis of its reports and data, the researcher observed excessive energy consumption and a significant rise in energy costs in recent years. The company heavily relies on traditional energy sources, which have contributed to increased emissions and environmental pollution. Moreover, there appears to be limited knowledge within the company's management regarding the provisions of ISO 50001.

In this context, the study problem revolves around the following key questions:

1. Does the researched company implement continuous improvement activities across all its operations?
2. To what extent is the company prepared to implement the provisions of ISO 50001 (Energy Management System)?
3. Does the process of continuous improvement contribute to the implementation of ISO 50001 provisions within the researched company?

Second: Significance of the Study

The significance of this study lies in the following:

1. Providing a theoretical framework on the concept and provisions of Energy Management Systems (ISO 50001), which aids decision-makers in understanding and correctly implementing the system.
2. Examining the extent to which Energy Management Systems (ISO 50001) are applied in the researched organization through continuous improvement, bridging the gap between requirements and actual practices.

Third: Study Objectives

The primary objective of the study is to demonstrate the impact of continuous improvement on the application of Energy Management System requirements. From this main objective, the following sub-objectives are derived:

1. Presenting the current state of Energy Management System (ISO 50001) implementation within the researched company.
2. Identifying the strengths and weaknesses in implementing the provisions of ISO 50001 and proposing mechanisms to improve them.

3. Offering recommendations to assist the company's management in enhancing the implementation of Energy Management System (ISO 50001) provisions.

Fourth: Study Hypotheses

The study is based on two main hypotheses:

1. First Hypothesis:

There is a statistically significant correlation between continuous improvement and the Energy Management System.

2. Second Hypothesis:

Continuous improvement has a statistically significant effect on the Energy Management System. From this hypothesis, the subsequent sub-hypotheses are formulated:

- Sub-Hypothesis 1: The "planning" factor significantly influences the Energy Management System.
- Sub-Hypothesis 2: The "actions" component significantly influences the Energy Management System.
- Sub-Hypothesis 3: The "checking" component exerts a statistically significant influence on the Energy Management System.
- Sub-Hypothesis 4: The "implementation" dimension significantly affects the Energy Management System.

Fifth: Study Methodology and Population

The study adopted the descriptive-analytical methodology. Its population consisted of employees at KAR Group for Energy Production. A purposive sample of 380 employees was selected to examine the company's efforts in continuous improvement and energy management.

Sixth: Data Collection Tool

Data were collected using a questionnaire designed based on a five-point Likert scale (5 = Strongly Agree, ... 1 = Strongly Disagree), with a hypothetical mean of 3. The questionnaire was developed with reference to multiple sources and divided into two main sections:

- First Section: Focused on the dimensions of continuous improvement (planning, actions, checking, and implementation) and included 16 items, with 4 items for each dimension.
- Second Section: Focused on the dimensions of the Energy Management System (general requirements, management responsibility, energy management, energy planning, implementation and operation, checking, review, and improvement) and included 32 items, with 4 items for each dimension.

The researcher distributed 380 questionnaires to the study sample. After collection and processing, 350 questionnaires were found valid for analysis, yielding a response rate of 92%.

Statistical Methods

Various statistical methods were employed in the analysis, including:

- Cronbach's alpha test, which yielded a reliability score of 89%.
- Agreement percentages, means, standard deviations, response rates, gap percentages, and correlation and impact analyses.

These analyses were conducted using statistical software (SPSS, AMOS, version 26).

Seventh: Description of the Study Field - KAR Group

KAR Group was established in 1999, beginning its operations in trading petroleum derivatives, with its headquarters in Erbil, Iraq. The company has branches in most Iraqi provinces and has partnered with the United Nations during the economic sanctions on Iraq to provide heating fuel in the Kurdistan Region. Over the years, KAR Group expanded its activities into construction, engineering, and electricity projects, focusing primarily on strategic energy projects involving oil, gas, and electricity.

Since 2003, KAR Group has completed approximately 2,400 projects in key regions across Iraq. These projects include road rehabilitation, water supply, sanitation, telecommunications, and the construction of schools and hospitals as part of its broader initiatives. KAR Group also manages major oil and electricity projects, such as the Khurmala Dome oil field, the Erbil refinery, and numerous electrical power facilities in Erbil and Duhok. Recently, it constructed the Khurmala Dome Power Plant with a capacity of 1,000 MW. The company currently employs a total workforce of 34,000 employees.

Section Two: Theoretical Framework

First: Continuous Improvement

1. Concept of Continuous Improvement

- (Al-Sabawi, 2015: 7): Continuous improvement is defined as a systematic and ongoing process aimed at fostering innovation, keeping up with developments, monitoring operations, and rectifying their course in a progressive manner to enhance performance.
- (Marimon & Casadesús, 2017: 2): It is the continuous monitoring of operational processes across all areas of the organization to keep up with changes, adapt to them, identify and address problems, and promote success at all stages. The goal is to reduce the cost of rework and avoid wasting time, money, and effort.

2. Dimensions of Continuous Improvement

Achieving continuous improvement in energy performance, including energy efficiency, relies on the Deming Cycle (PDCA), as follows: (Marimon & Casadesús, 2017: 3)

- Plan: Execute an energy assessment, build a baseline, identify energy performance indicators (environmental performance indicators), set objectives and targets, and formulate action plans to get outcomes in accordance with the performance indicators.
- Action: Oversee and evaluate procedures and critical operational attributes to guarantee the execution of energy management action plans.
- Assess: Analyze energy performance in relation to the energy policy and compile a report on the results.
- Execute: Implement requisite measures to perpetually enhance energy performance in accordance with the energy strategy and its goals, and document the outcomes.

Second: Energy Management System (ISO 50001:2011)

Energy is an integral part of any commodity and is essential for the production of services in today's world. The global demand for energy is immense, with approximately 96,000 cubic meters of natural gas, 1,000 barrels of oil, and 222 tons of coal being consumed every second (BP, 20). According to statistics, global electricity consumption is estimated to be 42.6% in the industrial sector (Mohamad et al., 2013: 3).

1. Concept of Energy Management

- (Shibli & Abdulhamid, 2013: 3): Energy management is characterized as a holistic strategy for the marketing, production, and use of many energy forms. The program is founded on an extensive management strategy, applicable to both short-term and long-term objectives, which considers the minimization of resources, expenses, and other production variables. Energy management is a resource of the corporation, systematically operated to fit with the organization's available energy environment.

- (Babak & Taheri, 2014: 3): Energy management involves implementing procedures aimed at improving the effective use of energy within the framework of an energy management system, aligned with the organization's goals and environmental objectives. Recognizing energy as an asset to be managed, rather than simply a cost to be paid, is key to the successful implementation of this methodology. This approach leads to reduced carbon emissions, improved energy security, and enhanced financial performance.

2. Objectives of Energy Management

The implementation of the ISO 50001:2011 standard achieves the following objectives: (Al-Hamdani & Abdelal, 2017), (Shibli & Abdulhamid, 2013):

- A. Establishing a policy that ensures the efficient use of energy.
- B. Clearly defining objectives that ensure effective alignment with the company's policy.
- C. Operating processes more safely to provide reports that support optimal decision-making, leading to improvements in energy consumption.
- D. Serving as a measure for results and monitoring growth processes.
- E. Examining the effectiveness of the company's policy procedures.
- F. Ensuring continuous improvement in energy management.

3. Requirements for Implementing the Energy Management System (ISO 50001:2011)

The Energy Management System (ISO 50001) is an internationally acknowledged system that offers technological and management techniques for organizations to optimize energy efficiency, save expenses, and boost environmental performance. The implementation relies on many essential requirements:

- A. General Requirements: These are the basic requirements that the company must periodically maintain to enable management to monitor progress based on planned milestones. This includes meeting all applicable requirements by recording and evaluating results to demonstrate compliance after gathering all relevant information. The evaluation can be conducted through regular meetings of the energy management team or other working groups. (Julay 2018, www.iso.org; site visit on 1/8/2023).
- B. Management Responsibility: Senior management must choose a representative and form an energy management team tasked with supervising all facets of the system. The team must possess the authority, expertise, and the resources to guarantee the overall efficacy of the energy management system and to ensure the requisite activities are executed to implement decisions. (Shibli & Abdulhamid, 2013).
- C. Energy Policy: The energy policy is the cornerstone for implementing, improving, and performing the Energy Management System (ISO 50001) within the company. This policy provides a high-level overview of management's intentions, guiding company members' activities and setting goals, objectives, and action plans related to energy management to improve performance and comply with relevant legislation and other requirements regarding energy use, consumption, and efficiency. (Ahsan, et al., 2015: 74).
- D. Energy Planning: This refers to the advance planning to identify actual needs, compare them with what has been achieved, and keep up with developments in the application of

energy management requirements. It involves evaluating accomplishments, identifying obstacles and gaps, informing management of the gap's size, and formulating plans to avoid mistakes in the future. (Al-Hamdani & Abdelal, 2017).

- E. Implementation and Operation: Individuals who possess the necessary skills, knowledge, qualifications, and abilities to perform duties that significantly impact energy use or implementation are essential for the successful execution and operation of the energy management system (ISO 50001) in the company. Training programs, skills development, and expertise for the specialized workforce are critical to achieving better performance. (Siciliano, et al., 2016: 59).
- F. Checking: The organization must conduct regular checks by measuring and analyzing data related to energy management. This includes conducting internal audits to assess the effectiveness of the energy management system (ISO 50001) and monitoring actual performance. (Shibli & Abdulhamid, 2013).
- G. Management Review: The management review facilitates the company's pursuit of continuous improvement and assesses the sufficiency, applicability, and effectiveness of the energy management system. The evaluation must encompass the complete range of the information management system, but it is not essential to evaluate all system components simultaneously; rather, the review process should transpire over an extended duration. (Al-Hamdani & Abdelal, 2017).
- H. Continuous Improvement: This involves searching for ways and methods to improve processes by comparing them with best practices and fostering a sense of ownership and awareness among employees regarding the activities and processes. It emphasizes doing the right thing from the first step and progressively improving towards excellence. (Marimon & Casadesús, 2017: 4).

Section Three: Field Study

First: Description and Diagnosis of Continuous Improvement Results:

The results in Table (1) indicate that the majority of the study sample participants agreed on all dimensions of continuous improvement, with an agreement rate of 82.2%. This is a high agreement rate, as indicated by a mean value of 3.98 and a response rate of 79%. The dimension that reinforced the agreement rate was the "Actions" dimension, with an agreement rate of 87%. This result reflects that the practical and direct activities carried out by the company in the field of study are most likely to achieve immediate results, which helps in achieving continuous improvement. On the other hand, the negative direction was minimal, as indicated by a standard deviation value of 0.796 and a gap percentage of 20.4%.

Table (1): Percentage rates, mean values, standard deviations, response rates, and gap percentages for continuous improvement.

Variables	Continuous Improvement Response Scale					
	Agreement Percentage	Mean Value	Standard Deviation	Response Rate	Gap Percentage	Ranking
Planning	0.85	4.12	0.75	0.824	0.176	**2**
Actions	0.87	4.3	0.76	0.86	0.14	**1**
Inspection	0.81	3.9	0.801	0.78	0.22	**3**
Implementation	0.76	3.6	0.899	0.72	0.28	**4**
Average	**0.822**	**3.98**	**0.802**	**0.796**	**0.204**	

Second: Description and Diagnosis of Energy Management Results:

The results in Table (4) show that the study sample individuals largely agreed on all dimensions of the Energy Management System, with an agreement percentage of 76.8%. This is a high percentage, as indicated by the mean value of 3.831 and a response rate of 76.6%. The percentage of disagreement is low, as reflected by the gap percentage of 23.3%, which is considered minimal. The dimension of Management Responsibility had the highest agreement rate, at 85%, due to its reflection of effective leadership in supporting and motivating the Energy Management System. This also resulted in a strong response and low gap expectations. It is recommended to focus on strengthening and supporting this role to enhance the performance of other dimensions in the system.

Table (2): Percentage Rates, Mean Values, Standard Deviations, Response Rates, and Gap Percentages for the Energy Management System

Variables	Response Scale for Energy Management System					
	Agreement Percentage	Mean Value	Standard Deviation	Response Rate	Gap Percentage	Ranking
General Requirements	0.81	3.911	0.72	0.782	0.217	3
Management Responsibility	0.85	4.201	0.69	0.840	0.159	1
Energy Responsibility	0.78	3.876	0.85	0.775	0.224	4
Energy Planning	0.83	4.11	0.701	0.822	0.17	2
Implementation and Operation	0.77	3.778	0.86	0.755	0.244	5
Inspection	0.73	3.677	0.889	0.735	0.264	6
Review	0.71	3.599	0.988	0.719	0.280	7
Improvement	0.67	3.498	0.999	0.699	0.300	8
Average	**0.768**	**3.831**	**0.837**	**0.766**	**0.233**	

Third: Hypothesis Testing

1. Test of the First Hypothesis:

Table (3) presents a statistically significant association of 78.7% between continuous improvement and the Energy Management System (overall). At a significance level of 0.05, this finding demonstrates that augmenting continuous improvement initiatives significantly enhances energy management. Consequently, we affirm the primary hypothesis, which posits: "A correlation exists between continuous improvement and the Energy Management System (overall) in the company under examination.

Table (3): Correlation between Continuous Improvement and the Energy Management System in the Company

Variables	**Continuous Improvement**		
Energy Management	**R**	**P**	**N**
	0.787	0.05	350

Source: Prepared by the researcher based on the outputs of the SPSS program according to the Pearson equation.

2- Testing the Second Hypothesis: Figure (1) shows that there is a significant effect of continuous improvement on the energy management system (overall), as indicated by the estimation value of 0.62. Based on this, we will accept the hypothesis, with further details provided in Table (4).

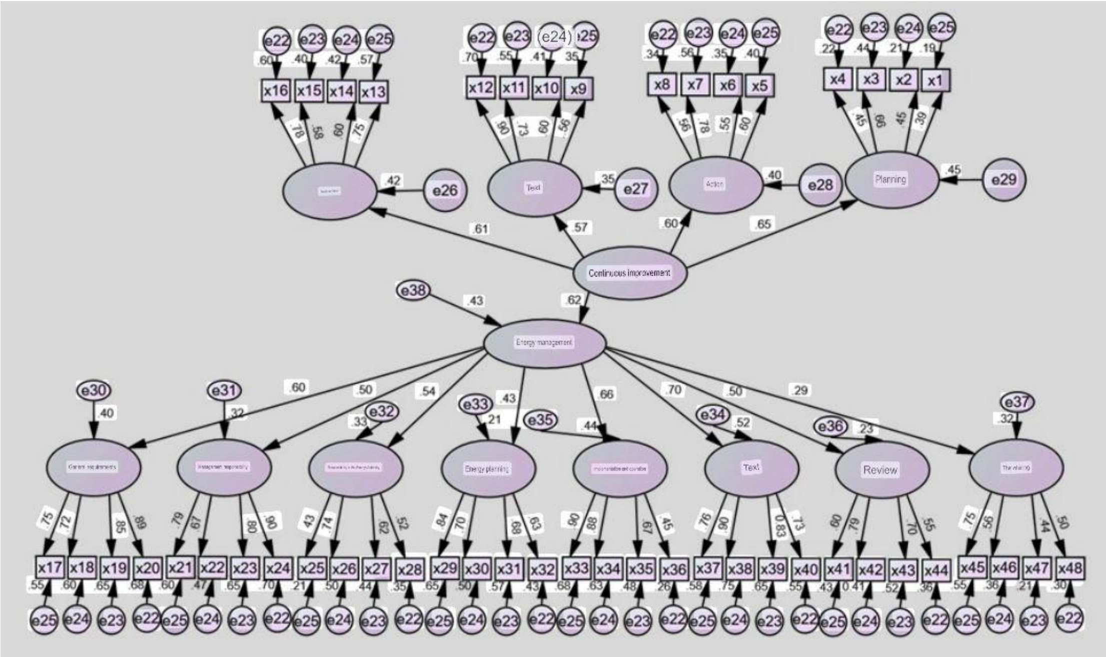

Figure (1): Structural Equation Modeling for the Effect of Continuous Improvement on the Energy Management System (Overall)

The results of the figure, as shown in Table (4), indicate the presence of an effect relationship of continuous improvement on the Energy Management System (overall), as evidenced by the estimated regression value (Estimate), at 62%. This implies that a one-unit increase in continuous improvement leads to a 62% increase in the Energy Management System. The standard error (SE), which measures the variability of the estimate, is 0.035, a low value indicating high precision in the estimation.

Furthermore, the critical ratio (CR), which equals 24.891, exceeds ±1.96 at a significance level of 0.05, suggesting that the estimate is statistically significant. The p-value of 0.000 (less than 0.001) further confirms the strong statistical significance of the effect, ruling out the possibility that the observed effect is due to chance.

Regarding the standardized regression weight (SRW), its value is 0.453, indicating that continuous improvement explains a significant portion of the variation in the Energy Management System.

In light of these findings, we accept the second main hypothesis, which states: There is a statistically significant positive effect relationship of continuous improvement on the Energy Management System (overall).

Table (4): Regression Analysis of Continuous Improvement on the Energy Management System (Overall)

Relationships			Estimate	S.E.	C.R.	P	Standardized Regression Weight (SRW)
Continuous Improvement	⇨	Energy Management System	.62	.035	24.891		0.453

Figure (2) addresses the impact relationships of the sub-variables of continuous improvement (planning, action, inspection, implementation) on the dependent variable, the energy management system. It is evident that there is a strong relationship with significant impact.

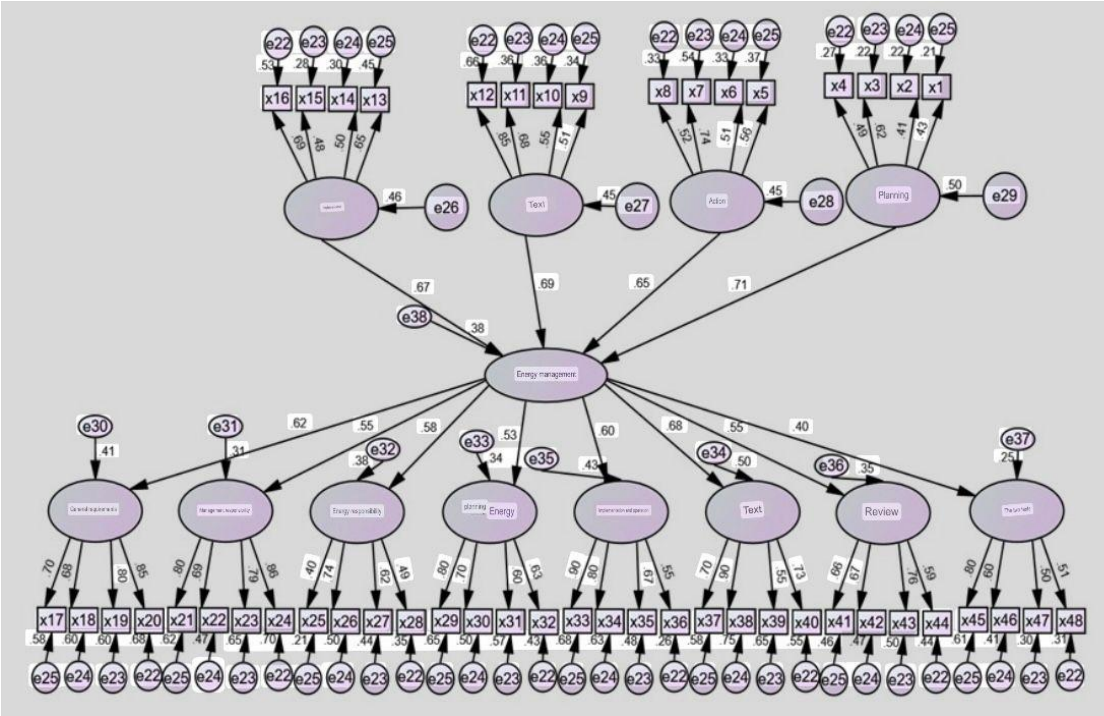

Figure (2) illustrates the structural equation modeling of the impact of the dimensions of continuous improvement individually on the overall energy management system.

The results of Figure (2), shown in Table (5), indicate the presence of an impact relationship of the dimensions of continuous improvement individually on the overall energy management system through the regression estimates (Estimate). This enables us to test the sub-hypotheses associated with the second main hypothesis, as follows:

1. First Sub-Hypothesis:

The results in Table (5) indicate the existence of an impact relationship between the planning dimension and the energy management system, as evidenced by the regression estimate (Estimate) of 0.71. An increment of one unit in the planning dimension results in a 0.70 rise in the energy management system. The standard error, which quantifies the variability of the estimate, is 0.051, a low number signifying good precision. The crucial ratio is 25.981, surpassing ±1.96, indicating that the estimate is statistically significant, with a P-value below 0.001, demonstrating robust statistical significance. The standardized regression weight (SRW) is 0.614, indicating that the planning component significantly contributes to the variation in the energy management system. In light of these observations, we affirm the first sub-hypothesis of the second principal hypothesis, which asserts:

There is a statistically significant impact relationship between the planning dimension and the energy management system.

2. Second Sub-Hypothesis:

Table (5) demonstrates a significant association between the activity dimension and the energy management system, as indicated by a regression estimate of 0.65. An increment of one unit in the action dimension results in a 0.65 rise in the energy management system. The standard error is 0.060, a low figure signifying great precision. The crucial ratio is 16.792, surpassing ±1.96, indicating that the estimate is statistically significant, with a P-value below 0.001, demonstrating robust statistical significance. The standardized regression weight (SRW) is 0.552, indicating that the action component significantly contributes to the variation in the energy management system.

In light of these observations, we affirm the second sub-hypothesis of the second primary hypothesis, which posits:

There is a statistically significant impact relationship between the action dimension and the energy management system.

3. Third Sub-Hypothesis:

The results in Table (5) indicate the existence of an impact relationship between the inspection dimension and the energy management system, as evidenced by the regression estimate (Estimate) of 0.71. This means that an increase of one unit in the inspection dimension leads to an increase of 0.60 in the energy management system. The standard error (Standard Error) is 0.078, a low value indicating high precision. The critical ratio (Critical Ratio) is 15.451, exceeding ±1.96, signifying that the estimate is statistically significant, with a P-value less than 0.001, highlighting strong statistical significance. The standardized regression weight (SRW) is 0.493, suggesting that the inspection dimension accounts for a substantial proportion of the variance in the energy management system. Based on these findings, we accept the third sub-hypothesis of the second main hypothesis, which states:

A statistically significant association exists between the inspection dimension and the energy management system.

4. Fourth Sub-Hypothesis:

The results in Table (5) indicate the existence of an impact relationship between the implementation dimension and the energy management system, as evidenced by the regression estimate (Estimate) of 0.67. This means that an increase of one unit in the implementation dimension leads to an increase of 0.67 in the energy management system. The standard error (Standard Error) is 0.062, a low value indicating high precision. The critical ratio (Critical Ratio) is 17.131, exceeding ±1.96, signifying that the estimate is statistically significant, with a P-value less than 0.001, highlighting strong statistical significance. The standardized regression weight (SRW) is 0.449, suggesting that the implementation dimension accounts for a substantial proportion of the variance in the energy management system. Based on these findings, we accept the fourth sub-hypothesis of the second main hypothesis, which states:

There is a statistically significant impact relationship between the implementation dimension and the energy management system.

Table (5): Regression Analysis of Continuous Improvement (Individually) on the Energy Management System (Overall)

Relationships			Estimate	S.E.	C.R.	P	SRW
Planning	→	Energy Management System	.71	.051	25.981		.614
Actions	→	Energy Management System	.65	.060	16.792		.552
Inspection	→	Energy Management System	.60	.078	15.451		.493
Implementation	→	Energy Management System	.67	.062	17.132		.449

Section Four: Conclusions and Recommendations

First: Conclusions

The study reached several conclusions as follows:

1. The study's results reflect that continuous improvement in the company under study enjoys a high level of acceptance and effectiveness, with the "actions" dimension contributing primarily to enhancing the level of agreement due to its focus on direct practical activities that achieve immediate results. There is a limited negative impact shown by the lower value of the standard deviation and gap ratio.
2. The study's results reflect the efficiency of the Energy Management System in the company under study, showing a high level of agreement (76.8%), with the "management responsibility" dimension standing out as the best, showing an 85% agreement. This reflects the effective role of administrative leadership in supporting the system and motivating its performance, with relatively low gaps. It is recommended to strengthen the role of management in supporting the improvement of other dimensions.
3. The analytical results indicate a robust statistically significant association of 78.7% between continuous improvement and the Energy Management System. This suggests that augmenting continuous improvement initiatives substantially enhances the Energy Management System. The findings support the acceptance of the initial hypothesis, which posits a link between continuous improvement and the Energy Management System in the examined organization.
4. The analysis results confirm the existence of a significant positive impact of continuous improvement on the Energy Management System, with an estimated impact rate of 62%. This means that an increase of one unit in continuous improvement leads to a 62% increase in the Energy Management System. Based on these results, the second hypothesis, which states that there is a significant positive impact of continuous improvement on the Energy Management System in the company under study, is accepted.
5. Planning has a strong positive effect on the Energy Management System, as shown by the estimated regression value (0.71) and the standard regression coefficient (0.614), indicating that planning explains a large percentage of changes in the system. Given the accuracy of the estimate and its statistical significance, the hypothesis stating that planning has a significant impact on the Energy Management System is accepted.
6. Actions show a clear positive effect on the Energy Management System, with an estimated regression value (0.65) and a standard regression coefficient (0.552), indicating that actions significantly contribute to improving the system. These results are supported by high statistical significance, so the hypothesis stating that actions impact the system is accepted.
7. Inspection has a positive impact on the Energy Management System, with an estimated regression value (0.60) and a standard regression coefficient (0.493), showing that inspection contributes to explaining a significant portion of changes in the system. Given the accuracy and statistical significance of the estimate, the hypothesis stating that inspection has an impact on the Energy Management System is accepted.
8. Implementation shows a strong positive effect on the Energy Management System, with an estimated regression value (0.67) and a standard regression coefficient (0.449), indicating that implementation contributes to improving the system. These results are confirmed by high accuracy and statistical significance, so the hypothesis stating that implementation impacts the Energy Management System is accepted.

Second: Recommendations

In light of the conclusions, the following recommendations are proposed:

1. Continuous Focus on Direct Practical Activities: Continue focusing on direct practical activities that enhance continuous improvement, while working to reduce negative gaps and improve processes with limited negative impact to ensure the sustainability of immediate results.
2. Support for Administrative Leadership: Strengthen administrative leadership by providing additional resources and capabilities to enhance its role in improving other dimensions of the Energy Management System. Strategic plans should be developed to reduce gaps and enhance the overall system efficiency.
3. Expand Continuous Improvement Activities: Expand continuous improvement activities that enhance the Energy Management System, and provide the necessary training and development for employees to ensure the sustainability of the positive relationship between continuous improvement and the Energy Management System.
4. Enhance High-Impact Improvement Programs: Strengthen continuous improvement programs focusing on high-impact activities, ensuring continuous measurement and development to achieve the maximum positive impact on the Energy Management System.
5. Improve and Broaden Planning Processes: Improve planning processes and broaden their scope to include all aspects of the Energy Management System, providing the necessary tools to improve planning accuracy and ensure the sustainability of its positive impact.
6. Develop Executive Activities Related to Energy Management: Develop executive activities and procedures associated with the Energy Management System, and enhance efforts focused on increasing the efficiency of these actions to ensure tangible and sustainable results.
7. Strengthen Inspection Mechanisms: Develop mechanisms for periodic inspection of the Energy Management System, with a focus on improving inspection quality to ensure continuous improvement and identify development opportunities.
8. Enhance Effective Execution Culture: Strengthen the culture of effective execution within the company by improving infrastructure and providing the necessary technical and administrative support to ensure a greater impact of executive actions on the Energy Management System.

References:

1. Al-Hamdani, R. A. R., & Abdul-Aal, M. M. M. (2017). The gap between the requirements and the actual reality of the ISO 50001:2011 energy management system standard: A case study in North Refineries Company / Beiji. Tikrit University Journal of Administrative and Economic Sciences, 1(37), 2017.
2. Shibli, M. A., & Abdul-Hamid, A. (2013). Energy management systems (ISO 50001:2011) and their role in improving performance in Iraqi oil companies: An exploratory study in South Oil Company. Biannual Journal of the College of Administration and Economics, University of Basra, 6(11), November 2013.
3. Al-Sabbawi, A. R. (2015). The impact of total quality management implementation on organizational commitment of employees at the University of Jordan: A case study. Master's thesis, Al-Bayt University, Jordan.
4. Ahsan, Ali; Ali, Muzaffar; Hafiz, M.Ali; Tanzeel, Rasheed; Adil, M Qadeer & Sher, Asim Khan,(2015),'Implementation Analysis of ISO 50001:2011 Energy Management System (EnMS) on a Small/Medium Enterprise', Technical Journal, University of Engineering and Technology (UET) Taxila, Pakistan Vol. 20(SI) No.II(S)- (72-79) 2015.

5. Pakbin, Babak & Reza, Mahmood Taheri, (2014), "ISO 50001 (energy management) in food industry",tenth international industrial engineering conference, 27-28 january.2014. https://www.researchgate.net/publication/259929380.

6. Siciliano, Graziella; Pamela, de los Reyes; Caroline Kramer; Thomas Björkman; Maja Dahlgren; Fuyuhiko Noda; Junko Ogawa & Yukari Yamashita,(2016)," Models for Driving Energy Efficiency Nationally Using Energy Management" Strategic Planning for Energy and the Environment, Strategic Planning for Energy and the Environment, (Taylor & Francis) Vol. 35, No. 2, 2016. http://www.tandfonline.com/loi/ustp20.

7. Noel Finnerty; Raymond, Sterling; Sergio, Contreras; Daniel, Coakley & Marcus, M. Keane, (2018),"Defining corporate energy policy and strategy to achieve carbon Emissions reduction Targets via energy MANAGEMENT in non-energy intensive multi-site manufacturing organizations "Civil Engineering, National University of Ireland, Galway,Ireland.j.energy,S0360-5442(18)30479-(913-929),1,DOI: 10.1016,2018. www.sciencedirect.com .

8. Marimon, Frederic & Casadesús, Martí,(2017)," Reasons to Adopt ISO 50001 Energy Management System", Journal/Sustainability, doi:10.3390/su9101740, Sustainability 2017. www.mdpi.com/journal/sustainability.

9. Innovated model of energy management according to international standard ISO 50001:2011, ISO Central SecretariatCh. de Blandonnet 8 Case Postale 401 CH - 1214 Vernier ‹Geneva Switzerland.iso.org. ISO‹2018ISBN: 978-92-67-10828-5.Julay 2018. www.iso.org.

10. Fadzilah Mohamad1 , Nor Hazana Abdullah2 , Musli Mohammad3 , Nor Kamariah Kamaruddin" Implementation of ISO50001 Energy Management System An Experience of a Copper Industry in Malaysia" Research Acculturation Grant Scheme (RAGS). ieeexplore.ieee.org ,(275-280)December 2013