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A Study to Get the Main Reasons of Low Performance of Ground Support Equipments

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ABSTRACT: Aviation is very important because it connects the whole world easily and quickly, the world becomes a small village so it is very important to ensure that aviation field works regularly and effectively to achieve his purpose. Aviation has a great effect in economy because the gains from it are great and also the losses from it are great. Ground Support Equipments GSE are a main source of aviation losses; the problem formulation focuses on studying the dimensions of the performance of the GSE (efficiency, effectiveness, safety and quality) and how Ground Services Companies improve this performance by using the most effective improvement methodology.

KEYWORDS: Ground Support Equipments (GSE), Performance improvement, ISO-9001, ISO-6966.

I. INTRODUCTION

This paper is done to solve the problems and remove the barriers facing the improvement of the performance of Ground Support Equipments, this done through making different meeting and interviews with employees and experts from different administrative levels (senior manager, middle level, operational level), and use different statistical quality tools as (Pareto chart, brain storming, one sample T tests, ... etc.) to determine the current situation and evaluating the new model that based on the integration between ISO-9001 and ISO-6966 and this was done through the following three steps:

The first step: was to identify the main field for the study using different statistical quality tools through collecting historical data from deferent annual reports for (air transportation, Aircraft accident, work injuries, cost of losses due to Aircraft accident etc.) during the period (2012 – 2014).

The second step: was to develop a questionnaire to collect data from a sample of size (60) of employees and experts of the chosen organization in step one, and then analyzing and interpreting questionnaire's results to validate and proof the acceptance of this the new model.

The third step: was to make modification on this questionnaire to solve the expected problems and barriers facing improvements of the performance, through collecting another data from a sample of size (60) of the same employees and expertise's of the chosen organization, and then analysing and interpreting questionnaire's results to validate and proof the acceptance of this questionnaire to the study.

II. RELATED WORK

The researcher reads a group of previous studies and classified them into three categories and gives a simplified discussion on each field as follows:

- 1) Previous studies related to performance improvement methodologies: This field has seven studies two for implementing TQM for Improving Performance, and one Linking IT and TQM, and two studies one using Malcolm Baldrige National Quality Award, to improve organizational performance and the other using Taguchi Methods to

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Improve the Production Process Quality, and one use Lean Tools for Reducing Production Time and Satisfying Employees, and one use Time-Based Performance Improvement a Methodology for Performance Improvement Solutions.

2) Previous studies related to performance appraisal:

This field has six studies three for performance appraisal management and factors affecting its implementation, and three studies for measuring and managing organizational and enterprises performance.

3) Previous studies related to Ground Support equipments:

This field has seven studies two for handling and improvements of ground characteristics and operations, and two studies for accidents and incidents on commercial airport ramps and its effect on equipment damage and human injury, and three studies for safety system and culture in handling of ground equipments.

III. MAIN FIELD OF STUDY

To identify the main field for studying the problems and barriers facing improvements of the performance of aviation the researcher study the following reports:

- The annual report for air transportation statistics which describe the Egyptian airports movements for international and local flights, which published by Central Agency for Public Mobilization and Statistics.
- The annual report for Aircraft accident statistics at Egyptian airports during the interval (2012 – 2014) according to Central Directorate of Aircraft Accident Investigation of Ministry of Civil Aviation.
- The annual report for work injuries due to Aircraft accident in Egyptian airports according to Central Directorate of Aircraft Accident Investigation of Ministry of Civil Aviation.
- The annual report for cost of losses due to Aircraft accident in Egyptian airports according to Central Directorate of Aircraft Accident Investigation of Ministry of Civil Aviation.
- The accident reports for aviation safety reviewed from the National Transportation Safety Board (NTSB).
- The Flight Safety Foundation statistics, about the losses from Ground Support Equipments.
- The number of services provided by Egypt air Ground Services Company (EGS) during the year (2014/2015),

The following are the results of analysing of the previous annual reports:

A. Selection of Airport and Aircraft

Studying the annual reports for air transportation statistics which describe the Egyptian airports movements for international and local flights, which published by Central Agency for Public Mobilization and Statistics (CAPMAS) showed that:

- 1) There are about 19 Egyptian Airports which are classified to 3 categories as follows:
 - International Airports: Cairo – Sharm Elshiekh –Hurghada – Aswan –Luxor – Borg Arab – Alex – Assuit
 - Local Airports: Ariesh – Sant Cathrien – Abo Simbel – Owainat – Port Saed – Tour – Dakhla – Kharga
 - Training Airports: 6 October
- 2) There are about 133500 aircraft movement; 61600 aircrafts for international movement with percentage 46.1% and 71850 aircrafts for local movement with percentage 53.9% as shown in Table (1).

Table (1) Flight movements (international & local) in Egyptian Airports There are about 133500 aircraft movement; 61600 aircrafts for international movement with percentage 46.1% and 71850 aircrafts for local movement with percentage 53.9%

Airport	Cairo	Alex	Hurghada	Luxor	sharm	others	Total
International Flight movement	45598	1890	5233	2476	4680	1729	61606
Local Flight movement	22778	11423	7136	11783	11329	7397	71846

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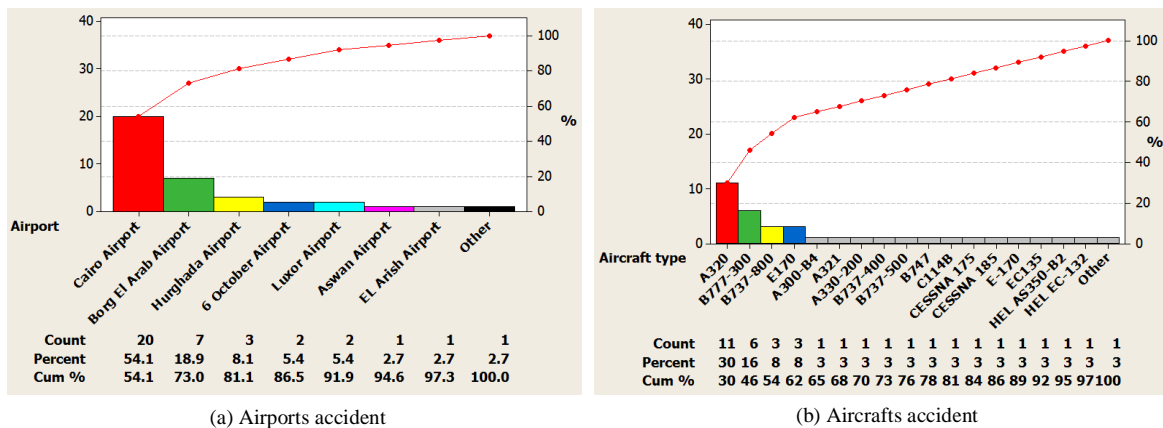
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The researcher collected a historical data for three annual reports for Aircraft accident at Egyptian airports for years (2012 - 2014) and studying and analysis of these data using Pareto chart shows the following:

- Pareto chart Figure (1.a) for annual reports for Aircraft accident at Egyptian airports for year (2012) shows that Cairo Airport has the highest percentage (54.1%) for Aircraft accident at Egyptian airports, followed by Borg El Arab Airport with percentage (18.9%). Also Pareto chart Figure (1.b) shows that Aircraft type (A320) has the highest percentage (30%) for Aircraft accident at Egyptian airports, followed by Aircraft type (B777-300) with percentage (16%).

Figure (1) Annual Reports for Aircraft accident at Egyptian airports year (2012), (a) Airports accident and (b) Aircrafts accident

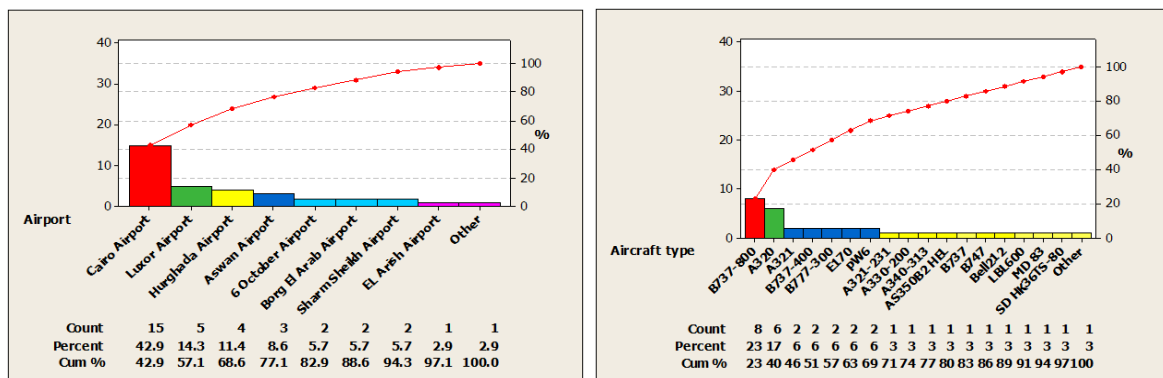


(a) Airports accident

(b) Aircrafts accident

- Also, Pareto chart Figure (2.a) for annual reports for Aircraft accident at Egyptian airports for year (2013) shows that Cairo airport has the highest percentage (42.9%) for Aircraft accident at Egyptian airports, followed by Luxor Airport with percentage (14.3%). Also Pareto chart Figure (2.b) shows that Aircraft type (B737-800) has the highest percentage (23%) for Aircraft accident at Egyptian airports, followed by Aircraft type (A320) with percentage (17%).

Figure (2) Annual Reports for Aircraft accident at Egyptian airports year (2013), (a) Airports accident and (b) Aircrafts accident



(a) Airports accident

(b) Aircrafts accident

- Also, Pareto chart Figure (3.a) for annual reports for Aircraft accident at Egyptian airports for year (2014) shows that Cairo airport has the highest percentage (56.4%) for Aircraft accident at Egyptian airports, followed by

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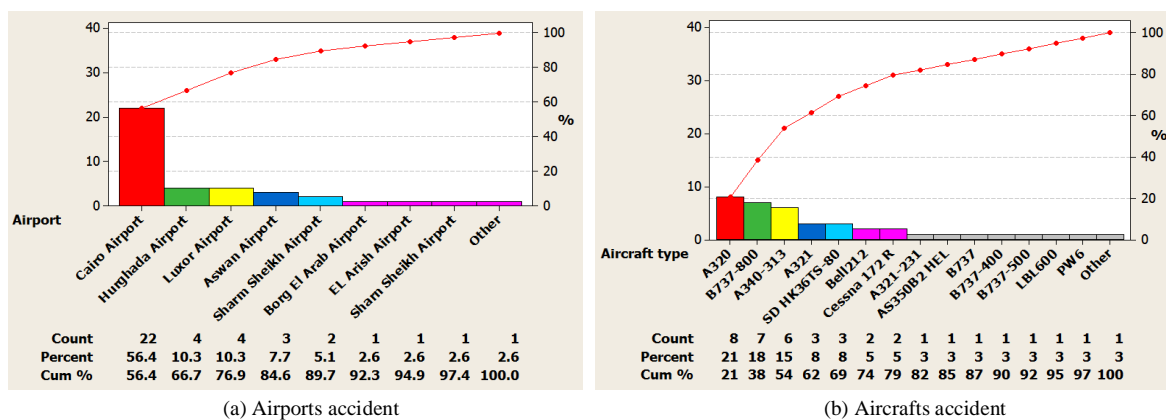
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Hurghada Airport with percentage (10.3%). Also Pareto chart Figure (3.b) shows that Aircraft type (A320) has the highest percentage (21%) for Aircraft accident at Egyptian airports, followed by Aircraft type (B737-800) with percentage (18%).

Figure (3) Annual Reports for Aircraft accident at Egyptian airports year (2014), (a) Airports accident and (b) Aircrafts accident



Analysis of the previous results shows that Cairo airport has the highest percentage for flight movements (international & local) in Egyptian Airports and has the highest percentage for Aircraft accident for 3 years (2012:2014) so, the researcher select **Cairo airport** as the location for implementing this study, and according to these previous results, Aircraft type (B737) has the highest percentage for Aircraft accident at Egyptian airports so, the researcher select **Aircraft type (B737)** as the Aircraft.

B. Selection of Equipments

The researcher collected a historical data for years (2012-2014) for cost of losses due to Aircraft accident in Egyptian airports as shown in Table (2), and studying and analysis of these data using Pareto charts Figures (4) shows Pareto chart for cost of losses for (Aircraft) has the highest percentage (58.4%), followed by cost of losses for (GSE) with percentage (27%), and finally cost of losses for (Others) with percentage (14.6%).

Table (2) Work injuries due Aircraft accident at Egyptian airports, cost of losses for (Aircraft) has the highest percentage (58.4%), followed by cost of losses for (GSE) with percentage (27%), and finally cost of losses for (Others) with percentage (14.6%).

Type of losses	Cost of losses in million \$			Total
	2012	2013	2014	
Aircraft	1.5	1.7	2	5.2
GSE	0.9	1	0.5	2.4
Others	0.2	0.4	0.7	1.3
Total	2.6	3.1	3.2	8.9

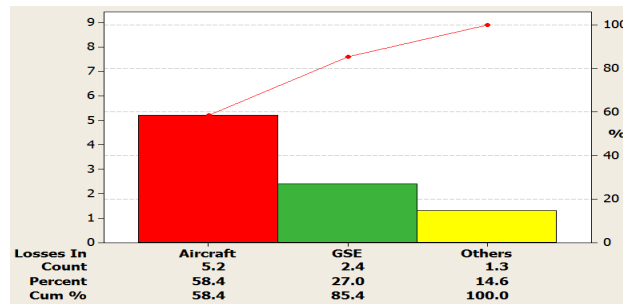
Figure (4) Cost of losses due Aircraft accident at Egyptian airports

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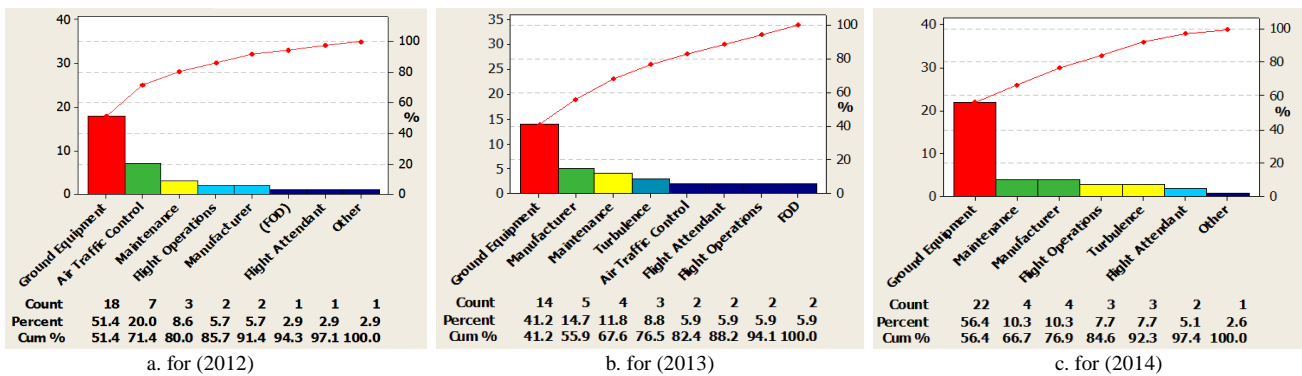
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The researcher collected a historical data for three accident reports of aviation safety for years (2012 - 2014) as and studying and analysis of these data, the researcher revealed that the causes of accidents are Flight Operations, Ground Equipments, Turbulence, Maintenance, Foreign Object Damage (FOD), Flight Attendant, Air Traffic Control or Manufacturer, by using Pareto charts shows the following:

- Pareto chart Figure (5.a) for (2012) shows that Ground Support Equipment has the highest percentage (51.4%) for accident causes of Aircraft at Egyptian airports.
- Also Pareto chart Figure (5.b) for (2013) shows that Ground Support Equipment has the highest percentage (41.2%) for accident causes of Aircraft at Egyptian airports.
- Also Pareto chart Figure (5.c) for (2014) shows that Ground Support Equipment has the highest percentage (56.4%) for accident causes of Aircraft at Egyptian airports.

Figure (5) Accident Reports for Aviation Safety at Egyptian Airports, (a) 2012, (b) 2013 and (c) 2014



Because Ground Support Equipments play a great role in completing aviation operations and has the highest percentage for accident causes of Aircraft at Egyptian airports, so the researcher selects **Ground Support Equipments** as equipments.

C. Selection of EGS as Company

The researcher collected a historical data for the year (2014/2015), for the number of services provided at Egyptian airports and according to Egypt air Ground Services annual report issued in 2017 shows the number of services provided during this year Table (3), and it is clear that EGS Company has the highest percentage (69.3%) for ground services at Cairo Airport, while Foreign Carriers has percentage (39.7%), and Foreign Carriers has the highest percentage (63.2%) for ground services at Domestic Stations while EGS Company has percentage (36.8%), and for these results the researcher select the Company EGS for implementing this study.

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Table (3) Number of services provided by EGS Company, the highest percentage (69.3%) for ground services at Cairo Airport, Foreign Carriers has percentage (39.7%), and Foreign Carriers has the highest percentage (63.2%) for ground services at Domestic Stations while EGS Company has percentage (36.8%)

Description	Cairo Airport		Domestic Stations		Total
	Foreign Carriers	Egyptair	Foreign Carriers	Egyptair	
No. of services	16937	38237	32455	18911	106550

Egypt air Ground Services Company (EGS) is one of 9 subsidiary companies of Egypt Air Holding Company which complete each other and play great roles in airline transportation, Egypt air Ground Services Company provides its services which annually more than 100,000 flight, about 11 million passengers and 1 million tons of cargo through a staff of about 5247 of efficient well trained staff that is aware of safety procedures and having skills to accurately provide services in accordance with the international standards using more than 1300 pieces of equipment & about 477 vehicles (more than 70% of them are brand new ones).

Egypt air Ground Services Company provides full ground handling services that includes:

- Ramp handling for all kinds of aircraft.
- Full passenger, baggage and ramp handling.
- Loading and unloading for all types of aircrafts.
- Crew and employees ground transportation.
- Maintenance and repair up to overhaul for all types of airport equipment.
- Incapacitated passengers and catering handling.

D. Conclusions

From above previous studies, the researcher can summarize the results in the following:

- **Location:** Cairo Airport.
- **Aircraft:** Boeing 737.
- **Equipment:** Ground Support Equipment (GSE)
- **Company:** Egypt air Ground Services (EGS)

IV. EVALUATION OF GSE'S PERFORMANCE IN EGS COMPANY USING ISO-9001

To evaluate the GSE's performance in EGS Company, the researcher develop a questionnaire based on ISO-9001 to collect data from a sample of size (60) of the employees and expertise's of this EGS Company, and then analysing and interpreting questionnaire's results to determine the current situation and knowing the root causes for problems and barriers facing improvements of the performance of aviation in EGS Company.

A. First Data Collection Tool

The first data collection tool for this study was the questionnaire which collect data for analysing the answers of the respondents, about implementing ISO-9001 in their organization and identify the evaluation of employee's perceived performance of ground aviation systems, and which composed of two parts.

- Part I: Personal Information: contains five questions for the demographic variables for employees (Gender, Age, Qualification, Experience, Administrative level), Appendix (1)
- Part II: Evaluation of employee's perceived performance of ground aviation systems which contains two dimensions with twenty one questions as follows:
 - ❖ First Dimension: Quality Management System which includes eleven questions (1-11), Appendix (2)

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❖ Second Dimension: Quality of service which includes ten questions (12-21), Appendix (3)

All the items in questionnaire were measured by using a five-point Likert-type response scales, anchored at 5 strongly agree and 1 strongly disagrees and questionnaires are administrated in different ways: face to face, telephone, postal, e-mail and Web.

B. Reliability of First Collection Tool

The researcher distribute randomly (60) form of the first collection tool (survey) to the employees of EGS Company, then collected the returned and corrected forms (55) with percentage (91.67%) of the sample size, and entered their data into the statistical software (SPSS) to test the validity and reliability of the data collection tool and its suitability for the study. To measure internal reliability of each construct of the First Collection Tool, the Cronbach's alpha is calculated for each construct according to table (4) shows that all constructs for first Questionnaire have Cronbach's alphas which ranges between (0.828, 0.848) which are larger than 0.6 (level considered "acceptable" in most social science research).

Table (4) Cronbach's alpha for constructs of the 1st questionnaire which ranges between (0.828, 0.848) which are larger than 0.6 (level considered "acceptable" in most social science research)

Study Variables		No. of Items	Cronbach's Alpha
GSE's Performance	Quality Management System	11	0.828
	Quality of Service	10	0.848
Total statements Survey		21	0.892

C. GSE's Performance in EGS Company using ISO-9001

After evaluation of internal reliability of each construct of the first collection tool, the researcher evaluate employees perceived value for GSE's Performance in EGS Company through performing the following steps:

- The first step was to calculate the mean and the standard deviation for employee's perceptions for GSE's Performance in EGS Company.
- The second step was to calculate the gaps between employee's perceptions for employee's perceptions for GSE's Performance in EGS Company and the expected value proposed by researcher.

The following items discuss the previous two steps in detail for evaluation the employee's perceived GSE's Performance in EGS Company and table (5) shows the corresponding answers, and it is clear that its mean equal (3.156), against standard deviation equal (0.638) and has gap equal (16.88%), also the dimensions of GSE's Performance (Quality Management System, Quality of Service) has mean that equal (3.370, 2.942) respectively, and these results indicate that employee's perceived GSE's Performance values in EGS Company are moderate and researcher must confirm these results in population and then make investigation to know the reasons and root causes for problems and barriers facing improvements of the GSE's Performance in EGS Company.

Table (5) Employee's perceived GSE's Performance using 1st questionnaire mean equal (3.156), against standard deviation equal (0.638) and has gap equal (16.88%)

Ser.	Dimensions of GSE's Performance	Mean	Std Dev.	Gaps %
1	Quality Management System	3.370	0.659	12.60%
2	Quality of Service	2.942	0.764	21.16%
Mean and Std Dev.		3.156	0.638	16.88%

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To confirm these results in the population, the researcher uses (1-Sample T) test, between the employee's perceived values for GSE's Performance in EGS Company and the proposed value by researcher, and Table (6) shows that there is a significant difference between them and that proved through:

- (P value = 0.000) which is less than (0.05) and this means researcher reject Null hypothesis which validate that there is a significant difference between the mean value for GSE's Performance in EGS Company and the expected value (4).
- (T Calculated = -9.81) and which is less than (T Tabulated = -1.674) and this confirm previous result.
- Also, this is confirmed through confidence interval which its upper limit is (3.300) which does not include the value (4) and that means there is a difference between them.

Table (6) (1-Sample T) for Employee's perceived GSE's Performance using 1st questionnaire, (P value = 0.000) and (T Calculated = -9.81)

Company	Mean	St.dev	Std error	Upper Confidence interval	T Calculated	P value
EGS Company	3.156	0.638	0.086	3.300	-9.81	0.000

These results prove there is a significant difference between the mean value for GSE's Performance in EGS Company using 1st questionnaire and the expected value (4), and to confirm these results the researcher uses (1-Sample T) test, between the employee's perceived values for GSE's Performance dimensions (Quality Management System, Quality of Service) in EGS Company and the proposed value by researcher, and Table (7) shows that there is a significant difference between them and that proved through:

- (P value = 0.000) which is less than (0.05) and this means researcher reject Null hypothesis which validate that there is a significant difference between the mean value for GSE's Performance dimensions (Quality Management System, Quality of Service) in EGS Company and the expected value (4).
- (T Calculated) equal (-7.09, -10.27) respectively and which is less than (T Tabulated = -1.674) and this confirm previous result.
- Also, this is confirmed through confidence interval which its upper limit equal (3.519, 3.114) respectively which does not include the value (4) and that means there is a difference between them.

Table (7) (1-Sample T) for Employee's perceived GSE's Performance dimensions in EGS Company, (P value = 0.000) and (T Calculated= -7.09, -10.27)

GSE's Performance dimensions	Mean	St.dev	Std error	Upper Confidence interval	T Calculated	P value
Quality Management System	3.370	0.659	0.089	3.519	-7.09	0.000
Quality of Service	2.942	0.764	0.103	3.114	-10.27	0.000

These results prove there is a significant difference between the mean value for GSE's Performance in EGS Company and the expected value (4), and this means existence of problems and barriers facing improvements of GSE's Performance, and an investigation must done to know the reasons and root causes for these problems and barriers and make remedy for it.

V. EVALUATION OF GSE'S PERFORMANCE USING INTEGRATION OF ISO-9001 & ISO-6966

To make remedy for the problems and barriers facing improvements of GSE's Performance, the researcher must know the reasons and root causes for these problems, and for solution another different meeting and interviews with employees and expertise's from different administrative levels in EGS Company were done to determine the reasons and the root causes for these problems and barriers. And once more a brain storming with decision maker was done and the conclusion for these problems were either the employees in EGS Company does not implement ISO-9001 efficiently, or the ISO-9001 is not sufficient to improve the GSE's Performance in EGS Company. And to know the real

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reason for these problems the researcher collected a historical data for the year (2014/2015), and made analysis for the results of editing implementation of the ISO-9001 in EGS Company and found excellent results, and hence researcher comes to conclusion that the ISO-9001 is not sufficient to improve the GSE's Performance in EGS Company.

To make remedy for these problems and barriers once more a brain storming with decision maker in EGS Company was done to propose and suggest a suitable solution to these problems and barriers by modifying the first questionnaire to remedy the defects and problems happened during analysis its results through developing a second questionnaire based on integration of ISO-9001 with ISO-6966, and collect data from a sample of size (60) of the same employees and expertise's of this EGS Company, and then analysing and interpreting questionnaire's results to validate and proof the acceptance of this questionnaire to the study.

A. Second Collection Data Tool

The second collection data tool for this study was the questionnaire which integrate both ISO-9001 with ISO-6966 to collect data for analysing the answers of the respondents, and identify the evaluation of employee's perceived performance of ground aviation systems, and which composed of two parts.

- Part I: Personal Information: contains five questions for the demographic variables for employees (Gender, Age, Qualification, Experience, Administrative level), Appendix (1)
- Part II: Evaluation of employee's perceived GSE's Performance in EGS Company which contains five dimensions with fifty questions as follows:
 - ❖ First Dimension: Quality Management System which includes eleven questions (1-11), Appendix (2)
 - ❖ Second Dimension: Quality of service which includes ten questions numbered (12-21), Appendix (3)
 - ❖ Third Dimension: Effectiveness which includes ten questions numbered (22-31), Appendix (4)
 - ❖ Fourth Dimension: Efficiency which includes ten questions numbered (32-40), Appendix (5)
 - ❖ Fifth Dimension: Safety which includes nine questions numbered (41-50), Appendix (6)

All the items in questionnaire were measured by using a five-point Likert-type response scales, anchored at 5 strongly agree and 1 strongly disagrees. And questionnaires are administrated in different ways: face to face, telephone, postal, e-mail and Web.

B. Reliability of Second Collection Tool

The researcher distribute randomly (60) form of the second collection tool (survey) to the same employees of EGS Company, then collected the returned and corrected forms (55) with percentage (91.67%) of the sample size, and entered their data into the statistical software (SPSS) to test the validity and reliability of the data collection tool and its suitability for the study. Table (8) shows that all constructs for second Questionnaire have Cronbach's alphas which ranges between (0.686, 0.836) which are larger than 0.6 (level considered "acceptable" in most social science research).

Table (8) Cronbach's alpha for constructs of the 2nd questionnaire which ranges between (0.686, 0.836) which are larger than 0.6 (level considered "acceptable" in most social science research).

Study Variables		No. of Items	Cronbach's Alpha
GSE's Performance in EGS Company	Quality Management System	11	0.836
	Safety	10	0.826
	Efficiency	9	0.780
	Effectiveness	10	0.686
	Quality of Service	10	0.822
Total		50	0.924

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C. GSE's Performance using Integration of ISO-9001 & ISO-6966

After evaluation of internal reliability of each construct of the second collection tool,, the researcher evaluate employees perceived value for GSE's Performance in EGS Company through performing the following steps:

- The first step was to calculate the mean and the standard deviation for employee's perceptions for GSE's Performance in EGS Company.
- The second step was to calculate the gaps between employee's perceptions for employee's perceptions for GSE's Performance in EGS Company and the expected value proposed by researcher (4).

The following items discuss the previous two steps in detail for evaluation the employee's perceived GSE's Performance in EGS Company, and Table (10) shows the corresponding answers, and it is clear that its mean equal (3.122), against standard deviation equal (0.501) and has gap equal (17.56%), also the five dimensions of GSE's Performance has mean that ranges between (2.831, 3.483), and these results indicate that employee's perceived GSE's Performance values in EGS Company are moderate and researcher must confirm these results in population.

Table (10) Employee's perceived GSE's Performance using 2nd questionnaire mean equal (3.122), against standard deviation equal (0.501) and has gap equal (17.56%)

Ser.	Dimensions of GSE's Performance	Mean	Std Dev.	Gaps %
1	Quality Management System	3.483	0.678	10.35%
2	Safety	2.942	0.732	21.16%
3	Efficiency	3.210	0.614	15.80%
4	Effectiveness	2.831	0.568	23.38%
5	Quality of Service	3.146	0.639	17.09%
Mean and Std Dev.		3.122	0.501	17.56%

To confirm these results in the population, the researcher uses (1-Sample T) test, between the employee's perceived values for GSE's Performance in EGS Company using 2nd questionnaire and the proposed value by researcher, and Table (11) shows that there is a significant difference between them and that proved through:

- (P value = 0.000) which is less than (0.05) and this means researcher reject Null hypothesis which validate that there is a significant difference between the mean value for GSE's Performance in EGS Company using 2nd questionnaire and the expected value (4).
- (T Calculated = -13.00) and which is less than (T Tabulated = -1.674) and this confirm previous result.
- Also, this is confirmed through confidence interval which its upper limit is (3.235) which does not include the value (4) and that means there is a difference between them.

Table (11) (1-Sample T) for Employee's perceived GSE's Performance using 2nd questionnaire (P value = 0.000) and (T Calculated = -13.00)

Company	Mean	St.dev	Std error	Upper Confidence interval	T Calculated	P value
EGS Company	3.122	0.501	0.068	3.235	-13.00	0.000

These results prove there is a significant difference between the mean value for GSE's Performance in EGS Company using 2nd questionnaire and the expected value (4), and to confirm these results the researcher uses (1-Sample T) test, between the employee's perceived values for the five GSE's Performance dimensions in EGS Company and the proposed value by researcher, and Table (12) shows that there is a significant difference between them and that proved through:

- (P value = 0.000) which is less than (0.05) and this means researcher reject Null hypothesis which validate that there is a significant difference between the mean value for five GSE's Performance dimensions in EGS Company using 2nd questionnaire and the expected value (4).

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- (T Calculated) ranges between (-15.26, -5.66) and which is less than (T Tabulated = -1.674) and this confirm previous result.
- Also, this is confirmed through confidence interval which its upper limit equal (2.959, 3.636) respectively which does not include the value (4) and that means there is a difference between them.

Table (12) (1-Sample T) for Employee's perceived GSE's Performance dimensions using 2nd questionnaire (P value = 0.000) and (T Calculated) ranges between (-15.26, -5.66)

GSE's Performance dimensions	Mean	St.dev	Std error	Upper Confidence interval	T Calculated	P value
Quality Management System	3.483	0.678	0.091	3.636	-5.66	0.000
Safety	2.942	0.732	0.099	3.107	-10.72	0.000
Efficiency	3.210	0.614	0.083	3.349	-9.54	0.000
Effectiveness	2.831	0.568	0.077	2.959	-15.26	0.000
Quality of Service	3.146	0.639	0.086	3.290	-9.91	0.000

In spite of using integration between ISO-9001 and ISO-6966 still the GSE's Performance in EGS Company is poor and once more a brain storming with decision maker in EGS Company was done to know the reasons and propose and suggest a suitable solution to the poor GSE's Performance in EGS Company, the researcher expected the reason was that the employees in EGS Company has high resistance for implementation ISO-6966 because they were not trained well on its parts, and researcher to confirm that reason create ten statements to measure this resistance, and collect data once more from a sample of size (60) of the same employees and experts of this EGS Company, and the results of analysing and interpreting the answers were shown in Table (13) and it is clear that the mean value for employee's resistance equal (3.856) which is high, against standard deviation that equal (0.313), it is also clear that all ten statements has mean value that ranges between (3.455, 4.418), these results gives indication that employees in EGS Company have high resistance to apply ISO-6966.

Table (13) Employees resistance to apply ISO-6966 in EGS Company

Ser.	Employee's resistance to apply ISO-6966	Mean	St dev.
1	Feeling resistant as initial reaction when informed of new changes regarding the way of work.	3.945	0.870
2	Effective Communication is always used in the workplace.	3.927	0.716
3	When involving in the decision making regarding new change in the way of work, resistance to changes will be few.	4.418	0.712
4	When the new changes in the way of work have been implemented incorrectly, there will be an immediate corrective action.	4.309	0.717
5	When asking for feedback regarding the new implemented change, there will be an accurate and immediate feedback with suggestions for improvement if needed.	3.655	0.751
6	Loss of confidence between top management and subordinates will cause resistance in new changes in the way of work	3.727	0.781
7	In order to make effective changes, communication between staff and management must remain fluid and vibrant.	3.764	0.693
8	Anger, dereliction, withdrawal, and indifference are all symptoms of change resistance.	3.455	0.939
9	Employee suggestions are involved when planning for a major changes in the way of work	3.782	0.738
10	Supporting in applying the new changes in the way of work if the reason for these changes were effectively and directly related to the work	3.582	0.956
Mean and Std Dev.		3.856	0.313

These results confirm that employees in EGS Company have high resistance to apply ISO-6966, and they need more training on its parts, and the 2nd questionnaire must modify to include these statements to measure resistance of employees toward application of ISO-6966 in their organization.

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VI. CONCLUSION AND DISCUSSION

In order to improve the performance of any organization, it is necessary to pay attention to the administrative aspect which represented in applying ISO-9001 in addition to specialized aspect which represented in this study in applying ISO-6966, and make an extra effort to change the culture of employees in accepting the new methods that improve the performance.

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APPENDICES

Appendix (1) : Personal information			
1	Gender	Male	Female
2	Age	Less than30	30 : 45 More than 45
3	Educational qualification	Average	University degree Post graduate
4	experience	Less than 15	15 : 30 More than 30
5	Managerial level	Top management	Middle management Operational management

Appendix (2) : Quality Management System						
		1	2	3	4	5
1	The company management is committed to develop and implement of the quality management system					
2	Quality policy, quality objectives, quality manual, quality procedures and records are existed and updated					
3	Quality policy of the company is appropriate to its purpose					
4	Quality objectives of the company are SMART and consistent with the quality policy					
5	Quality management system planning meet the requirements and quality objectives					
6	Responsibilities and authorities are defined and communicated within the company					
7	Quality management system is reviewed by the management at planned intervals					
8	The management review provides assessing and improvements for quality management system					
9	The company plans and manages processes necessary for the continual improvement					

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10	Internal audits are conducted at planned intervals to determine the efficiency of quality management system					
11	There are suitable methods applied by the company for monitoring and measuring the quality management system processes					

Appendix (3) : Quality of Service		1	2	3	4	5
12	The company provides and maintains the infrastructure (buildings, workplace, process equipments and supporting services) needed to achieve conformity to requirements					
13	Work environment meet all regulations and achieve conformity to requirements					
14	Employees are aware of the relevance and importance of their activities and how they contribute to obtaining the quality objectives					
15	The company plan and control the design and development of services					
16	The company controls its purchasing processes to ensure purchased product conforms to requirements					
17	The equipments are preserved during use, maintenance and storage.					
18	The company monitors and measures the performance of the equipments					
19	The company identifies and controls the non conforming service or equipment					
20	The company identifies corrective actions to eliminate the cause of nonconformities					
21	The company identifies preventive actions to eliminate the cause of potential nonconformities					

Appendix (4) : Effectiveness		1	2	3	4	5
22	Taken into account when designing GSE the environmental conditions (surface, slope, weather, lighting, operating rules, staff qualification, etc.)					
23	There are controls, monitoring devices and displays					
24	There are signs and markings for all GSE that shows all data about the equipment and working, safety and maintenance requirements					
25	Complying with the manufacturer's instructions during operation work					
26	There is a specific regulations for improve the performance of GSE					
27	There are manufacturer regulations for maintenance and are adhered to					
28	Documents covering operation, maintenance, and spare parts are provided					
29	The company provides the necessary and effective training programs for all employees					
30	Preparing the aircraft for the next flight completes on estimated time or below					
31	There are minor changes in any process					

Appendix (5) : Efficiency		1	2	3	4	5
32	There isn't any congestion during the moving of vehicles of GSE					
33	There are emergency systems for any failure in all equipment or any component thereof					
34	GSE are designed so that its stability and its strength are ensured during intended use					
35	Systems like fuel, hydraulic and electrical are working with high and safe performance					
36	The material of GSE are suitable and dependable for its use					
37	The design of GSE are suitable and dependable for its use					
38	GSE are designed to work in all climates conditions					
39	Workers and operators know how to operate and maintain GSE correctly					
40	Employee satisfaction according to the existing regulations and standards					

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Appendix (6) : Safety		1	2	3	4	5
41	There are specific comprehensive risk assessments for each type of aircraft GSE					
42	Applying a specific standard to reduce damages and injuries during GSE operations					
43	All personnel working surfaces (platforms, walkways, steps, stairs, ramps, ladder rungs, cleats or treads) are safely designed					
44	The cabin of GSE (if provided) and all its contents (operator's space, seats, glass in doors and windows,...) are safely designed					
45	The observance of safety standards in the achieving of the visibility					
46	Any part of the GSE coming close to or liable to touch the aircraft is safe designed to protect the aircraft					
47	There are certain speed limits for any GSE or vehicles					
48	There is an additional fire protection while aircraft refuelling					
49	All lifting systems are design safely that any failure does not result in uncontrolled descent or hazardous actions					
50	Using PPE (personal protective equipments) in work and maintenance					