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The Impact of Documents Review on Improving of Management System According to Requirements of ISO: IEC 17025:2005 (A case study: NANO for Measurement and Calibration Center, Khartoum North-Sudan)

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Abstract: *This study aimed to identify the impact of documents review on improving of management system according to requirements of ISO: IEC 17025:2005, the study was conducted at NANO center for measurement and calibration and the samples were employees of NANO center for measurement and calibration. For the nature of the study, used the questionnaire as a data collection tool, 40 questionnaires were distributed and were all collected and data were analyzed using statistical package for the social sciences (SPSS). The study showed that there was a statistically significant relationship between the application of the methodology of the documents review and applying the documents in the quality system according to requirements for the competence of performance of calibration and testing laboratories, there was a statistically significant relationship between the application of the methodology of the documents review and number of cases of nonconforming in the quality system according to requirements for the competence of performance of calibration and testing laboratories and there was a statistically significant relationship between the application of the methodology of the documents review and continuous improvement in the quality system according to requirements for the competence of performance of calibration and testing laboratories. The study concluded that technical procedures should be reviewed by the technical manager of the center in order to ensure that they comply with the requirements for the competence of performance of calibration and testing laboratories to help in improvement of the service provided by the NANO center for measurement and calibration. The top management should also pay attention on identifying employees suggestions and taken them in the process of improving the quality system at the NANO center for measurement and calibration.*

Keywords— Impact; Documents Review; Improving of Management System; NANO center for measurement and calibration

1. INTRODUCTION

ISO/IEC 17025 is refers to the global quality standard for testing and calibration laboratories and it is the basis for accreditation from an accreditation body. The current release was published in 2017. Laboratories that are accredited to this international standard have demonstrated that they are technically competent and able to produce precise and accurate test and\ or calibration data, located anywhere in the world. Accreditation is an objective way to assure customers that technical competence has been fully implemented to provide reliable and accurate test or calibration results [1]. Also, ISO/IEC 17025 is an ideal management system model for laboratories because it aims to control quality costs, improve measurement accuracy and guarantee consistency of results. It is also customer-driven when implemented correctly. Furthermore, when your company achieves ISO/IEC 17025 accreditation, you will be presented with a certificate of accreditation. This certificate can be used in advertising, promotional literature and stationary to show current and potential customers that your laboratory is committed to quality and has demonstrated technical competency to perform calibration or testing services [2]. In this research, NANO center for measurement and calibration was taken as an example to evaluate the implementation of ISO (17025-2005) in laboratories performance and to know the benefits obtained by following the application of the standard. ISO is based global consortium in Geneva and has a membership of more than 90 national standardization body, was shortened (ISO) based on the Greek word "ISOS" which means "Equal", ISO creates documents that provide requirement, specification, guidelines or characteristics that can be used consistently to ensure that materials, product processes and services are fit for their purpose. It covers almost every industry, from technology to food safety, to

agriculture and healthcare [3]. It is an international organization for standardization (ISO) and the international electro technical commission (IEC) standard used by testing and calibration laboratories to provide a basis for accreditation of laboratory quality systems. There are many commonalities with the ISO 9000 family of standards, but ISO/IEC 17025 adds in the concept of competence to the equation, applying directly to those organizations that produce testing and calibration results. ISO/IEC 17025 was developed by laboratory experts from all over the world, along with 18 liaison organizations, such as the International Laboratory Accreditation Cooperation (ILAC), and many associations representing laboratories [4]. Laboratories that are accredited to this international standard have demonstrated that they are technically competent and able to produce precise and accurate test and\ or calibration data. In most major countries, ISO/IEC 17025 is the standard for which most laboratories must hold accreditation in order to be deemed technically competent. In many cases, suppliers and regulatory authorities will not accept test or calibration results from laboratories that are not accredited. Laboratories use ISO/IEC 17025 to implement a quality system aimed at improving their ability to consistently produce valid results [4].

2. Materials and methods

2.1 Study design:
It is descriptive study.

2.2 Study area:
The study was conducted at NANO Center for Measurement and Calibration, Khartoum North-Sudan.

2.3 Study population:
The study was conducted on employees at NANO Center for Measurement and Calibration.

2.4 Sample size:
The targeted sample of this research was the total population of the employees (43) but the actual sample number was (40) who had respond to the questionnaire.

2.5 Study period:
The study was conducted during the interval from February 2017 to February 2018.

3. Methods

3.1 Data collection methods:
Questionnaire was used as the basic tool in this study. The quantitative survey consisted of questionnaire contain three hypothesis that cover the research questions which distributed for personnel included and limited to laboratory technicians. The study depends on the questionnaire as a key to offer gathering information from the study population, as for questionnaire advantages including:-
1.can be applied to get information on the number of individuals.
2. The low cost and ease of application.
3. Ease of put the questionnaire questions
4. The questionnaire save responder time and give him a chance to think**,** this effect the reliability and validity of the answers**,** stability means that measures give the same results if used more than once under similar conditions.

Reliability is defined as the extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials.

Validity is defined as the extent to which the instrument measures what it purports to measure ،and calculate in many ways represents the easiest being the square root of the reliability coefficient.

$$\text{Validity} = \sqrt{\text{Reliability}}$$

3.2 Questionnaire design:
The following five steps of questionnaire design process were followed:

Firstly, the information was determined to be drawn from the research objectives, questions and hypothesis with consideration to who will be able to supply the information. Secondly, the structure and the length of the questionnaire were determined, the questionnaire was self-administrated and thus the gave clear instructions with direct and simple questions. Thirdly a draft questionnaire was prepared considering the content, format, layout …ect. Fourthly, the questionnaire was pre-tested and revised. Fifthly, the questionnaire reliability and validity were assessed.

3.4 Data analysis:
The data obtained were analyzed using the Statistical Package for Social Sciences (SPSS). To achieve the objectives of the study, statistical methods were used the frequency distribution of the answers, the percentages, chi-square test for the significance of differences between the test results considering all other variables, the half-fractionation method using the Spearman-Brown equation, Alpha-Kronbach equation, the method of re-applying the test and Gutman's equation. Then data were presented in tables.

3.5 Ethical considerations
Study permissions were obtained from College of Graduate Studies- Sudan University of Science and Technology, then from Management of NANO Center for Measurement and Calibration.

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4. Results

The majority of study subjects (42.5%) were in the age group less than (30) years, followed by the same number of members of the study sample in the age group (30-39) years, and then (10.0%) in the age group (40-49) and (5.0%) in the age group (50 years and above) (table 1). Out of 40 subjects, 13 (32.5%) had diploma, 15 (37.5%) had bachelor and 12 (30.0%) had master degree (table 2). Out of 40 subjects 23 (57.5%) had less than 5 years of experience, while 10 (25.0%) had 5-9 years of experience, 4(10.0) had 10-14 years of experience and 3 (7.5%) had 15 years and more of experience (table 3). The majority of study subjects 15

(37.5%) had very good training on the standard for the efficiency of the performance of the calibration and testing laboratories, then 13 (32.5%) had good training, followed by 7 (17.5%) had excellent training then 5 (12.5%) had average training (table 4). Out of 40 subjects, 13 (32.5%) were technician, 8 (20.0%) were engineer, 7 (17.5%) were head of department, 5 (12.5%) were director of department and 7 (17.5%) were other (table 5). Reliability and validity of the questionnaire were calculated (table 6). Out of 40 study subjects, 33 (82.5%) were strongly agreed that the document review methodology contributes to the identification of deficiencies in the documents (first statement in the first hypothesis) (table 7). Out of 40 subjects, 27 (67.5%) were strongly agreed that the document review methodology contributes to determining the difficulty of applying some points in the document (second statement) (table 8). 21(52.5%) respondents were strongly agreed that the methodology of document review benefits from the opinion of the beneficiary of the application of the document (third statement) (table 9). 26 (65.0%) were strongly agreed that the application of document review methodology leads to the ease of understanding and application of procedures and work instructions (fourth statement) (table 10). 27 (67.5%) were strongly agreed that the methodology of reviewing the documents contributes to increasing the efficiency of the procedures and instructions at the center (fifth statement) (table 11). 30 (75.0%) were strongly agreed that the document review methodology contributes to ensuring the effectiveness of the applicability of the quality system documents (sixth statement) (table 12). 27 (67.5%) were strongly agreed that the method of reviewing the documents contributes to increasing the effectiveness of the procedures and instructions at the center (seventh statement) (table 13). 34 (85.0%) individuals were strongly agreed that there was a procedure for controlling, preserving and circulating documents that are part of the quality system in the center first statement in the second hypothesis) (table 14). 29 (72.5%) individuals were strongly agreed that the language of issuing documents in the center is understandable, accessible and easy to handle (second statement) (table 15). 25(62.5%) individuals were strongly agreed that the author of the document corresponds to the nature of the activity of the document (third statement) (table 16). 18 (45.0%) individuals were agreed that the technical director is reviewing the technical procedures to make sure they comply with the requirements of the standard for the efficiency of performance of the calibration and testing laboratories (fourth statement) (table 17). 32 (80.0%) individuals were agreed that the quality manager is reviewing the administrative procedures to make sure they comply with the requirements of the standard of efficiency of the performance of the calibration and testing laboratories (fifth statement) (table 18). 32 (80.0%) individuals were agreed that the application of the document review methodology reduces errors and deviations in the management system (sixth statement) (table 19). 32(80.0%) individuals were strongly agreed that the application of the document review methodology leads to a reduction of non-conformity by accreditation bodies (seventh statement) (table 20). 31(77.5%) individuals were strongly agreed that the application of the document review methodology contributes to the follow-up of the treatment of deviations that may appear with the procedures and the instructions (eighth statement) (table 21). 28 (70.0%) respondents were strongly agreed that the center's management is enthusiastic and serious about using the method of reviewing the documents (first statement in third hypothesis) (table 22). 24(60.0%) individuals were strongly agreed that the center's management has the ability to provide facilities, time and tools to apply the methodology of document review (second statement) (table 23). 23 (57.5%) respondents were strongly agreed that the center's management is fully prepared to oblige the employees to apply the document review methodology (third statement) (table 24). 22 (55.0%) individuals were agreed that the administration is interested in identifying the employees suggestions and taking them in the process of improving the quality of operations in the center (fourth statement) (table 25). 29 (72.5%) individuals were strongly agreed that the quality programs in the center help to create a spirit of cooperation among the employees for continuous improvement (fifth statement) (table 26). 32 (80.0%) individuals were strongly agreed that the application of the procedure review methodology and the work instructions at the center makes the center able to develop and improve (sixth statement) (table 27). The median of the answers of the study sample to the statements of the first hypothesis was shown in table (28). The results of Chi-square test for the differences in the answers to the first hypothesis statements were shown in table (29). Frequency distribution of the responses of the study sample to all statements of the first hypothesis was shown in table (30). The median for the responses of the study sample to the statements of the second hypothesis was shown in table (31). The results of the Chi-square test to indicate the differences in the answers to the statements of the second hypothesis were shown in table (32). Frequency distribution of the responses of the study sample to all statements of the second hypothesis was shown in table (33). The median for the responses of the study sample to the statements of the third hypothesis was shown in table (34). The results of Chi-square test to indicate the differences of the answers to the statements of the third hypothesis were shown in table (35). Frequency distribution of the responses of the study sample to all statements of the third hypothesis was shown in table (36). Summary of the results of the study hypothesis was shown in table (37).

Table 1: Frequency distribution of study subjects according to age groups

Age groups (years)	Frequency	Percentage (%)
Less than 30	17	42.5
30-39	17	42.5
40-49	4	10.0
50 and over	2	5.0
Total	40	100.0

Table 2: Frequency distribution of study subjects according to qualification

Qualification	Frequency	Percentage (%)
Diploma	13	32.5
Bachelor	15	37.5
Master degree	12	30.0
Total	40	100.0

Table 3: Frequency of study subjects according to the years of experience

Years of experience	Frequency	Percentage (%)
Less than 5 years	23	57.5
5-9 years	10	25.0
10-14 years	4	10.0
15 years and more	3	7.5
Total	40	100.0

Table 4: Frequency distribution of the study subjects according to the extent of your training on the standard for the efficiency of the performance of the calibration and testing laboratories

Training on the standard	Frequency	Percentage (%)
Average	5	12.5
Good	13	32.5
Very good	15	37.5
Excellent	7	17.5
Total	40	100.0

Table 5: Frequency of study subjects according to the job title

Job title	Frequency	Percentage (%)
Technician	13	32.5
Engineer	8	20.0
Head of department	7	17.5
Director of department	5	12.5
Other	7	17.5
Total	40	100.0

Table 6: Reliability and validity of the questionnaire

Hypothesis	Reliability coefficient	Validity coefficient
First	0.73	0.85
the second	0.74	0.86
Third	0.78	0.88
The questionnaire is complete	0.84	0.92

Table 7: Frequency distribution of the responses of the study sample to the first statement (first hypothesis)

The answer	Number	Percentage (%)
I strongly agree	33	82.5
I agree	6	15.0
Neutral	1	2.5
Total	40	100.0

Table 8: Frequency distribution of the responses of the study sample to the second statement (first hypothesis)

The answer	Number	Percentage (%)
I strongly agree	27	67.5
I agree	12	30.0
Neutral	1	2.5
Total	40	100.0

Table 9: Frequency distribution of the responses of the study sample to the third statement (first hypothesis)

The answer	Number	Percentage (%)
I strongly agree	21	52.5
I agree	18	45.0
Neutral	1	2.5
Total	40	100.0

Table 10: Frequency distribution of the responses of the study sample to the fourth statement (first hypothesis)

The answer	Number	Percentage (%)
I strongly agree	26	65.0
I agree	12	30.0
Neutral	2	5.0
Total	40	100.0

Table11: Frequency distribution of the responses of the study sample to the fifth statement (first hypothesis)

The answer	Number	Percentage (%)
I strongly agree	27	67.5
I agree	12	30.0
Neutral	1	2.5
Total	40	100.0

Table 12: Frequency distribution of the responses of the study sample to the sixth statement (first hypothesis)

The answer	Number	Percentage (%)
I strongly agree	30	75.0
I agree	9	22.5
Neutral	1	2.5
Total	40	100.0

Table 13: Frequency distribution of the responses of the study sample to the seventh statement (first hypothesis)

The answer	Number	Percentage (%)
I strongly agree	27.5	67.5
I agree	12	30.0
Neutral	1	2.5
Total	40	100.0

Table 14: Frequency distribution of the responses of the study sample to the first statement (second hypothesis)

The answer	Number	Percentage (%)
I strongly agree	34	85
I agree	5	12.5
Neutral	1	2.5
Total	40	100.0

Table 15: Frequency distribution of the responses of the study sample to the second statement (second hypothesis)

The answer	Number	Percentage (%)
I strongly agree	29	72.5
I agree	10	25.0
Neutral	1	2.5
Total	40	100.0

Table 16: Frequency distribution of the responses of the study sample to the third statement (second hypothesis)

The answer	Number	Percentage (%)
I strongly agree	25	62.5
I agree	13	32.5
Neutral	2	5.0
Total	40	100.0

Table 17: Frequency distribution of the responses of the study sample to the fourth statement (second hypothesis)

The answer	Number	Percentage (%)
I strongly agree	13	32.5
I agree	18	45.0
Neutral	8	20.0
Disagree	1	2.5
Total	40	100.0

Table 18: Frequency distribution of the responses of the study sample to the fifth statement (second hypothesis)

The answer	Number	Percentage (%)
I strongly agree	32	80.0
I agree	7	17.5
Neutral	1	2.5
Total	40	100.0

Table 19: Frequency distribution of the responses of the study sample to the sixth statement (second hypothesis)

The answer	Number	Percentage (%)
I strongly agree	32	80.0
I agree	6	15.0
Neutral	2	5.0
Total	40	100.0

Table 20: Frequency distribution of the responses of the study sample to the seventh statement (second hypothesis)

The answer	the number	Percentage (%)
I strongly agree	32	80.0
I agree	7	17.5
Neutral	1	2.5
Total	40	100.0

Table 21: Frequency distribution of the responses of the study sample to the eighth statement (second hypothesis)

The answer	Number	Percentage (%)
I strongly agree	31	77.5
I agree	8	20.0
Neutral	1	2.5
Total	40	100.0

Table 22: Frequency distribution of the responses of the study sample to the first statement (third hypothesis)

The answer	Number	Percentage (%)
I strongly agree	28	70.0
I agree	11	27.5
Neutral	1	2.5
Total	40	100.0

Table 23: Frequency distribution of the responses of the study sample to the second statement (third hypothesis)

The answer	Number	Percentage (%)
I strongly agree	24	60.0
I agree	15	37.5
Neutral	1	2.5
Total	40	100.0

Table 24: Frequency distribution of the responses of the study sample to the third statement (third hypothesis)

The answer	Number	Percentage (%)
I strongly agree	23	57.5
I agree	14	35.0
Neutral	3	7.5
Total	40	100.0

Table 25: Frequency distribution of the responses of the study sample to the fourth statement (third hypothesis)

The answer	Number	Percentage (%)
I strongly agree	17	42.5
I agree	22	55.0
Neutral	1	2.5
Total	40	100.0

Table 26: Frequency distribution of the responses of the study sample to the fifth phrase (third hypothesis)

The answer	Number	Percentage (%)
I strongly agree	29	72.5
I agree	10	25.0
Neutral	1	2.5
Total	40	100.0

Table 27: Frequency distribution of the responses of the study sample to the sixth statement (third hypothesis)

The answer	Number	Percentage (%)
I strongly agree	32	80.0
I agree	10	17.5
Neutral	1	2.5
Total	40	100.0

Table 28: The median of the answers of the study sample to the statements of the first hypothesis

No.	Phrase	Median	Interpretation
1	The document review methodology contributes to the identification of deficiencies in the documents	5	I strongly agree
2	The document review methodology contributes to determining the difficulty of applying some points in the document	5	I strongly agree

3	The methodology of document review benefits from the opinion of the beneficiary of the application of the document	5	I strongly agree
4	The application of document review methodology makes it easier to understand and apply procedures and work instructions by staff	5	I strongly agree
5	The document review methodology contributes to increasing the efficiency of the procedures and instructions in the center	5	I strongly agree
6	The document review methodology contributes to ensuring the effectiveness of the applicability of the document of quality system in the center	5	I strongly agree
7	The document review methodology contributes to increasing the effectiveness of the procedures and instructions in the center	5	I strongly agree
	All phrases	5	I strongly agree

Table 29: The results of Chi-square test for the differences in the answers to the first hypothesis statements

No.	Phrase	Degree of freedom	Chi-square value	Probability value
1	The document review methodology contributes to the identification of deficiencies in the documents	2	44.45	0.000
2	The document review methodology contributes to determining the difficulty of applying some points in the document	2	25.55	0.000
3	The methodology of document review benefits from the opinion of the beneficiary of the application of the document	2	17.45	0.000
4	The application of document review methodology makes it easier to understand and apply procedures and work instructions by staff	2	21.80	0.000
5	The document review methodology contributes to increasing the efficiency of the procedures and instructions in the center	2	25.55	0.000
6	The document review methodology contributes to ensuring the effectiveness of the applicability of the document of quality system in the center	2	33.65	0.000
7	The document review methodology contributes to increasing the effectiveness of the procedures and instructions in the center	2	25.55	0.000

Table 30: Frequency distribution of the responses of the study sample to all statements of the first hypothesis

The answer	Number	Percentage (%)
I strongly agree	191	68.2
I agree	81	28.9
Neutral	8	2.9
Total	280	100.0

Table 31: The median for the responses of the study sample to the statements of the second hypothesis

No.	Phrase	Median	Interpretation
1	There is a procedure for the control, preservation and circulation of documents that are part of the center's quality system	5	I strongly agree
2	The language of issuing documents is understandable, accessible and easy to handle	5	I strongly agree

3	The document creator corresponds to the nature of the document activity	5	I strongly agree
4	The technical director shall review the technical procedures to ensure that they comply with the requirements of the standard for the efficiency of the performance of the calibration and testing laboratories	4	I agree
5	The quality manager reviews the administrative procedures to ensure they comply with the requirements of the standard for the efficiency of the performance of the calibration and testing laboratories	5	I strongly agree
6	The application of the document review methodology reduces errors and deviations in the management system	5	I strongly agree
7	the application of the document review methodology leads to a reduction of non-conformity by accreditation bodies	5	I strongly agree
8	The application of the document review methodology contributes to the follow-up of the treatment of deviations that may appear in the procedures and instructions	5	I strongly agree
	All phrases	5	I strongly agree

Table 32: The results of the Chi-square test to indicate the differences in the answers to the statements of the second hypothesis

No.	Phrase	Degree of freedom	Chi-square value	Probability value
1	There is a procedure for the control, preservation and circulation of documents that are part of the center's quality system	2	48.65	0.000
2	The language of issuing documents is understandable, accessible and easy to handle	2	30.65	0.000
3	The document creator corresponds to the nature of the document activity	2	19.85	0.000
4	The technical director shall review the technical procedures to ensure that they comply with the requirements of the standard for the efficiency of the performance of the calibration and testing laboratories	3	15.80	0.001
5	The quality manager reviews the administrative procedures to ensure they comply with the requirements of the standard for the efficiency of the performance of the calibration and testing laboratories	2	40.55	0.000
6	The application of the document review methodology reduces errors and deviations in the management system	2	39.80	0.000
7	the application of the document review methodology leads to a reduction of non-conformity by accreditation bodies	2	40.55	0.000
8	The application of the document review methodology contributes to the follow-up of the treatment of deviations that may appear in the procedures and instructions	2	36.95	0.000

Table 33: Frequency distribution of the responses of the study sample to all statements of the second hypothesis

The answer	Number	Percentage (%)
I strongly agree	228	71.3

I agree	74	23.1
Neutral	1	5.3
Total	320	100.0

Table 34: The median for the responses of the study sample to the statements of the third hypothesis

No.	Phrase	Median	Interpretation
1	The center's management has the enthusiasm and seriousness to use the methodology of document review	5	I strongly agree
2	The center's management has the ability to provide facilities, time and tools to apply the methodology of document review	5	I strongly agree
3	The center's management is fully prepared to oblige staff to apply the document review methodology	5	I strongly agree
4	The department is interested in identifying and suggesting the suggestions of employees in the process of improving the quality of operations at the center	4	I agree
5	The quality programs at the center help to create a spirit of cooperation among the employees leading to continuous improvement	5	I strongly agree
6	The application of the methodology review procedures and the instructions of the work of the center makes the center to develop and improve	5	I strongly agree
	All phrases	5	I strongly agree

Table 35: The results of Chi-square test to indicate the differences of the answers to the statements of the third hypothesis

No.	Phrase	Degree of freedom	Chi-square value	Probability value
1	The center's management has the enthusiasm and seriousness to use the methodology of document review	2	29.08	0.000
2	The center's management has the ability to provide facilities, time and tools to apply the methodology of document review	2	20.15	0.000
3	The center's management is fully prepared to oblige staff to apply the document review methodology	2	15.05	0.001
4	The department is interested in identifying and suggesting the suggestions of employees in the process of improving the quality of operations at the center	2	18.05	0.000
5	The quality programs at the center help to create a spirit of cooperation among the employees leading to continuous improvement	2	30.65	0.000
6	The application of the methodology review procedures and the instructions of the work of the center makes the center to develop and improve	2	40.55	0.000

Table 36: Frequency distribution of the responses of the study sample to all statements of the third hypothesis

The answer	Number	Percentage (%)
I strongly agree	153	63.8
I agree	79	32.9
Neutral	8	3.3
Total	240	100.0

Table 37: Summary of the results of the study hypothesis

No.	Hypothesis	Chi-square value
1	There is a statistically significant relationship between the application of the documentation methodology and the application of the documents of the quality system according to the requirements of the standard for the efficiency of the performance of calibration and testing laboratories ISO: IEC 17025: 2005 at NANO Center for Measurement and Calibration.	181.85

2	There is a statistically significant relationship between the application of the document review methodology and the number of cases of non-conformity to the quality system according to the requirements of the standard for the efficiency of the performance of calibration and testing laboratories ISO: IEC 17025: 2005 at NANO Center for Measurement and Calibration	401.88
3	There is a statistically significant relationship between the application of the document review methodology and the continuous improvement of the quality system according to the requirements of the standard for the efficiency of the performance of the calibration and testing laboratories ISO: IEC 17025: 2005 at NANO Center for Measurement and Calibration.	131.43

5. Discussion

The present study showed that there was a statistically significant relationship between the application of the documentation methodology and the application of the documents of the quality system according to the requirements of the standard for the efficiency of the performance of calibration and testing laboratories ISO: IEC 17025: 2005 at NANO Center for Measurement and Calibration, as it was achieved in the second degree based on the second largest value of Chi-square (181.85) based on the opinion of the respondents. There was a statistically significant relationship between the application of the document review methodology and the number of cases of non-conformity to the quality system according to the requirements of the standard for the efficiency of the performance of calibration and testing laboratories ISO: IEC 17025: 2005 at NANO Center for Measurement and Calibration, as it was achieved in the first degree based on the first largest value of Chi-square (401.88), based on the opinion of the respondents. There was a statistically significant relationship between the application of the document review methodology and the continuous improvement of the quality system according to the requirements of the standard for the efficiency of the performance of the calibration and testing laboratories ISO: IEC 17025: 2005 at NANO Center for Measurement and Calibration, where it was achieved in the third degree based on the third largest value of the Chi-square (131.43), based on the opinion of the respondents. These findings were in agreement with the findings obtained by Mohamed (2016) [5] in the impact of implementation of ISO 17025 in chemical laboratories and aimed to detect the laboratories performance before and after implementation of the ISO 17025, the study found that the effect of the ISO 17025 was clearly visible; the systems have been improved to the best. Also, the findings obtained from the present study were in agreement with the findings obtained by Hamza (2015) [6] who found that the perception of top managers of ISO helped them in the process of evaluation and measuring the system as well achieving intended results.

6. Conclusion

The study concluded that there was a statistically significant relationship between the application of the documentation methodology and the application of the documents of the quality system according to the requirements of the standard for the efficiency of the performance of calibration and testing laboratories ISO: IEC 17025: 2005 at NANO Center for Measurement and Calibration. There was a statistically significant relationship between the application of the document review methodology and the number of cases of non-conformity to the quality system according to the requirements of the standard for the efficiency of the performance of calibration and testing laboratories ISO: IEC 17025: 2005 at NANO Center for Measurement and Calibration. There was a statistically significant relationship between the application of the document review methodology and the continuous improvement of the quality system according to the requirements of the standard for the efficiency of the performance of the calibration and testing laboratories ISO: IEC 17025: 2005 at NANO Center for Measurement and Calibration.

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