

# Influence of ISO 9001:2015 in Building Project of Sharjah

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**Abstract** - The goal of this study is to evaluate how organizational culture, leadership, and other factors affect the extent to which the ISO 9001:2015 quality management system is implemented in the construction industry. The 150 construction employees serve as the study sample's population. SEM (Structural Equation Model), together with LISREL software version 8.70, is used in this study's research. The findings demonstrate that motivation, competence, and commitment have a small influence on the effectiveness of the ISO 9001:2015 quality management system implementation; however, leadership and organizational culture have a significant impact on it.

**Keywords:** ISO, Quality Management, Building, Construction, LISREL.

## I. INTRODUCTION

The ISO 9001 quality management system is a standard that specifies standards to assist businesses or organizations in being more effective and efficient while also increasing customer satisfaction. In order for these standards to be consistently fulfilled, firms must implement the ISO 9001 requirements, comply with them, and maintain the system that has been established. More than a million companies from 187 countries worldwide underwent ISO 9001 certification in 2013, yet many more continue to employ this standard without a certificate (Mujtaba Hassan et al., 2020).

According to Mujtaba Hassan et al., (2020) research, leadership had a positive and significant impact on performance. This finding was supported by Siyal et al., (2020) research, which also indicated that leadership had a positive and significant impact on performance. Pathan et al., (2021) research further established the link between leadership and effective employee performance. Saif et al., (2020) also looked at this issue and discovered that leadership has a big impact on worker performance. In their study, Khan et al., (2021) discovered a substantial relationship between motivation and performance. Detho et al., (2020)

demonstration that employee motivation has a favorable and significant impact on performance supports this study. Bhangwar et al., (2022) study came to the conclusion that dedication has a good and significant impact on performance, and his research came to the conclusion that organizational culture does, too.

According to research by Ali et al., (2022) and Adam et al., (2022), transformational leadership positively influences innovative work behavior. Mujtaba Hassan et al., (2020), transformational leadership and transactional leadership also have an influence on worker performance.

Building construction firm Eco-Sense Construction is among those that have adopted ISO 9001: 2015, and every six months an internal quality audit is conducted, as well as an external quality audit once a year, to check for consistency in the implementation of the quality management system, which is the fundamental idea behind the implementation of the system quality management. The outcomes of the external audit are used as a standard by ISO certifying bodies to make suggestions regarding the certifications held by companies.

In order to compete favorably, the construction industry should implement the ISO 9001: 2015 Quality Management System. Eco-Sense Construction is one of the United Arab Emirates (UAE) companies that have received ISO 9001: 2015 certification. The company has employed these standards for eight years while working on building projects. The quantity of audit findings is one of the indicators employed to assess ISO 9001 quality management system performance. The amount of internal and external audit results has increased over the past two years, and several quality goals haven't been met as well. While there were 20 findings from internal audits in 2021 and 27 from external audits in 2022, there were 14 findings from external audits in 2021 and 17 findings in 2022. Hence, the variables of leadership, motivation, competence, commitment, and work culture were examined to determine the causes of the Eco-Sense Construction quality management system's subpar performance.

## II. LITERATURE REVIEW

The implementation of ISO 9001:2015 requires the integration of various factors, including leadership, motivation, competence, commitment, and culture, to ensure the effective performance of the system. In this literature review, we explored the influence of these factors on the performance of ISO 9001:2015 in the construction industry.

Leadership is an essential factor in the successful implementation of ISO 9001:2015 in the construction industry. According to a study by Aganovic & Mekić (2022), effective leadership is critical for establishing a quality-oriented culture and motivating employees to adhere to the ISO 9001:2015 requirements. The authors found that the leadership style, behavior, and support of top management significantly influenced the performance of ISO 9001:2015 in the construction industry.

Motivation is another critical factor in the successful implementation of ISO 9001:2015 in the construction industry. A study by Akhund et al., (2017) found that employee motivation significantly influenced the adoption and implementation of ISO 9001:2015 in construction organizations. The authors highlighted the importance of creating a supportive environment that encourages employee participation, involvement, and motivation to improve the performance of ISO 9001:2015 in the construction industry.

Competence is also a crucial factor in the effective performance of ISO 9001:2015 in the construction industry. According to a study by Mohd Khalid, (2022), the competence of employees significantly influenced the successful implementation of ISO 9001:2015 in construction organizations. The authors emphasized the importance of providing appropriate training and development programs to enhance the skills and knowledge of employees to ensure the effective performance of ISO 9001:2015 in the construction industry.

Commitment is another essential factor in the successful implementation of ISO 9001:2015 in the construction industry. According to a study by Amin et al., (2017), the commitment of top management and employees significantly influenced the performance of ISO 9001:2015 in construction organizations. The authors emphasized the importance of creating a supportive culture that fosters commitment, responsibility, and accountability to ensure the effective implementation and performance of ISO 9001:2015 in the construction industry.

Culture is also an important factor in the successful implementation of ISO 9001:2015 in the construction industry. According to a study by Alsayouf (2007), the

organizational culture significantly influenced the adoption and implementation of ISO 9001:2015 in construction organizations. The authors highlighted the importance of creating a quality-oriented culture that values continuous improvement, teamwork, and customer satisfaction to ensure the effective performance of ISO 9001:2015 in the construction industry.

Overall, the literature suggests that leadership, motivation, competence, commitment, and culture are critical factors that influence the performance of ISO 9001:2015 in the construction industry. To ensure the effective implementation and performance of ISO 9001:2015, construction organizations should focus on creating a supportive environment that fosters these factors and values continuous improvement, customer satisfaction, and employee participation.

### The objectives of this research are

- Examine and evaluate the influence of leadership on performance at Eco-Sense Construction
- Examine and evaluate the influence of motivation on performance at Eco-Sense Construction
- Examine and evaluate the influence of competence on performance at Eco-Sense Construction
- Examine and evaluate the influence of commitment on performance at Eco-Sense Construction
- Examine and evaluate the influence of organizational culture on performance in Eco-Sense Construction

## III. RESEARCH DESIGN AND HYPOTHESIS

Based on past research findings and hypotheses, the following research concept framework is developed:

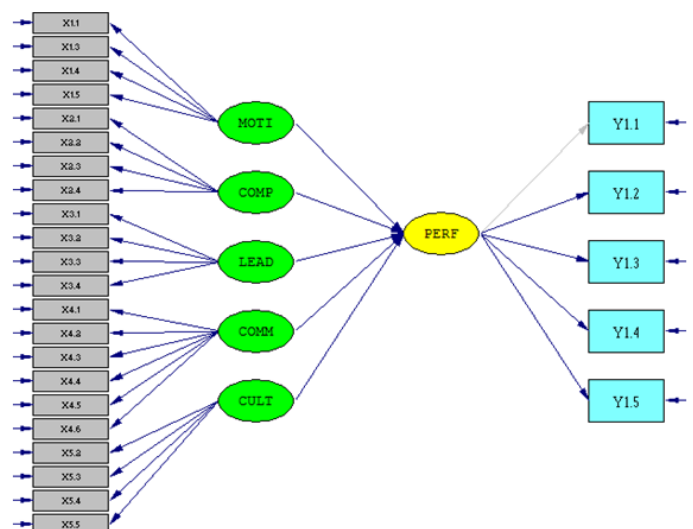


Figure 1: Model of Research

The following research hypotheses are created based on the model for research hypothesis presented above:

*Hypothesis 1:* The performance of the adoption of ISO 9001: 2015 is significantly and positively influenced by motivation.

*Hypothesis 2:* The performance of the adoption of ISO 9001: 2015 is significantly and positively influenced by competence.

*Hypothesis 3:* The performance of the adoption of ISO 9001: 2015 is significantly and positively influenced by leadership.

*Hypothesis 4:* The performance of the adoption of ISO 9001: 2015 is significantly and positively influenced by commitment.

*Hypothesis 5:* The performance of the adoption of ISO 9001: 2015 is significantly and positively influenced by organizational culture.

The variables that will be employed in this study are sorted into the following categories based on the proposed hypothesis:

1. Dependent variables are those whose values are affected by independent variables. Performance is the dependent variable in this study (Y).
2. An independent variable is one that has a positive or negative relationship with other dependent variables and can influence changes in the dependent variable. Motivation(X-1), competence(X-2), leadership(X-3), commitment(X-4), and organizational culture (X-5) are the five independent variables in this study.

**Method of Collecting Data**

Employees of Eco-Sense Construction served as the study's subjects. Eco-Sense Construction is a Sharjah-based building construction company. The focus of this study is to identify the influence of organizational culture, leadership, competence, commitment, and motivation on performance. A total of 196 Eco-Sense Construction employees constituted the study's population.

**Demography of respondents Based on education experience and sections**

Table 1: Demographics of respondents according to their educational level

No	Education	No. of Employees	Percent
1	Diploma	105	54%
2	Bachelor	44	22%
3	Masters	36	18%
4	Other	11	6%
<b>Total</b>		<b>196</b>	<b>100%</b>

Table 2: Demographics of respondents according to their experience

No	Tenure (Year)	No. of Employees	Percent
1	0 – 5	109	56%
2	6 – 10	52	26%
3	11 – 15	28	14%
4	16 – 20	7	4%
<b>Total</b>		<b>196</b>	<b>100%</b>

Table 3: Demographics of respondents according to functional departments

No	Section	No. of Employees	Percent
1	Procurement	12	6%
2	Execution	159	81%
3	Planning	7	4%
4	Management	18	9%
<b>Total</b>		<b>196</b>	<b>100%</b>

**IV. RESULTS AND DISCUSSION**

To retrieve the t-value for each variable and the loading factor for each indicator and variable, a syntax program must first be created on the ISREL software and then run. Linear Structural Model (LISREL) version 8.70 is used for data analysis by Structural Equation Model (SEM), and the results are shown in the following image:

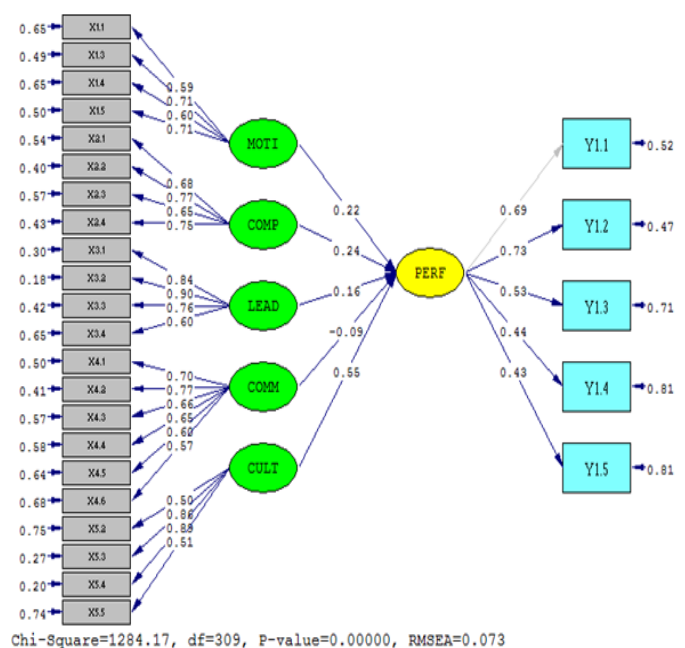


Figure 2: Loading factor Value Indicator

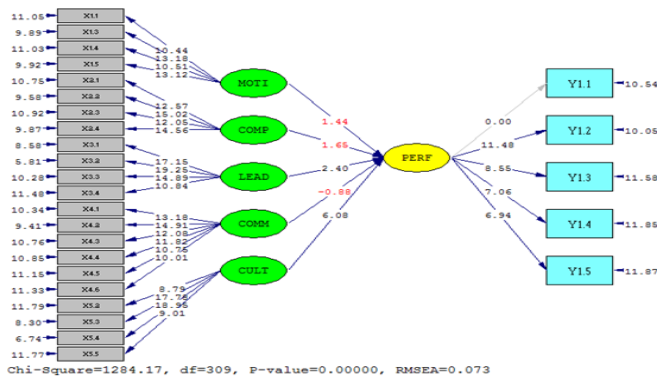


Figure 3: t-Value Indicator

Based on Figures 2 and 3, it is inferred that no error variance negative value exists, and that values for indicators that have loading factors greater than or equal to 0.5 (> 0.5) and lower than 0.5 will result in output. The complete value of t that will be used to determine whether the loading factor's value is significant (> 1.96). It is an entirely reliable and significant indicator. Following that, a table with a summary of the output LISREL results for each indicator and loading factor is created for validity and reliability analysis. The table below provides an overview of the analysis' findings:

Table 4: Outcomes of CFA Construct Validity Indicators

Variable	Indicator	Loading Factor	T-Value	Remark
MOTIVATION (X1)	X1.1	0.58	10.45	Significant and Valid
	X1.3	0.70	13.19	Significant and Valid
	X1.4	0.61	10.52	Significant and Valid
	X1.5	0.72	13.13	Significant and Valid
COMPETENCE (X2)	X2.1	0.69	12.58	Significant and Valid
	X2.2	0.78	15.03	Significant and Valid
	X2.3	0.66	12.06	Significant and Valid
	X2.4	0.76	14.57	Significant and Valid
LEADERSHIP (X3)	X3.1	0.85	17.18	Significant and Valid
	X3.2	0.91	19.29	Significant and Valid
	X3.3	0.77	14.88	Significant and Valid
	X3.4	0.61	10.85	Significant and Valid
COMMITMENT (X4)	X4.1	0.71	13.19	Significant and Valid
	X4.2	0.76	14.92	Significant and Valid
	X4.3	0.65	12.09	Significant and Valid
	X4.4	0.63	11.83	Significant and Valid
	X4.5	0.69	10.76	Significant and Valid
	X4.6	0.58	10.02	Significant and Valid
CULTURE (X5)	X5.2	0.51	8.78	Significant and Valid
	X5.3	0.87	17.79	Significant and Valid
	X5.4	0.86	18.96	Significant and Valid
	X5.5	0.54	9.02	Significant and Valid
PERFORMANCE (Y)	Y1.2	0.75	11.49	Significant and Valid
	Y1.3	0.57	8.56	Significant and Valid
	Y1.4	0.66	7.08	Significant and Valid
	Y1.5	0.63	6.95	Significant and Valid

According to the findings of the aforementioned test, the loading factor value was totally achieved above 0.5 (> 0.5), and the entire t-value obtained is significantly greater than 1.96 (> 1.96). As a result, the model satisfies the criterion for convergent validity. Together with considering each indicator's loading factor value, the convergent validity of the LISREL model is evaluated based on the VE value of each construct. If the VE value of each construct is greater than 0.5, the model is said to have met the convergent validity criteria. The following table shows each construct's CR and VE values:

Table 5: Value of CR and VE

Variable	CR	VE
Work Culture	0.81	0.61
Leadership	0.80	0.53
Performance	0.79	0.53
Commitment	0.82	0.61
Competence	0.80	0.59
Motivation	0.77	0.60

According to the results of the data analysis in the table above, the values of CR and VE for all constructs, both in the form of dimensions and variables, have exceeded 0.7 (for CR) and 0.5 (for VE), demonstrating that every indicator in each construct has met the required requirements for convergent validity. Thus, based on an analysis of the reliability calculation results, it is possible to draw the conclusion that overall reliability is a good signal and that the research satisfies all testing standards. The analysis of goodness of fit

(GOF), which is the following phase, is done using data that was gleaned from the software execution's outcomes.

**Analysis Goodness of Fit (GOF)**

Evaluate the model's applicability in terms of the overall model fit regarding the analysis of statistical GOF values produced by the LISREL program, for the model's relevance (model fit) to be adequate, and for its model to meet the requirements listed in Table 6.

Table 6: Goodness of Fit

Fit Indices	Value	Value Standard	Remark
Chi-Square	1284.18	>0.5	Fit
Approximate Root Mean Square Error (RMSE)	0.072	<0.08	Fit
Normed Fit Index (NFI)	0.93	>0.90	Fit
Index of Non-Normed Fit (NNFI)	0.95	>0.90	Fit
Index of Comparative Fit (CFI)	0.95	>0.90	Fit
Index of Incremental Fit (IFI)	0.95	>0.90	Fit
Index of Relative Fit (RFI)	0.92	>0.90	Fit

It is clear from the analysis's findings that the model fit according to all fit indices. Using these findings, it may be determined that the variable is still considered valid and reliable and that the overall model still provides a satisfactory fit. Model equation (Structural Equations) obtained as follows using LISREL 8.70 software.

Structural Equations					
PERF = 0.22*MOTI + 0.24*COMP = 0.17*LEAD - 0.087*COMM + 0.56*CULT, Errovar.=0.098, R <sup>2</sup> = 0.90					
(0.15)	(0.15)	(0.065)	(0.098)	(0.091)	(0.047)
1.45	1.66	2.41	-0.89	6.09	1.67

Figure 4: Structural Equations

The following test results are derived based on the results of the aforementioned hypothesis testing:

The relationship between workplace culture and performance has a t-value of 6.09 and a positive path coefficient of 0.56. Ho is refuted, and it is found that work culture affects performance in a positive and significant way. The better the work culture, the better the employees' performance, and vice versa. This is because the t-value obtained was > 1.96 and the positive path coefficient.

Leadership's impact on performance has a t-value of 2.41 and a positive path coefficient of 0.17. Ho is disproved and it

is found that leadership has a positive and large impact on performance. The higher the level of leadership, the more the employee's performance grows, and vice versa.

The t-values for the effects of commitment, competence, and motivation on performance are -0.89, 1.45, 1.66, and 1.67 respectively. All of the variables' t-values are 1.96. Ho is not rejected as a result, and it is inferred that employee performance is unaffected by motivation, competence, or dedication.

## V. CONCLUSION

Based on research findings and data analysis findings, it is possible to draw the conclusion that leadership positively influence the adoption of ISO 9001: 2015 in building project construction companies. The more influence that leadership has, the better ISO 9001: 2015 is applied. The performance of the implementation of ISO 9001: 2015 in building project construction company is positively impacted by work culture. The higher the work culture at all levels of management, the higher the performance of the implementation of ISO 9001: 2015. The effectiveness of implementing ISO 9001: 2015 in companies that construct building projects has not been impacted by human resource motivation, competence, or commitment. The one corporate location that was the subject of this study's investigation is a limitation. Future researchers are advised to expand their variables and explore for other variables when doing their study in order to obtain more precise research results. This research methodology is also applicable to other industries.

## VI. LIMITATION

This study may have some limitations, including the sample's unrepresentativeness of the target population, the use of fewer samples than necessary due to time and resource constraints, and the study's exclusive focus on companies in the building construction despite the widespread adoption of the ISO 41001:2018 - Facility management by other companies. The research study was exclusively restricted to companies in Sarjah, and the questionnaire's results might not apply to other locations.

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