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MIDDLE EAST UNIVERSITY
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Investigating the Mediating Role of Workforce Agility on the Effect of Lean Six Sigma Elements on Competitive Advantage "A Comparative Study among Royal Bahraini Armed Forces"

التحقق من الدور الوسيط لرشاقة الموارد البشرية في أثر عناصر الإنحراف السداسي الرشيق على الميزة التنافسية:دراسة مقارنة بين مستودعات القوات المسلحة الملكية البحرينية

Prepared by:
Ghassan Abduljalil Al-Mahmeed

Supervised by:
Dr.Ahmed Ali Salih

Thesis Submitted in Partial Fulfillment of the Requirements for Master's Degree in Business Management.

Department of Management
Faculty of Business
Middle East University
Amman - Jordan

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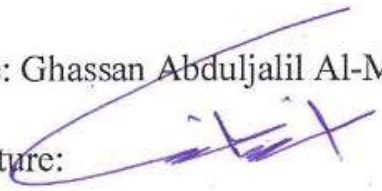
Signature: 

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Resolution of the Discussion Committee

This dissertation titled "Investigating the Mediating Role of Workforce Agility on The Effect of Lean Six Sigma Elements on Competitive Advantage "A Comparative Study among Royal Bahraini Armed Forces" has been defended and approved on Saturday 27/01/2018.

Discussion Committee Title Signature

Discussion Committee Member	Title	University	Signature
Prof. Abdel Bari Durra "***Professor Emeritus***"	Chairman	Middle East University	A. Durra
Dr. Ahmed Ali Salih	Supervisor	Middle East University	
Prof. Salem Saffah Al-Oun	External member	Al al-Bayt university	

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Finally, I would like to thank all my colleagues who have provided me insights through sharing their experiences, discussions and creative ideas and to all who contributed to make this work a reality.

Dedication

To whom taught me the meaning of honesty, taught me sincerity, to whom were role models in the greatness and diligence, to those pure souls and the best teachers in life "Mohammed bin Salman Almahmeed, Eid bin Rashid Bukhmmas, Ahmad bin Darwish. These people will stay forever and I will tell my children as long as I live.

Fostered me and taught me patience, determination, separation in the discourse and the strength of the statement and raised me to be a better man. To my father, “Abdul Jalil Mohammed Almahmeed."

To the virtuous educator, who instilled the best virtues and qualities in me. To whom I reassure my heart and seek comfort in. To my paradise, to my mother "Sheikhabint Eid Boukhmas".

To my precious wife, my beloved, who sacrificed her time and stood by my side and supported me in the years to study. To the mother of my beloved daughter. To my wife "Dr. Maryam Mohammed Salem Altamimi".

To my long waited little baby girl. To my sunshine after the length of absence.To my beautiful smile.To my new life.To my daughter "Lulwa".

To my beloved sisters "Wafa and Fatima". To my dear brother “Hasan"Who supportme while they were busy. To the sons of my sisters”Shakha, Rashed, Maria, Shamlan, and Abdulrahman”whom they miss my absence.

To all the smile and longing, to the owners of love and the beautiful heart, to my second beloved family "Mohammed Salem Al Tamimi" “Father Mohammad, Mother Salama, Salem, Fatima, Amana, Dana, Ahmed and Abdulaziz ”which they gave me their calls and pray for my excellence and success.

To my uncles "Salman, Laila, Samira, Badriya, Hessa", my family who they hugged me in my childhood and wished me all the best and excellence.

List of Contents

List of Tables

List of Figures

List of Abbreviations

Abbreviations	Means
CA	Competitive Advantage
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
DMAIC	Define, Measure, Analyze, Improve, and Control
EFA	Exploratory Factor Analysis
ET	Environmental Turbulence
GE	General Electric
GFI	Goodness of Fit Index
JIT	Just in Time
KMO	Kaiser-Meyer-Olkin
LSS	Lean Six Sigma
OPD	Outpatient Department
PO	Patient Outcomes
RMESA	Root Mean Square Error Approximate
TQM	Total Quality Management
WFA	Workforce Agility

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Abstract

The study aim is to recognize the investigation of the Effect of Lean Six Sigma (LSS) elements on the Competitive Advantage (CA) by studying the Workforce Agility (WFA) attributes among Royal Bahraini Armed Depots.

The Population of the study, applied to the present study, include a total number of (300) members that included all the working specialists (officers, officers, Military beneficiaries, and finally beneficiaries of local civilian companies) in the Royal Bahraini Armed Depots of total (3) Depots (Army Depot, Navy Depot, Air force Depot),Due to the limited study population, it has been fully taken for the current study using a comprehensive survey method, and the questionnaire was used as a main tool for collecting information and then analyzed by a set of statistical methods, (Means, Standard Deviations, Cronbach Alpha, CFA,ANOVA, VIF, Tolerance, **t** "test", Factor Analysis, Confirmatory Factor Analysis, Kolmogorov - Smirnov Test, Linear Regressions)

The results of the study have been shown:

- The level of practice of the three variables [(LSS) elements, (CA), and (WFA) attributes] in general was "moderate" among the Armed Forces Depots was a difference in according to the sequential descending, where the Air force Depots, Navy force Depots, and Army Depots.
- There is a direct effect of (LSS) elements on the (CA), and this effect was increased by the presence of mediator variable of (WFA) attributes which it generally full mediator.
- There are differences in the responses among the three Armed Forces Depots (Air Force, Naval Force, and Army Force) in the practices with the main variables of

current study [(LSS) elements, (WFA) attributes, and (CA) according to the Depots as follows**:**

- The differences in response to the exercise of (LSS) elements were in favor of (Air Force Depots) at the expense of the other Forces Depots (Army, Naval).
- The differences in response to the exercise of (CA) were in favor of (Air Force Depots) at the expense of the other Forces Depots (Army, Naval).
- The differences in response to the exercise of (WFA) Attributes were in favor of (Air Force Depots) at the expense of the other Forces Depots (Army, Naval).

The study has recommends the following:

- Minimizing the inventory to the equivalent limit for the period until the next quantity arrives to save the cost of inventory and avoid the expiration by applying the standards of inventory (quantities, compatibles, capacity) to save type of items.
- Performing the transactions in value process through Electronic Internal Network and continually monitored their operations to reduce any additional process.
- Supporting the training with workforce Agility attributes to face the change in the environment.
- Creating the Quality Control (QC) departments in the Army Depot.

Keywords: Lean Six Sigma "LSS", Lean Six Sigma "LSS" elements, Competitive Advantage "CA", Workforce Agility "WFA" attributes, and the Armed Forces Depots

التحقق من الدور الوسيط لرشاقة الموارد البشرية في أثر عناصر الإنحراف السداسي الرشيق على الميزة التنافسية: دراسة مقارنة بين مستودعات القوات المسلحة الملكية البحرينية

أعــداد الطـالب

غسان عبدالجليل محمد المحميد

أشراف

د. أحمد علي صالح

الملـخـــص

هدفت الدراسة الحالية وهي دراسة مقارنة لمعرفة أثر الإنحراف السداسي الرشيق على الميزة التنافسيه من خلال إختبار الدور الوسيط "سمات رشاقة الموارد البشرية" بين مستودعات القوات المسلحة الملكية البحرينيه. أن مجال الدراسه هي مستودعات القوات المسلحة والبالغ عددها (3) مستودعات (مستودعات القوه البريه، مستودعات القوه البحريه، مستودعات القوه الجويه) إذ بلغ مجتمع الدراسه (300) فردا من جميع الصنوف و الرتب (ضباط، ضباط صف، جنود، مستفيدين عسكريين، و أخيرا مستفيدين شركات مدنيه محليه)، ونظرا لمحدودية مجتمع الدراسه تم أخذة بالكامل عينه للدراسه بإسلوب المسح الشامل وتم إستخدام الأستبانة كأداة رئيسية من أجل جمع المعلومات ومن ثم تحليلها بمجموعة من الاساليب الاحصائية وهي (الوسط الحسابي، الإنحراف المعياري، كرونباخ ألف، تحليل التباين الأحادي، معامل التباين التضخم، الحد المسموح به، إختبار الـ T، التحليل ألعاملي التوكيدي والإستكشافي، إختبار كولمو دروف سيميرنوف، الإنحدار المتوسط و البسيط، تحليل المسار بإستخدام برمجية أوماس)

وقد اظهرت نتائج الدراسة :

- ان مستوى ممارسة المتغيرات الثلاثة (الانحراف السداسي الرشيق، الميزة التنافسيه، رشاقة الموارد البشرية) بشكل عام كان ‘‘متوسط’’ ولكن على مستوى مستودعات الاسلحة فيما بينها كان هناك تباين بينها حيث تأتي مستودعات القوة الجويه في المرتبه الأولى ثم تليها مستودعات القوة مستودعات البحريه و أخيرا القوة مستودعات البريه.
- وجود اثر مباشر لعناصر الإنحراف السداسي الرشيق على الميزة التنافسيه، وقد ازاد هذا الاثر بوجود المتغير الوسيط .

- وجود فروق في الإستجابات بين مستودعات الأسلحة الثلاثه (القوة الجويه، القوة البحرية، القوة البرية) في ممارسات المتغيرات الرئيسية لهذه الدراسه (الإنحراف السداسي الرشيق، الميزه التافسية، سمات رشاقة الموارد البشرية) تبعا لمستودع السلاح على النحو التالي:

- فروق الإستجابه في ممارسة عناصر الإنحراف السداسي الرشيق كانت لصالح (مستودعات القوة الجويه) على حساب مستودعات القوتين (البرية، البحرية).
- فروق الإستجابه في ممارسة الميزه التافسية كانت لصالح (مستودعات القوة الجويه) على حساب مستودعات القوتين (البرية، البحرية).
- فروق الإستجابه في ممارسة لسمات رشاقة الموارد البشريه كانت لصالح (مستودعات القوة الجويه) على حساب مستودعات القوتين (البرية، البحرية).

قدمت الدراسة مجموعة من التوصيات أبرزها :

- تقليل المخزون إلى الحد المكافي للفترة حتى وصول الكمية التالية لتقليل كلفة المخزون وتجنب انتهاء الصلاحية من خلال تطبيق معايير المخزون (الكميات، التجانس، السعه) لحفظ نوع المخزون.
- تفعيل المعاملات في عمليات ذات قيمة و من خلال شبكة داخلية إلكترونية مع الرصد المستمر للعمليات للحد من أي عملية إضافية.
- تفعيل التدريب لتطوير سمات رشاقة الموارد البشريه في مواجهة التغيير في البيئه لدى مستودعات القوة البريه ودعمها في مستودعات القوة البحريه.
- إنشاء قسم مراقبة الجودة في مستودعات القوة البريه وزيادة تفعيلها لدى مستودعات القوة البحريه.

الكلمات المفتاحية: الإنحراف السداسي الرشيق، عناصر الإنحراف السداسي الرشيق، الميزة التنافسية، رشاقة الموارد البشرية، مستودعات القوات المسلحه.

Chapter One: Background and Importance of the Study

1.1 Introduction

This chapter will be the gateway to the subject of the study, where we address the background of the study, which consists of four parts, as follows: the first four lines of the formulation of the researcher, then followed by studies on each variable and interspersed studies link between variables, finally the last lines of the researcher's formulation.

As will be discussed, in this chapter, problem statement, study objectives, study importance, study questions and hypothesis which embodies by study model and conceptual framework to reflect the relations and the studied relationship, limitations, delimitations, and finally conceptual and operational framework as shown in the following figure (1.1).

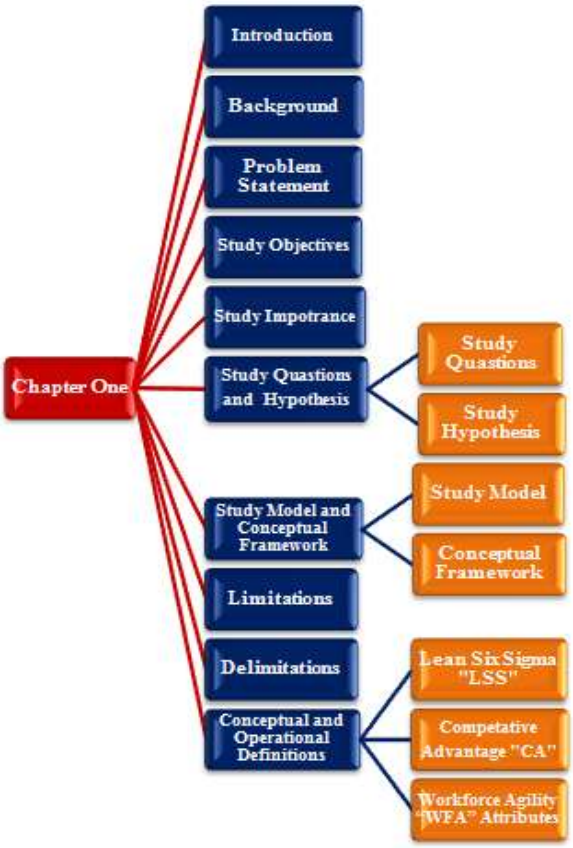


Figure (1.1): Construction of chapter one.

1.2 Background

The race for distinction between military organizations has become remarkable by reviewing the capability of combat readiness and has become a regional, international and global classification. Many of these organizations have become models of competitiveness and excellence in all their forms, and their access mechanisms are more accurate.

Competitive Advantage (CA) is the ability to survive (Porter, M. E., 1985) and create a defensible position over its competitors (McGinnis, M. A., & Vallopra, R. M., 1999) through attributes and resources that allow outperforming others in the same field (Chaharbaghi K, Lynch R., 1999). So that, the (CA) penetrated the military organization to stay in confrontation with the adversary as the case of profit organization against competitors. It is the capability to let an organization to differentiate itself from competitors (Tracey M, et al, 1999) and build flexible strategy to respond to other major changes in competitive environments (Combs, J. G, et al, 2011). It is an important variable in strategic planning (Gruber, A, 2015).

Competitive Advantage (CA), for any military force, means the uniqueness and difference of the force or sector from its counterparts in the application of systems and provision of services [cutting Costs, Time investment, Quality delivery]. All of that utilized to sustain and achieve the effectiveness of combat readiness of the front lines at the highest level (Praful Patel, P., (2014), cade, T., (2014), Apte, U., and Kang, K., (2006).The strength of (CA) will emerge powerful through operation mechanism and (LSS) is the most effective results in several studies (George, M.L 2003; Polcyn, K. A., & Engelman, S. S 2006; Giorgio, C., A., 2008).

Lean Six Sigma “LSS” defined as a recent methodology to resolve a variety of processes with common problems (Apte, U.; and Kang, K.; 2006) to minimize the defect to 3.4 per million and eliminating waste and non-add value process (Hajikordestani, N.R; 2007) to achieve a deliberate strategy (Manville.et al; 2012).Military organizations are characterized by sequencing, and with this mechanism will increasingly consistent.(George, M.L 2003) in his comment that “LSS” is strongly successful to raise the (CA) between military industries to meet customer’s need and reduce cycle time.

(Apte, U.; and Kang, K., 2006) described also that “LSS” is a means to decrease cost and improve the front-line employees The purpose of “LSS” is to make an organization superior in overall work (Naslund, D., 2008)and process improvement without barriers (Assarlind.et al; 2013). To complete the circle of effect of quality systems on (CA), previous studies have encouraged inserting (WFA) as a mediator to stimulate the loop of effectiveness. (Goldman S L, et al., 1995; Sanchez, L. M., & Nagi, R, 2001).

Workforce agility (WFA) is an environmental responsiveness to the turbulence and sudden change (Breu., K, et al; 2001) to react, adapt the change promptly, and take advantage to benefit the firm (Chonko, L. B., & Jones, E.; 2005). According to (Brumfit, K., et al., 2001), (WFA) has an influential role on environmental turbulence that affects (CA) among the competitors. Previous studies have indirectly pointed to the link between (LSS) and (WFA), but it describes it through their tools. (Sherehiy, B., 2008) describes “WFA” as an agile performance in six dimensions that is harmonious to operate Lean Six Sigma “LSS” requirements. The flexibility, copes with the unexpected internal and external environmental changes (Bosco, C. L., 2007), qualify the knowledge and skills to anticipate the dynamics of the environment (Alavi S & Abd.Wahab D. 2013).

By focusing on previously presented about the three components [(CA), (LSS), and (WFA)] and the relationship between them, in addition to the result of previous studies in increasing the effectiveness of (CA) with quality systems in existence of (WFA). furthermore, the lack of studies of the link between these three components at the civil and military levels, this is a motivate for this research to study the mechanism of linking the three components in the military field to investigate the effectiveness of (CA) by (LSS) quality systems in the presence of (WFA)as a mediator and show the impact of competitiveness among the Armed Forces Depots “Army (land force), Navy, and Air force” in Royal Bahraini Armed Forces.

1.3 Problem Statement

The diagnosis of the current study problem is derived from two sources, the first source from previous studies, and the second source from the practical and field experience of the researcher.

Studies by (George, M.L, 2003; Cavallini, A. G., 2008; Gupta, V., et al, 2012) conclude that (LSS) is a supportive mean and source of (CA); this resulted through cutting cost, cutting time, and high revenue. So they recommended investing this relation for gaining competitiveness.

A study by Sumukadas, N., & Sawhney, R. (2004) concluded with regard to a relationship between the WFA and CA that the WFA attributes can be improved by adopting employee involvement practices, especially when there were many of sources literature described these attributes of (WFA) and its effectiveness without examining it on organization outcomes.

As to a study of Alavi S and Abd.Wahab D (2013), they deduced that there is a lack of study that has not been given much attention during growing global competition although it is an effective tool on behavior of many firms. They recommended continuing the study to find out more impacts of (WFA) on organizational outcomes.

In the frame of (LSS) and (WFA), there are no studies showing the direct relationship between them. Sherehiy, B. (2008) concludes that (WFA) is new approach of enterprise management between many different solutions including quality systems that are necessary to achieve success and adapt in responding to unpredictable changes of competitive market environments.

Based on the above, it is clear that there are no previous studies that indicate to examine the effective relationship between the three variable components [(CA), (LSS), and (WFA)] as an effective and influential point between them. Most of the studies were conducted to find the effect of two variables only, and the studies were between component and it is elements of component.

The researcher has another motivation to adopt the problem statement from his practical and field experience, and from field interview as the second source in diagnosing the problem.

Through the researcher close to the field, and making interviews with the three Depots crew “Army, Naval, and Air force” of how practice the (LSS) tools, apply (WAF) in the right context and how it well affect together to raise the level of (CA), it appears that exercise these three variables concepts in military organization in kingdom of Bahrain does not rise to the desired ambition level, despite the existence of a framework,

which leads to retreat in the quality performance and decline in the incentive to work and thus losing of (CA).

Based on the above, it is clear that these subjects need giving importance to a deeper study of evaluating these variables and the relationship between them. This study comes to develop and clarify the concepts of these variables in military organization, and put it in correct framework and study their importance, impact, and it effectiveness to achieve the desired ambition level of (CA).

1.4 Study Objectives

The current study seeks to achieve its main objective that verification of the effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, Non-utilized Talent, and Space" on (CA) in the presence of (WFA) attributes as a mediator between the three Armed Forces Depots "Army, Navy, and Air force" through:

1. Providing a conceptual and intellectual framework for basic study variables [(LSS) elements, (WFA) attributes, and (CA)].
2. Identifying the level of exercising the three study variables [(LSS) elements, (WFA) attributes, and (CA)] in the Armed Forces Depots "Army, Navy, and Air force".
3. Detecting the direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on (CA) among Armed Forces Depots "Army, Navy, and Air force".
4. Detecting the direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on (WFA) attributes among Armed Forces Depots "Army, Navy, and Air force".
5. Detecting the direct effect of (WFA) attributes on (CA) among Armed Forces Depots "Army, Navy, and Air force".
6. Diagnosing the indirect effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on (CA) in the presence of (WFA) attributes as a mediating variable among Armed Forces Depots "Army, Navy, and Air force"?

7. Investigate the differences in the response of the sample about the importance of three variables of study [(LSS) elements, (WFA) Attributes, and (CA)] according to the type of Armed Forces Depots "Army, Navy, and Air force".

1.5 Study Importance

The importance of the study is considering from both scientific and practical points of view as follow:

From the scientific side, this research deals with studying and analyzing the three contemporary variables in administrative literature [(LSS) elements, (WFA) attributes, and (CA)] while others studies deal with only two variables.

Also the study seeks to examine the nature of the three variables [(LSS) elements, (WFA) attributes, and (CA)] taking into consideration that it is the first kind of study according to the best researcher's moreover, this study will fill the knowledge gap the Arab library in this kind of studies of these three variables together.

From the practical side, it is a comparative study in a military environment "Armed Forces Depots" among the three forces "Army, Navy, and Air force" in Royal Bahraini Armed Forces, where the effect of variables on (CA) is analyzed.

The results of this study can benefit the military sectors and category in Royal Bahraini Armed Forces and take into the account development it to direct the work and achieve the desired ambition in successful competitiveness in the Armed Forces.

1.6 Study Questions and Hypothesis

1.6.1 Study Questions

Based on the presented through the study problem and the seeking goal, the following main question has been identified:

1. What is the level of the three variables of study [(LSS) elements, (WFA) attributes, and (CA)] in the Armed Forces Depots "Army, Navy, and Air force"?

2. Do (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" have direct effects on (CA) in Armed Forces Depots "Army, Navy, and Air force"?

2.1 Do (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" have direct effect on the "Time" element of (CA) in Armed Forces Depots "Army, Navy, and Air force"?

2.2 Do (CA) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" have direct effect on the "Quality" element of (CA) in Armed Forces Depots "Army, Navy, and Air force"?

2.3 Do (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" have direct effect on the "Cost" element of (CA) in Armed Forces Depots "Army, Navy, and Air force"?

2.4 Do (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" have direct effect on the "Innovation" element of (CA) in Armed Forces Depots "Army, Navy, and Air force"?

3. Do (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" have direct effects on (WFA) attributes in Armed Forces Depots "Army, Navy, and Air force"?

4. Do (WFA) attributes have a direct effect on (CA) in Armed Forces Depots "Army, Navy, and Air force"?

5. Do (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" have indirect effect on (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force"?

5.1 Do (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" have indirect effects on the "Time" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots at $\alpha \leq 0.05$?

5.2 Do (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" have indirect effects on the "Quality" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots at $\alpha \leq 0.05$?

5.3 Do (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" have indirect effects on the "Cost" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots at $\alpha \leq 0.05$?

5.4 Do (LSS) "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" have indirect effects on the "Innovation" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots at $\alpha \leq 0.05$?

6. Are there a differences in the response of the sample about the importance of the three variables of study [(LSS) elements, (WFA) attributes, and (CA)] according to the type Armed Forces Depots "Army, Navy, and Air force"?

6.1 Are there a differences in the response of the sample about the importance of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" according to the type Armed Forces Depots "Army, Navy, and Air force"?

6.2 Are there differences in the response of the sample about the importance of (CA) according to the type of Armed Forces Depots "Army, Navy, and Air force"?

6.3 Are there differences in the response of the sample about the importance of (WFA) attributes according to the type of Armed Forces Depots "Army, Navy, and Air force"?

1.6.2 Study Hypotheses

Based on the study problem, objectives and questions, the study seeks to test the following hypotheses:

- **$H_{0.1}$**: There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

- **$H_{0.1.1}$**: There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on the "Time" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.
- **$H_{0.1.2}$**: There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on the "Quality" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.
- **$H_{0.1.3}$**: There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on the "Costs" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.
- **$H_{0.1.4}$**: There is no direct effect of (LSS) elements" Defect, Waiting, Transportation, Inventory, Motion, Extra Process, Non-utilized talent, and Space" on the "Innovation" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.
- **$H_{0.2}$**: There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on (WFA) attributes in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.
- **$H_{0.3}$**: There is no direct effect of (WFA) attributes on (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.
- **$H_{0.4}$**: There is no indirect effect of (LSS)elements on (CA)in the presence of (WFA)attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.
- **$H_{0.4.1}$**: There is no indirect effect of (LSS)elements on the "Time" element of (CA)in the presence of (WAF) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.
- **$H_{0.4.2}$**: There is no indirect effect of (LSS)elements on the "Quality" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.
- **$H_{0.4.3}$**: There is no indirect effect of (LSS) elements on the "Costs" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

- **$H_{0.4.4}$**: There is no indirect effect of (LSS) elements on the "Innovation" element of (CA) in the presence of (WFA) as a mediator variable among Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.
- **$H_{0.5}$**: There are no differences in the response of the sample about the importance of the three variables of study [(LSS) elements, (WFA) attributes, and (CA)] according to the type of Armed Forces Depots "Army, Navy, and Air force".
- **$H_{0.5.1}$**: There are no differences in the response of the sample about the importance of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" according to the type of Armed Forces Depots "Army, Navy, and Air force".
- **$H_{0.5.2}$**: There are no differences in the response of the sample about the importance of (CA) according to the type of Armed Forces Depots "Army, Navy, and Air force".
- **$H_{0.5.3}$**: There are no differences in the response of the sample about the importance of (WFA) attributes according to the type of Armed Forces Depots "Army, Navy, and Air force".

1.7 Study Model and Conceptual Framework

1.7.1 Study Model → **1.7.2 Conceptual Framework**

1.7.1 Study Model

The current study seeks to achieve its main objective of verifying the effect of (LSS) elements on (CA) in the presence of (WFA) attributes as a mediating variable between the three Armed Forces Depots "Army, Navy, and Air force" in Royal Bahraini Armed Forces, as shown in the following study model Figure (1.1):

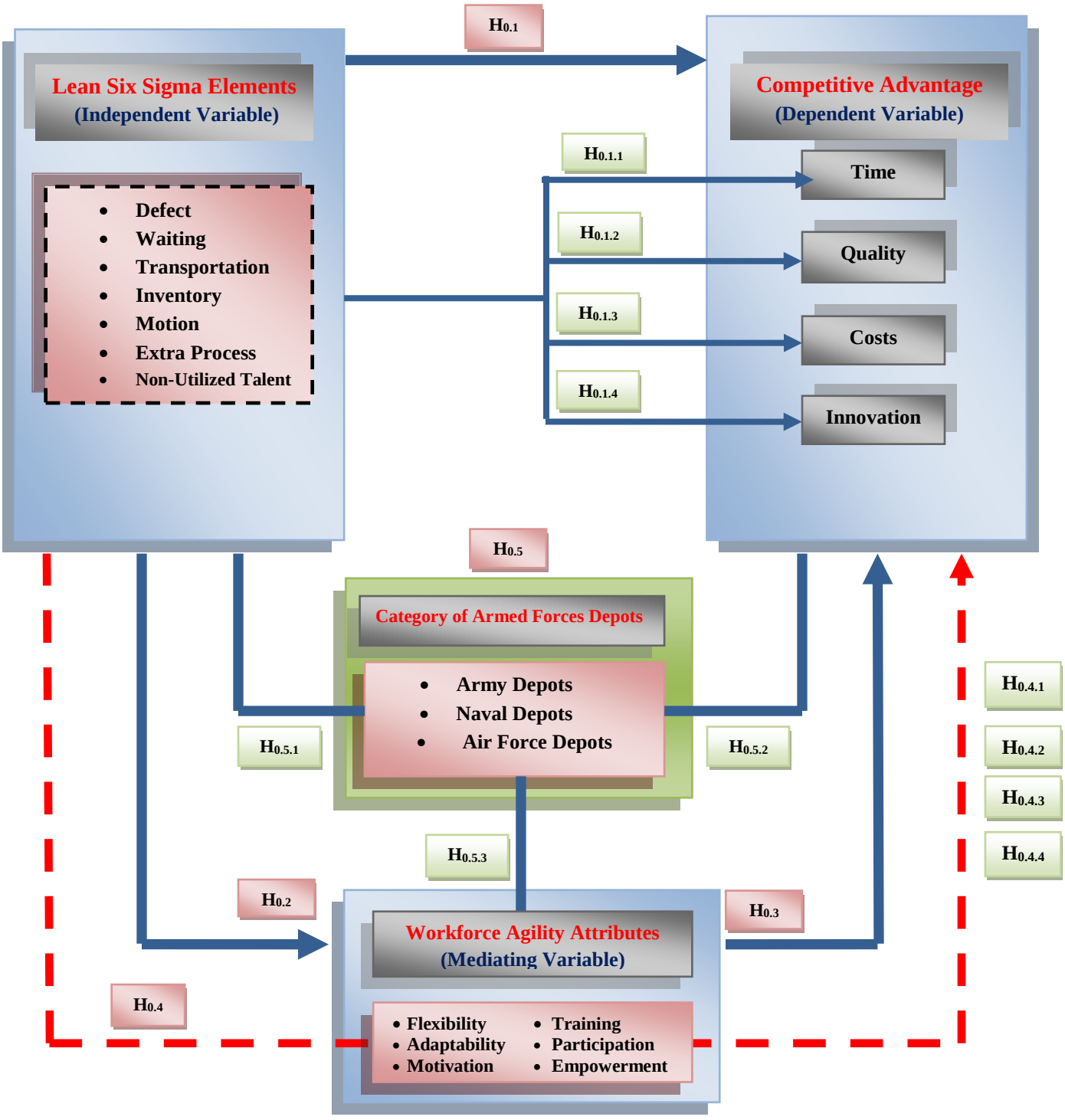


Figure (1.2): The study model

Source: Prepared by the researcher based on the following conceptual framework

1.7.2 Conceptual Framework

The design of the model is prepared by the researcher based on the following:

1. The dimensions of the main variables were determined by the researcher by looking at the literature and previous studies. These dimensions are the most frequent in the studies as follows:
   - Lean Six Sigma (LSS) elements [Independent Variable]: (Womack, J.P; and Jones, D.T, 1996; Goldsby, T.; and Martichnko, R., 2005; Brue, G. & Howes, R. 2006; Berty, E, 2001; Goetsch, D., 2014).
   - Competitive Advantage (CA) [Dependent Variable]:(Handfield, R.B; and Pannesi, R.T,1995; Koufteros, X.A. et al,1997; Tracey M, et al,1999; Brumfit, K., et al,2001; Jaber, M. A, 2013; Gruber, A. M., 2015).
   - Workforce Agility (WFA) attributes [Mediating Variable]: (Breu, K., 2001; Vazques-Bustelo, D, et al, 2007; Ye-zhuang, T, et al, 2006; Sherehiy, B, 2008; Muduli, A, 2013).
2. The model design based on the following assumptions:
   a. Focusing on the common joint tasks of the Armed Forces Depots.
   b. Focusing on the joint duties and operations between the Armed Forces Depots.
   c. Failure to enter into the technical details of the specialty, content and readiness.
3. The direction of the model integrated as follows:

   a. There is a direct effect of the Independent Variable (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on (CA) in Armed Forces Depots "Army, Navy, and Air force" and its relation to the model is indicated in the continuous arrow line(⟶).

   b. There is a direct effect for the Independent Variable (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on (WFA attributes in Armed Forces Depots "Army, Navy, and Air force" and its relation to the model is indicated in the continuous arrow line(⟶).

c. There is a direct effect of the Mediating Variable (WFA) attributes on (CA) in Armed Forces Depots "Army, Navy, and Air force" and its relation to the model is indicated in the arrow continuous line (⟶).

d. There is an indirect effect of the Independent Variable (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" on (CA) in the presence of (WFA) attributes as a Mediating variable in Armed Forces Depots "Army, Navy, and Air force" and its relation to the model is indicated in the arrow dash read line (- - -▶).

e. There are differences in the response of the sample of the three Armed Depots "Army, Navy, and Air force" in their evaluation of the three variables [(LSS) elements, (WFA) attributes and (CA)] and its relation to the model is indicated in the continuous line (———).

1.8 Limitations

This study was conducting on sector of Armed Forces Depots and the results achieved cannot be generalized to all sectors category of military society in Royal Bahraini Armed Forces because the study deal with a specific sectors and cannot be compared to sectors that differ in their composition and duties, but it is possible to take into account the results and the consequences of the study to develop other sectors in the Armed forces to achieve the desire ambition in the (CA).

Also this study cannot be applied and generalized to similar armies as a result of different policies and strategies in the composition of the armies, but the results can be viewed as a catalyst factor in the continuation and of research on other sectors of the Armies and more broadly.

It is difficult to generalize the results on profit organizations as a result of different policies and strategies in addition to different composition. Moreover, the results of this study depend on the seriousness and credibility of the sample members to the extent of their response to the questionnaire.

1.9 Delimitations

The scope of the study is composed as follows:

1. Spatial: This research was carried in the Royal Bahraini Armed Forces.
2. Field study: This research was carried on officers, non-commissioned officers, soldiers, and technicians who work in the Royal Bahraini Armed Forces.
3. Time limits: the time limit that will be taken to complete the research within the period between 2nd semester of 2017 and 1stsemester of academic year 2018 semester of academic year.
4. Scientific Delimitations**:** In this research, the relationship between the (LSS) elements, (WFA) attributes, and (CA) are going to be analyzed, and study the effect of (LSS) elements in the presence of (WFA) attributes on (CA).

The first variable (LSS) elements divides into seven elements "Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent" based on agreement of (Womack, J.P; and Jones, D.T, 1996; Goldsby, T.; and Martichnko, R., 2005; Brue, G. and Howes, R., 2006; Berty, E., 2011; and Goetsch, D., 2014).

The Second variable (CA) divides into four "Time, Quality, Cost, and Flexibility" based on agreement of (Handfield, R.B; and Pannesi, R.T., 1995; Koufteros, X.A, et al, 1997; Tracey M,. et al, 1999; Brumfit, K., et al, 2001; iJaber, M. A., 2013; Gruber, A., 2015).

The third variable (WFA) as a mediating divides into six elements "Flexibility, Adaptability, Motivation, Training, Participation, and Empowerment" based on agreement of (Breu, K., 2002; Vazques-Bustelo, D., et al, 2007; Ye-zhuang, T., et al, 2006; Sherehiy, B., 2008; and Muduli, A., 2013).

1.10 Conceptual and Operational Definitions

The researcher relied on several sources to extract the definitions of variables, elements, and attributes for focusing on the elements concept of this study which leads the researcher, in addition to his field experience to draw the operation definitions as follows:

1.10.1 Lean Six Sigma "LSS"

The combination of Six Sigma methodology and the Lean production philosophy utilized to eliminate waste of physical resources, investing time, effort and talent while assuring quality in production and organizational processes (Mack, J., et al., 2011).

For the study purposes, "Lean Six Sigma" methodology consists of an elements set such as (Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent). All these elements utilized for measuring the level of performance, accuracy, eliminating waste by investing resources and developing the efficiency of processes to maximize the value of productivity to support competitiveness.

The following are the operational definitions of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent," as follows:

1. **Defects:** Eliminating or minimizing of all additions or occurrences of everything that is rejected and unnecessary to operations, which disrupts the balance between inputs and outputs that leads to defects or to re-work.
2. **Waiting:** Eliminating or minimizing the lost time from the time of operation and not add value to the process, which includes "trading transactions, exchange of information, stages of work, performance of operations" to accomplish tasks.
3. **Transportation:** Eliminating or minimizing the unnecessary movement that permeates operations "loading, handling, and trading" and adds no value to the process.

4. **Inventory:** Rationalizing the inventory to quantity equivalent to the warehouse capacity and enough to cover the duration of the current tasks until the next quantity arrives.
5. **Motion:** Eliminating or minimizing the unnecessary steps and phases that add no value in transactions and operations.
6. **Extra Processing:** Eliminating or minimizing the existing and added stages that are worthless in the process, thus wasting the performance effort.
7. **Non-Utilized Talent:** The Lack of waste in exploiting and investing in competencies, abilities, for Depots crews in favor of mission objectives.

1.10.2 Competative Advantage "CA"

Mandahawi. N., et al,(2010) presented the (CA) that are attributed to a variety of factors, including innovation, specialization, quick response, quality, teamwork, process sustainability, reliability to allow the organization for gaining superior margins than other competition.

For the study purposes, the operational definition of (CA) is the uniqueness and difference in the (Time, Quality, Costs, and Innovation) that increase the value of output and gain the benchmark between the competitors.

The study relied on four elements, the definitions of (CA) elements (Time, Quality, Costs, and Innovation) are declared as follows:

1. **Time:** Is reducing the time period associated with completing the operations tasks of the beneficiaries.
2. **Quality:** Is providing what meets the expectations of the beneficiaries in completing the tasks.
3. **Costs:** Refer to rationalize the expenditures "spending" to minimum limit on operations and projects.
4. **Innovation:** Is singularity of design of ideas as an added value to increase the performance of operations to support beneficiaries to the completion the tasks.

1.10.3 Workforce Agility "WFA"

Muduli, A., (2013), in her conceptual study, states that (WFA) is an attribute of a wide frame that is capable of promoting the competitive environment for confronting sudden environmental change, it has the following attributes “Flexible, Adaptability, Developmental, innovative, collaborative, competent, fast and informative in nature, training, compensation, empowerment, teamwork, and Information systems”.

For the study purposes, the (WFA) attributes are complementary features of the Organization, its crews consist of a set of (Flexibility, Adaptability, Motivation, Training, Participation, and Empowerment) for using the respond quickly and flexibly to the sudden change and adapt easily to unexpected external and internal environmental changes.

The definitions of (WFA) attributes “Flexibility, Adaptability, Motivation, Training, Participation, and Empowerment” are presented below:

1. **Flexibility:** Depots response to sudden change in the external and internal environment and to perform different tasks in one.
2. **Adaptability:** Is a Full compatibility of the Depots to the environmental shift in the tasks to modify and develop patterns and behaviors to better fit the new environment.
3. **Motivation:** The engine that drives the Depots crews to do their duties to perform tasks with enthusiasm and mastery to the end.
4. **Training:** The process of acquiring the skills, experiences and knowledge of the Depots' workers in their current and future jobs in a way that reflects on their performance and behavior.
5. **Participation:** Contribution, participation and involvement in operations to highlight the capabilities and effectiveness of warehouses and their staff as a team in accomplishing tasks.
6. **Empowerment:** An authorization of powers in the decision making in the chain of command of duties within a limit to align the Depots tasks.

1.10.4 Armed Forces Depots

Based on the researcher field and for the study purposes, the Armed Forces Depots are the Shelters that store, maintain and prepare the types of equipment, Ammo., weapons, gears and supplies, then feed it to the frontline.

Chapter Two: Theoretical Framework and Previous Studies

In this chapter, three main themes is shown in the following diagram related to the three variables of this study [(LSS), (WFA) and (CA)], which summarized the relationship and the link between them in the first chapter.

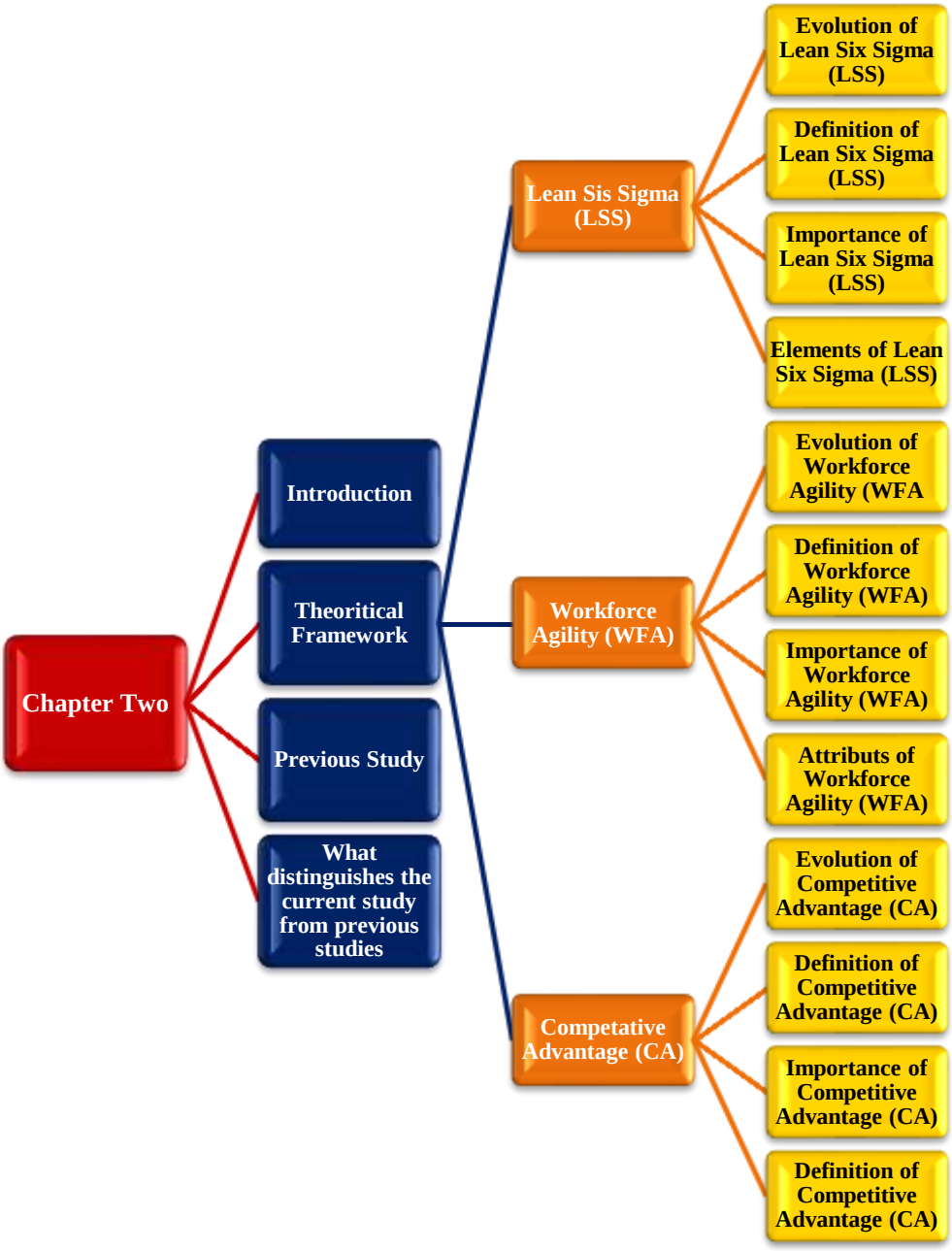


Figure (2.1): Construction of chapter two.

2.1 Theoretical Framework

2.1.1 Lean Six Sigma (LSS)

2.1.1.1 Evolution of Lean Six Sigma (LSS)

The emergence of (LSS) is the product of mating Lean production and Six Sigma methodology to integrated quality system production combines positive o two systems based on the removal of waste and rationing the process of fixed methodology. So, what is the (LSS)?

Back to the history of quality and its evolution, the American companies initiated Quality Management concept extension of Management concept, as stated by Fredrick Taylor in 1911(Goldsby, T.; and Martichnko, R.; 2005) but Total Quality Management (TQM) parameters were evident early 1920s by Japanese companies (Mack, J., et al; 2011) and first who was concerned with quality, inventory, low cost, and delivery on time was Toyota (Desale, S.; and Deodhar, S., 2014).

In 1950, Eiji Toyoda and TaiichiOhno started developing Toyota Production System “TPS” (Kim-Soon, N., 2012) to achieve continuous improvement, respect for people, and standard work practice (Goetsch, D., 2014).In the early 1970s, TaiichiOhno comes up with Just-in-Time “JIT” to reduced inventory, material arrives where and when they need Heizer, J., et al., 2014).

Six Sigma was introduced in 1986 by Motorola as a more powerful version of Total Quality Management (TQM) (Goetsch, D., 2014) which is a methodology to improve processes, operation, production and productivity (Kim-Soon, N., 2012).It is operate as a form of project process conducted in phases called DMAIC "Define, Measure, Analyze, Improve, and Control" (De Noni, I., et al; 2016) and specific goal of no more than 3.4 defect per million parts (Pranil, V.S., et al; 2016).

In 1990, Lean Production was produced from Just in Time "JIT" and Toyota Production System "TPS"(Heizer, J., et al; 2014) for support of eliminating all waste "Defects, Overproduction, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-Utilized Talent"(Womack, J.P; and Jones, D.T, 1996) with a philosophy of concentration on "product development, supplier, customer, and process of the whole enterprise" (Holweg, M., 2007).

In the light of underlying the title of the study, What if the two systems "Six Sigma and Lean Production" were merged from the overall quality umbrella systems? Mack,J., (2011) pointed to the pairing of the two systems for delivery of (LSS) General Electric "GE" in 1980s, to describe the integration of two philosophies of system (Sheridan, J. H. 2000) and provide the tools and know-how to tackle specific problems by eliminating waste and establishing standard (Wheat, A., et al., 2003).

Through the evolution of quality concept in the management science, appearance of sequential systems expresses this concept to achieve quality effectiveness, and the emergence of harmony between some of each other to find a relationship between the former and the subsequent birth until the origination of (LSS) as a methodology based on eliminating waste and rationing the process; this reflects the importance of quality in the work and attention to the development of systems, which prompted the researcher to choose this path in the program and study it as a methodology proven to be effective in achieving (CA) in military sector.

2.1.1.2 Definition of Lean Six Sigma (LSS)

The researchers differed in defining their idea of uniformity to define (LSS), but the implications were consistent among them.

Lean Six Sigma (LSS) is a fusion of two powerful quality systems focused on creating value by eliminating wastes (Womack, J.P, and Jones, D.T, 1996). Antony, J., et al, (2003) explains it as an integration of two concepts of two quality systems with convergence, synergy the strengths between them.

Lean Six Sigma (LSS) is a combination of operational improvement by eliminating wastes and methodology for improving process (Arnheiter, E., and Maleyeff, J., 2005). It is marriage of two quality system to make an organization that strives for operational excellence superior in processes, products, and services (Naslund, D., 2008). Mack, J., et al., (2011) believes the (LSS) seeks to remove the causes of defects and eliminating waste to improve the quality of processes' outputs and operational stages. Manville, G., et al (2012) stated that (LSS) is a strategic tool that could be implemented as a means of achieving a deliberate strategy by senior management.

Assarlind, M., et al (2013) defined it as an umbrella of two complementary approaches for process improvement without barriers. (LSS) is a business improvement methodology that aims to maximize shareholder value through improving quality, speed, satisfying customer, and costs (Laureania A, and Antonyb J, 2015).

Lande, M., et al (2016) describe (LSS) as a convergence of two concepts, while Lean focused on speed and waste "efficiency issue", and six sigma emphasis is on variation reduction, defect reduction and process evaluation "effectiveness issue". (LSS) is to reduce production costs, increase productivity, improve safety, shorten time to market, and enhance product quality (Cheng J, 2017).

Through introducing the definitions of researchers in the past and until recent periods, there has been an intellectual accumulation which the researcher could build his theoretical definition on his point of view. Lean Six Sigma (LSS) is a methodology formed by merging of two quality systems "Lean Production and Six Sigma" those aim to reduce wastes during operation and improving processes to create more value and achieve the a (CA) and ensure their sustainability.

2.1.1.3 Importance of Lean Six Sigma (LSS)

The diligence of researchers in the development of quality systems over time was to create a balanced and accurate work environment that ensures the performance of organization and satisfying the final beneficiary.

In service applications, George, M. L., (2003) clearsthat dropping (LSS) program causes revenue growth, quality of service and cost reduction, all that can give organizations a major strategic advantage over their competitors. Lockheed Martin as a case study in military industry, over 1000 projects have been completed, their debt is down, revenues are healthy, and offer their customer newest military products atfifty percent drop cost and 1/3 cut in the cycle time which gave it (CA) between competitors (George, M. L., 2003). In logistics, Goldsby, T., and Martichnko, R., (2005) mentioned that (LSS) gave accomplishment in improvement activities and launch a logo "everything we can do" by knowing the strengths and weaknesses that will aid the logistician to solve age-old issues while improving operations.

In manufacturing and service industries, some well-known organizations have been successful (e.g. GE and Motorola) in creating as a copycat phenomenon in reducing defects, cutting costs in recycling, reducing process, cutting time, satisfying customers, with many organizations around the world wishing to replicate its success (Laureania A, and Antonyb J, 2015).

Due to widespread use of (LSS) with impressive results and simulates multiple angles at work, the researcher directs his attention to investigatelevel of practice and application of (LSS) in the Depots of "Army, Air force, and Navy" in Royal Bahraini Armed Forces.

2.1.1.4 Elements of Lean Six Sigma (LSS)

Researchers expanded the (LSS) elements according to their vitality and importance in developing business requirements. From reviewing the previous studies by the researcher and his practical experiences, the selection of (LSS) elements comes based on the common and consistent from the researchers' previous studies and the most compatible elements to the researcher field. In addition to, the interviews were conducted by the researcher that mentioned in the problem statement and summarized it in the following table (2.1).

Table (2.1): (LSS) Elements of from the previous literature

Researcher	Year	Dimensions												
		Defects	Waiting	Transpor -tation	Inventories	Motion	Extra Processing	Over production	Speed	Non-utilized people	correction	poor design	cost	development
Womack and Jones	1996	●	●	●	●	●	●	●		●				
Goldsby and Martichnko	2005	●	●	●	●	●	●	●	●					
Brue, G. & Howes, R	2006		●	●	●	●	●			●	●			
Berty	2011	●	●	●	●	●	●	●						
Stoiljkovi, et. al.	2011		●	●		●	●	●						
Subramaniyam, et. al.	2011		●					●				●	●	●
Arunagiri and Babu	2013	●	●	●	●	●	●			●				
Goetsch	2014	●	●	●	●	●	●							
Total Grade		**5**	**8**	**7**	**6**	**7**	**7**	**5**	**1**	**3**	**1**	**1**	**1**	**1**

1. Defects:

Mack, J.,et al., (2011) defined “Defects” as poor quality materials, equipment failures, missing customer due date, personal data incorrect, data entry error, rework, or missed customer due dates. Berty, E., (2011) said that it is creating rejected work or causing rework as the result of production or processing error. Goetsch, D., (2014) defined that as creating rejected work or causing rework as the result of production or processing error; also it refers to the waste related to the non quality cost of materials, processes, customer complaints and repairs (Dragulanescu, I. V., and Popescu, D., 2015).

The definitions of previous researchers show that a researcher from his point of view and his work field experience indicates that “Defects” is the lack of something necessary in the work that leads to imbalance and cause rework or corruption. It could be measured through deliberating the questionnaire, meeting, dialogues, and stand on the stages of the work and what is supposed to support the work.

2. Waiting:

Binding that happens due to next step, queue of customers, manual process and decisions (Berty, E., 2011), or created when material, complicated information system that cause delay at work (Villa, D., 2010). “Waiting” is described as an idle time that transactions, processes, people, machine, or equipment are not yet ready (Goetsch, D., 2014) or generating long duration through activities that add no value leading to hold the time (Dragulanescu, I. V., and Popescu, D. 2015) and tumble to complete the content of the stages that cause pending the process with the client (Barnabè, F., et al, 2016).

Based on the definitions of previous researchers, in addition to with the researcher’s work field experience, from the researcher's perspective, the binding information, transaction, processes, people, material, machine, or equipment is not yet ready that cause delay “Waiting” to the final beneficiary.

It could be measured through the practical calculation of the duration of the operations in each phase during deliberating the questionnaire, meeting, dialogues, and stand on the stages of the work and what is supposed to support the work.

3. Transportation:

Any additional transportation of the parts in manufacturing setting (Goldsby, T.; and Martichnko, R., 2005); it is refers to useless transporting people or materials (Villa, D., 2010); conveyance types of equipment, shipping, or hard copies delivering in transactions doesn’t make sense (Mack, L., et al., 2011); or any moving for tooling, operations that adds no value (Goetsch, D., 2014) even the losses in the phase of moving, transferring, lifting/lowering, stacking, or moving the parts needlessly are problems related to transportation distances (Dragulanescu, I. V., & Popescu, D., 2015).

The researcher’s perspective comes from the working field experience that supported by the previous researcher’s definitions, “Transportation” to any conveyance adds no value to the

work process. It could be measured by deliberating the questionnaire, meeting, dialogues, and identify the Transportation mechanism and what is supposed to support the work.

4. Inventory:

Villa, D., (2010) defined "Inventory" as any supply over plus of what is required; material between operations and processes steps awaiting approval (Mack, J., 2011); items stored in a warehouse, buffers and stock carry more than is needed at given time (Goetsch, D., 2014) or storing more over necessary stock that cause stack up, spoiling, loss controlling (Dragulanescu, I. V., & Popescu, D., 2015).

Based on definitions of previous researchers, in addition to the researcher working field experience, the "Inventory" refers to what overstocked, accumulating, or unneeded that are not compatible with the storing standards. this is could be measured through deliberating questionnaire, meeting, dialogues, and references related to the warehouse design and capacity versus inventory and the standard of compatibility items group (military technical orders references-confidential).

5. Motion:

Villa, D., (2010) stated "Motion" as a an activities of people that does not add value to the product or service; or additional movements or movement of a person's body which it not necessary and useless ((Dragulanescu, I. V., & Popescu, D., 2015) even working machine in incorrect process, useless robotic motion, navigating multiple screens to input data that has no benefit (Mack; 2011); incorporating unnecessary looking for data of information, movement into the production process or into the delivery of service (Goetsch, D., 2014).

Based on definitions of previous researchers, in addition to the researcher's working field experience, the "Motion" defined as any unnecessary movement that adds no value to people, transactions or useless in the process of work.

It could be measured through deliberating the questionnaire, meeting, dialogues, observing movement of people, identifying process and transaction of movement more than needed in work process.

6. Extra Process:

Villa, D., (2010) clarified "Extra Process" as an additional exertion in the phases, steps, or stages that adds no value to the product or service; processes of no benefit and

multiple ways to do the same task or duplicate entries (Mack, J., 2011); also it includes wasting effort to produce more than needed and wanted from the beneficiary's viewpoint (Goetsch, D.,2014) which is described as futile activities and operations, which are traditionally considered unnecessary and add no value to the job (Dragulanescu, I. V., & Popescu, D., 2015).

From the researcher perspective based on the previous researchers' definitions, "Extra Process" is any exceeding processes that add no value to the transactions and to the working process.

It could be measured through deliberating the questionnaire, meeting, dialogues, and observing with identifying the process design and the path transaction through it.

7. Non-Utilized Talent:

Villa, D., (2010) stated that it is not taking advantage of talents, capabilities and abilities to exploit them in the right place; in addition to untapped the skills and abilities possessed by workers, operators and who are close to the specialization (Benson, R., and Kulkarni, N. S., 2011); beside underuse of the creativity of people and the capabilities of technology, and not to exploit the full talents if they even in correct place (Goetsch, D., 2014).

Based on the definitions of previous researchers, in addition to the researcher working field experience, the "Non-Utilized Talent" means not to exploit and use the skills, abilities, and talents of individuals in their correct point, then develop, maintain, and invest it in the work process to contribute for maximizing (CA).

This can be measured through deliberating the questionnaire, meeting, dialogues, and observing with identifying the working environment and what is available in it related to the potential of employees.

2.1.2 Workforce Agility (WFA) attrebutes

2.1.2.1 Evolution of Workforce Agility (WFA)

The movement of any organization business is to meet the new and face the sudden change to the flexibility of the organization and its crew. Workforce Agility (WFA) is simulating this meaning through a composition of two parts "Agility and Workforce", that is a suggestive word to the rapid response of the organization to sudden environmental change (Zhang, D. Z., 2011).So, what is the (WFA)?

The term of this word (WFA) is essentially derived from the Agility**,** that was developed in the 1950s in the field of air combat which means the ability of aircraft to change its maneuver state (Richards, C. W., 1996), where this concept was originated in manufacturing research by "Iaccoca Institute", which soon became a focal reference for manufacturing systems studies (Nagel, R. and Dove, R., 1991).

By increasing the internationalization of competition (Kasarda, J.D. and Rondinelli, D.A., 1998), fragmentation of mass markets, and the need for cooperative production relationships (Yusuf, Y. Y., et al., 1999), the concept of Agility has emerged and popularized in manufacturing in the early 1990s and quickly extended to the broader business context (Huang, C. C., 1999)as the new competitive strategy by the need for meeting varied customer requirements in terms of price, specification, quality, quantity and delivery (Katayama, H. and Bennett, D., 1999).

The need for handling with unpredictable, dynamic and constantly changing environments has been a prevailing topic in the industry and academia for few decades (Sherehiy, B., et al., 2007). Besides that, the organizational agility has been argued to require an agile workforce; agility research has been mainly sought to understand speed and flexibility from an operations perspective (Yusuf, Y. Y., 1999). It was a need to recall the concept of Workforce which is described by Drucker in 1959 as "knowledge worker" (Breu, K., et al., 2001), which was described by (Pfeffer, J., 1994) by considering it as the

skills, quality, competencies, and capability that are owned by people to manufacture the (CA).

By combining the two concepts of the two words to have (WFA), the integration between both organization and employee would lead to the growth of businesses in competitive markets that face continuous and unanticipated change (Gehani, R. R., 1995). Overall organization would be capable now to respond rapidly to market changes and to cope flexibly with unexpected change in order to survive unprecedented threats from the business environment (Huang, C. C., 1999).

The researcher finds out from the historical sequence in the terms and concepts of (WFA) it reflects importance as vital element to meet the sudden environmental change; this is what the researcher called to address in its extent to stimulate the performance of the(LSS) to achieve (CA).

2.1.2.2 Definition of Workforce Agility (WFA)

Researchers have defined (WFA) in a concise and manner efficient despite a few research have written about it.

Kidd, P. T., (1994) described (WFA) as the ability of the workforce to respond to changes in appropriate methods, and in due time. Also, it exploits changes and takes their advantage as opportunities. It is the main differentiators between the companies in competitive environment when the availability of skills, knowledge and experience (Goldman, R. R., et al;1995).

A new competitive strategy, driven by the need for meeting customer requirements in terms of price, specification, quality, quantity and delivery (Katayama, H. and Bennett, D., 1999) and it is the skill and vision of people and capabilities to deal with the sudden change in marketplace turbulence by capturing the advantageous side. (Zhang Z and Sharifi H, 2000).In 1991, the group of researchers introduced the concept of (WFA) as the capability of the organization and people for responding to the rapid environmental changes and adapt to it (Hormozi, A. M.,2001).

Sherehiy, B.(2008) assumed it is a reactive and proactive behavior, and it understood the significance of organizational characteristics to face the environmental change by using the knowledge and skills to pre-empt the dynamics of the environment

(Alavi, S., and Wahab, D. A.,2013). It is an organized and dynamic talent that can quickly deliver the correct skills and knowledge at the exact time, as dictated by business needs (Ben-Menahem et al. 2013).

Workforce Agility is a well-trained and flexible workforce that can adapt quickly and easily to new opportunities and market circumstances (Muduli A.; 2013), which are integration of resources and appropriate actions in the knowledge environment with fast changes through providing customer friendly products and services through (speed, flexibility, innovation, quality and profitability) (Rahimi G, and Moqtader A; 2016).

By introducing the definitions of researchers, there has been a convergence in the intellectual essence calls the researcher from his point of view to define (WFA) as the quick response from the organization and its crew to the sudden change in the environment. It could be measured through to what extent of flexibility response of the organization to the change and the reactive of crew to the responding to the change.

2.1.2.3 Importance of Workforce Agility (WFA)

With time, the researchers focused on the importance of (WFA) to create a balanced and accurate work environment that ensures the performance of the organization, ensure the competitiveness, and satisfy the final beneficiary. Workforce Agility (WFA) achieves the collaboration within and outside the organization (Gunasekaran, A., 1999), it can meet the growing needs of customer demands for products of high quality, low-cost which that require cooperation across functional and organizational boundaries (Forsythe, C.. 1997).

It is necessary to maintain the competitiveness in the market characterized by uncertainty and change (Jackson, M., and Johansson, C., 2003), so that can support strategic objectives of cost, time, quality, and variety (Hopp, W. J., & OYEN, M. P.,2004). Workforce Agility (WFA) is now considered to increase productivity, profits and market shares, for business development in a competitive market of continuous and unanticipated change and for enhancing organizations' prospects for survival in an increasingly volatile and global business environment (Muduli A.; 2013).

In the search for (CA), the (WFA) created for adapting quickly and easily to new opportunities and market conditions that can make the difference through well-trained and flexible workforce (Muduli A.; 2013).

Owing to importance the use (WFA) and the need for it for quick response to face the sudden change for competitiveness, the researcher directed his effort to investigate the extent of verification quick response to the (LSS) for achieving the (CA) among the Depots of Army, Air force, and Navy in Royal Bahraini Armed Forces.

2.1.2.4 Attributs of Workforce Agility "WFA"

Researchers have expanded the attributes of (WFA) attributes due to their vitality and importance in developing business requirements. By informing the researcher to the previous studies and his proximity to the field of work system, the selection of (WFA) attributes comes from the common and consistent between the researchers in previous studies and the most harmony and compatible elements to the researcher field in addition to the interviews conducted by the researcher that referred to in the problem statement that summarized it in the following table (2.2).

Table (2.2): (WFA) Attributes from the previous literature

Researcher	Year	Dimensions													
		Adaptability	Motivation	Training	Participation	Empowerment	Speed	Flexibility	Innovation	proactivity	Incentive	Teamwork	Multi task	Skills	Competent
Yusuf et al.	1999						•	•	•	•					
karin et al.	2001				•	•								•	
SUMUKADAS N and SAWHNEY R	2004			•	•	•					•		•		
Ye-zhuang.et.al	2006			•	•	•						•	•		
Vazquez.et.al	2007		•	•					•			•			
Sherehiy	2008	•						•		•					
Ashutosh	2013	•	•	•	•	•	•	•				•			•
Rahimia G and Mansouri A	2016						•	•	•						
Total Grade		**2**	**2**	**4**	**4**	**4**	**3**	**3**	**3**	**2**	**1**	**3**	**2**	**1**	**1**

1. Flexibility:

Forsythe, C., (1997) described "Flexibility" as adapting rapidly and effectively in any environment. It is the ability to process different products for achieving different objectives with the same facilities (Sharifi, H., and Zhang, Z., 1999).

it is interpersonal flexibility; adjusting interpersonal style to achieve a goal; adapting interpersonal behavior to work effectively with a new team, co-workers, or customers; service provider (Pulakos, E. D., et al., 2000). Sherehiy, B.(2008) defined flexibility as an efficient functioning under stress in changing environment or with solutions failure.

It is one of the organic structure used to describe an organizational structure that promotes initiation to change and adapt quickly to changing conditions (Amiri, A., et al., 2010) and the ability to pursue different business strategies and tactics to quickly change from one strategy, task, or job to another (Muduli A; 2013).Also, it is the capability and competence of working on different tasks simultaneously (Sohrabi, R., et.al; 2014).

From the researcher definitions and his perspective derived from field experience of working, the "Flexibility" is considered as the ability of the organization and its crew to adjust and adapt interpersonal behavior to work effectively with the renewals. It could be measured through the flexibility response of the organization and their crew to the change.

2. Adaptability:

Huang, C. C., (1999) described it as reading external change "customer needs, new business opportunities and competitor strategies" and adjusting business objectives with quick action in the new business direction. This would help employees to assimilate new working environments such as moving across projects and functional boundaries (Breu, K., et al, 2001)

"Adaptability" is fully responding of (WFA) to external and internal change and to be subject to change in changing business environment surrounding it (Breu, K.,). Changing or modifying patterns or behaviors to the organization and its content may be to better fit new environment, this is what (Sherehiy, B., 2008) said. Muduli, A., (2013) describes Adaptability as comfort to receive new ideas, and new technologies with change.

From the researcher definitions and his perspective derived from field experience of working, “Adaptability” is the comfortable receiving and responding quickly to the change for quick alignment with external and internal variables. It could be measured through the comfortable receptive response of the organization and their crew to the sudden change.

3. Motivation:

White, R. W. (1959) described “Motivation” as self-motivated, motivated by intriguing exploration, even in the absence of reinforcement or equivalence. It is a self-motivation to do something for learning and achievement (Ryan, R. M., and Deci, E. L., 2000).).The feel of impetus, inspiration, and energized or activated toward the end either by doing of an activities for satisfaction “Intrinsic motivation”, or doing an activities for enjoying the activity itself “Extrinsic motivation”, this is what (Richard, C. W., etal; 2000) explained.

Sumukadas, N., and Sawhney, R.(2004) described it as the incentives and rewards that enhance the employees’ willingness and cope with the agility in the work. It is the incentive and reward for accomplishing the work (Vazquez-Bustelo, D., et al.; 2007) and induce people to engage in the positive environmental behavior (Cecere G; 2013). While, Muduli, A., (2013)explained it as rewards, incentives, and encouragement of the employee regarding the number and depth of skills acquired which is consistent with (WFA) for fostering acquisition and application of different skills.

From the researcher definitions and his perspective derived from field experience of working, Motivation is the catalysts, pulse, and impetus to do the duties in enthusiasm and willing. It could be measured through the crew's rush to perform the work.

4. Training:

It is a factor achieving (WFA) for developing and maintaining a highly skilled, technologically competent and adaptable workforce to deal with non-routine and exceptional circumstances (Youndt, M. A., et al., 1996).Also, it defined as an element for adapting (WFA) Through leveraging of employee’s knowledge and skills (Forsythe, C., 1997), which was agreed in its content Plonka, F. S., (1997) when he described it as a means of promoting (WFA) and employee's knowledge and skills to achieve leveraging.

"Training" is a factor to improve the flexibility and adaptation in (WFA) to present a set of skills to accomplish the tasks (Hopp, W. J., & OYEN, M. P., 2003). It is a powerful strategy that can ensure (WFA) (Hopp, W. J., & OYEN, M. P., 2004) which focuses skills and facilitates performance to increase the production flexibility of an organization.

From the researcher definitions and his perspective derived from field experience of working, Training means the developing of knowledge and skills to improve (WFA) and adaptation to accomplish the duties. It could be measured through the crew performance and their mastering in the work.

5. Participation:

Van Deth, J. W. (2001) clarified Participation as an involvement of ideas, opinion, modifying activities, and helping in decision-making. It is Integrating and sharing knowledge, ideas, and experiences (Breu, K., et al, 2001); and factor for decision-making and element to complement to (WFA) attributes in demonstrating their effectiveness. The participation cannot be practiced without flexibility, adaptation, and skills (Ye-zhuang, T., et al; 2006) considering it sharing all persons effectively to master all changes within the organization, leading to their involvement in the transformation process (Aier, S., and Schelp, J., 2010) and common integration loop between the organization, employee, and the customer for rapid prediction and interaction with sudden environmental variables (Rahimia, G., and Mansouri, A., 2016).

From the researcher definitions and his perspective derived from field experience of working, participation refers to involve all ingredients to express involvement in opinions, suggestions, modifying activities decision-making to achieve and accomplish the duties. It could be measured by the extent of crew involvement in opinions, suggestions, modifying activities in the work.

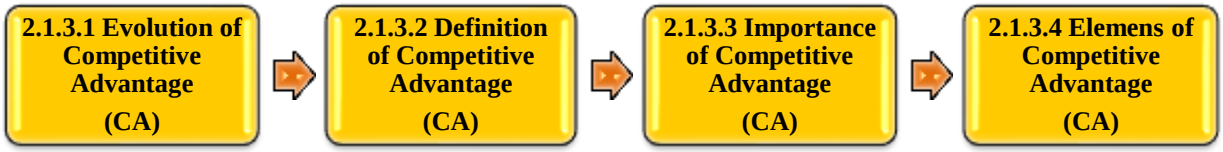
6. Empowerment:

Van, M. P., et al., (2001) described Empowerment as a key in making a workforce truly agile. It is autonomy in decision making and supportiveness the culture of independent decision making and the distribution of decision authority (Breu, K., et al, 2002).

Empowerment is a power sharing practices and factor for distributing task and supporting (WFA) by improving efficiencies of training, exchanging roles, multitasking and collaboration (Hopp, W. J., and VanOyen, M. P., 2004). It is the way to activate (WFA) in the distributing of tasks, duties, and powers in order to participate in decision making (Kelly, A., 2008).

From the researcher definitions and his perspective derived from field experience of working, Empowerment is autonomy in decision making on duty level in line with the organization objectives. It could be measured through the authority among the crew levels and positions regarding to their tasks and duties.

2.1.3 Competative Advantage (CA)



2.1.3.1 Evolution of Competitive Advantage (CA)

In the past centuries, the (CA) is considered as formed on what the country is characterized by as a product for the domestic and neighboring markets.

The concept of (CA) has been modified to be sharing of interests, wealth, and resources where the ability and the ability of organization to create a defensible position over its competitors (McGinnis, M. A., Vallopra, R. M., 1999) and the awareness of competition between competing companies that was growing on two environments (Porter, M E., 1985).Firms compete for material resources such as economic capital, labor, and input commodities, in the technical environment (Shrivastava, P., 1995)and firms also compete for symbolic resources such as legitimacy, status and reputation, in the institutional environment (Scott, A., 2005).

The (CA) is turned into crucial management decisions to exploit the resources (Tracey, M., et al; 1999) and frame it into price/cost, quality, delivery, and flexibility as

important competitive capabilities (Skinner, W., 1985), this lead to increased focus on providing a clear framework for CA through the following five dimensions "competitive pricing, premium pricing, value to customer quality, delivery, and innovation" Donlon (1996).

Addition of time beside the above dimensions to become one of important elements as the major source of (CA) (Vesey, J. T., 1991).The concept of competition star shine in sky 1990s intensified and markets became global, thus, the challenges associated with getting a product and service is obtained to the right place at the right time at the lowest cost (Li, S., et al., 2006). In order to enhance the (CA) of the organization, the role emerges of systems and programs of quality to preserve the earnings of organization (Li, S., et al., 2006).

Competitive advantage (CA) emerges when firms occur to differ in a specific type of learning ability, integrate new information to meet customer perceptions. (Michael, J., et al; 2016). As a concept, it became linked with Organizational intelligence and (WFA) by integration of resources and recruits the knowledge in the fast changes environment to meet customer satisfaction with friendly products and services (Rahimia, G., and Mansouri, A., 2016).

The researcher learns through the journey of the evolution of the concept of (CA) and its importance in excellence and its relationship to quality systems and optimization programs to highlight competitiveness, which the researcher called to be presented as a variable of competitiveness in the existence of a quality system (LSS) in the presence of optimization programs (WFA).

2.1.3.2 Definition of Competitive Advantage (CA)

Competitive advantage (CA) is a competitive capability in the price/cost, quality, delivery, and flexibility (Skinner, W., 1985), and the capabilities that allow an organization to differentiate itself from its competitors and is an outcome ofcritical management decisions (Tracey, M., et al; 1999) and the extent to which an organization is able to create a defensible position over its competitors (McGinnis, M. A., and Vallopra, R. M., 1999).

Competitive advantage (CA) is the extent to which an organization is able to create a defensible position over its competitors (porter, M. E., 1985). It is the elements and conditions that allow organization to produce a goods or services at a lower price or in more desirable

fashion to gain superior margins than its competition, where (Swartwood, L., 2003) and Suhong, S. (2006) came to confirm it as challenges associated with getting a product and service at the right place, right time and lowest cost.

Mandahawi, N., et al, (2010) clarified it as a variety of factors that including innovation, specialization, quick response, quality, teamwork, process sustainability and reliability. (CA) is the favorable position of an organization seeks in order to be more profitable than its competitors which it involves communicating a greater perceived value to a target market than its competitors can provide (Rouse, A., 2012). (CA) (CA) is an engine of competitiveness and competitive survival to meet the demands of environmental change (Antonya, A., et al, 2016).

Based on the previous definitions of researchers, there has been a unified trend calls the from researcher perspective to define (CA) capabilities that allow an organization to differentiate itself from its competitors and through the direction of management decisions. It could be measured through to what extent organization's desire to excel and create its excellence elements.

2.1.3.3 Importance of Competitive Advantage (CA)

With time, the researchers have pointed out the importance of (CA) to cope with dynamic environment, creating benchmark, defend it between competitors, and satisfying the final beneficiary.

Competitive advantage is capability to allow organization to differentiate itself from its competitors (Tracey, M., et al; 1999), so that organization able to be create a defensible position over its competitors (McGinnis, M. A., and Vallopra, R. M., 1999).

Competitive advantage is a stimulated to cope with dynamic environment that affects change in the firm's existing resource base (Eisenhardt, K. M., and Martin, J. A., 2000), as that, the (CA) allow the company to create and be a benchmark to other organization (Suhong, K., 2006).

Competitive Advantage (CA) is a Catalyst and motivation of knowledge, innovations and Technology which confirmed companies as the most important factor for survival (Bahram, M., and Hussein, M., 2012), it is a challenge associated with getting a product and service at the right place, right time and lowest cost (Heizer, J., et al, 2014).

Competitive Advantage (CA) drives business firms to analyze the market to be one of the three in a competitive scope "cost leadership, differentiation, focus" (Thomas, L., et al, 2015)

Due to the importance of (CA) which the researchers clarified, through which the researcher was directed to investigate in this, study the extent of the desire for excellence between the Depots of Army, Air force, and Navy in Royal Bahraini Armed Forces.

2.1.3.4 Elemens of Competitive Advantage (CA)

Researchers have expanded the elements of (CA) due to their vitality and importance in developing business requirements. By informing the researcher to the previous studies and his proximity to the field of work system, the selection of (CA) elements comes from the common and consistent between the researchers in previous studies and the most harmony and compatible elements to the researcher field in addition to the interviews conducted by the researcher that referred to in the problem statement that summarized it in the following table (2.3).

Table (2.3): (CA) Dimensions from the previous literature

Researcher	Year	Dimensions								
		Time	Cost	Quality	Flexibility	Skill	Innovation	Delivery Dependability	Services	process
Handfield & Pannesi	1995	•	•	•						
Koufteros.et.al	1997	•	•	•	•		•			
Tracey.et.al	1999	•	•	•	•					
Brumfit.et.al	2001	•	•		•	•	•			
Suhong.et.al	2004	•	•	•			•	•		
Mohammed Abdali Jaber	2013		•	•		•			•	
Gruber Anthony Mark	2015		•		•	•				
Antonya.et.al	2016			•					•	•
Total Grade		**5**	**7**	**6**	**4**	**3**	**3**	**1**	**2**	**1**

1. Time:

Nespor, J., (1994) described "Time" as the relation to other factors to measure the duration taken. It is based upon competition as an important competitive priority (Handfield, R. B., and Pannesi, R. T., 1995). It is a framework for competitive

capabilities that define (CA) (Koufteros, X. A.,et al; 1997) and one of the most important dimensions of building(CA) (Vickery, S., et al; 1999)

Timeis the next source of (CA) (Zhang, S., 2001), which is the way to calculate duration to prompt and deliver value (Brockwell, P. J., and Davis, R. A., 2013).It is the duration taken to complete the process and is an element of competitiveness (Singh, A., et al; 2014)

From the researcher perspective, the "Time" is duration of time spent to accomplish the duty. It could be measured by the duration spent in the work and transactional process.

2. Quality:

It is a component of the competitive capabilities to meet the customer needs (Skinner, W., 1985), which is a framework for competitive capabilities that define (CA) (Koufteros, X. A., etal; 1997) being one of the most important dimensions of building (CA) (Vickery, S., et al; 1999).

Kim-Soon, S., (2012) explained "Quality" as a perceptual, conditional and somewhat subjective attribute of a product or services and it is a key competency which companies drive (CA). It is a dynamic state associated with product, services, people, processes, and environments that meet customer needs and expectations and help produce superior value (Goetsch; A., 2014)

From the researcher perspective, the "Quality" is meeting the needs and expectations of the products and services. It could be measured by the reaction of other units and the extent of response to achieve Quality that meets expectations and creating value.

3. Costs:

Skinner, A., (1985) defined "Costs" as a major element of the competitive capabilities to meet the customer satisfaction. It is one of the competitive capabilities frame that works to define (CA) (Koufteros,X. A., et al; 1997) which is one of the most important dimensions of building (CA)(Vickery, S., et al; 1999).

Hohmeyer, D., (2002)describe the "Costs" through "Social costs" which it arise when any costs of production or consumption are passed on to third parties, like future generations or society at large. It is a resource sacrificed or forgone to achieve a specific

objective such as “cost of labored, advertising, inventory ...etc”, is usually to acquire goods or services (Wheelen, T. L., et al., 2015)

From the researcher perspective, the “Costs” are the expenditures of the minimum limit on the requirements, operations, and projects. It could be measured by the volume of expenditures requirements, operations, and projects.

4. Innovation:

Evangelista, D., etal, (1995)explained “Innovation” as creative activities of value in work process, new processes that vary in design with improved or new methods, products that differ in their use and characteristics in order to increase product efficiency and competitiveness and gain (CA).

It is created by knowledge to translate the idea in reality which is a framework for competitive capabilities that define (CA) (Koufteros, X. A., etal; 1997); in addition, it is the most important dimensions of building (CA)(Vickery, D., et al; 1999).

Baregheh, A., et al (2009)describe “Innovation”as creating value and sustaining (CA), which represents the renewal process in the system of any organization and what ideas the world offers and the way in which it creates and delivers those offerings.

From the researcher perspective, the Innovation is the actual translation of idea in actual that added value to increase the performance. It could be measured by creations and ideas and the extent of the organization’s interaction and the final consumer.

2.2 Previous Studies

This section will take a glance at selected previous studies that led to the study framework in [(LSS), (WFA), and (CA)] and the extent of association with each other in the context of this study.

1. Breu, K., et al (2001) **"Workforce agility: the new employee strategy for the knowledge economy"**. This study was conducted to confirm the effectiveness of (WFA) and it relation with the new strategy of knowledge with employee through examining how the pressures of organizational agility impact upon the workforce with a new sudden change.

This study was applied in United Kingdom of 515 UK organizations with sample size of 15000 senior managers. It was a means of collecting the information and (WFA) attributes that are related to the study from previous literature and studies and developed a questionnaire from each variable used.

The results of this study that came related to the researcher study that (WFA) contributes effectively to build new strategy among variable pressures, by the five capabilities "intelligence, competencies, collaboration, culture and information systems".

This study helped the current researcher to conclude the relevant attributes that relate to the current study in addition of how the (WFA) importance as a link tool for the new systems. This prompted the researcher to take it as a variable in the study model.

2. George (2003) **"Lockheed Martin as a case study with applying lean six sigma"** (Military study)**.** This study was applied in one of the largest USA military companies, "Lockheed Martin whose aim is to meet the customer's desire, cutting cost and time, cover as many projects as possible to gain the largest market share, which turned out to be declining with their market share and their client.

As a result, by applying (LSS), it gave (CA) between their competitors. Over 1000 projects have been completed; their debt is down, revenues are healthy, and offer their customer newest military products at 50% drop in cost and 1/3 the cycle time cut. This is in itself a gain in (CA). This is an indicator for the current researcher that (LSS) is like engine leading to Competitive Advantage by meeting the customer's desire, cutting cost and time.

3. Sumukadas, N., and Sawhney, R. (2004) **"Workforce Agility through employee involvement"**. This study came to apply between 40 plants in united sate of America with a sample of (1000) samples and modifying questioner to test the effectiveness of (WFA) through employee involvement in some practices "Information sharing, Training, Rewards, and Power sharing" which it a part of flexibility of competitive category.

The results indicate that (WFA) can indeed be improved by adopting Employee Involvement through these practices which is part of organization vision of employees contributing extensively in a rapidly changing competitive environment.

This study added to the current researcher that the Employee Involvement is a very effective element to reach the organization vision with a turbulent environment to raise the competiveness, which proves that (WFA) is a catalyst factor to achieve competiveness.

4. O'Rourke, P. M. Captain in US Air force institute of technology (2005) study title **"Multiple case analysis of lean six sigma deployments and implementation strategies"** (Military Thesis)**.** This study aims to assist the Air Force structure a continuous improvement program that eliminates the negative effects caused by deployment barriers and implementation challenges.

A qualitative design with participation of six sections of the following companies "General Electric, Raytheon, Lockheed Martin, Xerox, ITT Industries, and Solectron" with sample of "667,600 employee" and questionnaire had used to answer the research question of this study.

The most prominent results came by implementing (LSS): Demonstration of success a new training strategy, Good selection criteria, Continuing education, Coaching and workshops for management.

These results help current researcher that (LSS) is an effective tool and is not limited to a particular sector. That promoted current researcher to take it as a variable in the study model.

5. Apte, U., & Kang, K. (2006) **"Lean Six Sigma for reduced cycle costs and improved readiness"** (Military Thesis). This thesis comes for rationalization the

expenditure in the all department of US military and improved readiness of weapon, beside the logistics systems "transportation, inventory management, modifications and maintenance activities" are critically important for containing the lifecycle costs of weapon systems and for maintaining the highest level of military readiness given the extant fiscal constraints.

As a result, (LSS) has proved the effectiveness in reducing the Cycle Costs "vehicle from $89,000 to $48,000; saving recycle time till 90%; saved $11.9 million in the cost of building the Patriot air-defense missile system" increased the production rate about 50%; accuracy repairs to above 90%".

This drew the attention of the current researcher that (LSS) leads to cutting cost which can be considered a (CA) and this system could support many sectors.

6. Polcyn and Engelman (2006) Study title **"Gaining a competitive advantage with lean and six sigma philosophies and tools".** This theoretical study aim to prove (LSS) concept is a way to gain (CA) through its methodology and tools.

As a result, to gain (CA) with (LSS) there is a need to complete the requisitetraining to initiate enthusiasm and action for ensuring employee and organizational success "pick the right people, follow the method(s), clearly define role and responsibilities, communicate, education and training".

This gives the current researcher proof that (LSS) is a means to achieve (CA) with bridge of (WFA) for fast move to (CA).

7. Bosco, C. L. (2007) thesis title **"The relationship between environmental turbulence, workforce agility and patient outcomes"**. The purpose of this research is to identify the relationship between Environmental Turbulence (ET), (WFA) and Patient Outcomes (PO) and its effect on (CA) represented by customer satisfaction especially in case of patient outcome.

The study was applied in Arizona - USA and was conducted on the sample of (454 nurse) samples mainly focus on nursing unit and (1179 patient) with using a group of evaluation questions (5 Questions)

As a result, there was an impact from (WFA) has effectiveness to deal with Environmental Turbulence to affect positively or negatively on the Patient Outcomes and their reactions and results.

This prompted the current researcher to stick to (WFA) in the research model as contribution tool to face the sudden change in the environment to become competitive through the reaction of the final beneficiary.

8. CUC, S., & TRIPA, S., (2007) **"Lean Six Sigma and innovation"**. This paper comes to prove (LSS) is a business improvement methodology that maximizes shareholder value by achieving the fastest rate of improvement in customer satisfaction, cost, quality, process speed, and invested capital.

As a result, (LSS) create integration and sharing responsibility between each other of changing the organization to make it better equipped to meet the needs of its customers and to keep finding innovative ways to deliver its products or services.

This gives the current researcher proof that (LSS) is a means to the Innovation,which is a pillar of (CA) that needs a people and organization upcoming to the change which means (WFA) for move fast to (CA).

9. Cavallini, A. G. (2008) thesis title **"Lean Six Sigma as a source of competitive advantage".** The goal of this thesis is to successfully demonstrate that manufacturing companies applying (LSS) and quality control tools are able to respond better and faster to complex market demands and gain strategic advantage.

This study analyzes a group of publicly traded manufacturing companies with the intent of verifying if a correlation exists between companies being Lean and the attainment of superior returns on investments.

The results of this study showed that a superior financial reward comes from a systematic application of (LSS) tools as a source of (CA, if they want to strategically invest their capital.

This draws attention of current researcher that (LSS) drives to (WFA) through providing superior financial rewards that come from a systematic application which could operate to achieve (CA).

10. Gupta, V., et al., (2012) study title" **Monitoring quality goals through lean six-sigma insures competitiveness**". This case seeks to illustrate the specific problem of excessive Defects in radial tires produced in "Speedo Tires" company in India by using (LSS) methodology to tackle Defects reduction that erode theirbrand value and

financial performance and try to stay in competitive zone and keep the actual name of the company.

Consulting teams of (LSS) analyze all the processes by applying the methodology of (LSS) on all process

As a result, the root-cause of the Defects "are foreign particles in the manufacturing environment, under ageing and over ageing of tire components, and inefficient bead winding process", this led to reduce defective tires from 22-25% to 15% of the total monthly production, sales curve up to 30%, encouraged changing in organization culture by incorporating a continuous improvement systems, employee accountability, involvement in the organization, motivation building and reward programs for gaining employees confidence.

This is an indicator to the researcher that (LSS) way to treat the defects in relationship with (WFA) through changing the organization policy and direction with for gaining employees confidence to lead the (CA).

11. Laureani, A., & Antony, J. (2012) study title **"Critical success factors for the effective implementation of lean six sigma**". The purpose of this paper is to present (CSFs) for any continuous improvement of initiative and focus the efforts on these factors for the effective implementation of (LSS), to analyze the implementation of (LSS) focusing on the CSFs identified in the literature.

The population of this study is the literatures related to various critical success factors in conjunction with the cases and examples from the various sectors, sample size of 101 companies; questionnaire was sent to 600 companies with responding rate is approximately 17%.

The authors concluded the most important respondents from the survey of critical success factors for (LSS) implementation were "Management Commitment, Organizational Culture, Linking (LSS) to Business Strategy, and Leadership Styles".

This conclusion gave the researcher indicators that (LSS) work on culture basis and have inherent root to (WFA).

12. Jaber, M. A. (2013) Thesis title "**Implementing lean six sigma methodologies in the oil industry: general framework**".

The main objective of this research is to show the effectiveness of (LSS) methodology of solving problems that the oil industry face and minimize or eliminate negativity to stay among the competitive domain.

The study recommended that (LSS) is an advanced methodology that can maximize productivity with high quality and can be integrated with other quality systems to increase flexibility in the oil industry.

The researcher understands from this study, that (LSS) is an advanced methodology to stay in the competitiveness zone

13. Gijo, E. V., & Antony, J. (2013). study title"**Reducing patient waiting time in outpatient department using lean six sigma methodology**". This study came to treat the causes of delay for the Patients in the Out Patient Department "OPD" in a specialist hospital of a manufacturing company in India which cause very high level of absenteeism of workers to the industry causing production stoppages and other operational inconveniences resulting in customer dissatisfaction and this reduce the competitiveness among other manufacturing company, hence, timely and quality service was of the utmost important.

The sample size was 12,000 current employees, approximately 80 specialist doctors, 700 to 800 patients/ day.

As a result, (LSS) summarized (14) non-add value steps of (35) steps, behavior "medical behavior culture" of service provider beside the technology, advance equipments caused Defects and the average waiting time reduced from 57 min to 24.5 min.

This conclusion gave the current researcher indicators that (LSS) treat the delay, faster recovery, increase the satisfaction of beneficiaries, and changing culture of work which it all pour into (WFA) and (CA).

14. Muduli, A. (2013). Study title "**Workforce agility: a review of literature**". This theoretical study came to fill the research gap and continues the competition of the identity and attributes of (WFA). As a result (WFA) is "Adaptability, flexible, developmental, innovative, collaborative, competent, fast and informative in nature, training, compensation system, empowerment, teamwork, information system availability". This study gave the meaning of important of applying (WFA) attributes,

also it helped the current researcher to conclude the relevant attributes that relate to the current study in addition to how the (WFA) is important as a link tool for the facing systems.

15. Praful Patel (2014) "**Cost management &lean six sigma" naval center for cost analysis**" (Military article). This article simulates and translates the effectivenessof(LSS) in cost management through waste reduction to improve cost, quality, capability and customer satisfaction. The article had showed in a "US Naval forces - Department of Defense" how successful was using (LSS)in several areas, such as "low production cost to 10% of shipbuilding industry caused increasing flow ability to buy and sustain the productivity between competitors, fewer turnovers of parts and reduced inventories. This article gave to the researcher the meaning of the effect of applying (LSS) to invest the costs difference and fewer turnovers of parts and reduced inventories.

16. Cade, T., (2014). (Military article). "**Cost Management and lean six sigma -a United States special operations command "USSOCOM" perspective**". This paper comes to view the effectiveness of applying (LSS) for eliminating waste; improving processes; employing innovative ideas; planning, analyzing, and controlling costs and encourage the competitiveness between the units in the United States Special Operations Command "USSOCO" Due to the extreme difficulty in the finance of the US Department of Defense in several military sectors during joint special operations out of USA

As a result, there is an abundance of cost worth by applying this quality system in of total contracts of 62.4 million. This paper gave to the researcher the meaning of the effect of applying (LSS) to invest the costs difference and fewer turnovers of parts and reduced inventories.

17. Dogan, S., (2015) "**Strategic assessment of lean six sigma practicality in the Turkish army**" The primary goal of this study is to introduce the (LSS) methodology in Turkish army compared with USA military, considering that the Turkish military has not yet become acquainted with (LSS).

The researcher applies between U.S. and Turkish military officers study at the Naval Postgraduate School NPS of (47) Turkish students at NPS and the same of U.S.

military were both isolated group away from their typical daily working environments, nearly the same age, same amount of military experience, and mid-manager opinions of their military organizations.

Results indicate that there is no significant cultural difference between the U.S. and Turkish military organizations that would likely hinder the successful implementation of (LSS).This calls the researcher to keep in account that culture factor "which it a rooted in (WFA)" is of vital importance to indicate how important it is to show the effectiveness of (LSS) and take into consideration them in the research.

18. Ellis, S. F. (2016) single holistic case study "**The application of lean six sigma to improve a business process: A study of the order processing process at an automobile manufacturing facility**".

The study aims to improve the order process in automobile manufacturing facility that takes an average four business days to complete order. This affects reaching customers on time and dissatisfies them.

It concluded that the cycle time has been reduced to 50% (from four days to two days), Increasing in customer satisfaction by (6.48%), Increasing in the automobile manufacturing facility's annual customer service rating (8.25%). So that the organizations should with the superior product able to compete in regards to Time constraints.

The researcher summarized the extent of success of (LSS) to reduce the cycle Time which it important to accomplish the duties on time which it advantage to satisfy the final beneficiary and achieve the (CA).

2.3 What Distinguishes the Current Study from Previous Studies

Lean Six Sigma quality system has been measured in most of the studies on civil organizations and a limited number in non-Arab military organizations. This study was applied in an Arab military organization; therefore this study is the first of its kind applied to an Arab military organization according to the researcher's knowledge.

The samples of the previous studies included specific categories either employees or beneficiaries, while the current study included the sample of employees and all levels and military levels as well as beneficiaries of the service, institutions and companies.In

this case, this study is more comprehensive than its predecessors in terms of sample and results.

Previous studies were conducted in factories sectors, production, or service departments. The current study was implemented in the Armed Forces Depots, the first of its kind in this field.

The present study is comparative studies that is distinguished from its predecessors by studying three dimensions [(LSS), (WFA) and (CA)] in the military field, where as the previous studies were descriptive or experimental studies only.

Chapter Three: Study Methodology (Methods and Procedures)

3.1 Introduction:

In this chapter, seven main axes related to the three variables of current study [(LSS), (WFA) and (CA)] shown through the following diagram which will summarizes the relationship analysis between them and an extension of the two previous chapters.

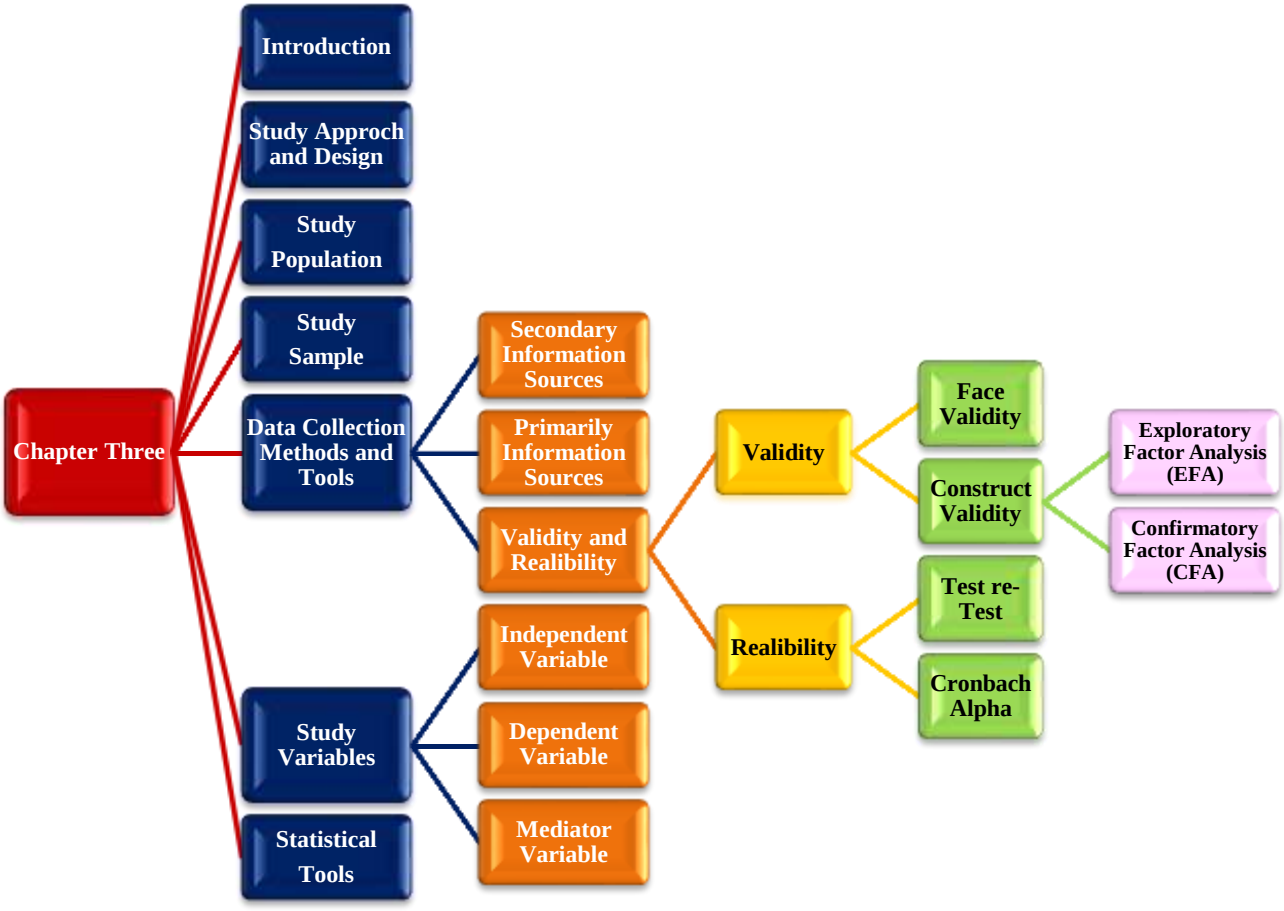


Figure (3.1): Construction of chapter three.

3.2 Study Approach and Design

The current study is a Comparative study among Royal Bahraini Armed Depots, this study has been implemented on the analytical descriptive approach which it is the most appropriate method in achieving the objectives of the present study and answering its questions.

3.3 Study Population

The Royal Bahraini Armed Forces Depots in the Kingdom of Bahrain are the subject of the current study, which included the Population of the study applied to the present study that included all the specialists working in the Royal Bahraini Armed Depots for all their specialist and ranks and the beneficiaries related to the Depots of military units and local civil companies of total number (300) distributed in the following table (3.1).

Table (3.1): description of Study Population

		Army Depots	Air force Depots	Navy Depots
Crew		42	44	32
Beneficiaries	Military Units	50	46	40
	Local Civil Companies	28	10	8
Total	Per Depot	**120**	**100**	**80**
	Of all Depots	**300**		

Source: records of the Armed Forces Depots that subject to the current study for (2017)

3.4 Study Sample

Due to the limited number of the member of the study sample and the possibility of full coverage the whole population was examined as a sample for the study by comprehensive survey, which included all the specialists working in the Royal Bahraini Armed Forces Depots with all their specialties, ranks, and Beneficiaries related to Depots from military units and local civil companies of total number (300).The following table (3.2) describes the demographic profile of the study sample.

Table (3.2): Respondents' characteristics and demographic variables

Respondent's Characteristics		Category	Counts	%
Age		18 – Less 25	23	7.7
		25 – Less 32	79	26.3
		32 – Less 39	106	35.3
		39 and above	92	30.7
		Total	**300**	**100**
Education		Secondary School	173	57.7
		Diploma	77	25.7
		Bachelor	45	15.0
		Master	4	1.3
		Doctorate	1	0.3
		Total	**300**	**100**
Rank	**Military Uniform**	Officers	43	14.4
		Non-Commissioned Officers	147	49
		Soldiers	39	13
		Technicians	25	8.3
	Beneficiaries	Civil Companies	46	15.3
		Total	**300**	**100**
Experience		Less 5	29	9.7
		5 – 10	100	33.3
		11 – 15	109	36.3
		16 and above	62	20.7
		Total	**300**	**100**
Depots' Type		Army Depot	120	40.0
		Navy Depot	80	26.7
		Air force Depot	100	33.3
		Total	**300**	**100**
Common Divisions in the Depots and Beneficiaries Type	**Inside the Depots "Sections"**	Receiving section	6	2
		Account section	6	2
		Ammo. section	60	20
		Weapons section	23	7.7
		Mechanism section	23	7.7
	Beneficiaries Type	Military Unites	136	45.3
		Civil Company	46	15.3
		Total	**300**	**100**
Dealing	**Military**	Crew	118	39.4
	Beneficiaries Type	Military Unites	136	45.3
		Civil Company	46	15.3
		Total	**300**	**100**

From table (3.2),the Age scale was built according to the Depots registers, and from the above demographic table, the responding ages 18 – Less 25 (7.7%), 25 – Less 32 is (26.3%), 32 – Less 39 is (35.3%), finally 39 and above is (30.7%), and the greatest percentage coming with "32 – Less 39" (35.3%) followed by "39 and above" is (30.7%) this means that the policies of the Depots take into consideration the existence of advanced age that relate to the experience for feeding the front line, where the Experiences "coming back to the Depots registers" we concluded that Less 5 (9.7%), 5 – 10 (33.3%), 11 – 15 (36.3%), finally 16 and above (20.7%) which the greatest percentage

mention to “11 – 15” (36.3%) that prove the relation of the Depots policies for caring with the expert people.

This implies the educational level of people who had filled the questionnaire is consistent with the current level of the study results, as the table above, (57.7%) of the respondents have Secondary School, (25.7%) have Diploma degree, (15.0%) have Bachelor degree, (1.3%) have Master degree, and (0.3%) have Doctorate degree. This indicates that the Depots need more attention to Educational level for advanced mind to face the sudden change and contribute the development.

Furthermore, all relevant ranks of Royal Bahraini Armed Depots have targeted and covered divided in two categories, with the first category being Military Uniform starting with Officer (14.4%), Non-Commissioned Officer (49%), Solder (13%), and Technician (8.3%) and the most of respondents from “Non-Commissioned Officer” category with (49%) which that indicate the Royal Bahraini Armed Depots depend on mature people. The second category is the Beneficiaries where they the Civil Company with (15.3%).

The sample of population in the Depots covers two side, first is inside the Depots “Sections” where the Receiving (2%), Account (2%), Ammo. (20%), Weapons (7.7%), and Mechanism (7.7%). The second side is the Beneficiaries where they are divided into Military Unites (45.3%) and Civil Company (15.3%) which they directly deal and relate to the mission of the Depots which is part of the study axis.

3.5 Data Collection Methods (Tools)

In this study, the researcher relied on two sources: secondary and primary, to achieve the study objectives as follows:

3.5.1 Secondary Information Sources

Including the knowledge of what the researchers, management thought, books, articles, scientific research, and the Internet regarding the three variables [(LSS) elements, (WFA) attributes, and (CA)] and their content in order to cover the theoretical side.

3.5.2 Primarily Information Sources

They were obtained through two sources in order to investigate the Mediator role of (WFA) on the effect of Independent Variable (LSS) elements on Dependent Variable (CA).

- **First source:** through the interviews with the workers "military and technicians" in the study field and observations through the researcher field and experience in the study field.
- **Second source:** through the questionnaire distributed to the sample of the study which included all the specialists working in the Royal Bahraini Armed Depots with all their specialties, ranks and beneficiaries related to Depots from military units and local civil companies.

The questionnaire is divided into two parts:

- **Part one:** The researcher developed the questionnaire by identifying the demographic variables of the sample as follows (Age, Education, Rank, Experience, Type of Depot, Division, and Dealing with the Depots).

- **Part two:** The questionnaire was composed of three axes that were defined by the three variables [(LSS),(WFA) and (CA)]. The number of questions was (76)as follows in the nest table (3.3).

Table (3.3) Division of Questions by Variables

Variable	References	Elements of Variable	Number of Questions	Total Questions/ Variable
Lean Six Sigma Elements (Independent Variable)	• Womack, J.P; and Jones, D.T (1996). "*Lean thinking: Banish Waste and Create Wealth in Your Corporation*", (2nd ed.), New York: Simon and Schuster. • George, M.L (2003) "*Lean Six Sigma for Service*", New York: MCGRAW-HILL • Goldsby, T.; and Martichnko, R. (2005) "*Lean six sigma logistics*", New York: J. Ross Publishing, Inc. • Mack, J.; Eitel, G; Heslop, J.; and Owens, N. (2011) "Operation excellence, lean six sigma" Customer Green Belt Training course. • Goetsch, D. (2014). "*Quality management for organizational excellence*", (7thed.). UK: Pearson.	Defects	5	33
		Waiting	4	
		Transportation	4	
		Inventory	7	
		Motion	4	
		Extra Process	5	
		Non-Utilized Talent	4	
Variable	**References**	**Dimensions of Variable**	**Number of Questions**	**Total Questions/ Variable**
Competitive Advantage (Dependent Variable)	• Handfield, RB; and Pannesi, RT. (1995). Antecedents of lead-time competitiveness in make-to-order manufacturing firms. ***INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH.*** 33(2), 511. • Koufteros XA, Vonderembse MA, & Doll WJ. (1997). "Competitive capabilities: measurement and relationships". Proceedings Decision Science Institute. 1067–68. • Tracey M, Vonderembse MA, & Lim JS. (1999). Manufacturing technology and strategy formulation: keys to enhancing competitiveness and improving performance. *JOURNAL OF OPERATION MANAGEMENT*. 17(4); 411–28. • Brumfit, K., Barnes, S., Norris, L., & Jones, J. (2001). *The competitive business environment*. Cheltenham, UK: Nelson Thornes. • Mohammed AbdaliJaber. (2013). **Implementing Len Six Sigma methodology in the general framework**. (Unpublished Master dissertation). Southern Illinois University Carbondale • Gruber A. (2015). **Factors relating workforce development management system of training, mentoring, wellness, and recognition effects on competitive advantage, return on investment, retention, worker productivity, worker perception of organizational leadership, and worker absenteeism. (**Unpublished doctoral dissertation). Alliant International University, San Diego: USA.	Time	4	17
		Quality	5	
		Cost	4	
		Innovation	4	

Table (3.4) Division of Questions by Variables "cont."

Variable	References	Attributes of Variable	Number of Questions	Total Questions/ Variable
Workforce Agility Attributes (Mediator Variable)	• KARIN BREU, CHRISTOPHER J., HEMINGWAY AND MARK STRATHERN. (2001). Workforce agility: the new employee strategy for the knowledge economy. *JOURNAL OF INFORMATION TECHNOLOGY*. 17; 21–31. • Vazquez-Bustelo, Daniel, Lucía Avella, and Esteban Fernandez. (2007). Agility drivers, enablers and outcomes. *INTERNATIONAL JOURNAL OF OPERATIONS & PRODUCTION MANAGEMENT*. 27 (12); 1303–1332. • Ye-zhuang, Tian, Zhang Fu-jiang, and GuoHai-feng. (2006). An Empirical Study on the Consistency Model of Agile Manufacturing Strategy. Paper Read at IEEE International Conference on Management of Innovation and Technology, Singapore. • Sherehiy, Bohdana. (2008). Relationships between agility strategy, work Organization and Workforce Agility. Kentucky: University of Louisville. • AshutoshMuduli. (2013). "Workforce agility: a review of literature". *JOURNAL OF MANAGEMENT RESEARCH*. 3 (30)	Flexibility	4	26
		Adaptability	4	
		Motivation	5	
		Training	5	
		Participation	4	
		Empowerment	4	
Total Variables Questions				**76**

3.5.3 Validity and Reliability

3.5.3.1 Validity

3.5.3.1.1 Face Validity → **3.5.3.1.2 Construct Validity**

The validity of the study tool was checked by

1. Face Validity
2. Construct Validity
   a. Exploratory Factor Analysis (EFA)
   b. Confirmatory Factor Analysis (CFA)

3.5.3.1.1 Face Validity

For the purpose of measuring the current study, it was presented to (15) arbitrators by (7) arbitrators from the Kingdom of Bahrain from the military field holders of higher degrees and faculty members in the Department of Business Administration from the Universities of Bahrain and (8) arbitrators of the faculty members of the Department of Business Administration in the Hashemite Kingdom of Jordan [Appendix (1)] to express their opinions on the validity of the content of the instrument in the clarity of the questions, affiliation of phrases and their suitability to the scale. Based on the opinions of the arbitrators, (21) questions have been dismissed for the lack of clarity, meaning and difficulty of measuring, and to amend some paragraphs in terms of wording to increase their clarity, and the adjustment because of the similarity of the meaning with other paragraphs, the scale has consisted of (55), Where the researcher considered the views of the arbitrators and their amendments to indicate the validity of the content of the study tool and the relevance of paragraphs and diversity, and after making the required adjustments, balance between the contents of the scale in its paragraphs, indicating the apparent honesty of the tool.

3.5.3.1.2 Construct Validity

The sincerity of the construction of the scale was calculated by calculating the correlation of the degree of the paragraph to the variable to which it belongs and the total scores for each variable where the results are shown the results in following tables of Exploratory Factor Analysis "EFA" and Confirmatory Factor Analysis.

3.5.3.1.2.1 Exploratory Factor Analysis "EFA" → **3.5.3.1.2 .2 Confirmatory Factor Analysis**

3.5.3.1.2.1 Exploratory Factor Analysis "EFA"

It was performed using the principal component method to evaluate the validity of (LSS) elements, (CA) and (WFA) attributes and the validity of the brand loyalty attributes. It's common that factor loadings (which represent the amount of variation an item contributes to the factor's total variation) should not be less than 40 % (i.e. 0.40)

(Laher, S.,2010).The desirable case is that all the items load on one factor, however in some cases this did not occur and that the items load on more than one factor. In this case the researcher chooses the factor that has the greater loading rather than the other factor. If a factor being extracted with fewer than three items loaded on it should be cancelled (Deleted).

The Eigen value is a criteria suggested by Kaiser to generate the factors which represents the sum of the loadings squares. If an Eigen value of less than one for a given factor, that factor should be eliminated and the process of extracting more factors stops. The percentage of explained variance represents the average amount of the total factors variance per an item, as the value increases the explained variance is positively recognized. The KMO test is a test suggested by (Kaiser, Meyer and Olkin) to identify the adequacy of data being used to be analyzed by factor analysis (Hair, J. F., et al., 2010). The test value ranges between (0 -1).

Practically a value of 0.50 or more represents sufficient and adequate data (Pallant, J., 2010). The Barlets test is a test used to explore whether the correlation matrix for the variables is an identity matrix (zero matrix) practically the test is provided with a value representing type 1 error ($\alpha \leq 0.05$). If the sig value was ≤ 0.05 the test is positive meaning that the data is convenient to be analyzed by factor analysis as it represents different sampling for the study population.

All the mentioned concepts will be used to interpret the results of the upcoming tables taking into account that the mentioned concepts and criteria were met and satisfied.

Table (3.5): (EFA) "Principal component method" of (LSS) elements

Lean Six Sigma Elements	Question No.	Factor loadings	Eigen value	Explained variance	KMO	Sphericity test (Barlets)	
						Test value	sig
Defects	IV 1.1	0.936	2.39	79.68	0.671	572.62	0.000
	IV 1.2	0.929					
	IV 1.3	0.805					
Waiting	IV 2.1	0.859	1.47	73.73	0.500	75.90	0.000
	IV 2.3	0.859					
Transportation	IV 3.1	0.776	1.83	61.26	0.652	147.07	0.000
	IV 3.2	0.825					
	IV 33	0.745					
Inventory	IV 4.1	0.659	2.39	59.85	0.718	364.58	0.000
	IV 4.2	0.890					
	IV 4.3	0.694					
	IV 4.4	0.828					
Motion	IV 5.1	0.925	2.39	79.72	0.701	503.54	0.000
	IV 5.2	0.834					
	IV 5.3	0.916					
Extra Process	IV 6.1	0.869	2.38	79.56	0.715	465.16	0.000
	IV 6.2	0.924					
	IV 63	0.883					
Non-Utilized Talent	IV 7.1	0.895	2.50	83.52	0.742	571.59	0.000
	IV 7.1	0.932					
	IV 7.2	0.915					

The Kaiser-Meyer-Olkin tests “KMO” adequacy and suitability of the data being used for factor analysis. A critical value 0.50 is considered to be the smallest satisfactory value. The table shows that the “KMO” test values ranged between (0.500) for Waiting and (0.742) for Non-Utilized Talent elements.

So the mentioned values of “KMO” mentioned suggest an acceptable value for data adequacy for the purpose of factor analysis. The Bartlett’s test of sphericity measures the factorability of the correlation matrix. The test of sphericity assumes significant probabilities among the factors being used in the correlation matrix. As could be figured out from the results of probability, all the probabilities were significant at $p < 0.001$ level, meaning significant relationships between the factors included in the analysis.

The items loadings reflect the concept of convergent validity. Typically an item is said to be convergent if a loading value is 0.40 or greater. Inspecting the provided results we can see that the minimum loading being obtained was assigned to item “No. 1” in the Inventory element (IV 4.1) which was (0.659) and that the maximum loading value was assigned to the item “No. 1” in the Defect element (IV 1.1) which recorded a loading of (0.936) so these values were above the minimum required (0.50 or greater) suggesting reasonable convergent validity. These results confirmed the factorability of the Exploratory Factor Analysis “EFA” conducted for each element.

Table (3.6): (EFA) “Principal component method” of (CA) elements

Competitive Advantage Elements	Question No.	Factor loadings	Eigen value	Explained variance	KMO	Sphericity test (Barlets)	
						Test value	sig
Time	DV1.1	0.762	3.16	79.18	0.758	1125.14	0.000
	DV1.2	0.900					
	DV1.3	0.934					
	DV1.4	0.952					
Quality	DV2.1	0.747	1.49	74.68	0.500	83.10	0.000
	DV2.2	0.747					
Cost	DV3.1	0.687	2.61	65.45	0.688	732.25	0.000
	DV3.2	0.922					
	DV3.3	0.939					
	DV3.4	0.646					
innovation	DV4.1	0.911	2.10	70.09	0.615	347.06	0.000
	DV4.3	0.893					
	DV4.4	0.690					

The Kaiser-Meyer-Olkin tests “KMO” adequacy and suitability of the data are used for factor analysis. A critical value of 0.50 is considered to be the smallest satisfactory value. The table shows that the “KMO” test values ranged between (0.500) for quality attribute and (0.758) for time.

So the mentioned values of “KMO” mentioned suggest an acceptable value for data adequacy for the purpose of Exploratory Factor Analysis “EFA”. The Bartlett’s test of sphericity measures the factorability of the correlation matrix. The test of sphericity assumes significant probabilities among the factors being used in the correlation matrix. As could be figured out from the results of probability, all the probabilities were significant at $p < 0.001$ level, meaning significant relationships between the factors included in the analysis.

The items loadings reflect the concept of convergent validity. Typically an item is said to be convergent if a loading value was 0.40 or greater. Inspecting the provided results we can see that the minimum loading being obtained was assigned to item “No. 1” in the Costs element (DV3.4) which was (0.646) and that the maximum loading value was assigned to the item “No.1” in the Time element (DV1.4) which recorded a loading of (0.952) so these values were above the minimum required (0.50 or greater) suggesting reasonable convergent validity. These results confirmed the factorability of the Exploratory Factor Analysis “EFA” conducted for each element.

Table (3.7): (EFA) “Principal component method” of (WFA) Attributes

Workforce Agility Attributes	Question No.	Factor loadings	Eigen value	Explained variance	KMO	Sphericity test (Barlets)	
						Test value	sig
Flexibility	MV1.1	0.838	2.34	78.10	0.706	438.56	0.000
	MV1.2	0.916					
	MV1.3	0.895					
Adaptability	MV2.1	0.856	2.22	74.05	0.718	325.93	0.000
	MV2.2	0.850					
	MV2.3	0.876					
Motivation	MV3.1	0.873	2.40	80.23	0.718	482.16	0.000
	MV3.2	0.887					
	MV3.3	0.926					
Training	MV4.1	0.891	2.33	77.84	0.725	411.90	0.000
	MV4.2	0.899					
	MV4.3	0.856					
Participation	MV5.1	0.780	1.99	66.47	0.644	222.41	0.000
	MV5.2	0.876					
	MV5.3	0.786					
Empowerment	MV6.1	0.954	2.71	90.36	0.760	878.22	0.000
	MV6.2	0.936					
	MV6.3	0.962					

The Kaiser-Meyer-Olkin tests “KMO” adequacy and suitability of the data being used for factor analysis. A critical value 0.50 is considered to be the smallest satisfactory value. The table shows that the “KMO” test values ranged between (0.644) for Participation attribute and (0.760) for empowerment. So the mentioned values of “KMO” mentioned suggest an acceptable value for data adequacy for the purpose of factor analysis.

The Bartlett’s test of sphericity measures the factorability of the correlation matrix. The test of sphericity assumes significant probabilities among the factors being used in the correlation matrix. As could be figured out from the results of probability, all the probabilities were significant at $p < 0.001$ level, meaning significant relationships between the factors included in the analysis.

The items loadings reflect the concept of convergent validity. Typically an item is said to be convergent if a loading value was 0.40 or greater. Inspecting the provided results we can see that the minimum loading being obtained was assigned to item “No. 1” in the Participation attribute (MV5.1) which was (0.780) and that the maximum loading value was assigned to the item “No. 3” in the Empowerment attribute (DV1.4) which recorded a loading of (0.962) so these values were above the minimum required (0.50 or greater) suggesting reasonable convergent validity. These results confirmed the factorability of the Exploratory Factor Analysis “EFA” conducted for each element.

3.5.3.1.2 .2 Confirmatory Factor Analysis

This analysis was performed using AMOS version 22 software. This software provides both the standardized and un-standardized loading for each item (question) on its proposed (latent) variable. The software provides an advantage that it gives an indication for the goodness of fit for the overall data variables being used in the model. These indicators are numerous.

The researcher use the most common indicators (four) that most studies rely on to decide the goodness of model fit, chi square test (χ^2), the Comparative Fit Index “CFI”, the Goodness of Fit Index “GFI” and the Root Mean Square Error Approximate “RMESA”.

Each of these indicators has a reference value above which it reflects good model fitting. In general the chi square test is the inferential test that uses probability to accept or reject the goodness of fit; the desire situation is that the probability of chi square test is > 0.05 suggesting no statistical differences between the real (actual measured model) and the theoretical one (Hair, J. F., et al., 2010).

One major negative aspect of chi square is that it is sensitive to the sample size (i.e. its affected and varied largely among different sample sizes) accordingly rarely that a researcher obtains a suitable desired chi square value (i.e. $p > 0.05$). In the same context the "RMESA" indicator refers to the average of squared errors, so as less the result as the desired situation is, typically a value less than 0.08 is considered to be fair, others suggest that this value should be less than 0.05 expresses a good indicator (the ideal situation is to equal 0.00). Both the "CFI" and "GFI" indicators ranges between (0 -1) so a value of 0.90 or higher suggest good fitting.

The results pertain to the Independent Variable (LSS), Dependent Variable (CA) and Mediator Variable (WFA) is provided in the upcoming tables.

Table (3.8): (CFA) of (LSS) elements

Elements	Question No.	Factor loadings	χ^2	sig	CFI (0 – 1.00)	GFI (0 – 1.00)	RMSEA (0 – 0.08)
Defects	IV 1.1	0.960	643.24	0.000	0.901	0.906	0.100
	IV 1.2	0.909					
	IV 1.3	0.640					
Waiting	IV 2.1	0.822					
	IV 2.3	0.577					
Transportation	IV 3.1	0.851					
	IV 3.2	0.549					
	IV 33	0.472					
Inventory	IV 4.1	0.548					
	IV 4.2	0.903					
	IV 4.3	0.612					
	IV 4.4	0.704					
Motion	IV 5.1	0.780					
	IV 5.2	0.874					
	IV 5.3	0.790					
Extra Process	IV 6.1	0.811					
	IV 6.2	0.877					
	IV 63	0.792					
Non-Utilized Talent	IV 7.1	0.848					
	IV 7.1	0.899					
	IV 7.2	0.869					

Table (3.8) presents the results items loadings reflecting the concept of convergent validity using the technique of Confirmatory Factor Analysis "CFA". Inspecting the results provided by table (3.8) it can be seen that the minimum loading obtained was assigned to item no. 3 in the Transportation element (IV 3.3) which was (0.472) and that the maximum loading value was assigned to the item "No. 1" in the Defect element (IV 1.1) which recorded a loading of (0.960).So these values are above the minimum required (0.40 or greater) suggesting reasonable convergent validity. Typically an item is said to be convergent if a loading value was 0.40 or greater (Hair, J. F., et al., 2010).

Concerning the model fitting indicators obviously the chi square test value (643.24) showed a significant difference (sig = 0.000) which <0.05 resulting a bad indication. Furthermore, the CFI (0.901) and GFI value of (0.906) are almost within the acceptable high range indicating good fitting indicators. The RMSEA indicator was slightly greater than the desired value (0.100) suggesting a poor fitting, as a result the model is considered to be suitable and cannot be judged as good nor can't be judged worse so for the purpose of the current research it is considered to be acceptable, Figure (3.1).

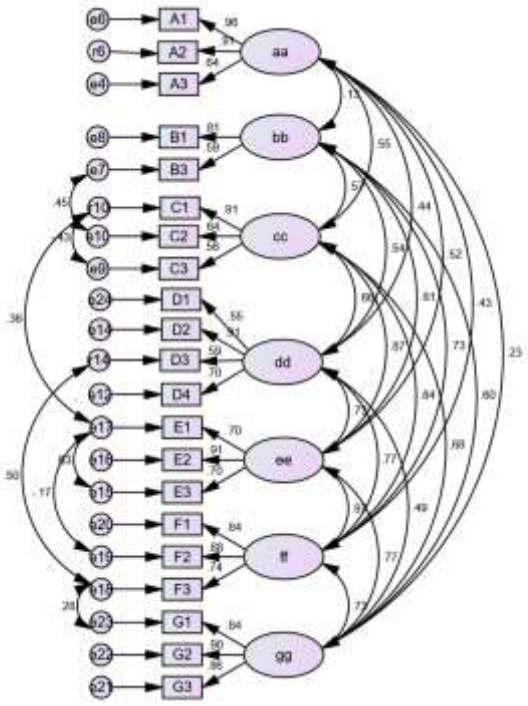


Figure (3.2): Construct Validity of (LSS) elements

Table (3.9): (CFA) of (CA) elements

Attributes	Code	Factor loadings	χ^2	sig	CFI (0 – 1.00)	GFI (0 – 1.00)	RMSEA (0 – 0.08)
Time	DV1.1	0.618	3072.88	0.000	0.902	0.912	0.124
	DV1.2	0.801					
	DV1.3	0.950					
	DV1.4	0.991					
Quality	DV2.1	0.882					
	DV2.2	0.560					
Cost	DV3.1	0.547					
	DV3.2	0.941					
	DV3.3	0.976					
	DV3.4	0.493					
Innovation	DV4.1	0.919					
	DV4.3	0.841					
	DV4.4	0.503					

Table (3.9) presents the results items loadings reflecting the concept of convergent validity using the technique of CFA (confirmatory factor analysis). Inspecting the results provided by table (3.9). it can be seen that the minimum loading being obtained was assigned to item no. 4 in the cost attribute (DV3.4) which was (0.493) and that the maximum loading value was assigned to the item "No.4" in the time attribute (DV1.4) which recorded a loading of (0.991) so these values were above the required minimum of (0.40 or greater) which suggest reasonable convergent validity. Typically an item is said to be convergent if a loading value is 0.40 or greater (Hair, J. F., et al., 2010).

Concerning the model fitting indicators obviously the chi square test value (3072.88) showed a significant difference (sig = 0.000) was < 0.05 resulting in bad indication, further, the CFI (0.902) and GFI value (0.912) are within the acceptable range indicating good fitting indicators. The RMSEA indicator was greater than the desired value (0.124) suggesting a poor fitting, as a result the model is considered to be fair and can't be judged as good nor can't be judged worse so for the purpose of the current it is considered as acceptable, Figure (3.2).

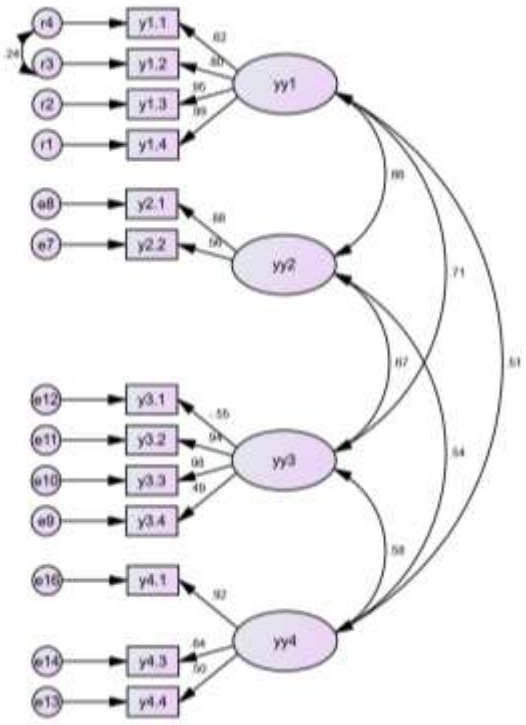


Figure (3.3): Construct Validity of (CA) elements

Table (3.10): (CFA) of (WFA) attributes

Attributes	Code	Factor loadings	χ^2	sig	CFI (0 – 1.00)	GFI (0 – 1.00)	RMSEA (0 – 0.08)
Flexibility	MV1.1	0.754	632.09	0.000	0.900	0.901	0.101
	MV1.2	0.847					
	MV1.3	0.870					
Adaptability	MV2.1	0.712					
	MV2.2	0.640					
	MV2.3	0.937					
Motivation	MV3.1	0.882					
	MV3.2	0.756					
	MV3.3	0.790					
Training	MV4.1	0.779					
	MV4.2	0.903					
	MV4.3	0.736					
Participation	MV5.1	0.658					
	MV5.2	0.810					
	MV5.3	0.667					
Empowerment	MV6.1	0.928					
	MV6.2	0.888					
	MV6.3	0.960					

Table (3.10) presents the results items loadings reflecting the concept of convergent validity using the technique of CFA (confirmatory factor analysis). Inspecting the results provided by table (3.10) it can be seen that the minimum loading being obtained was assigned to item “No. 2” in the Adaptability attribute (MV2.2) which was (0.640) and that the maximum loading value was assigned to the item no. 1 in the empowerment attribute (MV6.3) which recorded a loading of (0.960) so these values were above there quired minimum (0.40 or greater) suggesting reasonable convergent validity. Typically an item is said to be convergent if a loading value was 0.40 or greater (Hair et al., 2010).

Regarding the model fitting indicators it is obvious that the chi square test value (632.09) showed a significant difference (sig = 0.000) that was < 0.05 resulting as a bad indication, further, the CFI (0.900) and GFI value (0.901) are almost within the acceptable high range indicating good fitting indicators. The RMSEA indicator was slightly greater than the desired value of (0.101) suggesting a poor fitting, and as a result the model is considered to be suitable and can't be judged as good nor can’t be judged worse so for the purpose of the current research it is considered to be acceptable, Figure (3.3).

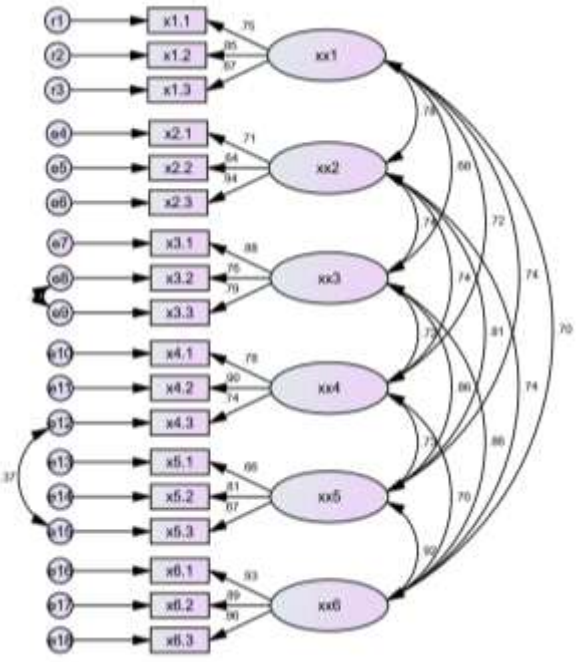


Figure (3.4): Construct Validity of (WFA) Attributes

3.5.3 .2 Reliability

3.5.3.2.1 Reliability in the concept of stability "Test re-Test" → **3.5.3.2.2 Internal Consistancy "Cronbach Alpha"**

Reliability was detected in two different approaches:

1. Reliability in the concept of stability "Test re-Test"
2. Internal consistency "Cronbach Alpha" among the items representing each Element and Attribute of the study variables:

3.5.3.2.1 Reliability in the concept of stability "Test re-Test"

In this approach, we check that the response of the same individuals is the same on the questions being used to evaluate the variable or not. In this case, the sample respondents should answer twice on the same questions by a suitable separation between the time periods. It's essential that to keep the order of the respondents assignedto the same individual to relate the answers correctly. A sample of (23) subjects performed as a pilot for this purpose, Table (3.11).

Table (3.11): Test re-Test (n = 23) for the reliability of the study variables

Variables		Test		re-Test		r	sig
		m	sd	m	sd		
Independent Variable Lean Six Sigma "LSS"	Defects	3.820	0.694	3.787	0.666	0.872	0.000
	Waiting	2.290	0.475	2.260	0.411	0.805	0.000
	Transportation	2.673	0.688	2.640	0.638	0.789	0.000
	Inventory	2.873	0.542	3.140	0.445	0.891	0.000
	Motion	3.000	0.690	3.040	0.722	0.914	0.000
	Extra Process	2.887	0.685	2.853	0.653	0.889	0.000
	Non-Utilized Talent	2.540	0.642	2.560	0.658	0.799	0.000
	Lean Six Sigma "LSS"	2.869	0.516	2.897	0.480	0.914	0.000
Dependent Variable Competitive Advantage "CA"	Time	3.190	0.769	3.230	0.787	0.893	0.000
	Quality	2.440	0.644	2.460	0.706	0.804	0.000
	Cost	2.885	0.351	2.930	0.372	0.856	0.000
	Innovation	2.400	0.707	2.440	0.692	0.811	0.000
	Competitive Advantage "CA"	2.729	0.442	2.765	0.451	0.860	0.000
Mediator Variable Workforce Agility "WFA"	Flexibility	3.327	0.760	3.280	0.743	0.935	0.000
	Adaptive	3.340	0.532	3.347	0.540	0.832	0.000
	Motivation	2.507	0.834	2.640	0.967	0.811	0.000
	Training	3.067	0.868	3.133	0.953	0.802	0.000
	Participation	2.707	0.827	2.693	0.855	0.809	0.000
	Empowerment	2.620	1.111	2.720	1.216	0.817	0.000
	Workforce Agility "WFA"	2.928	0.733	2.969	0.804	0.887	0.000

Table (3.11) presents the reliability results of the study variables using the approach of Test re-Test. According to the results pertaining to independent variables' elements the minimum value acquired was observed in the transportation element, never the less this value is considered to reflect a high reliability as the observed value (0.789) was above 0.700, which is the minimum value considered to describe correlations as high. All the other values were greater than the minimum observed suggesting a high reliability of the (LSS) elements noting that the overall degree was highly reliable by a value of (0.914).

Considering the reliability values obtained for the dependent variable (CA) attributes, the minimum value obtained was observed in the quality attribute (0.804) for the quality, this value was above the critical minimum (0.700) noting that all the other mentioned values within this variable were greater than the minimum observed concluding a high reliable attributes for the dependent variable. The reliability value for the overall degree of the (CA) was (0.860) and considered to be high

For the mediator variable it was noticed that the minimum observed reliability has recorded a value of (0.802) for the training attribute. All the mediator attributes were reliable in a high degree as all the reliability values were > 0.700, which is the required minimum to describe high reliability. The reliability value representing the overall degree of the mediator variable was (0.887) reflecting a high degree of reliability

It should be mentioned that the related sig values were < 0.05 level telling that all the mentioned reliability values were statistically significant at this level.

3.5.3.2.2 Internal Consistancy "Cronbach Alpha"

This approach is useful in order that it allows us to check for the amount of variance assigned by the scale (element or attribute) in relation to the variance of the total questions. The results are included in table (3.12) below.

Table (3.12): Cronbach Alpha for the reliability analysis results of the study variables

Variables		Items No.	Reliability
Independent Variable	Defects	3	0.870
	Waiting	2	0.736
	Transportation	3	0.759
	Inventory	4	0.762
	Motion	3	0.871
	Extra process	3	0.867
	Non-Utilized Talent	3	0.897
	Lean Six Sigma "LSS"	21	0.936
Dependent Variable	Time	4	0.911
	Quality	2	0.756
	Cost	4	0.824
	Innovation	3	0.772
	Competitive Advantage "CA"	13	0.865
Mediator Variable	Flexibility	3	0.852
	Adaptability	3	0.824
	Motivation	3	0.876
	Training	3	0.857
	Participation	3	0.747
	Empowerment	3	0.946
	Workforce Agility "WFA"	18	0.949

The above table (3.12) indicates the results of "Cronbach Alpha" reliability analysis. The minimum value obtained was (0.736) for Waiting element's items, while the maximum value obtained was (0.949) for the (WFA) attributes. The Reliability mentioned values reflect a satisfactory reliability values because it is greater than 0.70 (Hair et al., 2010).

3.6 Study Variables

3.6.1 Independent Variable → 3.6.2 Dependent Variable → 3.6.3 Mediator Variable

3.6.1 Independent Variable

Lean Six Sigma (LSS) is the independent variable,itincludes sub-Independent elements “Defects, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-Utilized Talent”, and this was adopted in the current study based on the consensus of previous studies and research and in accordance with the field of study. Table (2.1) chapter two.

3.6.2 Dependent Variable

Competitive Advantage (CA) is the dependent variable, it includes sub-dependent dimensions “Time, Quality, Cost, Innovation”, this was adopted in the current study based on the consensus of previous studies and research and in accordance with the field of study. Table (2.3) chapter two.

3.6.3 Mediator Variable

Workforce Agility (WFA) attributes are the mediating variable, it includes sub-mediatingattributes “Flexibility, Adaptability, Motivation, Training, Participation, and Empowerment”, this was adopted in the current study based on the consensus of previous studies and research and in accordance with the field of study. Table (2.2) chapter two.

3.7 Statistical Tools

After data collection it was analyzed using the SPSS software version 22. The related topics with the objectives of the study were used.

1. Frequencies and Percentages: to describe the sample characteristics
2. Means: to evaluate the degree of agreement on the sub questions of the independent, dependent and mediator variables.

3. Standard Deviations: to describe the variability of the respondents answer on the sub questions of the independent, dependent and mediator variables.
4. Cronbach Alpha: to evaluate the reliability of each component of the independent, dependent and mediator variables.
5. Person Correlation: to assess the reliability using the approach of test re test.
6. Factor Analysis: to explore the loadings on the predefined components "latent variables".
7. Confirmatory Factor Analysis "CFA": explore the loadings on the predefined components "latent variables".
8. One sample **t** test to estimate the differences between the questions means from the theoretical mean.
9. Skewness and kourtises Coefficients: to assess the symmetry of the data being collected around the normal distribution curve.
10. Linear Regression: to evaluate the effect of the mixed relationships and effects among the independent, dependent and mediator variables including the following sub tests " VIF, Tolerance, (**t)** Test".
11. One way analysis of variance (one way ANOVA).
12. Sheffe post hoc test

Chapter Four: Data Analysis and Results

4.1 Introduction:

This chapter addressed three main axes which display the Descriptive statistics, Pre-tests and the inferential statistics that relate to the three variables of current study [(LSS) elements, (WFA) attributes, and (CA)] as shown through the following diagram.

In this chapter, the mean **(m)**and standard deviations **(sd)** were calculated, the values of **(t)** were obtained, and the relative importance of each paragraph to identify the responses of the sample members of the sample, in addition, some Statistical Programs used such as SPSS and AMOS, in order to analyze the questionnaire's data.

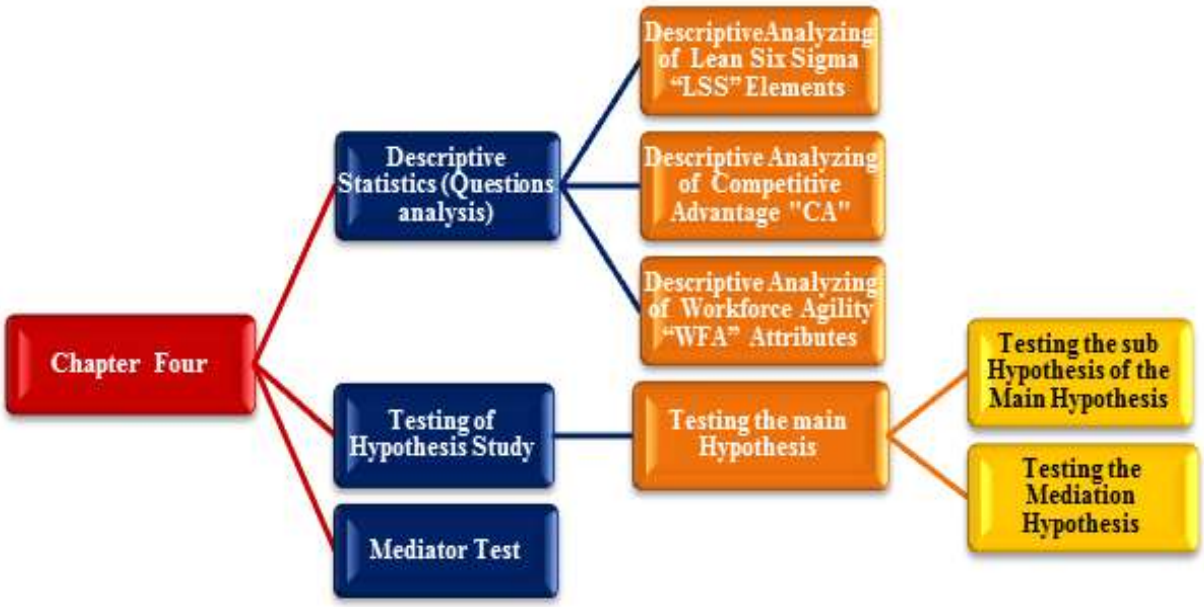


Figure (4.1): Construction of chapter four.

4.2 Descriptive Statistics (Questions analysis):

This study aims at identifying the effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized Talent" on (CA) in the presence of (WFA)attributes as a mediator between the three Armed Forces Depots "Army, Navy, and Air force".

In the light of this main objective a number of matching Questions and Hypotheses were formulated to embody these Objectives.

In this part, the results are presented to answer the questions that are formulated [What is the level of the three variables of study [(LSS) elements, (WFA), and (CA)] in the Armed Forces Depots "Army, Navy, and Air force"?].

To answer these questions, the means (m) and standard deviations (sd) and the (t) test have been used. The results are presented in table (4.1) below and the following formula was used to assign the means (m) levels.

$$\text{Category length} = \frac{[\text{highest weight (5)} - \text{lowest weight (1)}]}{\text{No. of categories}} = \frac{4}{3} = 1.33$$

Where [1 – Less than 2.33 (**low**); 2.34 – Less than 3.67 (**moderate**); 3.68 – Less than 5.00 (**high**)]

4.2.1 Descriptive Analyzing of Lean Six Sigma (LSS) elements

Table (4.1):(m), (sd) and (m%) test of (LSS) elements among the three Armed Forces Depots.

No.	Elements	Army Force			Navy Force			Air Force			Overall Lean Six Sigma "LSS" Elements				
		m	sd	m %	m	sd	m %	m	sd	m %	m	sd	m %	Level	Rank
1	Defects	3.208	0.500	64.16	3.996	0.499	79.92	3.973	0.630	79.46	3.673	0.664	73.46	moderate	1
2	Waiting	2.313	0.463	46.26	2.438	0.431	48.76	2.800	0.826	56.00	2.508	0.637	50.16	moderate	7
3	Transportation	2.150	0.442	43.00	2.879	0.451	57.58	3.333	0.536	66.66	2.739	0.700	54.78	moderate	6
4	Inventory	2.539	0.445	50.78	3.046	0.392	60.92	3.623	0.602	72.46	3.036	0.674	60.72	moderate	3
5	Motion	2.089	0.442	41.78	3.279	0.493	65.58	3.613	0.589	72.26	2.914	0.854	58.28	moderate	4
6	Extra Process	2.336	0.518	46.72	3.204	0.436	64.08	3.757	0.480	75.14	3.041	0.782	60.82	moderate	2
7	Non-Utilized Talent	2.336	0.527	46.72	2.938	0.621	58.76	3.347	0.593	66.94	2.833	0.721	56.66	moderate	5
Lean Six Sigma "LSS" Elements		2.424	0.290	48.48	3.111	0.268	62.22	3.492	0.381	69.84	2.964	0.563	59.28	moderate	

Means description [1 – 2.33 (**low**), 2.34 – 3.67 (**moderate**), 3.68 – 5 (**high**)]

Table (4.1) describes the responding degree of (LSS) elements among the three Armed Forces Depots "Army, Navy, and Air force", where The Air Force reported the largest (LSS) elements as it recorded the highest mean of (3.492) then the Navy Force with (3.111) while the Army Force is the least with mean (2.424).

It was noted that the Defects was the common element that recorded the highest mean in each one of the Depots mentioned. The mean values were (3.208) for the Army Force, (3.996) for the Navy Force and (3.973) for the Air Force.

Overall, the indicated the values of means, standard deviation and mean index (m%) of (LSS)elements. Defects was the most element being rated of Lean Six Sigma "LSS" elements as it ranked the first by the highest mean of (3.673) while Waiting expressed the least element with mean of (2.508). The Overall (LSS) elements were assessed by a value of (2.964) expressing a moderate level of agreement among respondents.

Further, the question representing each (LSS) elements was analyzed and the results are included in the following tables.

Table (4.1.1):(m), (sd) and (m%) test of (LSS) elements "Defects, Waiting, Transportation, and Non-Utilized Talent" among the three Armed Forces Depots.

Defects																
No.	Question	Army Force			Navy Force			Air Force			Overall Lean Six Sigma "LSS" Elements					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
IV 1.1	The Depots is suing all Ammo. Types of factory packed (boxes, containers, .on based)	3.209	0.498	64.18	4.138	0.590	82.76	4.080	0.787	81.60	3.747	0.769	74.94	high	16.82	1
IV 1.2	The Depots continuously following the validity of inventory to avoid Defects in the inventory.	3.207	0.511	64.14	3.950	0.475	79.00	3.960	0.816	79.20	3.657	0.717	73.14	moderate	15.87	2
IV 1.3	The Depots follow all the processes for fixing .Defects	3.208	0.500	64.16	3.900	0.722	78.00	3.880	0.808	77.60	3.617	0.752	72.34	moderate	14.21	3
Defects		3.208	0.500	64.16	3.996	0.499	79.92	3.973	0.630	79.46	3.673	0.664	73.46	high		
Waiting																
No.	Question	Army Force			Navy Force			Air Force			Overall Lean Six Sigma "LSS" Elements					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
IV 2.1	The Depots provide the needed equipments for faster completion of the task.	2.358	0.515	47.16	2.875	0.718	57.50	3.080	0.971	61.60	2.737	0.810	54.74	moderate	-5.63	1
IV 2.2	The Depots perform all their Transactions through Electronic Internal Network.	2.267	0.463	45.34	2.000	0.390	40.00	2.520	0.926	50.40	2.280	0.671	45.60	low	-18.60	2
Waiting		2.313	0.463	46.26	2.438	0.431	48.76	2.800	0.826	56.00	2.508	0.637	50.16	moderate		
Transportation																
No.	Question	Army Force			Navy Force			Air Force			Overall Lean Six Sigma "LSS" Elements					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
IV 3.1	The Depots concerned the "packing / wrapping" operations for accelerate the stock trading.	2.152	0.444	43.04	3.763	0.860	75.26	3.763	0.825	82.60	3.240	1.146	64.80	moderate	3.63	1
IV 3.2	The Depots apply a cargo tracking system to locate the shipment.	2.151	0.442	43.02	2.363	0.621	47.26	3.180	0.989	63.60	2.550	0.843	51.00	moderate	-9.25	2
IV 3.3	The Depots are used Multipurpose mechanisms for minimize the unnecessary movement	2.149	0.440	42.98	2.513	0.636	50.26	2.690	0.787	53.80	2.427	0.668	48.54	moderate	-14.87	3
Transportation		2.150	0.442	43.00	2.879	0.451	57.58	3.333	0.536	66.66	2.739	0.700	54.78	moderate		
Non-Utilized Talent																
No.	Question	Army Force			Navy Force			Air Force			Overall Lean Six Sigma "LSS" Elements					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
IV7.1	The Depots encourage new ideas.	2.200	0.559	44.00	2.988	0.803	59.76	3.410	0.726	68.20	2.813	0.865	56.26	moderate	-3.74	2
IV7.2	The Depots motivate the existing talents and exploit it for work.	2.300	0.616	46.00	2.850	0.748	57.00	3.200	0.696	64.00	2.747	0.782	54.94	moderate	-5.61	3
IV7.3	The Depots retain the existence talent.	2.508	0.580	50.16	2.975	0.616	59.50	3.430	0.624	68.60	2.940	0.720	58.80	moderate	-1.99	1
Non-Utilized Talent		2.336	0.527	46.72	2.938	0.621	58.76	3.347	0.593	66.94	2.833	0.721	56.66	moderate		

Note: The Lean Six Sigma (LSS) elements tables above indicate the results of one sample (t) test. If the value of (t) calculated >, so the tabulated (t) =1.96 with DF=299 as could be seen from the provided (t) values tell that they were all > 1.96 so a conclusion of the mean (m) differences can be drawn. The means (m) description [1 – 2.33 (low), 2.34 – 3.67 (moderate), 3.68 – 5 (high)] tabulated t value = 1.96.

Table (4.1.1) indicates the values of means (m), standard deviation (sd) and mean index (m%) of (LSS)elements (Defects, Waiting, Transportation and Non-Utilized Talent) among the three Armed Forces Depots “Army, Navy, and Air force" as following results:

1. **Defects:**
   - The results show sequential descent starting with The Navy Force (3.996), Air Force (3.973), while the Army Force (3.208).
   - The response estimations revealed to the Question No. “IV1.1” sequentially starts with the Army Force (3.209), Navy Force (4.138), and the Air Force (4.080).
   - Overall, “Defects” element for Question No. “IV1.1”is highest mean (3.747) while Question No. “IV1.3”is lowest mean (3.617).
   - In general, “Defects” elements’ mean was rated (3.673) expressing a “moderate” of agreement among respondents.
2. **Waiting:**
   - The results sequential descents starting with The Air force mean (2.800), Navy Force (2.438), while the Army Force was (2.313).

   For all the Armed Forces Depots, the response estimations were noted that the response estimations.

   - The responds estimations revealed that Question No. “IV2.1” sequentially starts with the Army Force (2.358), Navy Force (2.875), and the Air Force (3.080).
   - Overall, “Waiting” element for Question No. “IV2.1”is highest mean (2.737) while Question No. “IV 2.2” is the lowest mean (2.280).
   - In general, “Waiting” elements’ mean was rated (2.508) expressing a “moderate” of agreement among respondents.
3. **Transportation:**
   - The results show sequential descent starting with The Air Force (3.333), Navy Force (2.879), while the Army Force (2.150).
   - The response estimations revealed to the Question No. “IV3.1” sequentially starts with the Army Force (2.152), Navy Force (3.763), and the Air Force (3.763).

- Overall, “Transportation” element for Question No. “IV 3.1”is highest mean (3.240) while the Question No. “IV3.3” is the lowest means (2.427).
- In general, “Transportation” elements’ mean was rated (2.739) expressing a “moderate” of agreement among respondents.

4. Non-Utilized Talent:

- The results show sequential descent starting with The Air Force (3.347), Navy Force (2.938), while the Army Force was (2.336).
- The response estimations revealed to the Question No. “IV7.3” sequentially starts with the Army Force (2.508), Navy Force (2.975), and the Air Force (3.430).
- Overall, “Non-Utilized Talent” element for Question No. “IV 7.3” is highest mean (2.940) while the Question No. “IV 7.3” is the lowest means (2.747).
- In general, the mean of “Non-Utilized Talent” elements’ mean was rated as (2.833) expressing a “moderate” of agreement among respondents.

Table (4.1.2):(m), (sd) and (m%) test of (LSS) Elements "Inventory, Motion, and Extra Process" among the three Armed Forces Depots.

Inventory																
No.	Question	Army Force			Navy Force			Air Force			Overall Lean Six Sigma "LSS" Elements					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
IV4.1	The Depots apply the standards of inventory (quantities, compatibles, capacity).	2.892	0.776	57.84	3.388	0.626	67.76	3.390	0.886	67.80	3.190	0.814	63.80	moderate	4.04	3
IV4.2	The Depots minimize the inventory to the equivalent limit for the period until the next quantity arrives.	2.700	0.693	54.00	3.675	0.591	73.50	3.740	0.661	74.80	3.307	0.822	66.14	moderate	6.47	2
IV4.3	The Depots use electronic auditing in the inventory operations.	2.025	0.274	40.50	2.075	0.632	41.50	3.742	0.621	74.84	2.610	0.960	52.20	moderate	-7.04	4
IV4.4	The Depots confirm the stock arrangement to fits with the rotation rates.	3.158	0.799	63.16	3.475	0.656	69.50	3.738	0.616	74.76	3.437	0.758	68.74	moderate	9.98	1
Inventory		2.694	0.445	53.880	3.153	0.392	63.060	3.652	0.602	73.04	3.190	0.814	63.80	moderate		
Motion																
No.	Question	Army Force			Navy Force			Air Force			Overall Lean Six Sigma "LSS" Elements					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
IV5.1	The Depots are committed to specific steps to accomplish tasks.	1.967	0.564	39.34	3.500	0.796	70.00	3.600	0.804	72.00	2.920	1.057	58.40	moderate	-1.99	2
IV5.2	The Depots are keen to sequence the operations to reduce excess motion.	2.333	0.491	46.66	3.538	0.615	70.76	3.910	0.552	78.20	3.180	0.893	63.60	moderate	3.49	1
IV5.3	The Depots take into account the suitability of the crew with the size of the task.	1.967	0.564	39.34	2.800	0.719	56.00	3.330	0.829	66.60	2.643	0.916	52.86	moderate	-6.74	3
Motion		1.967	0.564	39.34	3.500	0.796	70.00	3.600	0.804	72.00	2.914	0.854	58.28	moderate		
Extra Process																
No.	Question	Army Force			Navy Force			Air Force			Overall Lean Six Sigma "LSS" Elements					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
IV6.1	The Depots are performed transactions in process of value.	2.583	0.616	51.66	3.938	0.401	78.76	3.970	0.559	79.40	3.407	0.866	68.14	moderate	8.13	1
IV6.2	The Depots have continually monitored their operations to reduce any additional process.	2.333	0.540	46.66	3.075	0.632	61.50	3.610	0.634	72.20	2.957	0.811	59.14	moderate	-1.98	2
IV6.3	The Depots combine all similar operations to perform faster tasks.	2.092	0.661	41.84	2.600	0.756	52.00	3.690	0.581	73.80	2.760	0.955	55.20	moderate	-4.35	3
Extra Process		2.336	0.518	46.72	3.204	0.436	64.08	3.757	0.480	75.14	3.041	0.782	60.82	moderate		

Note: The Lean Six Sigma (LSS) elements tables above indicate the results of one sample **(t)** test. If the value of **(t)** calculated >, so the tabulated **(t)** =1.96 with DF=299 as could be seen from the provided **(t)** values tell that they were all > 1.96 so a conclusion of the mean **(m)** differences can be drawn. The means **(m)** description [1 – 2.33 (**low**), 2.34 – 3.67 (**moderate**), 3.68 – 5 (**high**)] **tabulated t value = 1.96**.

Table (4.1.2) indicates the values of means (m), standard deviation (sd) and mean index (m%) of (LSS) elements (Inventory, Motion, and Extra Process) among the three Armed Forces Depots "Army, Navy, and Air force" as given in the following results:

5. **Inventory:**
   - The results show sequential descent starting with The Air Force (3.652), Navy Force (3.153), whiles the Army Force of mean (2.694).
   - The results show sequentially starting with The Army Force with Question No. "IV4.4" (3.158), Navy Force with question No. "IV4.2" (3.675) and Air Force question No. "IV4.3" (3.742).
   - Overall, "Inventory" element for Question No. "IV4.4"is highest mean (3.437) while the Question No. "IV 4.3" is the lowest means (2.610).
   - In general, the "Inventory" elements' mean was rated (3.036) expressing a "moderate" of agreement among respondents.
6. **Motion:**
   - The results show sequential descent starting with The Air Force (3.600), Navy Force (3.500) while the Army Force (1.967).
   - The response estimations revealed sequentially increase starting with the Army Force Question No. "IV5.1; IV5.3" (1.967), Navy Force Question No. "IV5.1" (3.500) and the Air Force with Question No. "IV5.2" (3.910).
   - Overall, "Motion" element for Question No. "IV 5.2" is highest mean (3.180) while the Question No. "IV 5.3" is the lowest means (2.643).
   - In general, the "Motion" elements' mean was rated (2.914) expressing a "moderate" of agreement among respondents.

7. **Extra Process:**
   - The results show sequential descent starting with The Air Force (3.757), Navy Force (3.204), whiles the Army Force (2.336).
   - The response estimations revealed to the Question No. "IV6.1" sequentially starts with the Army Force (2.583), Navy Force (3.938), and the Air Force (3.970).
   - Overall, "Extra Process" element for Question No. "IV6.1" is highest mean (3.407) while the Question No. "IV6.3" is the lowest mean (2.760).
   - In general, the "Extra Process" elements' mean was rated (3.041) expressing a "moderate" of agreement among respondents.

4.2.2 Descriptive Analyzing of Competitive Advantage (CA)

Table (4.2):(m), (sd) and (m%) test of (CA) elements among the three Armed Forces Depots.

No.	Elements	Army Force			Navy Force			Air Force			Overall Competitive Advantage "CA"				
		m	sd	m %	m	sd	m %	m	sd	m %	m	sd	m %	Level	Rank
1	Time	2.175	0.802	43.50	3.491	0.490	69.82	3.398	0.684	67.96	2.933	0.927	58.66	moderate	2
2	Quality	2.271	0.434	45.42	2.613	0.703	52.26	3.570	0.607	71.40	2.795	0.805	55.90	moderate	3
3	Costs	2.794	0.307	55.88	2.975	0.241	59.50	3.253	0.418	65.06	2.995	0.386	59.90	moderate	1
4	Innovation	2.275	0.506	45.50	2.319	0.541	46.38	3.035	0.499	60.70	2.540	0.620	50.80	moderate	4
Competitive Advantage "CA"		2.379	0.379	47.58	2.849	0.295	56.98	3.314	0.389	66.28	2.816	0.539	56.32	moderate	

Means description [1 – 2.33 (**low**), 2.34 – 3.67 (**moderate**), 3.68 – 5 (**high**)]

Table (4.2) indicates the values of means (m), standard deviation (sd) and mean index (m%) for (CA) among the three Armed Forces Depots "Army, Navy, and Air force", where The Air Force reported recorded the highest mean (3.314) then the Navy Force (2.849) while the Army Force has the least mean (2.379).

It was noted that the highest mean of the "Time" recorded was for the Navy Force (3.491), "Quality" to the Air Force with a mean (3.570), "Costs" has been recorded to the Army Force (2.794), and the "Innovation" reflects the Air Force with a mean (3.035).

Overall, it indicates "Costs" was the greatest ratings element by a mean of (2.995) while "Innovation" was the lowest mean (2.540). In general, overall degree of (CA) is (2.816) expressing a "moderate" of agreement among respondents.

Furthermore, the question represented in each (CA) elements was analyzed and the results are included in the following tables.

Table (4.2.1): (m), (sd) and (m%) test of (CA) elements (Time and Quality) among the three Armed Forces Depots

Time																
No.	Question	Army Force			Navy Force			Air Force			Overall Competitive Advantage "CA"					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
DV1.1	The Depots are committed to prepare the shipments in short time.	2.883	1.030	57.66	3.288	0.845	65.76	3.490	0.798	69.80	3.193	0.945	63.86	moderate	3.55	1
DV1.2	The Shipments arrive at depots points at the estimated time.	2.108	0.986	42.16	3.288	0.508	65.76	3.160	0.762	63.20	2.773	0.972	55.46	moderate	-4.04	4
DV1.3	The beneficiaries receive their shipments on time.	1.867	0.809	37.34	3.725	0.636	74.50	3.420	0.699	68.40	2.880	1.109	57.60	moderate	-2.01	3
DV1.4	The timing of completion of depots operations is acceptable to beneficiaries.	1.842	0.820	36.84	3.663	0.594	73.26	3.520	0.759	70.40	2.887	1.133	57.74	moderate	-2.01	2
Time		2.175	0.802	43.50	3.491	0.490	69.82	3.398	0.684	67.96	2.933	0.927	58.66	moderate		
Quality																
No.	Question	Army Force			Navy Force			Air Force			Overall Competitive Advantage "CA"					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
DV2.1	The Depots are concerned with beneficiaries' opinions to determine the level of completion of the operations.	1.950	0.314	39.00	2.763	0.680	55.26	3.390	0.764	67.80	2.647	0.859	52.94	moderate	-7.13	2
DV2.2	The Depots have Quality Control (QC) departments.	2.592	0.716	51.84	2.463	1.030	49.26	3.750	0.757	75.00	2.943	1.002	58.86	moderate	-1.99	1
Quality		2.271	0.434	45.42	2.613	0.703	52.26	3.570	0.607	71.40	2.795	0.805	55.90	moderate		

Note: The Competitive Advantage (CA) tables above indicate the results of one sample (t) test. If the value of (t) calculated >, so the tabulated (t) =1.96 with DF=299 as could be seen from the provided (t) values tell that they were all > 1.96 so a conclusion of the mean (m) differences can be drawn. The means (m) description [1 – 2.33 (low), 2.34 – 3.67 (moderate), 3.68 – 5 (high)] tabulated t value = 1.96.

Table (4.2.1) indicates the values of means (m), standard deviation (sd) and mean index (m%) of (CA) (Time and Quality) among the three Armed Forces Depots "Army, Navy, and Air force".

1. **Time:**
    - The results show sequential descent starting with the Army Force (2.175), Navy Force (3.491), and Air Force (3.398).
    - The response estimations revealed to the questions starting with the Army Force with the question No. “DV1.1” (2.883), Navy Force, Question No. “DV1.3” (3.725) and Air Force question No.”DV1.4” (3.520).
    - Overall, “Time” element for question No. “DV1.1” is highest mean (3.193) while the question No. “DV1.2” is the lowest mean (2.773).
    - In general, the “Time” elements’ mean was rated (2.933) expressing a “moderate” of agreement among respondents.

2. **Quality:**
    - The results show sequential descent starting with The Air Force (3.570), Navy Force (2.613), and the Army Force (2.271).
    - The response estimations revealed to the questions starting with the Army Force with question No. “DV2.2” (2.592), Navy Force with Question No. “DV2.1” (2.763) and the Air Force with Question No. “DV2.2” (3.750).
    - Overall, “Quality” element for question No. “DV 2.2” is highest mean (2.943) while question No. “DV2.1” (2.647) is the lowest mean.
    - In general, the mean of “Quality” was rated (2.933) expressing a “moderate” of agreement among respondents.

Table (4.2.2): (m), (sd) and (m%) test of (CA) elements (Costs and Innovation) among the three Armed Forces Depots

Costs																
No.	Question	Army Force			Navy Force			Air Force			Overall Competitive Advantage "CA"					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
DV3.1	The Depots utilize waste of stock (empty cases, metal) with companies for cutting cost to buy a new stock.	3.825	0.669	76.50	2.925	0.309	58.50	3.100	0.389	62.00	3.343	0.643	66.86	moderate	9.25	1
DV3.2	The Depots have effective expertise in rationalizing costs.	2.333	0.508	46.66	3.125	0.369	62.50	3.240	0.638	64.80	2.847	0.672	56.94	moderate	-3.95	3
DV3.3	The Depots balance their projects between low costs and performance.	2.333	0.508	46.66	3.063	0.332	61.26	3.180	0.575	63.60	2.810	0.629	56.20	moderate	-5.23	4
DV3.4	The Depots considered as benchmark to other weapons.	2.683	0.722	53.66	2.788	0.441	55.76	3.490	0.689	69.80	2.980	0.740	59.60	moderate	-1.97	2
Costs		2.794	0.307	55.88	2.975	0.241	59.50	3.253	0.418	65.06	2.995	0.386	59.90	moderate		
Innovation																
No.	Question	Army Force			Navy Force			Air Force			Overall Competitive Advantage "CA"					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
DV4.1	The Depots create methods that enhance the value delivered of beneficiaries.	2.200	0.574	44.00	2.488	0.636	49.76	2.880	0.700	57.60	2.503	0.696	50.06	moderate	-12.35	2
DV4.3	The Depots design their operations to be compatible with the beneficiaries' needs.	2.217	0.582	44.34	2.375	0.644	47.50	2.840	0.735	56.80	2.467	0.705	49.34	moderate	-13.10	3
DV4.4	The Depots do a brainstorming session among their crews to generate ideas.	2.333	0.640	46.66	2.263	0.707	45.26	3.230	0.601	64.60	2.613	0.778	52.26	moderate	-8.60	1
DV4.1	The Depots create methods that enhance the value delivered of beneficiaries.	2.200	0.574	44.00	2.488	0.636	49.76	2.880	0.700	57.60	2.503	0.696	50.06	moderate	-12.35	2
Innovation		2.234	0.506	44.68	2.375	0.541	47.50	2.983	0.499	59.66	2.540	0.620	50.80	moderate		

Note: The Competitive Advantage (CA) tables above indicate the results of one sample (t) test. If the value of (t) calculated >, so the tabulated (t) =1.96 with DF=299 as could be seen from the provided (t) values indicating that they were all > 1.96 so a conclusion of the mean (m) differences can be drawn. The means (m) description [1 – 2.33 (low), 2.34 – 3.67 (moderate), 3.68 – 5 (high)] tabulated t value = 1.96.

Table (4.2.2) indicates the values of means (m), standard deviation (sd) and mean index (m%) of (CA) (Costs and Innovation) among the three Armed Forces Depots "Army, Navy, and Air force".

3. Costs:

- The results show sequential descent starting with The Air Force (3.253), Navy Force (2.975), and Army Force (2.794).
- The response estimations revealed to the Questions start with the Army Force with Question No. “DV3.1” (3.825), Navy Force with Question No. “DV3.2” (3.125) and the Air Force with Question No. “DV3.4” (3.490).
- Overall, “Costs” element for Question No. “DV 3.1” is highest mean (3.343) while the Question No. “DV3.3” is the lowest mean (2.810).
- In general “Costs” elements’ mean was rated (2.995) expressing a “moderate” of agreement among respondents.

4. Innovation

- The results show sequential descent starting with The Air Force (2.983), Navy Force (2.375) while the Army Force was (2.234).
- The response estimations revealed to the Questions start with the Army Force with Question No. “DV4.3” (2.333), Navy Force with Question No. “DV4.1” (2.488) and the Air Force with Question No. “DV4.4” (3.230).
- Overall, “Innovation” element for Question No. “DV 4.4” is highest mean (2.613) while the Question No. “DV4.3” is the lowest mean (2.467).
- In general, “Innovation” elements’ mean was rated (2.540) expressing a “moderate” of agreement among respondents.

4.2.3 Descriptive Analyzing of Workforce Agility (WFA) attributes

Table (4.3):(m), (sd) and (m%) test of (WFA) Attributes among the three Armed Forces Depots.

No.	Elements	Army Force			Navy Force			Air Force			Overall Workforce Agility "WFA" Attributes				
		m	sd	m %	m	sd	m %	m	sd	m %	m	sd	m %	Level	Rank
1	Flexibility	2.753	0.373	55.06	3.746	0.493	74.92	3.777	0.551	75.54	3.359	0.682	67.18	moderate	1
2	Adaptive	2.600	0.496	52.00	3.633	0.426	72.66	3.493	0.571	69.86	3.173	0.690	63.46	moderate	3
3	Motivation	2.172	0.658	43.44	3.000	0.581	60.00	3.287	0.513	65.74	2.764	0.772	55.28	moderate	6
4	Training	2.694	0.494	53.88	3.500	0.520	70.00	3.530	0.563	70.60	3.188	0.660	63.76	moderate	2
5	Participation	2.275	0.409	45.50	2.946	0.526	58.92	3.407	0.568	68.14	2.831	0.696	56.62	moderate	5
6	Empowerment	2.011	0.679	40.22	3.150	0.785	63.00	3.767	0.518	75.34	2.900	1.010	58.00	moderate	4
Workforce Agility "WFA"		2.418	0.360	48.36	3.329	0.339	66.58	3.543	0.391	70.86	3.036	0.628	60.72	moderate	

Means description [1 – 2.33 (low), 2.34 – 3.67 (moderate), 3.68 – 5 (high)]

Table (4.3) indicates the values of means (m), standard deviation (sd) and mean index (m%) for (WFA) among the three Armed Forces Depots "Army, Navy, and Air force", where The Air Force reported the highest mean (3.543) then the Navy Force (3.329) while the Army Force has the least mean (2.418).

It was noted that the highest mean recorded is between all attributes is "Flexibility" for all the Armed Forces Depots, where the Army Force (2.753), Navy Force (3.746), and the Air Force with a mean (3.777).

Furthermore, the question representing each (CA) elements were analyzed and the results are included in the following tables.

Overall, it indicates the Workforce Agility attributes "Flexibility" was the greatest ratings element by a mean of (3.359) while "Motivation" expressed the lowest mean (2.764). In general, (WFA) attributes mean was assessed by a value of (3.036) expressing a moderate level of agreement among the respondents.

Furthermore, the question representing in each (WFA) attributes elements was analyzed and the results are included in the following tables.

Table (4.3.1): (m), (sd) and (m%) test of (WFA) attributes (Flexibility, Adaptability, and Motivation) among the three Armed Forces Depots

Flexibility																
No.	Question	Army Force			Navy Force			Air Force			Overall Workforce Agility "WFA" Attributes					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
MV1.1	The Depots respond to sudden environmental change.	2.625	0.623	52.50	3.750	0.490	75.00	3.730	0.709	74.60	3.293	0.826	65.86	moderate	6.15	3
MV1.2	The Depots perform their tasks simultaneously amid pressures of environmental change.	2.817	0.449	56.34	3.913	0.732	78.26	3.900	0.759	78.00	3.470	0.836	69.40	moderate	9.74	1
MV1.3	The Depots encourage exchanging information to accomplish tasks effectively.	2.817	0.441	56.34	3.575	0.546	71.50	3.700	0.560	74.00	3.313	0.656	66.26	moderate	8.28	2
Flexibility		2.753	0.373	55.06	3.746	0.493	74.92	3.777	0.551	75.54	3.359	0.682	67.18	moderate		
Adaptive																
No.	Question	Army Force			Navy Force			Air Force			Overall Workforce Agility "WFA" Attributes					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
MV2.1	The Depots achieve rapid harmonization with sudden environmental changes for new environmental work.	2.533	0.533	50.66	3.625	0.736	72.50	3.390	0.751	67.80	3.110	0.821	62.20	moderate	2.32	2
MV2.2	There is a desire for the Depots to learn new tasks	2.917	0.875	58.34	3.938	0.512	78.76	3.550	0.592	71.00	3.400	0.818	68.00	moderate	8.47	1
MV2.3	The Depots adjust their plans to respond to environmental changes.	2.350	0.545	47.00	3.338	0.502	66.76	3.540	0.576	70.80	3.010	0.769	60.20	moderate	1.964	3
Adaptive		2.600	0.496	52.00	3.633	0.426	72.66	3.493	0.571	69.86	3.173	0.690	63.46	moderate		
Motivation																
No.	Question	Army Force			Navy Force			Air Force			Overall Workforce Agility "WFA" Attributes					
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
MV3.1	The Depots provide a positive working environment.	2.267	0.546	45.34	3.200	0.770	64.00	3.520	0.643	70.40	2.933	0.851	58.66	moderate	-1.99	1
MV3.2	The Depots operate as a team.	2.125	0.773	42.50	3.013	0.626	60.26	3.290	0.701	65.80	2.750	0.881	55.00	moderate	-4.91	2
MV3.3	The Depots stimulate the development ideas with encouraging rewards (financially, day off, advantages)	2.125	0.773	42.50	2.788	0.791	55.76	3.050	0.687	61.00	2.610	0.853	52.20	moderate	-7.92	3
Motivation		2.172	0.658	43.44	3.000	0.581	60.00	3.287	0.513	65.74	2.764	0.772	55.28	moderate		

Note: The Workforce Agility (WFA) attributes tables above indicate the results of one sample (t) test. If the value of (t) calculated >, so the tabulated (t) =1.96 with DF=299 as could be seen from the provided (t) values tell that they were all > 1.96 so a conclusion of the mean (m) differences can be drawn. The means (m) description [1 – 2.33 (low), 2.34 – 3.67 (moderate), 3.68 – 5 (high)] tabulated t value = 1.96.

Table (4.3.1) indicates the values of means (m), standard deviation (sd) and mean index (m%) (WFA) attributes (Flexibility, Adaptability, and Motivation) among the three Armed Forces Depots "Army, Naval, and Air force".

1. **Flexibility:**
   - The results show sequential descent starting with the Air Force (3.777), Navy Force (3.746), whiles the Army Force (2.753).
   - The response estimations revealed to the questions started with the Army Force, with questions No. “MV1.2; MV1.3” (2.817), Navy Force with questions No. “MV1.2” (3.913) and the Air Force with questions No. “MV 1.2” (3.900).
   - Overall, “Flexibility” element for questions No. “MV1.2” is highest mean (3.470) while the questions No. “MV1.1” is the lowest mean (3.293).
   - In general, the “Flexibility” elements’ mean was rated (3.359) expressing a “moderate” of agreement among respondents.

2. **Adaptability:**
   - The results show sequentially descending start with The Navy (3.633), Air Force (3.493) while the Army Force (2.600).
   - The responds estimations revealed to the Question start with the Army Force with Question No. “MV2.2” (2.917), Navy Force with Question No. “MV2.2” (3.938) and the Air Force with Question No. “MV 2.2” (3.550).
   - Overall, “Adaptability” element for Question “MV2.2” is highest mean (3.400) while the Question No. “MV2.3” is the lowest mean (3.010).
   - In general, of “Adaptability” elements’ mean was rated (3.173) expressing a “moderate” of agreement among respondents.

3. **Motivation:**
   - The results show sequential descent starting with The Air Force (3.287), Navy Force (3.000), and the Army Force (2.172).
   - The response estimations revealed to the Question No “MV3.1” sequentially starts with the Army Force (2.267), Navy Force (3.200), and the Air Force (3.520).
   - Overall, “Motivation” element for Question No. “MV3.1” is highest mean (2.933) while the Question No. “MV3.3” is the lowest mean (2.610).
   - In general, the “Motivation” elements’ mean was rated (2.764) expressing a “moderate” of agreement among respondents.

Table (4.3.2): (m), (sd) and (m%) test of (WFA) attributes (Training, Participation, and Empowerment) among the three Armed Forces Depots.

Training															
No.	Question	Army Force			Navy Force			Air Force			Overall Workforce Agility "WFA" Attributes				
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
MV4.1	The Depots involve their crews in different training courses.	2.808	0.677	56.16	3.563	0.633	71.26	3.560	0.743	71.20	3.260	0.780	65.20	moderate	5.78	2
MV4.2	The training achieves the workforce Agility attributes.	2.483	0.580	49.66	3.275	0.595	65.50	3.430	0.655	68.60	3.010	0.747	60.20	moderate	1.964	3
MV4.3	The Depots consider the career path in their training plans.	2.792	0.578	55.84	3.663	0.615	73.26	3.600	0.586	72.00	3.293	0.718	65.86	moderate	7.08	1
Training		2.694	0.494	53.88	3.500	0.520	70.00	3.530	0.563	70.60	3.188	0.660	63.76	moderate		
Participation																
No.	Question	Army Force			Navy Force			Air Force			Overall Workforce Agility "WFA" Attributes				
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
MV5.1	The Depots involve their crews in making the necessary decisions to cope with environmental change.	2.267	0.807	45.34	2.513	0.779	50.26	3.230	0.679	64.60	2.653	0.865	53.06	moderate	-6.94	2
MV5.2	The beneficiaries contribute with their opinions to the development of Depots operations.	1.892	0.362	37.84	2.700	0.701	54.00	3.390	0.751	67.80	2.607	0.884	52.14	moderate	-7.71	3
MV5.3	The Depots rotate their crews among their duties to enrich their expertise	2.667	0.585	53.34	3.625	0.718	72.50	3.600	0.725	72.00	3.233	0.813	64.66	moderate	4.97	1
Participation		2.275	0.409	45.50	2.946	0.526	58.92	3.407	0.568	68.14	2.831	0.696	56.62	moderate		
Empowerment																
No.	Question	Army Force			Navy Force			Air Force			Overall Workforce Agility "WFA" Attributes				
		m	sd	m%	m	sd	m%	m	sd	m%	m	sd	m%	Level	t	Rank
MV6.1	The Depots exercise the powers of authority in the chain of command.	2.033	0.685	40.66	3.188	1.068	63.76	3.800	0.651	76.00	2.930	1.106	58.60	moderate	-1.99	2
MV6.2	The Depots are given an extraordinary decision authority to deal with the situations on time.	1.950	0.743	39.00	2.938	0.832	58.76	3.640	0.704	72.80	2.777	1.047	55.54	moderate	-3.69	3
MV6.3	The Depots drive to interact closely with the powers of authority.	2.050	0.684	41.00	3.325	0.759	66.50	3.860	0.532	77.20	2.973	1.034	59.86	moderate	-1.97	1
Empowerment		2.011	0.679	40.22	3.150	0.785	63.00	3.767	0.518	75.34	2.900	1.010	58.00	moderate		

Note: The Workforce Agility (WFA) attributes tables above indicate the results of one sample (t) test. If the value of (t) calculated >, so the tabulated (t) =1.96 with DF=299 as could be seen from the provided (t) values telling that they were all > 1.96 so a conclusion of the mean (m) differences can be drawn. The means (m) description [1 – 2.33 (low), 2.34 – 3.67 (moderate), 3.68 – 5 (high)] tabulated t value = 1.96.

Table (4.3.2) indicates the values of means (m), standard deviation (sd) and mean index (m%) (WFA) attributes (Training, Participation, and Empowerment) among the three Armed Forces Depots "Army, Navy, and Air force".

4. **Training:**
   - The results show sequential descent starting with The Air Force (3.530), Navy Force (3.500) whiles the Army Force (2.694).
   - The response estimations revealed to the Questions sequentially starts with the Army Force with question No. “MV4.1” (2.808), Navy Force with question No. “MV4.3” (3.663) and the Air Force with Question No. “MV4.3” (3.600).
   - Overall, “Training” element for question No. “MV4.3” is highest mean (3.293) while the Question No. “MV4.2” is the lowest mean of (3.010).
   - In general, the “Training” elements’ mean was rated (3.188) expressing a “moderate” of agreement among respondents.

5. **Participation:**
   - The results show sequential descent starting with The Air Force (3.407), Navy Force (2.946) whiles the Army Force (2.275).
   - The response estimations revealed to the Questions sequentially starts with Army Force with question No. “MV5.3” (2.667), Navy Force with question No. “MV5.2” (2.700) and the Air Force with Question No. “MV5.3” (3.600).
   - Overall, “Participation” element for Question No. “MV5.3” is highest mean (3.233) while the question No. “MV5.2” is the lowest mean of (3.010).
   - In general, the “Participation” elements’ mean was rated (2.831) expressing a “moderate” of agreement among respondents.

6. **Empowerment:**
   - The results show sequential descent starting with The Air Force (3.767), Navy Force (3.150), while the Army Force (2.011).
   - The response estimations revealed to the Question No. “MV6.3” sequentially starts with the Army Force (2.050), Navy Force (3.325), and the Air Force (3.860).
   - Overall, the “Empowerment” element for Question No. “MV6.3” is highest mean (2.973) while the Question No. “MV6.2” is the lowest mean of (2.777).
   - In general, the “Empowerment” elements’ mean was rated (2.900) expressing a “moderate” of agreement among respondents.

4.3 Testing the Study Hypothesis

To test the study hypothesis multiple linear regressions was applied. Before the application of linear regression there is a need to check for two basic assumptions, the normality of the distribution of the independent variable and the level of multi co linearity among the independent variables, the results are included in the following table

Table (4.4): Skewness and CO linearity among the independent variables using VIF test

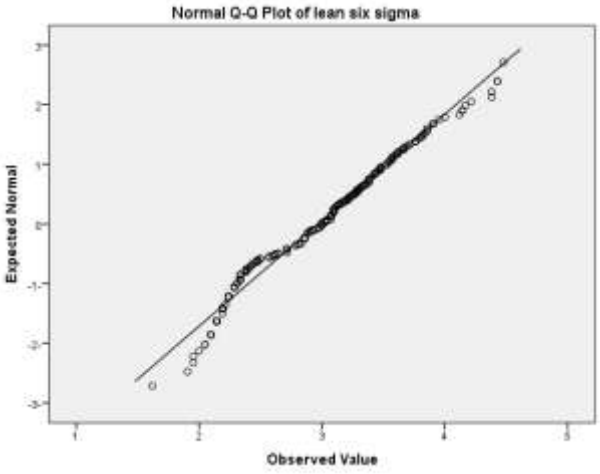
Variables	Elements of variables	skewness	kortises	VIF	Tolerance
Independent Variable Lean six sigma (LSS) elements	Defects	.375	-.709	1.421	0.704
	Waiting	-1.043	3.220	1.543	0.648
	Transportation	.340	-.264	2.779	0.360
	Inventory	.423	.122	2.391	0.418
	Motion	.004	-.782	2.850	0.351
	Extra Process	-.071	-.482	4.425	0.226
	Non-Utilized Talent	.135	.554	2.183	0.458
Lean Six Sigma "LSS"		.211	-.302		
Dependant Variable Competitive Advantage (CA)	Time	-.356	-.531		
	Quality	.352	3.839		
	Costs	.954	.225		
	innovation	.186	-.821		
Competitive Advantage "CA"		.189	-.341		
Mediator Variable Workforce agility (WFA)	Flexibility	.030	.380	2.387	0.419
	Adaptability	-.124	.964	2.157	0.464
	Motivation	-.081	-.001	2.747	0.364
	Training	.347	-.776	2.088	0.479
	Participation	.223	-.455	3.032	0.330
	Empowerment	-.158	.036	3.667	0.273
Workforce Agility "WFA"		-.033	-.611		

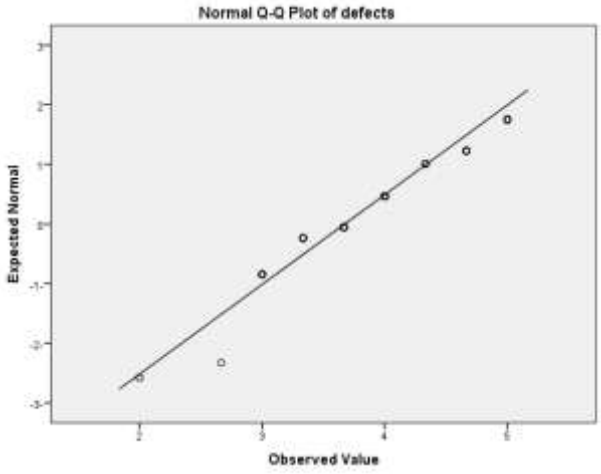
Form table (4.4), the Skewness is to evaluate the closeness of the study data to the theoretical normal distribution. From the figures, the value obtained (-1.043) for Waiting and (0.954) for Costs. All these skewness values are considered to be close to the normal distribution as an acceptable range in the most studies (-3 and 3), others studies accept it with range (-1.00 and +1.00), the accepted values ranges accepted (-1.96 and 1.96) according to fisher. clearly, there is no cutoff value for skewness, as a result the values obtained suggests a satisfactory skewness values and leads to a conclusion of closeness to the data distribution of the current study with the ideal normal distribution, taking into account that in most samplings the practical data should not behave ideally.

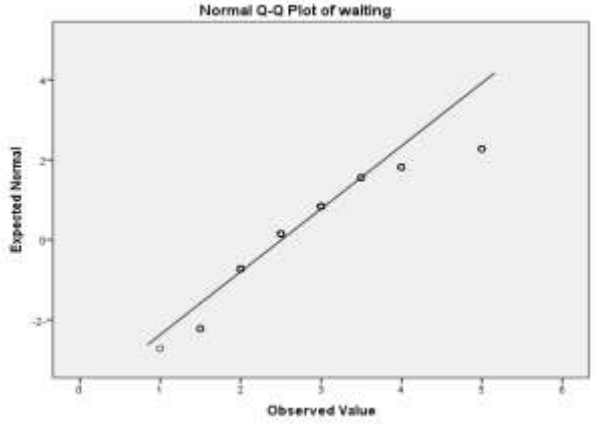
The Kortises is the second aspect of the normal curve. It describes the peak of the curve whether its sharp high or bottom low. The desirable values that the normal data distribution curve exhibit is around the value (7) or low according to the results obtained in the table; it is noticed that the maximum obtained value was (3.839) noting that this value is below the desired value so we conclude that the data data behave approximately normal taking into account that a sample size of (300) is considered as a large sample which reflects the better is the population.

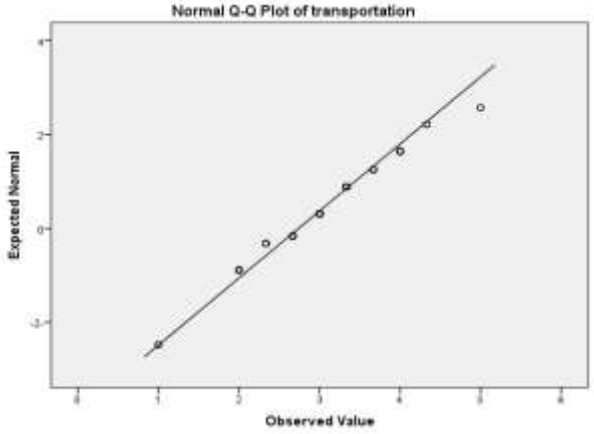
The VIF values less than (5) which are considered as expressing low co linearity among the (LSS) elements that were used to predict the (CA).A value of VIF> 30 which is considered a high problem, a VIF> 10 leads to no trust with the coefficients obtained.VIF (5 – 10) reflects a moderate problem, but VIF< 5 indicate a little problem. In the same context, the associated test with VIF test is the tolerance test which is defined as the reciprocal of the VIF.

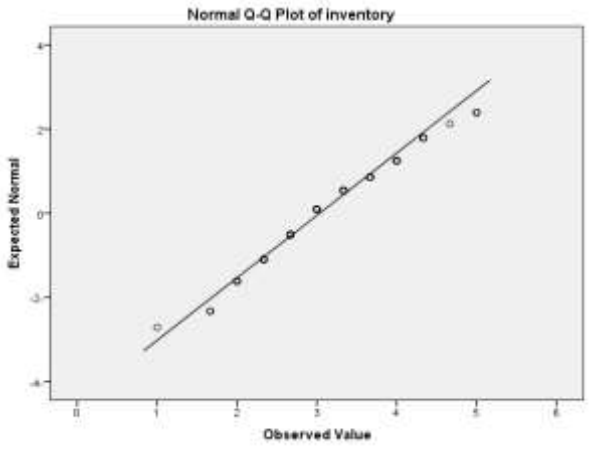
Finally, the Tolerance> 0.20 may express good results which all mentioned to meet this criteria concluding no multi co linearity problem existing. The data distribution is described using the q-q plot in the following charts.

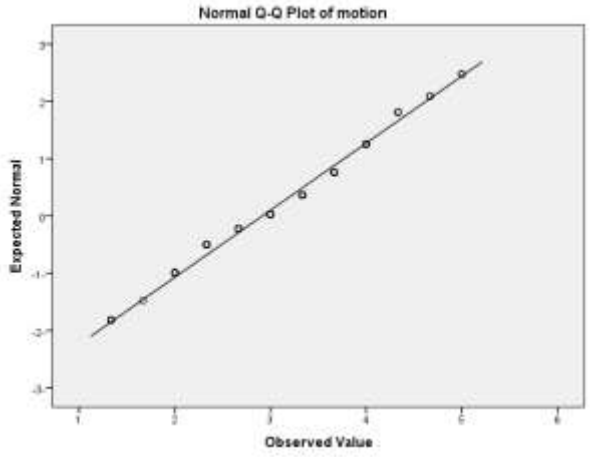

Normal Q-Q Plot of lean six sigma
Expected Normal
Observed Value

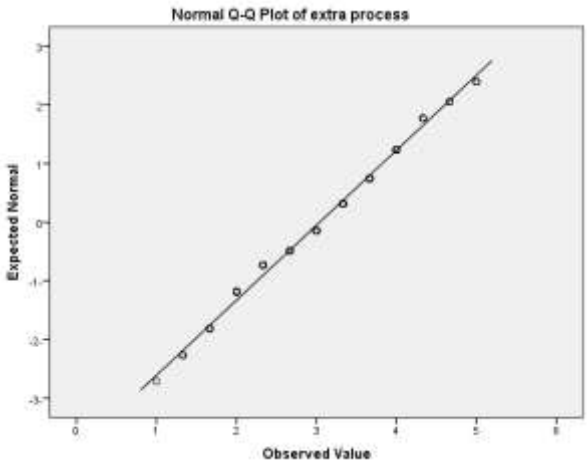

Normal Q-Q Plot of defects
Expected Normal
Observed Value


Normal Q-Q Plot of waiting
Expected Normal
Observed Value


Normal Q-Q Plot of transportation
Expected Normal
Observed Value


Normal Q-Q Plot of inventory
Expected Normal
Observed Value


Normal Q-Q Plot of motion
Expected Normal
Observed Value



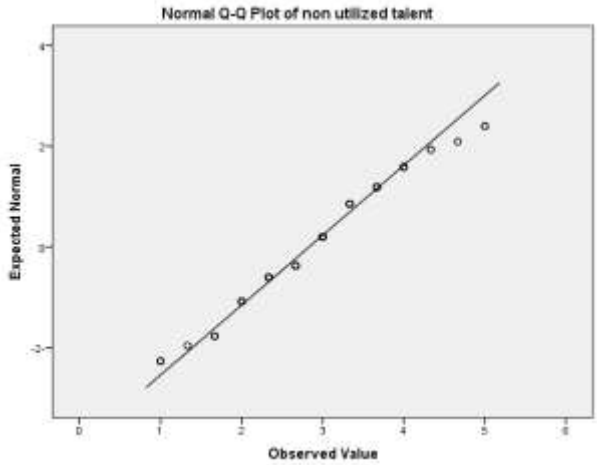
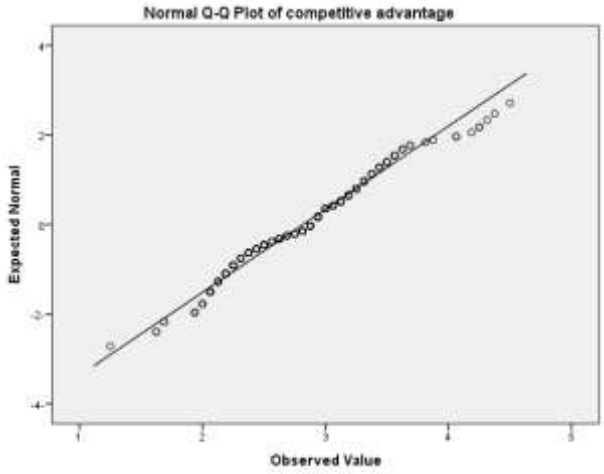
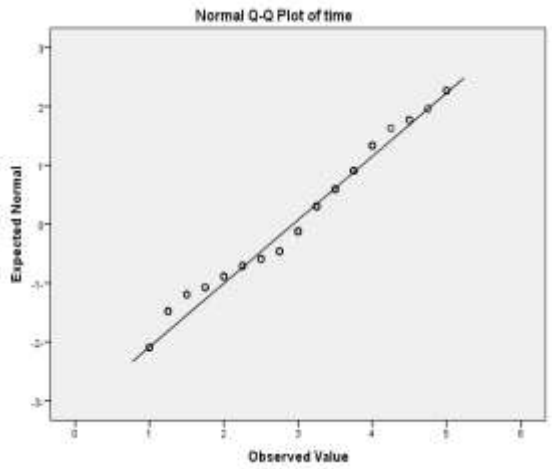
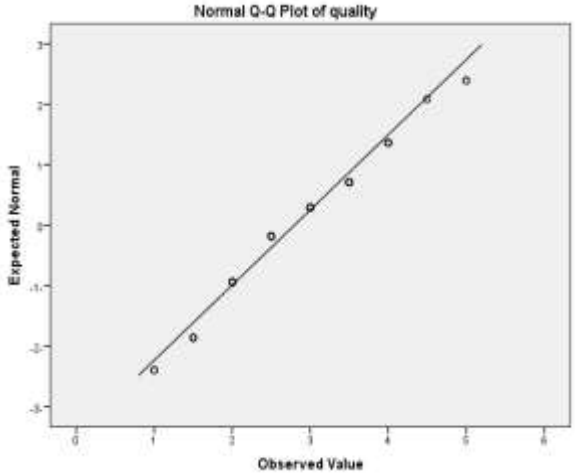


Figure (4.2): eight figures show the distribution of the study data in consistent with the natural hypothetical distribution of (LSS) and its elements.







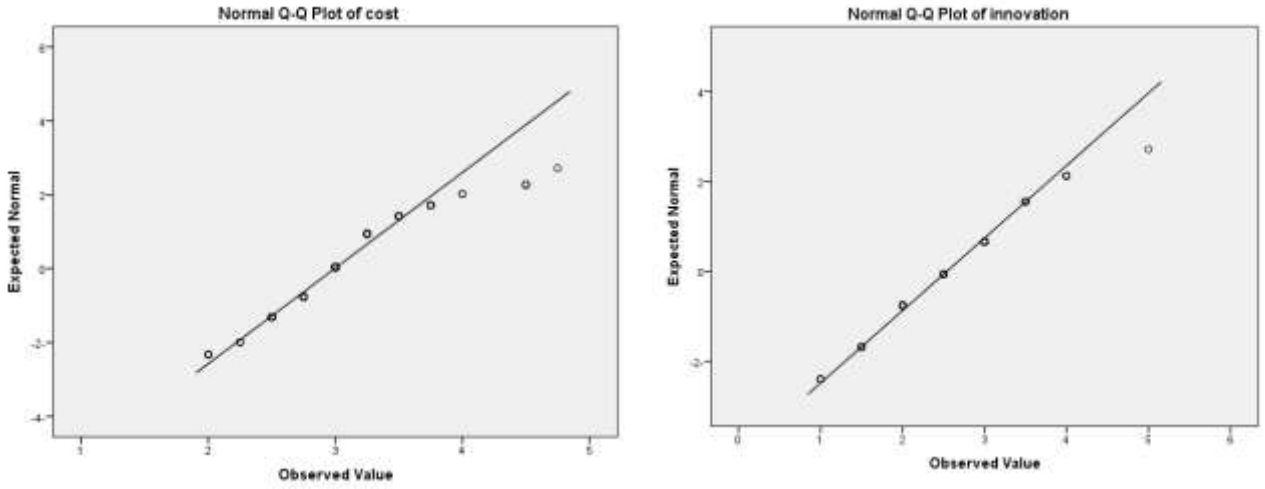
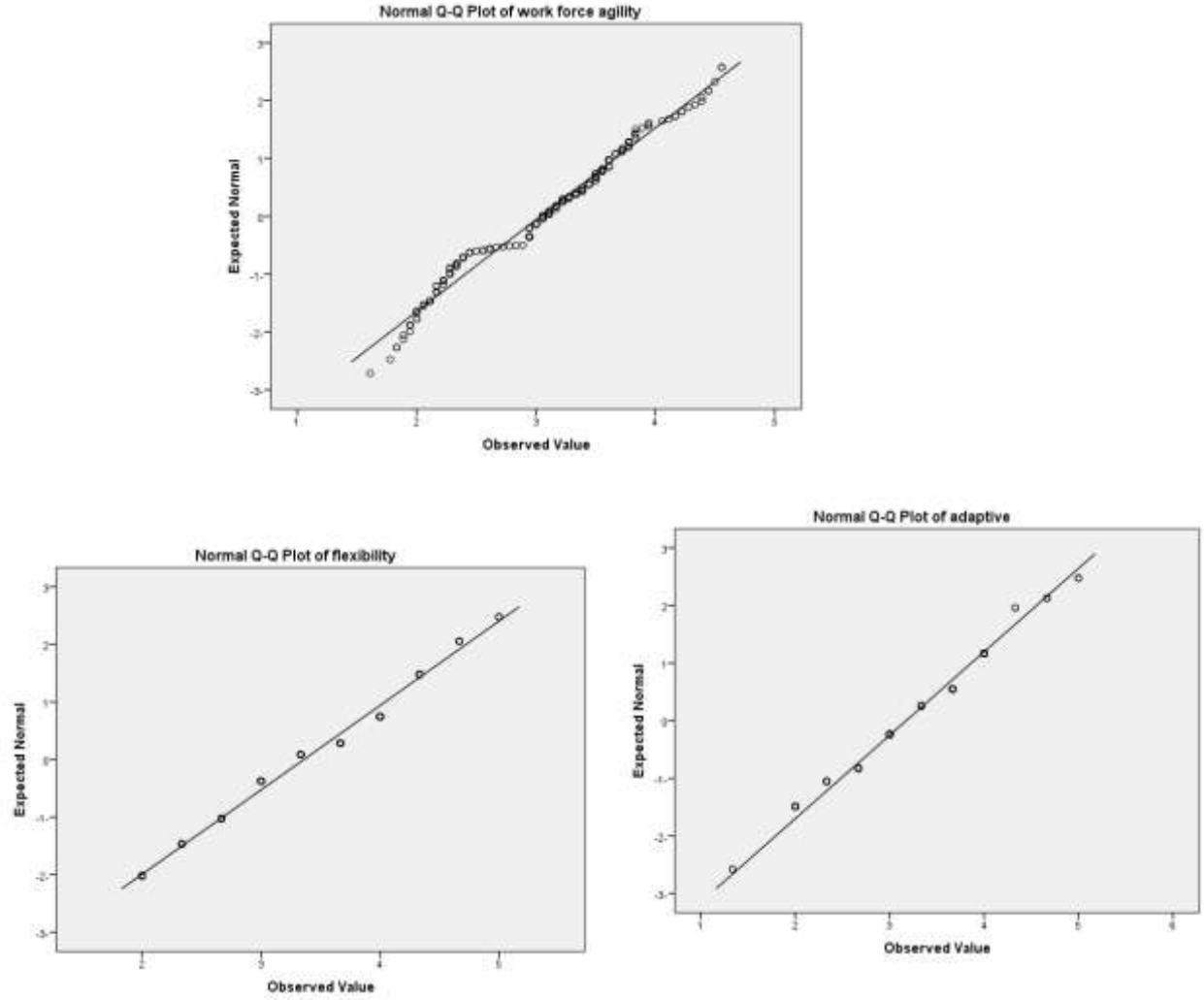


Figure (4.3): Five figures show the distribution of the study data in consistent with the natural hypothetical distribution of (CA) and its elements.



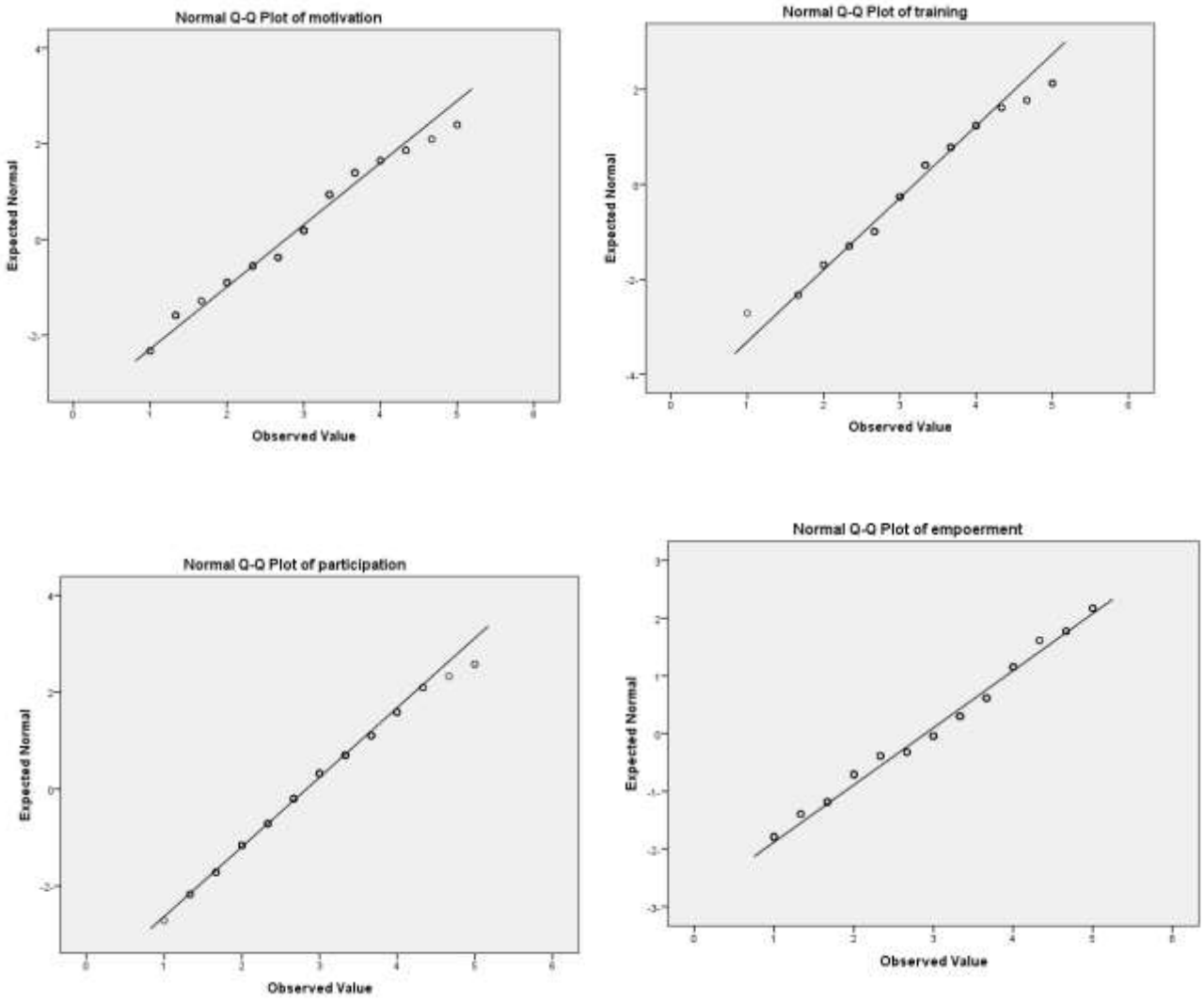


Figure (4.4): Seven figures show the distribution of the study data in consistent with the natural hypothetical distribution of (WFA) and its attributes.

4.3.1 Testing The Main Hypothesis:

$H_{0.1}$: There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

In order to identify the sequence of importance of Independent Variables contributing to the Dependent Variable "stepwise" multiple linear regressions was used. It is an efficient technique based on selecting the Independent Variable that contributes significantly to R^2such that it takes out of the regression model any Independent Variable that does not contribute significantly to the model. Furthermore, it ranks the Independent

Variable that is accepted in the model according to their magnitude of contribution in R^2. Table (4.5; 4.6) describes the Main Hypothesis testing results.

Table (4.5): Multiple linear regression for testing the effect of (LSS) elements on (CA) elements

Independent Variable Lean Six Sigma "LSS" Elements	Regression indicators					Coefficients			
	r	R^2	Adjusted R^2	f	Sig (f)	β	t	Sig (t)	Constant
Defects	0.893	0.797	0.792	163.97	0.000	-.052	-2.059	.040	0.722
Waiting						.082	2.972	.003	
Transportation						.131	3.885	.000	
Inventory						.104	3.207	.001	
Motion						.101	3.608	.000	
Extra Process						.236	6.171	.000	
Non-Utilized Talent						.138	4.738	.000	

From Table (4.5), we conclude the following result:

- The (f) value (163.97) was significantly related to (p) value (0.000) which was statistically significant (< 0.05).
- The (β) coefficient reflects the impact value on the Independent Variable elements. The results show sequential descent starting with Defects (- 0.052), Waiting (0.082), Transportation (0.131), Inventory (0.104), Motion (0.101), Extra Process (0.236), while Non-Utilized Talent (0.138).
- The (t) statistics tests the linearity importance of the (β) coefficient obtained for the Independent Variable. All the mentioned (β) values are significantly contributed to the Dependent Variables the probability of t statistics was< 0.05 for the mentioned impact (β) values.
- The R^2value expresses the percentage of variability observed in the Dependent Variable when using the Independent Variable to predict it. R^2 was found to be (97.7 %) expressed as a percentage. As a result and relying on the sig value of f (0.000) the study Hypothesis is partially Accepted where the (LSS) elements value <0.005 which it means some elements have an effect on (CA). The Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is a direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

Table (4.6): Stepwise method for testing the effect of (LSS) elements on (CA) elements

Independent Variable Lean Six Sigma "LSS" Elements	Regression indicators					Coefficients			
	r	R^2	Adjusted R^2	f	Sig (f)	β	t	Sig(t)	Constant
Extra process	.843	.710	.709	730.50	0.000	.236	6.171	.000	0.722
Non-Utilized Talent	.867	.752	.750	450.10	0.000	.138	4.738	.000	
Transportation	.877	.769	.767	329.06	0.000	.131	3.885	.000	
Inventory	.883	.780	.777	261.72	0.000	.104	3.207	.001	
Motion	.887	.787	.783	216.68	0.000	.101	3.608	.000	
Waiting	.891	.794	.790	188.51	0.000	.082	2.972	.003	
Defects	.893	.797	.792	163.97	0.000	-.052	-2.059	.040	

From Table (4.6), we conclude the R^2as the following sequential descending [Defects(.797), Waiting(.794), Motion(.787), Inventory(.780),Transportation (.769), Non-Utilized Talent (.752), and Extra process (.710)].

4.3.1.1 Testing The Sub Hypotheses of the Main Hypothesis:

$H_{0.1.1}$: There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Time" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

Table (4.7): Multiple linear regressions for testing the effect of (LSS) elements on the "Time" element of (CA) elements

Independent Variable Lean Six Sigma "LSS" Elements	Regression indicators					Coefficients			
	r	R^2	Adjusted R^2	f	Sig (f)	β	t	Sig (t)	constant
Defects	0.756	0.571	0.561	55.48	0.000	.076	1.186	.237	- 0.185
Waiting						.139	2.001	.046	
Transportation						-.052	-.611	.542	
Inventory						.061	.751	.453	
Motion						.387	5.510	.000	
Extra Process						.400	4.185	.000	
Non-Utilized Talent						.036	.500	.617	

From Table (4.7), we conclude the following result:

- The (f) value (55.48) was related significantly to (p) value (0.000) which was statistically significant (< 0.05).
- The (β) coefficient reflects the impact value on the Independent Variable elements. The results show sequential descent starting with Defects (0.076), Waiting (0.139), Transportation (- 0.052), Inventory (0.061), Motion (0.387), Extra Process (0.400), while Non-Utilized Talent (0.036).
- The (t) statistics tests the linearity importance of the (β) coefficient obtained for the Independent Variable. All the mentioned (β) values are significantly contributed to the

Dependent Variable as the probability of t statistics was< 0.05 for the mentioned impact (β) values.

- The value of R^2expresses the percentage of variability observed in the Dependent Variable when using the Independent Variable to predict it. R^2 was found to be (56.7 %) expressed as a percentage.
- As a result and relying on the sig value of f (0.000) the study Hypothesis is partially **acceptable** where the (LSS)elements (Defects, Transportation, Inventory, and Non-Utilized Talent) have been rejected because their value <0.005 which it means those elements have no effect on the "Time" element. The Zero Hypothesis is rejected and accept the Alternative Hypothesis which states [There is a direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Time" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at α≤0.05].

$H_{0.1.2}$: There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Quality" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at α≤0.05.

Table (4.8): Multiple linear regressions for testing the effect of (LSS) elements on "Quality" element of (CA) elements

Independent Variable Lean Six Sigma "LSS" Elements	Regression indicators					Coefficients			
	r	R^2	Adjusted R^2	f	Sig (f)	β	t	Sig (t)	constant
Defects	0.751	0.563	0.553	53.80	0.000	-.107	-1.918	.056	0.240
Waiting						.008	.127	.899	
Transportation						.195	2.633	.009	
Inventory						.216	3.028	.003	
Motion						.091	1.479	.140	
Extra Process						.160	1.912	.057	
Non-Utilized Talent						.348	5.449	.000	

From Table (4.8), we conclude the following result:

- The (f) value (55.48) was significantly related to (p) value (0.000) was statistically significant (< 0.05).
- The (β) coefficient reflects the impact value on the Independent Variable elements. The results sequential descent starting with Defects (- 0.107), Waiting (0.008), Transportation (0.195), Inventory (0.216), Motion (0.091), Extra Process (0.160) while Non-Utilized Talent (0.348).

- The (t) statistics tests the linearity importance of the (β) coefficient obtained for the Independent Variable. All the mentioned (β) values contribute significantly to the Dependent Variable as the probability of t statistics were < 0.05 for the mentioned impact (β) values.
- The R^2value expresses the percentage of variability observed in the Dependent Variable when using the Independent Variable to predict it. R^2 was (56.3 %) expressed as a percentage.
- As a result and relying on the sig value of f (0.000) the study Hypothesis is partially acceptable where the (LSS)elements (Defects, Waiting, Motion, and Extra Process) rejected because their value <0.005 which it means those elements have no effect on the "Quality" element. The Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is a direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Quality" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.].

$H_{0.1.3}$: There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Costs" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

Table (4.9): Multiple linear regressions for testing the effect of (LSS) elements on "Costs" element of (CA) elements

Independent Variable Lean Six Sigma "LSS" Elements	Regression indicators					Coefficients			
	r	R^2	Adjusted R^2	f	Sig (f)	β	t	Sig (t)	constant
Defects	0.623	0.389	0.374	26.53	0.000	.007	.207	.837	1.811
Waiting						.076	2.201	.029	
Transportation						.058	1.373	.171	
Inventory						.136	3.358	.001	
Motion						.042	1.194	.233	
Extra Process						.073	1.530	.127	
Non-Utilized Talent						.019	.535	.593	

From Table (4.9), we conclude the following result:

- The (f) value (26.53) was related significantly to (p) value (0.000) which was statistically significant (< 0.05).
- The (β) coefficient reflects the impact value on the Independent Variable elements. The results show sequential descent starting with Defects (0.007), Waiting (0.076), Transportation (0.058), Inventory (0.136), Motion (0.042), extra Process (0.073) while Non-Utilized Talent (0.019).
- The R^2value expresses the percentage of variability observed in the Dependent Variable when using the Independent Variable to predict it. R^2 was (38.9 %) expressed as a percentage. As a result and relying on the sig value of f (0.000) the study Hypothesis is partially acceptable concluding that (LSS)elements have no effect on"Costs" element of (CA).
- As a result and relying on the sig value of f (0.000) the study Hypothesis is partially acceptable where the (LSS)elements (Defects, Transportation, Motion, Extra Process, and Non-Utilized Talent) have been rejected because their value <0.005 which it means those elements have no effect on the "Costs" element. The Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is a direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Costs" element of Competitive Advantage "CA" in Armed Forces Depots "Army, Navy, and Air force" at α≤0.05].

$H_{0.1.4}$: There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, Non-utilized talent, and Space" on the Innovation element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at α≤0.05.

Table (4.10): Multiple linear regressions for testing the effect of (LSS) elements on "Innovation" element of (CA) elements

Independent Variable Lean Six Sigma "LSS" Elements	Regression indicators					Coefficients			
	r	R^2	Adjusted R^2	f	Sig (f)	β	t	Sig (t)	constant
Defects	0.728	0.530	0.519	47.12	0.000	-.185	-4.143	.000	1.022
Waiting						.107	2.204	.028	
Transportation						.324	5.474	.000	
Inventory						.004	.075	.940	
Motion						-.115	-2.334	.020	
Extra Process						.310	4.630	.000	
Non-Utilized Talent						.148	2.906	.004	

From Table (4.10), we conclude the following result:

- The (f) value (47.12) was related significantly to (p) value (0.000) which was statistically significant (< 0.05).
- The (β) coefficient reflects the impact value on the Independent Variable elements. The results show sequential descent starting with Defects (- 0.185), Waiting (0.107), Transportation (0.324), Inventory (0.004), Motion (- 0.115), Extra Process (0.310), while Non-Utilized Talents (0.148).
- The (t) statistics tests the linearity importance of the (β) coefficient obtained for the Independent Variable. All the mentioned (β) values have significantly contributed to the Dependent Variable as the probability of t statistics was< 0.05 for the mentioned impact (β) values.
- The R^2value expresses the percentage of variability observed in the Dependent Variable when using the Independent Variable to predict it. R^2 was (53.0 %) expressed as a percentage.
- As a result and relying on the sig value of f (0.000) the study Hypothesis is partially **acceptable** were the (LSS) Element (Inventory) has been rejected because their value <0.005 which it means those elements do not affect the "Innovation" element. The Zero Hypothesis is rejected and accepted the Alternative Hypothesis accepted, which state [There is a direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, Non-utilized talent, and Space" on the Innovation element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at α≤0.05].

$H_{0.2}$: There is no direct effect of (LSS)elements on (WFA)attributes in Armed Forces Depots "Army, Navy, and Air force" at α≤0.05.

Table (4.11): Simple linear regression for testing the effect of (LSS) elements on (WFA) attributes

Impact Direction	Regression indicators					Coefficients			
	r	R^2	Adjusted R^2	f	Sig (f)	β	t	Sig (t)	constant
Lean Six Sigma "LSS" Elements on Workforce Agility "WFA" Attributes	0.910	0.828	0.828	1436.05	0.000	0.910	37.89	0.000	0.023

From Table (4.11), we conclude the following result:

- The (f) value (1436.05) was significantly related to (p) value (0.000) was statistically significant (< 0.05).
- The (β) coefficient reflects the effect magnitude of the Independent Variable. It was (0.910) and significantly contributes to the Dependent Variable as the probability of (t) statistics was (0.000) < 0.05. The (t) statistics tests the linearity importance of the (β) coefficient obtained for the Independent Variable.
- The value of R^2expresses the variation percentage in the Dependent Variable that can be accounted for the Independent Variable. It was found to be (82.8 %) expressed as a percentage. As a result and relying on the sig value of f (0.000) the study Hypothesis is rejected, were the Zero Hypothesis is rejected and accept the Alternative Hypothesis is accepted, which state [There is a direct effect of (LSS) Elements on (WFA)attributes in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

$H_{0.3}$: There is no direct effect of (WFA) attributes on (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

Table (4.12): Multiple linear regressions for testing mediating effect of (WFA) attributes on (CA) elements

Impact Direction	Regression indicators					Coefficients			
	r	R2	Adjusted R2	f	Sig (f)	β	t	Sig (t)	constant
Workforce Agility "WFA" Attributes on Competitive Advantage "CA"	0.866	0.751	0.750	897.49	0.000	0.866	29.95	0.000	0.561

From Table (4.12), we conclude the following result:

- The (f) value (897.49) was significant relay to (p) value (0.000) was statistically significant (< 0.05).
- The (β) coefficient reflects the impact value on the Mediator Variable. . It was (0.866) and significantly contributes to the dependent variable as the probability of t statistics was (0.000) < 0.05. The (t) statistics tests the linearity importance of the (β) coefficient obtained for the Independent Variable.
- The R^2value expresses the percentage of variability observed in the Mediator Variable when using the independent variable to predict it. As a result and relying on the sig value of f (0.000) the study Hypothesis is rejected concluding that (WFA) attributes has an Effect on (CA).

- As a result and relying on the sig value of f (0.000) the study Hypothesis is rejected, were the Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is a direct effect of (WFA)attributes on (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

4.3.1.2 Testing The Mediating Hypotheses:

Path Analysis was performed using AMOS (22) software to test the Mediation effect of (WFA) attributes on the relationship between (LSS) and (CA).

The researcher will use four indicators that most studies rely on to decide the goodness of model fit, (χ^2) test, (CFI), (GFI) and RMESA. Each of these indicators has a reference value above which it reflects good model fitting. In general the (χ^2) test is the inferential test that uses probability to accept or reject the goodness of fit; the desire situation is that the probability of chi square test is (> 0.05) suggesting no statistical differences between the real (actual measured model) and the theoretical one.

One major negative aspect of (χ^2) is that it is sensitive to the sample size (i.e. it's affected and varies largely among different sample sizes) accordingly rarely that a researcher obtains a suitable desired chi square value ($p>0.05$). In the same context the RMSEA indicator refers to the average of squared errors, so as less the result as the desired situation is, typically a value (< 0.08) is considered to be fair, other suggest that this value should be (< 0.05) which expresses a good indicator (the ideal situation is to equal 0.0).

Both the (CFI) and (GFI) indicators ranges between (0 -1) so a value of (0.90) or higher suggest good fitting since four indicators were selected, the researcher will rely at least on two of them to decide the goodness of fit of the model. The indicators results are provided in the next table.

Table (4.13): Model fitting indicators for the effect of Mediator on the relationship of (LSS) elements on (CA) elements

Model's Dependent Variable	χ^2	Sig	GFI	CFI	RMSEA
Workforce Agility	51.33	0.000	0.905	0.949	0.41
Time	8.79	0.003	0.981	0.990	0.16
Quality	14.66	0.000	0.969	0.982	0.21
Costs	17.51	0.000	0.963	0.975	0.23
Innovation	19.54	0.000	0.960	0.973	0.24
Critical Values	0.00	1.00	(1.00 – 0.90)	(1.00 – 0.90)	(0.00 – 0.08)

From Table (4.13), we conclude the following result:

- (χ^2) value (51.33) is considered to be statistically significant as the related probability value (0.000) was (< 0.05) Suggesting significant differences.
- (GFI) was (0.905) and the value of the comparative index (CFI) was (0.949) suggesting a very good and acceptable values since they above the critical (0.90).
- RMSEA value was (0.41) suggesting a large value of residual square errors. Upon the results revealed two indices which suggest the goodness of the model as a result the model data may consider to be appropriate to test related Mediation Hypothesis.

$H_{0.4}$: There is no indirect effect of (LSS)elements on (CA)in the presence of (WFA)attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

The Path Analysis has used and is shown in the following tables.

Table (4.14): Testing the effect of (LSS) elements on (CA) elements.

Path Direction	χ^2	χ^2/DF	GFI	CFI	RMSEA	Direct effects			Sig	AVE
						Path weight β	C.R	Sig		
Independent on Dependent	74.61	3.73	0.938	0.968	0.096	0.916	17.35	0.000	0.00	0.839

From Table (4.14), we conclude the following result:

- (χ^2) value (74.16) is considered to be statistically significant as the related probability value (0.000) was (< 0.05) suggesting significant differences and the (χ^2/DF) indicator was (3.73).
- (GFI) was (0.938) and the value of the comparative index (CFI) was (0.968) suggest a very good and acceptable values as they above the critical (0.90).
- RMSEA value was (0.096) suggesting a large value of residual square errors. Upon the results revealed two indices were suggesting the goodness of the model as a result the model data may be considered to be appropriate to test related Mediation Hypothesis.
- The magnitude of the Direct Effect for the Independent Variable on the Dependent Variable was (0.916) and considered to be statistically significant.

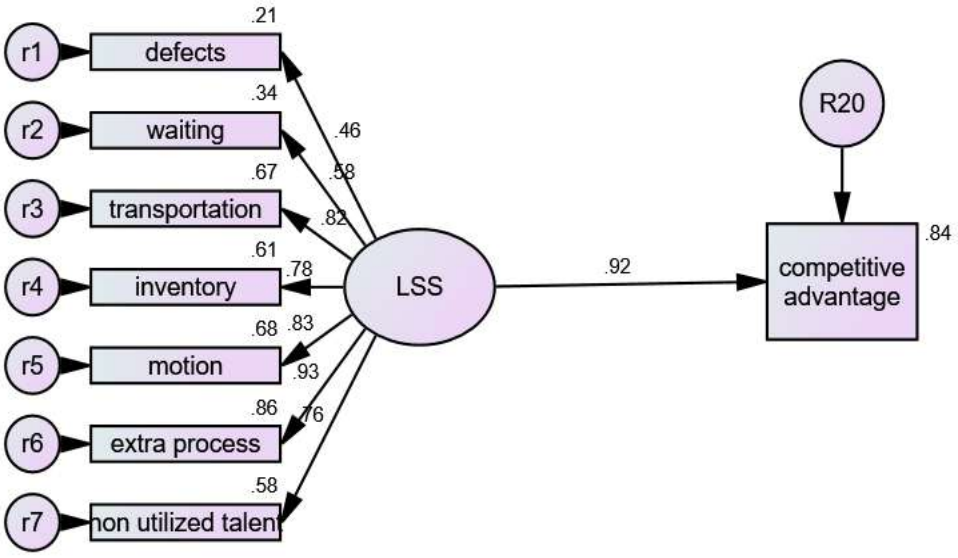


Figure (4.5): Model of the effect of (LSS) elements on (CA) elements

Table (4.15): Path analysis of testing the mediating effect of (WFA) attributes on the effect of (LSS) elements on (CA) Elements

Path Direction	χ^2	χ^2/DF	GFI	CFI	RMSEA	Direct effects			Indirect Effect	Sig	Total Effect	AVE
						Path weight β	C.R	Sig				
Independent on Dependent	131.47	5.05	0.912	0.954	0.116	0.924	7.35	0.000	0.006	0.000	1.95	0.842
Independent on Mediator						0.945	19.26	0.000				
Mediator on Dependent						0.07	0.05	0.954				

From Table (4.15), we conclude the following result:

- (χ^2) value (131.47) is considered to be statistically significant as the related probability value (0.000) was (<0.05) suggesting significant differences and the (χ^2/DF) indicator was (5.05).
- (GFI) was (0.912) and the value of the comparative index (CFI) was (0.954) suggest a very good and acceptable values since they are above the critical (0.90).
- RMSEA value was (0.116) suggesting a large value of residual square errors. Upon the results revealed two indices were suggesting the goodness of the model. Accordingly, the model data may data may be considered being appropriate to test related Mediation Hypothesis.

- The Mediation Effect of (WFA) attributes on the relationship between (LSS) elements and (CA). The magnitude of Direct Effect of the Independent Variable (LSS) elements on the Dependent Variable (CA) was expressed by the path weight (β) (0.924).
- The Indirect Effect caused by the Mediator Variable (WFA) attributes was estimated by the Indirect Path weights. So the magnitude of the indirect effect was estimated to be (0.006) as a result the Total Effect is expressed by the both the Direct and Indirect Effect (1.95).
    - As a result, Workforce Agility (WFA) attributes fully mediates in the Effect in the Effect of (LSS) elements on (CA) in the Armed Forces Depots "Army, Navy, and Air force" and this is due to the Mediator role, where the (AVE = 0.003) result is due to the difference between the direct effect and indirect effect. The Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is indirect effect of (LSS) elements on (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

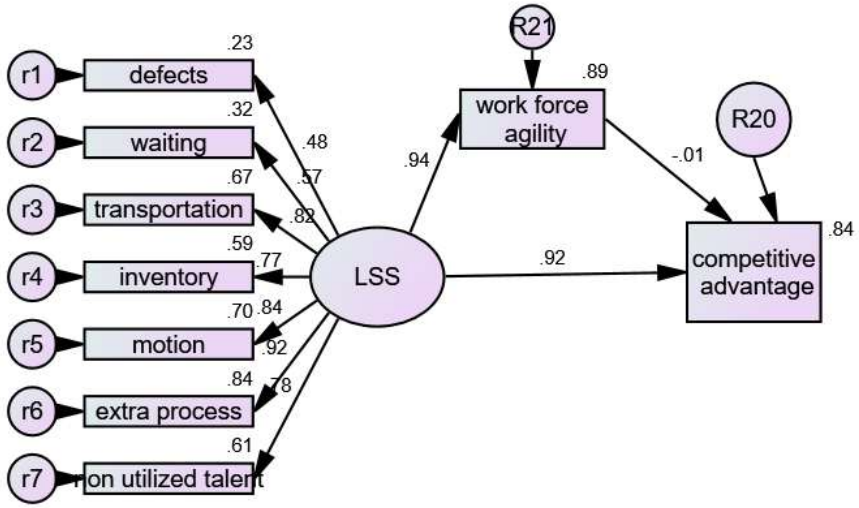


Figure (4.6): Mediating model of (WFA) attributes on the effect of (LSS) elements on (CA) elements

$H_{0.4.1}$: There is no indirect effect of (LSS)elements on the "Time" element of (CA)in the presence of (WFA)attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

The Path Analysis has used and is shown in the following tables

Table (4.16): Testing the effect of (LSS) elements on the "Time" element of (CA) elements.

Path Direction	χ^2	χ^2/DF	GFI	CFI	RMSEA	Direct effects			Sig	AVE
						Path weight β	C.R	Sig		
Independent on Dependent	69.02	3.45	0.948	0.967	0.091	0.765	13.40	0.000	0.00	0.585

From Table (4.16), we conclude the following result:

- (χ^2) value (69.02) is considered to be statistically significant as the related probability value (0.000) was (< 0.05) suggesting significant differences and the (χ^2/DF) indicator was (3.45).
- (GFI) was (0.948) and the value of the comparative index (CFI) was (0.967) that suggest very good and acceptable values as they above the critical (0.90).
- RMSEA value was (0.091) suggesting a large value of residual square errors. The results revealed two indices were suggesting the goodness of the model as a result the model data may be considered to be appropriate to test related Mediation Hypothesis.
- The magnitude of the Direct Effect for the Independent Variable on the Dependent Variable was (0.765) and considered to be statistically significant.

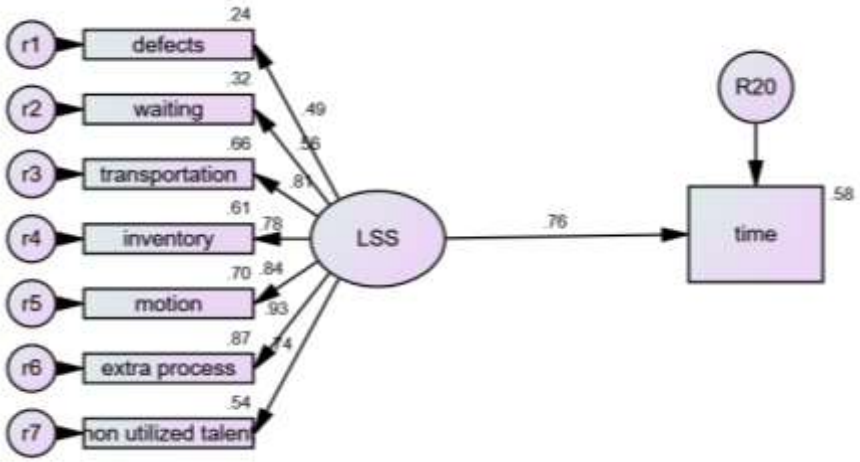


Figure (4.7): Model of the effect of (LSS) elements on the "Time" element of (CA) elements

Table (4.17): Path analysis of testing the mediating effect of (WFA) attributes on the effect of (LSS) elements on the "Time" element of (CA) elements

Path Direction	χ^2	χ^2/DF	GFI	CFI	RMSEA	Direct effects			Indirect Effect	Sig	Total Effect	AVE
						Path weight β	C.R	Sig				
Independent on Dependent	118.11	4.54	0.923	0.955	0.109	0.539	3.45	0.000	0.130	0.000	1.86	0.594
Independent on Mediator						0.945	18.76	0.000				
Mediator on Dependent						0.241	1.60	0.108				

From Table (4.17), we conclude the following result:

- (χ^2) value (118.11) is considered to be statistically significant as the related probability value (0.000) was (< 0.05) suggesting significant differences and the (χ^2/DF) indicator was (4.54).
- (GFI) was (0.923) and the value of the comparative index (CFI) was (0.955) suggest a very good and acceptable values as they are above the critical (0.90).
- RMSEA value was (0.109) suggesting a large value of residual square errors. The results revealed two indices were suggesting the goodness of the model and as a result the model data may consider being appropriate to test related Mediation Hypothesis.
- The Mediation Effect of (WFA) attributes on the relationship between (LSS) elements and (CA). The magnitude of Direct Effect of the Independent Variable (LSS) elements on the "Time" element of Dependent Variable (CA) was expressed by the path weight (β) (0.539).
- The Indirect Effect caused by the Mediator Variable Workforce Agility (WFA) attributes was estimated by the Indirect Path weights. So the magnitude of the indirect effect was estimated to be (0.130) as a result the Total Effect is expressed by the both the Direct and Indirect Effect (1.86).
- As a result, (WFA)attributes fully mediates in the effect of (LSS) elements on the "Time" element of (CA)in the Armed Forces Depots "Army, Navy, and Air force" and this is due to the Mediator role, were the (AVE = 0.009) resulted due to the difference from the direct effect and indirect effect. The Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is indirect effect of (LSS)elements on the "Time" element of (CA)in the presence of (WFA)attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

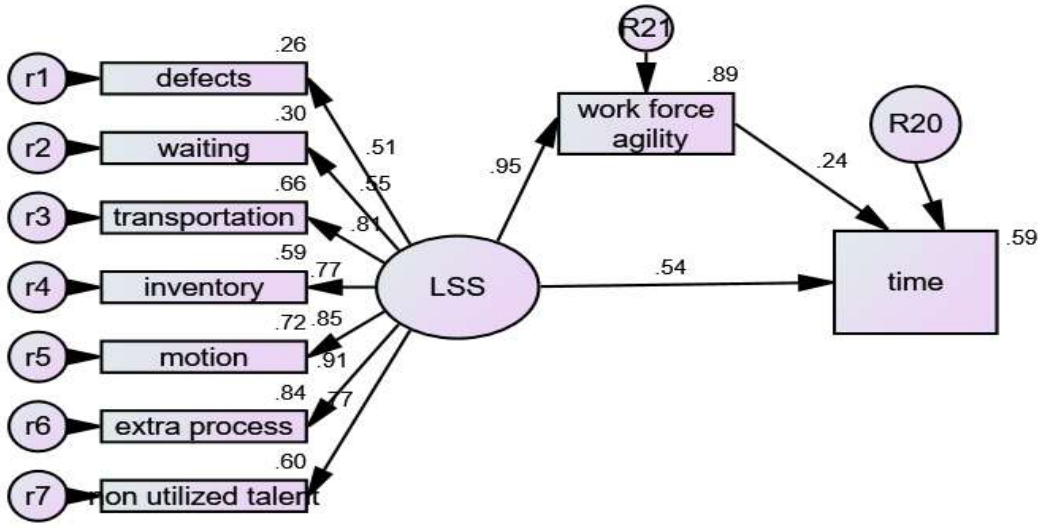


Figure (4.8): Mediating model of (WFA) Attributes on the effect of (LSS) elements on the "Time" element of (CA) elements

$H_{0.4.2}$: There is no indirect effect of (LSS)elements on the "Quality" element of (CA) in the presence of (WFA)attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

The Path Analysis has used and is shown in the following tables.

Table (4.18): Testing the Effect of (LSS) elements on the "Quality" element of (CA) elements.

Path Direction	χ^2	χ^2/DF	GFI	CFI	RMSEA	Direct effects			Sig	AVE
						Path weight β	C.R	Sig		
Independent on Dependent	79.74	3.98	0.938	0.959	0.100	0.749	13.44	0.000	0.00	0.561

From Table (4.18), we conclude the following result:

- (χ^2) value (79.74) is considered to be statistically significant as the related probability value (0.000) was (< 0.05) suggesting significant differences and the (χ^2/DF) indicator was (3.98).
- (GFI) was (0.938) and the value of the comparative index (CFI) was (0.959) which suggests very good and acceptable values as they are above the critical (0.90).
- RMSEA value was (0.100) suggesting a large value of residual square errors. The results revealed two indices that suggest the goodness of the model and as a result, the model data may be considered to be appropriate to test related Mediation Hypothesis.
- The magnitude of the Direct Effect for the Independent Variable on the Dependent Variable was (0.749) and considered to be statistically significant.

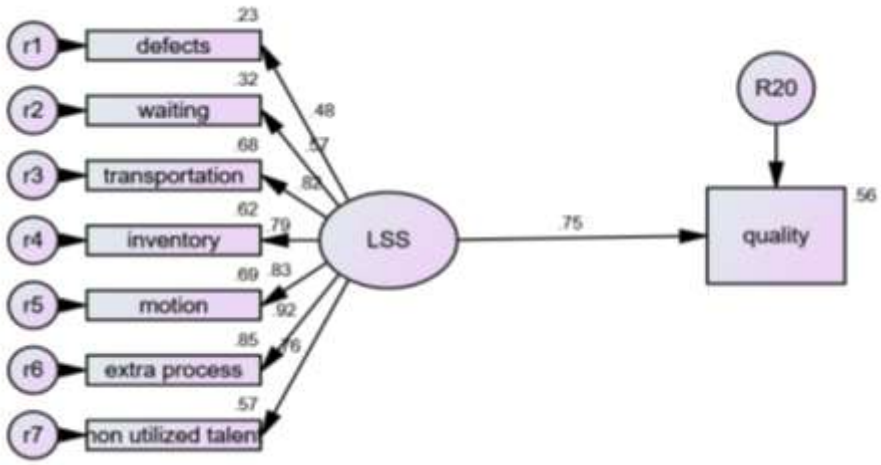


Figure (4.9): Model of the Effect of (LSS) elements on the "Quality" element of (CA) elements.

Table (4.19): Path analysis of testing the mediating effect of (WFA) attributes on the effect of (LSS) elements on the "Quality" element of (CA) elements

Path Direction	χ^2	χ^2/DF	GFI	CFI	RMSEA	Direct effects			Indirect Effect	Sig	Total Effect	AVE
						Path weight β	C.R	Sig				
Independent on Dependent	122.25	4.70	0.917	0.953	0.111	0.735	4.32	0.000	0.014	0.000	1.72	0.567
Independent on Mediator						0.946	18.76	0.000				
Mediator on Dependent						0.019	0.11	0.907				

From Table (4.19), we conclude the following result:

- (χ^2) value (122.25) is considered to be statistically significant as the related probability value (0.000) was (< 0.05) suggesting significant differences and the (χ^2/DF) indicator was (4.70).
- (GFI) was (0.917) and the value of the comparative index (CFI) was (0.953) suggesting very good and acceptable values as they are above the critical (0.90).
- RMSEA value was (0.111) suggesting a large value of residual square errors. The results revealed two indices were suggesting the goodness of the model and as a result, the model data may consider being appropriate to test related Mediation Hypothesis.
- The Mediation Effect of (WFA) attributes on the relationship between (LSS) elements and (CA). The magnitude of Direct Effect of the Independent Variable (LSS) elements on the "Quality" element of Dependent Variable [Competitive Advantage (CA)] was expressed by the path weight (β) (0.735).

- The Indirect Effect caused by the Mediator Variable (WFA) attributes was estimated by the Indirect Path weights. So the magnitude of the indirect effect was estimated to be (0.014) and as a result the Total Effect is expressed by the both the Direct and Indirect Effect (1.72).
- As a result, (WFA)attributes fully mediates between the Effect of (LSS) elements on the "Quality" element of (CA)in the Armed Forces Depots "Army, Navy, and Air force" and this is due to the Mediator role, were the (AVE = 0.006) result is due to the difference between the direct effect and indirect effect. The Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is indirect effect of (LSS)elements on the "Quality" element of (CA)in the presence of (WFA)attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

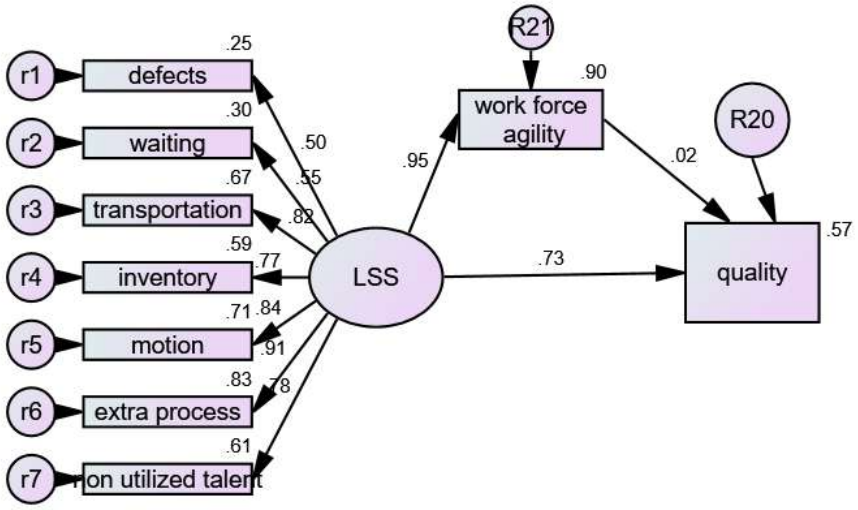


Figure (4.10): Mediating model of (WFA) Attributes on the effect of (LSS) elements on the "Quality" element of (CA) elements.

$H_{0.4.3}$: There is no indirect effect of (LSS) elements on the "Costs" element of (CA) in the presence of (WFA)attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

The Path Analysis has used and is shown in the following tables

Table (4.20): Testing the Effect of Lean Six Sigma (LSS) elements on the "Costs" element of (CA) elements

Path Direction	χ^2	χ^2/DF	GFI	CFI	RMSEA	Direct effects			Sig	AVE
						Path weight β	C.R	Sig		
Independent on Dependent	60.72	3.03	0.953	0.970	0.083	0.631	10.88	0.000	0.00	0.398

From Table (4.20) we conclude the following result:

- (χ^2) value (60.72) is considered to be statistically significant as the related probability value (0.000) was (< 0.05) suggesting significant differences and the (χ^2/DF) indicator was (3.03).
- (GFI) was (0.953) and the value of the comparative index (CFI) was (0.970) suggesting a very good and acceptable values as they are above the critical (0.90).
- RMSEA value was (0.083) suggesting a large value of residual square errors. The results revealed two indices that suggest the goodness of the model and as a result, the model data may considered to be appropriate to test related Mediation Hypothesis.
- The magnitude of the Direct Effect for the Independent Variable on the Dependent Variable was (0.631) and considered to be statistically significant.

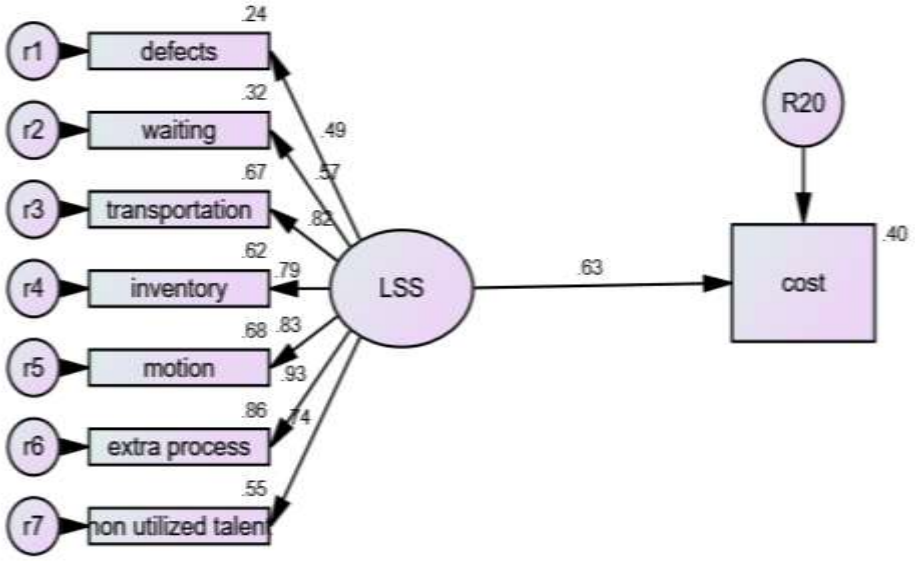


Figure (4.11): Model of the Effect of (LSS) elements on the "Costs" element of (CA) elements.

Table (4.21): Path analysis of testing the mediating effect of (WFA) attributes on the effect of (LSS) elements on the "Costs" element of (CA) elements

Path Direction	χ^2	χ^2/DF	GFI	CFI	RMSEA	Direct effects			Indirect Effect	Sig	Total Effect	AVE
						Path weight β	C.R	Sig				
Independent on Dependent	108.86	4.18	0.928	0.957	0.103	0.786	3.95	0.000	0.113	0.000	1.98	0.401
Independent on Mediator						0.945	18.88	0.000				
Mediator on Dependent						0.144	0.77	0.440				

From the above table we conclude the following result:

- (χ^2) value (108.86) is considered to be statistically significant as the related probability value (0.000) was (< 0.05) suggesting significant differences and the (χ^2/DF) indicator was (4.18).
- (GFI) was (0.928) and the value of the comparative index (CFI) was (0.957) suggesting very good and acceptable values as they are above the critical (0.90).
- RMSEA value was (0.103) suggesting a large value of residual square errors. The results revealed two indices were suggesting the goodness of the model and as a result, the model data may be considered to be appropriate to test related Mediation Hypothesis.
- The Mediation Effect of (WFA) attributes on the relationship between (LSS) elements and (CA). The magnitude of Direct Effect of the Independent Variable (LSS) elements on the "Costs" element of Dependent Variable [Competitive Advantage (CA)] was expressed by the path weight (β) (0.786).
- The Indirect Effect caused by the Mediator Variable (WFA) attributes was estimated by the Indirect Path weights. So the magnitude of the indirect effect was estimated to be (0.113) and as a result the Total Effect is expressed by the both the Direct and Indirect Effect (1.98).
- As a result, (WFA)attributes fully mediates in the Effect of (LSS)elements on the "Costs" element of (CA)in the Armed Forces Depots "Army, Navy, and Air force" and this is due to the Mediator role, were the (AVE = 0.003) result is due t to the difference between the direct effect and indirect effect. The Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is indirect effect of (LSS)elements on the "Costs" element of (CA)in the presence of (WFA)attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

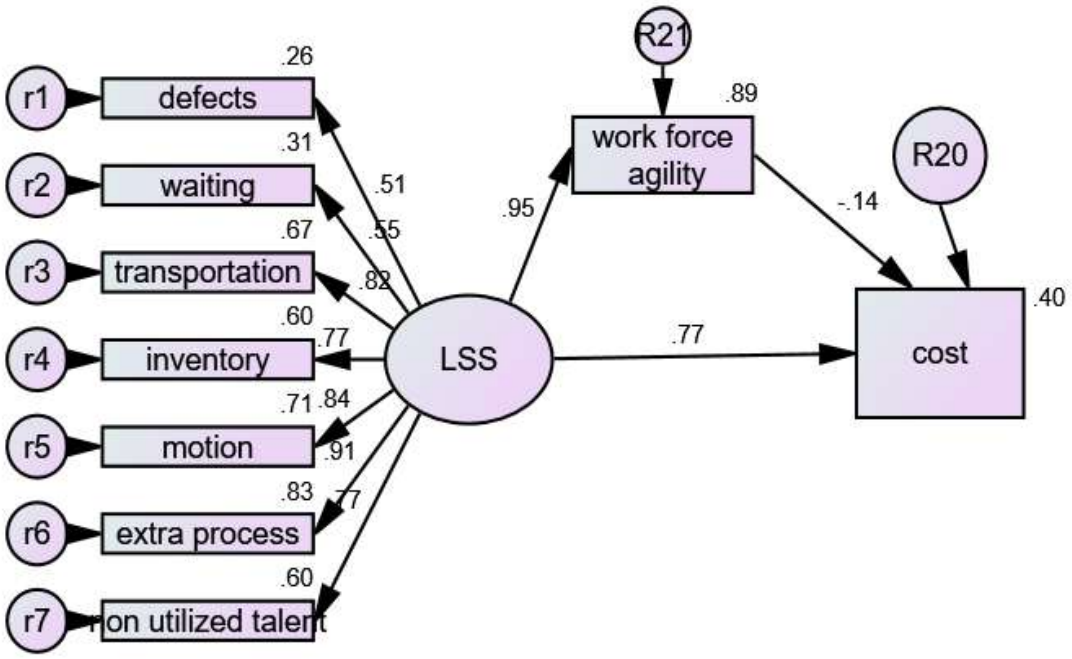


Figure (4.12): Model of the mediating effect of (WFA) attributes on the effect of (LSS) elements on the "Costs" element of (CA) elements

$H_{0.4.4}$: There is no indirect effect of (LSS) elements on the "Innovation" element of (CA) in the presence of "(WFA) Attributes" as a mediator variable between Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.

The Path Analysis has used and is shown in the following tables.

Table (4.22): Testing the Effect of (LSS) elements on the "Innovation" element of (CA) elements.

Path Direction	χ^2	χ^2/DF	GFI	CFI	RMSEA	Direct effects			Sig	AVE
						Path weight β	C.R	Sig		
Independent on Dependent	112.20	5.61	0.913	0.936	0.124	0.676	11.86	0.000	0.00	0.472

From Table (4.22), we conclude the following result:

- (χ^2) value (112.20) is considered to be statistically significant as the related probability value (0.000) was (< 0.05) suggesting significant differences and the (χ^2/DF) indicator was (5.61).
- (GFI) was (0.913) and the value of the comparative index (CFI) was (0.936) suggesting very good and acceptable values as they are above the critical (0.90).
- RMSEA value was (0.124) suggesting a large value of residual square errors. The results revealed two indices were suggesting the goodness of the model and as a result the model data may be considered to be appropriate to test related Mediation Hypothesis.

- The magnitude of the Direct Effect for the Independent Variable on the Dependent Variable was (0.676) and considered to be statistically significant.

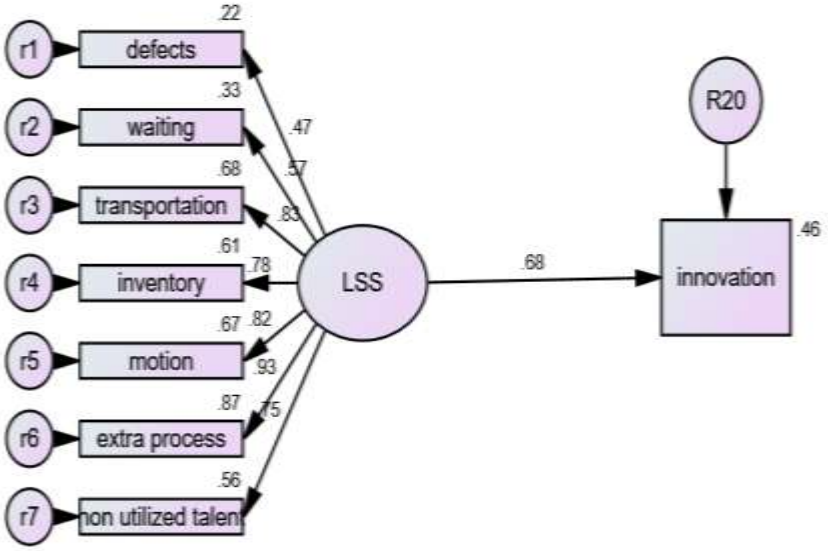


Figure (4.13): Model of the Effect of (LSS) elements on the "Innovation" element of (CA) elements.

Table (4.23): Path analysis of testing the mediating effect of (WFA) attributes on the effect of (LSS) elements on the "Innovation" of (CA) elements

Path Direction	χ^2	χ^2/DF	GFI	CFI	RMSEA	Direct effects			Indirect Effect	Sig	Total Effect	AVE
						Path weight β	C.R	Sig				
Independent on Dependent	161.52	6.21	0.901	0.932	0.132	1.026	19.32	0.000	0.656	0.000	2.9	0.475
Independent on Mediator						0.945	18.88	0.000				
Mediator on Dependent						0.370	2.02	0.043				

From Table (4.23), we conclude the following result:

- (χ^2) value (161.52) is considered to be statistically significant as the related probability value (0.000) was (< 0.05) suggesting significant differences and the (χ^2/DF) indicator was (6.21).
- (GFI) was (0.901) and the value of the comparative index (CFI) was (0.932 suggesting very good and acceptable values as they are above the critical (0.90).
- RMSEA value was (0.132) suggesting a large value of residual square errors. The results revealed two indices were suggesting the goodness of the model and as a result the model data may be considered to be appropriate to test related Mediation Hypothesis.
- The Mediation Effect of (WFA) attributes on the relationship between (LSS)elements and "Innovation" element (CA). The magnitude of Direct Effect of the Independent

Variable (LSS) elements on the "Innovation" element of Dependent Variable (CA) was expressed by the path weight (β) (1.026).

- The Indirect Effect caused by the Mediator Variable (WFA) attributes was estimated by the Indirect Path weights. So the magnitude of the indirect effect was estimated to be (0.656), and as a result the Total Effect is expressed by the both the Direct and Indirect Effect (2.9).
- As a result, (WFA)attributes fully mediates in the Effect of (LSS)elements on the (CA)in the Armed Forces Depots "Army, Navy, and Air force" and this is due to the Mediator role, were the (AVE = 0.003) result is due to the difference between the direct effect and indirect effect. The Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is indirect effect of (LSS) elements on the "Innovation" element of (CA) in the presence of "(WFA) Attributes" as a mediator variable between Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

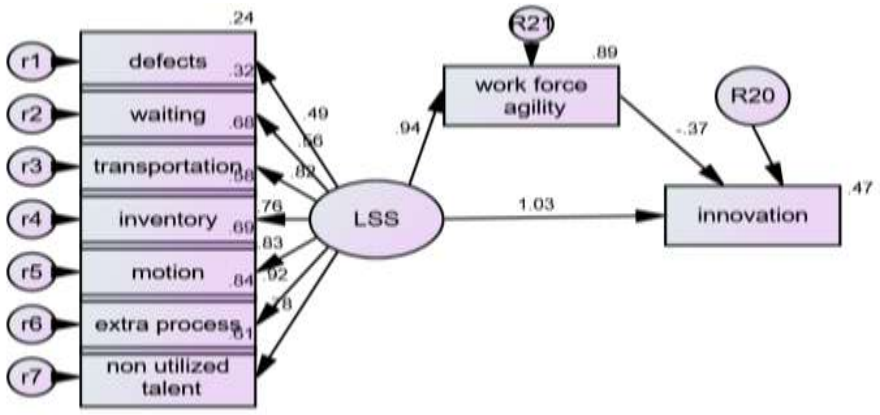


Figure (4.14): Model of the mediating effect of (WFA) attributes on the effect of (LSS) elements on the "Innovation" of (CA) elements.

$H_{0.5}$: There are no differences in the response of the sample about the importance of the three variables of study [(LSS) elements, (WFA) Attributes, and (CA)] according to the type of Armed Forces Depots "Army, Navy, and Air force".

This Hypothesis is splitting into the three sub-hypotheses as follow:

$H_{0.5.1}$: There are no differences in the response of the sample about the importance of (LSS)elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" according to the type of Armed Forces Depots "Army, Navy, and Air force".

The one way ANOVA test is using to test this Sub Hypothesis (**$H_{0.5.1}$**).The results are provided in the following table (4.24)

Table (4.24): One way ANOVA Test for differences in the sample responses to the importance of (LSS) elements according to the Depots

Lean Six Sigma "LSS" Elements	Depot	n	mean	sd	f	sig
Defects	Army Depot	120	3.208	0.500	72.42	0.000
	Navy Depot	80	3.996	0.499		
	Air force Depot	100	3.973	0.630		
Waiting	Army Depot	120	2.313	0.463	18.62	0.000
	Navy Depot	80	2.438	0.431		
	Air force Depot	100	2.800	0.826		
Transportation	Army Depot	120	2.150	0.442	171.99	0.000
	Navy Depot	80	2.879	0.451		
	Air force Depot	100	3.333	0.536		
Inventory	Army Depot	120	2.539	0.445	132.90	0.000
	Navy Depot	80	3.046	0.392		
	Air force Depot	100	3.623	0.602		
Motion	Army Depot	120	2.089	0.442	272.92	0.000
	Navy Depot	80	3.279	0.493		
	Air force Depot	100	3.613	0.589		
Extra Process	Army Depot	120	2.336	0.518	240.54	0.000
	Navy Depot	80	3.204	0.436		
	Air force Depot	100	3.757	0.480		
Non-Utilized Talent	Army Depot	120	2.336	0.527	85.90	0.000
	Navy Depot	80	2.938	0.621		
	Air force Depot	100	3.347	0.593		
Overall Lean Six Sigma "LSS" Elements	Army Depot	120	2.424	0.290	319.01	0.000
	Navy Depot	80	3.111	0.268		
	Air force Depot	100	3.492	0.381		

From Table (4.24), **(**sig) value indicates that all (LSS) elements are (< 0.05). The Depot variable's categories' (mean) are different from each other, which it means a different sample response regarding to the importance of (LSS) elements according to the type of Depot.

From the following table (4.25) sheffe post hoc test will know which Depots differ significantly from each other of each (LSS) elements.

Table (4.25): Sheffe post hoc test for determining the significant differences between the Depots each other of each (LSS) elements

Lean Six Sigma "LSS" Elements	mean	Depot	Navy Depot	Airforce Depot
Defects	3.208	Army Depot	*	*
	3.996	Navy Depot		
	3.973	Air force Depot		
Waiting	2.313	Army Depot		*
	2.438	Navy Depot		*
	2.800	Air force Depot		
Transportation	2.150	Army Depot	*	*
	2.879	Navy Depot		*
	3.333	Air force Depot		
Inventory	2.539	Army Depot	*	*
	3.046	Navy Depot		*
	3.623	Air force Depot		
Motion	2.089	Army Depot	*	*
	3.279	Navy Depot		*
	3.613	Air force Depot		
Extra process	2.336	Army Depot	*	*
	3.204	Navy Depot		*
	3.757	Air force Depot		
Non-Utilized Talent	2.336	Army Depot	*	*
	2.938	Navy Depot		*
	3.347	Air force Depot		
Overall Lean Six Sigma "LSS" Elements	2.424	Army Depot	*	*
	3.111	Navy Depot		*
	3.492	Air force Depot		

(*) suggest significant mean difference

From table (4.25), the Depots differ significantly from each other for each (LSS) elements as following:

- **Defects:** The differences in response for eliminate what cause Defects in exercise of (LSS) elements were in favor of (Naval force Depots) at the expense of the other Forces Depots (Air force, Army).
- **Waiting**: The differences in response for minimize the lost time that cause waiting in exercise of (LSS) elements were in favor of (Air force Depot) at the expense of the other Forces Depots (Naval, Army).
- **Transportation**: The differences in response for eliminate the unnecessary Transportation in exercise of (LSS) elements were in favor of (Air force Depot) at the expense of the other Forces Depots (Naval, Army).

- **Inventory**: The differences in response for rational the Inventory in exercise of (LSS) elements were in favor of (Air force Depot) at the expense of the other Forces Depots (Naval, Army).
- **Motion**: The differences in response for eliminate or minimize the unnecessary Motion in exercise of (LSS) elements were in favor of (Air force Depot) at the expense of the other Forces Depots (Naval, Army).
- **Extra Process**: The differences in response for eliminate non add value steps that cause Extra Process in exercise of (LSS) elements were in favor of (Air force Depot) at the expense of the other Forces Depots (Naval, Army).
- **Non-Utilized Talent**: The differences in response for investing the competencies and abilities that cause not Non-Utilized Talent in exercise of (LSS) elements were in favor of (Air force Depot) at the expense of the other Forces Depots (Naval, Army).
- **Overall degree of (LSS) elements**: The differences in response in overall of (LSS) elements were in favor of (Air force Depot) at the expense of the other Forces Depots (Naval, Army).

$H_{0.5.2}$: There are no differences in the response of the sample about the importance of (CA) according to the type of Armed Forces Depots "Army, Navy, and Air force".

The one way ANOVA test is using to test this Sub Hypothesis **($H_{0.5.2}$)**. The results are provided in the following table (4.26)

Table (4.26): One way ANOVA Test for differences in the sample responses to the importance of (CA) elements according to Depot

Attributes	Depot	n	mean	sd	f	sig
Time	Army Depot	120	2.175	0.802	57.70	0.000
	Navy Depot	80	3.491	0.490		
	Air force Depot	100	3.398	0.684		
Quality	Army Depot	120	2.271	0.434	47.84	0.000
	Navy Depot	80	2.613	0.703		
	Air force Depot	100	3.570	0.607		
Cost	Army Depot	120	2.794	0.307	5.76	0.000
	Navy Depot	80	2.975	0.241		
	Air force Depot	100	3.253	0.418		
Innovation	Army Depot	120	2.275	0.506	18.42	0.000
	Navy Depot	80	2.319	0.541		
	Air force Depot	100	3.035	0.499		
Overall Competitive Advantages "CA" Elements	Army Depot	120	2.379	0.379	23.90	0.000
	Navy Depot	80	2.849	0.295		
	Air force Depot	100	3.314	0.389		

From Table (4.26), (sig) value indicates that all (CA) (< 0.05). The Depot variable's categories' (mean) are different from each other, which it means a different sample response with regard to the importance of (CA) according to the type of Depot.

From the following table (4.27) sheffe post hoc test will know which Depots differ significantly from each other of each (CA) elements.

Table (4.27): Sheffe post hoc test for determining the significant differences between the Depots each other of each (CA) elements

Competitive Advantages "CA" Elements	mean	Depot	Navy Depot	Airforce Depot
Time	2.175	Army Depot	*	*
	3.491	Navy Depot		*
	3.398	Air force Depot		
Quality	2.271	Army Depot	*	*
	2.613	Navy Depot		*
	3.570	Air force Depot		
Cost	2.794	Army Depot	*	*
	2.975	Navy Depot		*
	3.253	Air force Depot		
Innovation	2.275	Army Depot		*
	2.319	Navy Depot		*
	3.035	Air force Depot		
Overall degree of Competitive Advantage "CA"	2.379	Army Depot	*	*
	2.849	Navy Depot		*
	3.314	Air force Depot		

(*) suggest significant mean difference

From Table (4.27), the Depots differ significantly from each other of each (CA) elements as following:

- **Time**: The differences in response for reduce the Time period to the exercise of (CA) elements were in favor of (Naval force Depots) at the expense of the other Forces Depots (Air force, Army).
- **Quality**: The differences in response for providing what meets the expectations of the beneficiaries in completing the tasks to the exercise of (CA) elements were in favor of (Air force Depots) at the expense of the other Forces Depots (Naval, Army).
- **Costs**: The differences in response for rationalize the expenditure to minimum limit to the exercise of (CA) elements were in favor of (Air force Depots) at the expense of the other Forces Depots (Naval, Army).

- **Innovation**: The differences in response for singularity of design the ideas as add value to the exercise of (CA) elements were in favor of (Air force Depots) at the expense of the other Forces Depots (Naval, Army).
- **Overall degree of (CA)**: The differences in response of overall (CA) elements were in favor of (Air force Depots) at the expense of the other Forces Depots (Naval, Army).

$H_{0.5.3}$: There are no differences in the response of the sample about the importance of (WFA) attributes according to the type of Armed Forces Depots "Army, Navy, and Air force".

The one way ANOVA test is using to test this Sub Hypothesis **($H_{0.5.3}$)**. The results are provided in the following table (4.28)

Table (4.28): One way ANOVA Test for differences in the sample responses to the importance of (WFA) attributes according to Depots

Workforce Agility "WFA" Attributes	Depot	n	mean	sd	f	sig
Flexibility	Army Depot	120	2.753	0.373	36.75	0.000
	Navy Depot	80	3.746	0.493		
	Air force Depot	100	3.777	0.551		
Adaptability	Army Depot	120	2.600	0.496	33.30	0.000
	Navy Depot	80	3.633	0.426		
	Air force Depot	100	3.493	0.571		
Motivation	Army Depot	120	2.172	0.658	36.89	0.000
	Navy Depot	80	3.000	0.581		
	Air force Depot	100	3.287	0.513		
Training	Army Depot	120	2.694	0.494	24.35	0.000
	Navy Depot	80	3.500	0.520		
	Air force Depot	100	3.530	0.563		
Participation	Army Depot	120	2.275	0.409	35.64	0.000
	Navy Depot	80	2.946	0.526		
	Air force Depot	100	3.407	0.568		
Empowerment	Army Depot	120	2.011	0.679	87.46	0.000
	Navy Depot	80	3.150	0.785		
	Air force Depot	100	3.767	0.518		
Overall Workforce Agility "WFA" Attributes	Army Depot	120	2.418	0.360	39.25	0.000
	Navy Depot	80	3.329	0.339		
	Air force Depot	100	3.543	0.391		

From Table (4.28), (sig) value indicates that all (WFA) attributes (< 0.05). The Depot variable's categories' (mean) are different from each other, which it means a different sample response regarding to the importance of (WFA) attributes according to the type of Depot.

From the following table (4.29) sheffe post hoc test will know which Depots differ significantly from each other of each (WFA) Attributes.

Table (4.29): Sheffe post hoc test for determining the significant differences between the Depots each other of each (WFA) attributes

Workforce Agility "WFA" Attributes	mean	depot	Navy Depot	Airforce Depot
Flexibility	2.753	Army Depot	*	*
	3.746	Navy Depot		
	3.777	Air force Depot		
Adaptability	2.600	Army Depot	*	*
	3.633	Navy Depot		
	3.493	Air force Depot		
Motivation	2.172	Army Depot	*	*
	3.000	Navy Depot		*
	3.287	Air force Depot		
Training	2.694	Army Depot	*	*
	3.500	Navy Depot		
	3.530	Air force Depot		
Participation	2.275	Army Depot	*	*
	2.946	Navy Depot		*
	3.407	Air force Depot		
Empowerment	2.011	Army Depot	*	*
	3.150	Navy Depot		*
	3.767	Air force Depot		
Overall Workforce Agility "WFA" Attributes	2.418	Army Depot	*	*
	3.329	Navy Depot		*
	3.543	Air force Depot		

(*) suggest significant mean difference

The differences in response to the exercise of (WFA) Attributes were in favor of (Air Force Depots) at the expense of the other Forces Depots (Army, Naval).

- **Flexibility**: The differences in response to the sudden change in the external and internal environment to the exercise of (WFA) attributes were in favor of (Air Force Depots) at the expense of the other Forces Depots (Naval, Army).

- **Adaptability**: The differences in response to the environmental shift in the task to better fit the new environment to the exercise of (WFA)attributes were in favor of (Naval Force Depots) at the expense of the other Forces Depots (Air force, Army).
- **Motivation**: The differences in response to the engine that drives the crew to do their duties to perform task with enthusiasm and mastery to the exercise of (WFA) attributes were in favor of (Air Force Depots) at the expense of the other Forces Depots (Naval, Army).
- **Training**: The differences in response to the process of acquiring the skills, experience and knowledge to the exercise of (WFA) attributes were in favor of (Air Force Depots) at the expense of the other Forces Depots (Naval, Army).
- **Participation**: The differences in response to the contribution, and involvement in operations to highlight the capabilities and effectiveness to the exercise of (WFA) attributes were in favor of (Air Force Depots) at the expense of the other Forces Depots (Naval, Army).
- **Empowerment**: The differences in response to authorization of powers in the power of decision making in the chain of command to the exercise of (WFA) attributes were in favor of (Air Force Depots) at the expense of the other Forces Depots (Naval, Army).
- **Overall degree of (WFA) Attributes**: The differences in response to the exercise of (WFA) attributes were in favor of (Air Force Depots) at the expense of the other Forces Depots (Naval, Army).

Chapter Five: Results Discussion, Conclusions and Recommendations

5.1 Introduction

This chapter is related to what analyzed in chapter four of the results of the descriptive statistical analysis of the study variables and the hypothesis test. This chapter discusses the descriptive results of the study variables and the results obtained by the researcher of answering the questions presented in the first chapter of this study related to the study problems, test the hypotheses of the study on which it was based. In the light of these results, the researcher presents a number of recommendations and proposals related to the current study and future studies.

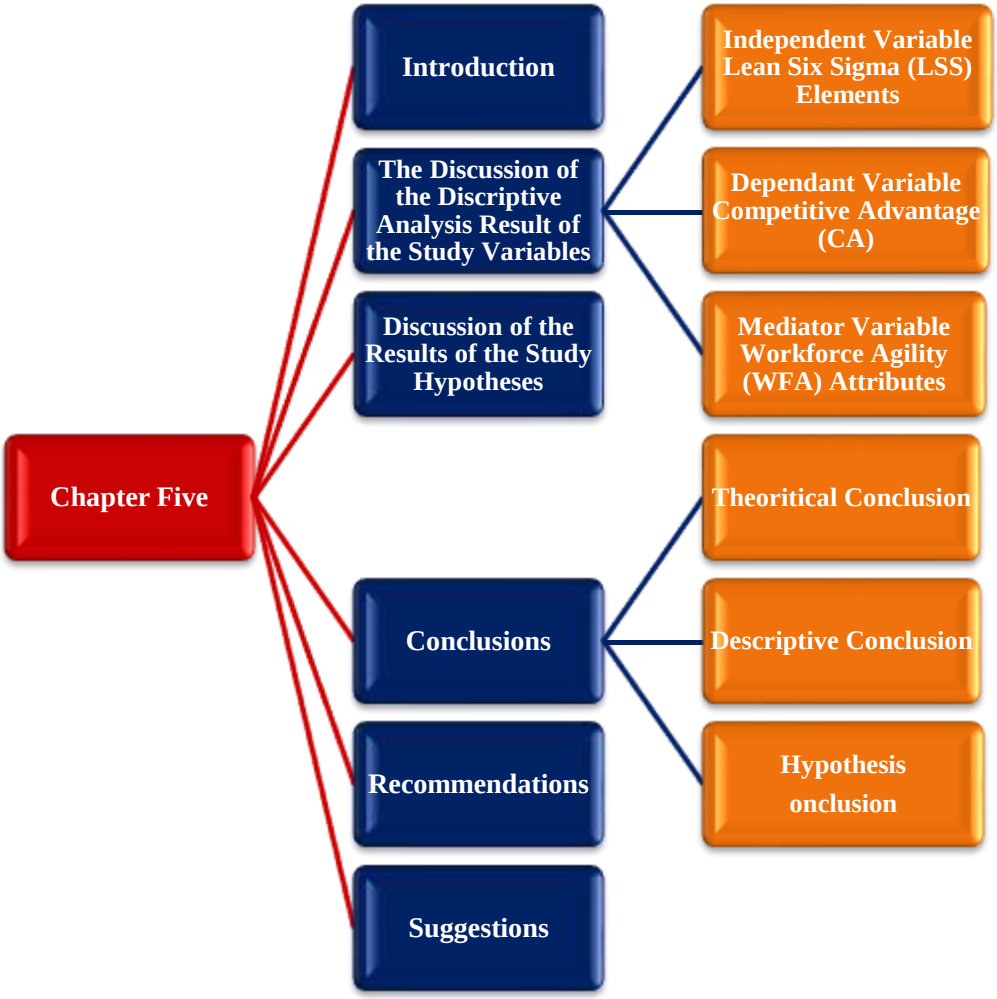


Figure (5.1): Construction of chapter five

5.2 The Discussion of the Descriptive Analysis results of the study variables

The researcher discusses the results of the three variables [(LSS) elements, (WFA) attributes and (CA)] of the current study from the point of view of the sample of the three Armed Forces Depots. This relates to the first question raised in the first chapter of the current study which states [What is the level of the three variables of study (LSS) elements, (WFA) attributes and (CA) elements) in the Armed Forces Depots "Army, Navy, and Air force"?]. The results showed an average of three variables in the statistical analysis of the sample of the three Armed Forces Depots, where the highest index is (WFA) attributes, then (LSS) elements, finally (CA). This is an indication of the Armed Forces Depots tendency with non-directed methodology for applying quality program represented by (LSS) elements to attain (CA) through (WFA) attributes.

5.2.1 Independent Variable "Lean Six Sigma (LSS) Elements

From the statistical mean of the statistical analysis regarding to the practice (LSS) between the Armed Forces Depots, found there are differences between the Depots "Army force, Navy force, and Air force" from the sample point of view that belong to the three types of Depots. The overall result showed "moderate" in Sequential descending (Air Force, Navy Force, and Army Force).

As recorded in the overall mean value (Table 4.1), the following (LSS) elements in Sequential descending according to its effectiveness between the Depots which these elements also inside it describe the Depots in Sequential descending.

- Eliminating or minimizing of all additions or occurrences of everything that is rejected and unnecessary to operations, which disrupts the balance between inputs and outputs that cause Defects was recorded "moderate" with Sequential descending between the Depots (Navy force, Air force, Army force).

- Eliminating or minimizing the existing and added stages that are worthless in the process, and cause double effort that emergence “Extra Process” is "moderate" with Sequential descending between the Depots (Air force, Navy force, Army force).
- Rationalizing the inventory to quantity equivalent to the warehouse capacity and enough to cover the duration of the current tasks until the next quantity arrives that cause emergence “Inventory” is "moderate" with Sequential descending between the Depots (Air force, Navy force, Army force).
- Eliminating or minimizing the unnecessary steps and phases that add no value in transactions and operations that cause emergence “Motion” is "moderate" with Sequential descending between the Depots (Air force, Navy force, Army force).
- The Lack of waste in exploiting and investing in competencies, abilities, for Depots crews in favor of mission objectives that emergence “Non-Utilized Talent” is "moderate" with Sequential descending between the Depots (Air force, Navy force, Army force).
- Eliminating or minimizing the unnecessary movement that permeates operationsand adds no value to the process and cause emergence “Transportation” is "moderate” with Sequential descending between the Depots (Air force, Navy force, Army force).
- Eliminating or minimizing the lost time from the time of operation and not add value to the process to accomplish tasks and cause waiting was recorded “moderate” with Sequential descending between the Depots (Air force, Navy force, Army force).

5.2.2 Dependant Variable Competitive Advantage (CA)

From the statistical mean of the statistical analysis regarding to reach the (CA) among the Armed Forces Depots found there are differences between the Depots “Army force, Navy force, and Air force" from the sample point of view that belong to the three types of Depots. The overall result showed "moderate" in Sequential descending (Air Force, Navy Force, and Army Force).

As recorded in the overall mean value (Table 4.2), the following (CA) elements in Sequential descending according to Competitive Achievement between the Depots which these elements also inside it describe the Depots in Sequential descending.

- Rationalizing the expenditures "spending" to minimum limit on operations and projects that cause emergence competitive in “Costs” is "moderate” with Sequential descending between the Depots (Air force, Navy force, and Army force).
- Reducing the time period associated with completing the operations tasks of the beneficiaries that cause emergence competitive in “Time” is "moderate” with Sequential descending between the Depots (Air force, Navy force, and Army force).
- Providing what meets the expectations of the beneficiaries in completing the tasks that cause emergence competitive in “Quality” is "moderate” with Sequential descending between the Depots (Air force, Navy force, and Army force).
- Singularity of design of ideas as an added value to increase the performance of operations to support beneficiaries to the completion the tasks that cause emergence competitive in “Innovation” is "moderate” with Sequential descending between the Depots (Air force, Navy force, and Army force).

5.2.3 Mediating Variable Workforce Agility (WFA) Attributes

From the statistical mean of the statistical analysis regarding to apply the (WFA) attributes among the Armed Forces Depots found there are differences between the Depots “Army force, Navy force, and Air force" from the sample point of view that belong to the three types of Depots. The overall result showed "moderate" in Sequential descending (Air Force, Navy Force, and Army Force).

As recorded in the overall mean value (Table 4.3), The following (WFA) attributes in Sequential descending according to its applying between the Depots which these attributes also inside it describe the Depots in Sequential descending.

- Depots response to sudden change in the external and internal environment and to perform different tasks in one, that cause emergence achievement application of “Flexibility” is "moderate” with Sequential descending between the Depots (Air force, Navy force, Army force).
- The process of acquiring the skills, experiences and knowledge of the Depots' workers in their current and future jobs in a way that reflects on their performance and behavior that cause emergence achievement application of “Training” is "moderate” with Sequential descending between the Depots (Air force, Navy force, and Army force).

- The full compatibility of the Depots to the environmental shift in the tasks to modify and develop patterns and behaviors to better fit the new environment that cause emergence achievement application of “Adaptability” is "moderate” with Sequential descending between the Depots (Navy force, Air force, Army force).
- An authorization of powers in the power of decision making in the chain of command of duties within a limit to align the Depots tasks that cause emergence achievement application of “Empowerment” is "moderate” with Sequential descending between the Depots (Air force, Navy force, Army force).
- Contribution, participation and involvement in operations to highlight the capabilities and effectiveness of warehouses and their staff as a team in accomplishing tasks that cause emergence achievement application of “Participation” is "moderate” with Sequential descending between the Depots (Air force, Navy force, Army force).
- The engine that drives the Depots crews to do their duties to perform tasks with enthusiasm and mastery to the end that cause emergence achievement application of “Motivation” is "moderate” with Sequential descending between the Depots (Air force, Navy force, Army force).

5.3 Discussion of the Results of the Study Hypotheses

$H_{0.1}$: The results of testing analysis of the 1st main Hypothesis which states [There is no direct effect of (LSS) elements “Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent” on (CA) in Armed Forces Depots “Army, Navy, and Air force” at $\alpha \leq 0.05$] is Partially Acceptance were the (LSS)elements value <0.005 and that means part of the elements have an effect on (CA) that linked to its interpretation to the following sub Hypothesis. The Zero Hypothesis is rejected and accept the alternative hypothesis which state [There is direct effect of (LSS) elements “Defect, Waiting, Transportation, Inventory, Motion, Extra Process, and Non-utilized talent” on (CA) in Armed Forces Depots “Army, Navy, and Air force” at $\alpha \leq 0.05$]. This is consistent with the previous studies of the current present [George (2003)],[Polcyn and Engelman (2006)] which referred that (LSS) is like engine lead to (CA) by meeting the customer's desire, cutting cost and time which part of (CA). The following table will describe the (Accept, Reject) of (LSS) elements on (CA) elements in the sub Hypothesis of (**$H_{0.1}$**).

$H_{0.1.1}$: The results of testing analysis of the 1st Sub Hypothesis derived from the 1st Main Hypothesis which states [There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Time" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$] is Partially Acceptance on the "Time" element of (CA) were the (LSS) elements (Defects, Transportation, Inventory, and Non-Utilized Talent) is rejected because their value <0.005 which it means those elements doesn't effect on the "Time" element, while accepted (Waiting, Motion, and Extra Process).

The Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There is a direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Time" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

From the researcher point of view, issuing all Ammo. types in factory packed, provide the needed equipments, apply electronic internal network for all their Transactions, using the electronic auditing in the inventory operations, and sustaining the crew with the size of the task will help to cut the "Time" and achieve the competitiveness in this part.

This is consistent with the previous studies of the current present [E. V. Gijo and Jiju Antony. (2013).] which referred that (LSS) is like engine lead to Competitive Advantages by saving the Time.

$H_{0.1.2}$: The results of testing analysis of the 2nd Sub Hypothesis derived from the 1st Main Hypothesis which states [There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Quality" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$] is Partially Acceptance on the "Quality" element of (CA) were the (LSS) elements (Defects, Waiting, Motion, and Extra Process) is rejected because their value <0.005 which it means those elements doesn't effect on the "Quality" element, while accepted (Transportation, Inventory, and Non-utilized talent).

The Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There is a direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Quality" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

From the researcher point of view, following the validity of inventory, follow all the processes for fixing Defects, use the Electronic Internal Network in their Transactions, providing needed equipments, suitability crew with the size of the task, and rejection the non-add value process, will help to reach the "Quality" and achieve the competitiveness in this part.

This is consistent with the previous studies of the current present [Vipul, Padmanav and Manoj (2012)] which referred that (LSS) the way treating the Quality in and changing the organization policy to direct to the Competitive Advantage.

$H_{0.1.3}$: The results of testing analysis of the 3rd Sub Hypothesis derived from the 1st Main Hypothesis which states [There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Costs" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$.] is Partially Acceptance on the "Costs" element of (CA)were the (LSS) elements (Defects, Transportation, Motion, Extra Process, and Non-Utilized Talent) have been rejected because their value <0.005 which it means those elements doesn't effect on the "Costs" element, while accepted (Waiting, and Inventory).

The Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There is a direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Costs" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

From the researcher point of view, following the validity of inventory, concern the "packing / wrapping" the stock trading, monitored their operations to reduce any additional process, encourage the new ideas, Use the waste of stock (empty cases, metal) with companies for cutting cost, and retain the existence talent will help to cut the "Costs" and achieve the competitiveness in this part. This is consistent with the previous studies of the current present [Praful Patel (2014)] which referred that (LSS) is a meaning of investing the Costs difference and fewer turnovers of parts and reduced inventories.

$H_{0.1.4}$: The results of testing analysis of the 4th Sub Hypothesis derived from the 1st Main Hypothesis which states [There is no direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the Innovation element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$] is Partially Acceptance on the "Innovation" element of (CA) were the (LSS) element "Inventory" is rejected because their value <0.005 which it means those elements doesn't effect on the "Innovation" element while accepted (Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent).

The Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There is a direct effect of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" on the "Innovation" element of (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$].

From the researcher point of view, creating methods to enhance the value for beneficiaries, gaining and retaining an innovator crew, design their operations to be compatible with the beneficiaries' needs, and creating brainstorming session among their crews to generate ideas will help to reach the "Innovation" and achieve the competitiveness.

This is consistent with the previous studies of the current present [Sunhilde and Simona, (2007)] which referred that (LSS) is a means to the Innovation which it a pillar of (CA) that needs a people and organization upcoming to the change.

$H_{0.2}$: The results of testing analysis of the 2nd Main Hypothesis which states [There is no direct effect of (LSS) elements on (WFA) attributes in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$] is rejected, were the Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There is a direct effect of (LSS) elements on (WFA) attributes in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$]. This is consistent with the previous studies of the current present [Polcyn and Engelman (2006)] which proofed that (LSS) is a means to achieve (CA) with a bridge of (WFA).

$H_{0.3}$: The results of testing analysis of the 3rd main Hypothesis which states [There is no direct effect of (WFA) attributes on (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$] is rejected, were the Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There is a direct effect of (WFA) attributes on (CA) in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$]. This is consistent with the previous studies of the current present [Carol (2007)] refers that the (WFA) attributes is contribution tool to face the sudden change in the environment to become competitive through the reaction of the final beneficiary.

$H_{0.4}$: The results of testing analysis of the 4th main Hypothesis which state [There is no indirect effect of (LSS) elements on (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$] is Full Mediates due to the Mediator role that raise the effectiveness The Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There is indirect effect of (LSS) elements on (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$]. This is consistent with the previous studies of the current present [Breu.et.al (2001)] Prove how the importance of (WFA) attributes as a link tool for new systems to raise the effectiveness.

$H_{0.4.1}$: The results of testing analysis of the 1st sub Hypothesis derived from the forth main Hypothesis which states [There is no indirect effect of (LSS) elements on the "Time" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$] is a Full Mediates due to the Mediator role that raise the effectiveness, so that the Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There is indirect effect of (LSS) elements on the "Time" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$]. This is consistent with the previous studies of the current present [Narendar and Rageev (2004)] this clear that the Employee Involvement is very effective element to reach the organization vision with a turbulence environment and save the time by to reach the competiveness.

$H_{0.4.2}$: The results of testing analysis of the 2nd Sub Hypothesis derived from the 4th Main Hypothesis which states [There is no indirect effect of (LSS) elements on the "Quality" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$] is a Full Mediates. due to the Mediator role that raise the effectiveness, so that the Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There is indirect effect of (LSS) elements on the "Quality" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$]. This is consistent with the previous studies of the current present [Polcyn and Engelman (2006)] this clear that the Employee Involvement is very effective element to reach the organization vision with a turbulence environment and save the time by to reach the competiveness.

$H_{0.4.3}$: The results of testing analysis of the 3rd sub Hypothesis derived from the 4th main Hypothesis which states [There is no indirect effect of (LSS) elements on the "Costs" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$] is Full Mediates due to the Mediator role that raise the effectiveness, so that the Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is indirect effect of (LSS) elements on the "Costs" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$]. This is consistent with the previous studies of the current present [Vipul, Padmanav and Manoj (2012)] This is indicator that (LSS) way to treating the policy of the organization in relationship with (WFA) attributes through changing the organization culture by train, educate, and gaining employees' confidence to reduce the Costs by avoiding the waste to gain the (CA).

$H_{0.4.4}$: The results of testing analysis of the 4th sub Hypothesis derived from the forth main Hypothesis which states [There is no indirect effect of (LSS) elements on the "Innovation" element of (CA) in the presence of (WFA) attributes as a mediator variable among Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$] is Full Mediates due to the Mediator role that raise the effectiveness, so that the Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There is indirect effect of (LSS) elements on the "Innovation" element of (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force" at $\alpha \leq 0.05$]. This is consistent with the previous studies of the current present [Sunhilde and Simona, (2007)] proof that (LSS) is a means to the Innovation which it a pillar of (CA) that needs a people and organization upcoming to the change which means (WFA) attributes for fasting move to (CA).

$H_{0.5}$: The results of testing analysis of the 5th Main Hypothesis which state [There are no differences in the response of the sample about the importance of the three variables of study [(LSS) elements, (WFA) attributes, and (CA)] according to the type of Armed Forces Depots "Army, Navy, and Air force"] is rejected and there are differences in the response of the sample according to the type of Armed Forces Depots, were the Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There are differences in the response of the sample about the importance of the three variables of study [(LSS) elements, (WFA) attributes, and (CA)] according to the type of Armed Forces Depots "Army, Navy, and Air force"] and this is what the following sub Hypothesis will review.

$H_{0.5.1}$: The results of testing analysis of the 1st Sub Hypothesis derived from the 5th Main Hypothesis which states [There Are no differences in the response of the sample about the importance of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" according to the type of Armed Forces Depots "Army, Navy, and Air force"] prove that there are differences in the response of the sample according to the type of Armed Forces Depots, were the Zero Hypothesis is rejected and accept the alternative Hypothesis which state [There are differences in the response of the sample about the importance of (LSS) elements "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent" according to the type of Armed Forces Depots "Army, Navy, and Air force"].

The overall degree of differences between the Armed Forces Depots to the (LSS) was in favor of (Air force Depot) at the expense of the other Forces Depots (Naval, Army). This is consistent with the previous studies of the current present [George (2003)] which proves that (LSS) elements are reason for the transformation and differences for the better.

- **$H_{0.5.2}$**: The results of testing analysis of the 2nd Sub Hypothesis derived from the 5th Main Hypothesis which states [There are no differences in the response of the sample about the importance of (CA) according to the type of Armed Forces Depots "Army, Navy, and Air force"] prove that there are differences in the response of the sample according to the type of Armed Forces Depots, were the Zero Hypothesis is rejected and accept the Alternative Hypothesis which state [There are differences in the response of the sample about the importance of (CA) according to the type of Armed Forces Depots "Army, Navy, and Air force"].

The overall degree of differences between the Armed Forces Depots to the (CA) was in favor of (Air force Depot) at the expense of the other Forces Depots (Naval, Army). This is consistent with the previous studies of the current present [Porter; 1985] which mention that (CA) a tool for creating and sustaining superior performance.

$H_{0.5.3}$: The results of testing analysis of the 3rd Sub Hypothesis derived from the 5th Main Hypothesis which states [There are no differences in the response of the sample about the importance of (WFA) attributes according to the type of Armed Forces Depots "Army, Navy, and Air force"] prove that there are differences in the response of the sample according to the type of Armed Forces Depots, were the Zero Hypothesis is rejected and accept the Alternative Hypothesis which state[There are differences in the response of the sample about the importance of (WFA) attributes according to the type of Armed Forces Depots "Army, Navy, and Air force"].

The overall degree of differences between the Armed Forces Depots to the (WFA) attributes was in favor of (Air force Depot) at the expense of the other Forces Depots (Naval, Army). This is consistent with the previous studies of the current present [Ashutosh (2013)] which mention that (WFA) attributes are a supporting way to achieve competitiveness and link tool reaching the destinations.

5.4 The Conclusions

Through the researcher acquaintance to the previous research and studies that related to the current study, in addition to the results of the descriptive analysis and discussion of the Hypotheses, the researcher will present his conclusion as follows:

5.4.1 Theoretical Conclusion

Through the reading of the previous study the researcher has concluded:

1. The previous literature has touched the evolutionary of quality until appearance of (LSS) with eight elements. Once this type of "Quality" has expanded due to their positive result, some literature devoted their effort to prove its effectiveness and studded deeply to fine more than the original elements (Table 2.2). So that, the current study conclude the compatible elements to the field of study based on the previous literature "Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent".
2. A numerous studies on (CA) that give indication as a tool for creating and sustaining superior performance, There were many concepts has create and the most implicit and comprehensive from the researcher point of view comes from the porter (1985) where the (CA) is the extent to which an organization is able to create a defensible position over its competitors. The researcher concludes that (CA) is based on the previous literature (Table 2.3) and compatible to the field "Time, Quality, Costs, and Innovation".
3. Workforce Agility (WFA) attributes is an effective tool and engine variable were the researcher conclude especially that many programs are not explicit on the composition and the organization's susceptibility to change. The previous literature has touched the evolutionary definitions of (WFA) and studied the attributes were the researcher has concluded the attributes is based on the previous literature (Table 2.2) and compatible to the field "Flexibility, Adaptability, Motivation, Training, Participation, and Empowerment".
4. The current study differed from the other previous literature that has studied two variables only, but the current study sea a knowledge gap between them, so it takes to study it.

5.4.2 Descriptive Conclusion

Through the Descriptive Analysis, it has shown that there are differences in the response of the sample according to the type of Armed Forces Depots "moderate", and these differences explained from the responding degree to the variables which conclude the Air force is the highest respond, then become the Navy Force, after that the Army Force.

1. The differences with (LSS) among the Armed Forces Depots in the following descending order (Air Force, Navy Force, and Army Force) where the most repeated are "Defects, Extra Process, and Motion".
2. The differences between the Armed Forces Depots with (CA) in the following descending order (Air Force, Navy Force, and Army Force) where the greatest element rating is "Costs" and the lowest is the "Innovation".
3. There are differences in (WFA) attributes among the Armed Forces Depots in the following descending order (Air Force, Navy Force, and Army Force) where the greatest element rating is "Flexibility".

5.4.3 Hypothesis Conclusion

The drawing of Hypotheses "based on the questions and objectives presented" opened the door to the researcher to understand the relationship among the three variables and turning the questions into answers.

1. There is a Partially Accepted of $\mathbf{H_{0.1}}$ due to the Partially Accepted of sub Hypothesis, where $\mathbf{H_{0.1.1}}$rejects the (Defects, Transportation, Inventory, and Non-Utilized Talent) but accept (Waiting, Motion, and Extra Process), $\mathbf{H_{0.1.2}}$rejects the (Defects, Waiting, Motion, and Extra Process) but accept (Transportation, Inventory, and Non-utilized talent), $\mathbf{H_{0.1.3}}$ rejects the (Defects, Transportation, Motion, Extra Process, and Non-Utilized Talent) but accept (Waiting, and Inventory), $\mathbf{H_{0.1.4}}$ rejects the (Inventory) but accept(Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent).

2. The $\mathbf{H_{0.2}}$ is rejected, so that there is a direct effect of (LSS) elements on (WFA) attributes in Armed Forces Depots "Army, Navy, and Air force".

3. The $\mathbf{H_{0.3}}$ is rejected, so that there is a direct effect of (WFA) attributes on (CA) in Armed Forces Depots "Army, Navy, and Air force".

4. The $\mathbf{H_{0.4}}$ proved that Full Mediate, so that there is indirect effect of (LSS) elements "on (CA) in the presence of (WFA) attributes as a mediator variable in Armed Forces Depots "Army, Navy, and Air force". Also the sub Hypothesis [$\mathbf{H_{0.4.1}}$, $\mathbf{H_{0.4.2}}$, $\mathbf{H_{0.4.3}}$, $\mathbf{H_{0.4.4}}$] prove that they are Full Mediate in sequentially relay to the sequence of sub Hypothesis (Time, Quality, Costs, and Innovation).

5. The $\mathbf{H_{0.5}}$ is rejected, so that there are differences in the response of the sample about the importance of the three variables of study [(LSS) elements, (WFA) attributes, and (CA)] according to the type of Armed Forces Depots "Army, Navy, and Air force". Also the sub Hypotheses [$\mathbf{H_{0.5.1}}$, $\mathbf{H_{0.5.2}}$, and$\mathbf{H_{0.5.3}}$] proves that there are differences in the response of the sample to the [(LSS) elements, (WFA) attributes, and (CA)] among the Armed Forces Depots.

5.5 Recommendations

After presenting the results of the study and discussing it, the researcher recommends:

1. Holding workshops to spread the culture of (LSS) and (WFA) among the military units to support and cover the differences among the Armed Forces to face the change in the environment.

2. Holding an open workshop among all the Depots through the brainstorm to discuss and analyze the results of the current thesis and develop mechanisms of treatment.

3. Conducting seminars between Depots commanders and the commanders of staffs, units, wings and fleets to create a common language and culture among the Depots and other categories to achieve the (CA).

4. The Investment the three variables [(LSS), (WFA), and (CA)] to increase the efficiency of performance in the Armed Forces Depots through joint field practices between the Depots using a simulation method training in a way that achieves integration among the Depot to achieve (CA).

5. Exchanging of experiences between the Depots to improve their performance.

6. Treating the "Defects, Waiting, Extra Process, Transportation and Motion" in the Army and support it in Navy Depots by providing the needed equipments, applying electronic internal network for all their Transactions, using the electronic auditing in the inventory operations, issuing all Ammo. Types of factory packed, sustaining the crew with the size of the task and continually monitoring their operations.

7. Minimizing the "Inventory" to the equivalent limit for the period until the next quantity arrives to save the cost and avoid the expiration by applying the standards (quantities, compatibles, capacity) to save the types of items in Army Depots.

8. By encouraging the talented crew and motivating them in positive and flexible working environments that will strength the (WFA) in Army and Navy Depots.

9. Continuity training the Air force Depots crew on the (WFA), supporting it in the Navy and creating it in the Army will contribute to face the sudden changes in the environment and raise the effect of the quality system (LSS) on (CA).

10. Involving the crews in making the necessary decisions and exercising the powers of authority in the chain of commands will create (WFA) for highly effectiveness (LSS) quality system to achieve (CA).

11. Creating the Quality Control (QC) departments and concerning the beneficiaries' opinions contribute to raise the (CA) in the Army and Navy Depots.

5.6 Suggestions

The researcher suggested some of the future studies as follows:

1. The need to expand the research on (WFA) attributes which are not yet fully studied, although today, as some studies have indicated, the main pillars in the success of organizations and even the link in the application of quality systems and organizations reaching excellence.
2. Expanding studies and research on the relationship of one of the variables of the current study to the other and study the impact between them at the military levels.
3. Conducting a study of the (LSS) variable whose components did not achieve the effect on the Competitive Advantages "CA" elements.
4. Conduct an in-depth study on the differences between Armed Forces Depots in the application of Lean Six Sigma "LSS".
5. Conduct a similar study for the current study in the civil sector.

6. Conduct a similar study of the current study in different sections within the Force class.
7. Conduct a study with another variables such as [organization culture] as a moderate and [organization structure (organic or mechanics)] as a mediator.

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Appendix (1)

Panel of Referees Committee

المملكة الاردنية الهاشمية

ت	الاسماء	الدرجة العلمية	الجامعة / العمل
1	أ.د شوقي ناجي جواد	استاذ	جامعة عمان العربية
2	أ.د محمد النعيمي	استاذ	الجامعة الاردنية
3	أ.د. حسن الزعبي	استاذ	جامعة العلوم التطبيقية
4	أ.د سامر دحيات	استاذ مشارك	الجامعة الاردنية
5	أ.د رامي الحديثي	استاذ مشارك	الجامعة الاردنية
6	د. فراس الشلبي	استاذ مشارك	جامعة البقاء
7	د. محمد المعايطة	استاذ مشارك	جامعة البقاء
8	د. عبد العزيز الشرباتي	استاذ مشارك	جامعة الشرق الاوسط

رتبت اسماء السادة الخبراء محكمي الأستبانه بجامعات المملكة الأردنية الهاشمية (الجدول اعلاه) حسب الدرجة العلمية والحروف الأبجدية

مملكة البحرين

ت	الاسماء	الدرجة العلمية	الجامعة / العمل
1	د. عبد الستار العوازي	استاذ مساعد	جامعة البحرين
2	د. عفاف بقوة	استذ مشارك	جامعة الخليج العربي
3	العميد الركن المهندس. جاسم محمد الجودر		القوة البحريه
4	العقيد دكتور مهندس. راشد الجلاهمة		مديرية المفتشيه العامة
5	العقيد المهندس. عادل المناعي		مستودعات القوة الجويه
6	العقيد المهندس. حسين الكبيسي		مستودعات القوة البريه
7	النقيب. منى احمد حسان		مستشفى الملك حمد الجامعي

رتبت اسماء السادة الخبراء محكمي الأستبانة بمملكة البحرين (الجدول اعلاه) بدءاً بالجامعات وحسب الدرجة العلمية والحروف الأبجدية ثم القطاع العسكري بحسب الرتبة والأقدمية والمنصب العسكري

Appendix (2)

جـامـعـة الـشـرق الأوسـط
MIDDLE EAST UNIVERSITY
Amman - Jordan

Dear professors and Members of the Royal Bahraini Armed Forces

After greeting and respect

The researcher is currently conducting a study entitled **[Investigating the Mediating Role of Workforce Agility on The Effect of Lean Six Sigma Elements on Competitive Advantage "A Comparative Study Among Royal Bahraini Armed Forces"]** in order to complete the master's degree in Business Administration (MBA) from the Middle East University, Faculty of Business- Business Administration Department, Amman-Jordan.

Because the subject is related to the field of work in the Depots, your opinion is important to the researcher. From this point, the researcher asks you to read the attached questionnaire carefully and answer each paragraph by marking an (x) in the box that corresponds to your opinion in each paragraph.

While the time the researcher expresses thanks for your cooperation, he would like to inform you that the information in the questionnaire will be used for scientific research purposes and will be handled in strict confidence without being seen by anyone.

Thank you for the support and effort to answer the questionnaire

With my sincere thanks and great gratitude

Researcher:
Ghassan Almahmeed

Supervised by:
Dr. Ahmed Ali Salih

November/ 2017

1. Topics of the questionnaire and its paragraphs

Part One

Demographic information

Age (years): □18 – Less 25 □ 25 – Less 32 □ 32 – Less 39
□ 39 and above

Education: □Secondary School □ Diploma □ Bachelor□ Master's degree
□ Doctorate

Position (Rank): □ Officer □ Non-Commissioned Officer
□ Soldier □ Technician

Years of Experience:	□ Less 5	□ 5 – 10□ 11 – 15	□ 16and above
Type of Depot:	□ Army Depot	□ Navy Depot	□ Air force Depot
Division:	□ Receiving	□ Account	□ Ammo.
.	□Armament	□ Weapons	□ Mechanism

Dealing with the Depots: □ Crew □Beneficiaries

Independent Variable and its Elements

Independent Variable (Lean Six Sigma "LSS" elements) (عناصر الإنحراف السداسي الرشيق) :المتغير المستقل

Methodology consists a set of elements (Defect, Waiting, Transportation, Inventory, Motion, Extra processing, and Non-utilized talent) for measuring the level of performance, accuracy, eliminating waste by investing resources and developing efficiency of processes to maximize the value of productivity to support competitiveness.

منهجية تتكون من مجموعة عناصر (العيوب، الإنتظار، النقل، المخزون، الحركة، العمليات الإضافية، و المواهب غير مستغلة) لقياسمستوىالأداء، الدقة، إزالةالهدر بإستثمار المواردو تطويركفاءةالعملياتلتعظيمقيمةالإنتاجيةلدعمالتنافسية.

1- Defects "العيوب":

Eliminating or minimizing of all additions or occurrences of everything that is rejected and unnecessary to operations, which disrupts the balance between inputs and outputs that leads defects or to re-work.

القضاء على أو التقليل من كل إضافة أوحدوث كل ما هومرفوض و غير ضروري علىالعملياتوالذي يخلبالتوازن بين المدخلات و المخرجاتو يؤدي إلى الخطئ أو إعادةالأعمال.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
IV 1.1	The Depots issuing all Ammo types in factory packed (boxes, containers, on based). تصرف المستودعات جميع فئات العتاد مغلفة بأعدادها بتغليف المصنع (صناديق, حاويات, قواعد).					
IV 1.2	The Depots continuously following the validity of inventory to avoid Defects in the inventory. تتابع المستودعات صلاحية المخزون لتلافي نشؤ العيوبفي المخزون.					
IV 1.3	The Depots follow all the processes for fixing Defects. تتابع المستودعات جميع العمليات لإصلاح العيوب .					

2- Waiting "الإنتظار":

Eliminating or minimizing the lost time from the time of operation and not add value to the process, which includes "trading transactions, exchange of information, stages of work, performance of operations" to accomplish tasks.

القضاء على أو التقليل من المدة المستقطعةالضائعة من وقت العملية و غيرذات القيمة التي تتخلل العملية التي تشمل " تداول المعاملات، تبادل المعلومات، مراحل العمل، أداء العمليات" لإنجاز المهام.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
IV 2.1	The Depots provide the needed equipments for faster completion of the task. توفر المستودعات ما يلزم من المعدات لإنجاز أسرع للمهمة.					
IV 2.3	The Depots perform all their Transactions through Electronic Internal Network. تنجز المستودعات جميع معاملاتها خلال شبكة داخلية إلكترونية لتفادي الإنتظار.					

3- Transportation "النقل":

Eliminating or minimizing the unnecessary movement that permeates operations "loading, handling, and trading" and adds no value to the process.

تقضي المستودعات أو التقليل من الحركة غير الضرورية التي تتخلل عمليات " التحميل، المناولة، و التداول" و لا تضيف أيقيمة للعملية

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
IV 3.1	The Depots concerned the "packing / wrapping" operations for accelerate the stock trading. تحرصالمستودعاتعلى عمليات" التعبئة, التغليف" لسرعة تداول المخزون.					
IV 3.2	The Depots apply a cargo tracking system to locate the shipment. تطبق المستودعات نظام تتبع الشحنات لتقصي موقع الشحنة.					
IV 3.3	The Depots are used Multipurpose mechanisms for minimize the unnecessary movement تستخدم المستودعات آليات متعددة الأغراض لتقليل الحركة غير الضرورية.					

Independent Variable and its Elements

4- Inventory "المخزون":

Rationalizing the inventory to quantity equivalent to the warehouse capacity and enough to cover the duration of the current tasks until the next quantityarrives.

ترشيد المخزون إلى الكمية المكافئة لسعة المستودع و بحد يكفي تغطية مدة المهام الحالية إلى حين موعد وصول الكمية التالية.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
IV 4.1	The Depots apply the standards of inventory (quantities, compatibles, capacity). تطبق المستودعات معايير الخزن (الكميات, تجانس المخزون, سعة المستودع).					
IV 4.2	The Depots minimize the inventory to the equivalent limit for the period until the next quantity arrives. تخفظ المستودعات المخزون إلى الحد المكافيئ للمدة لحين وصول الكمية التالية.					
IV 4.3	The Depots use electronic auditing in the inventory operations. تستخدم المستودعات التدقيق الإلكتروني في عمليات الجرد.					
IV 4.4	The Depots confirm the stock arrangement to fits with the rotation rates. ترتب المستودعات المخزون بحسب معدلات الطلب.					

5- Motion "الحركة":

Eliminating or minimizing the unnecessary steps and phases that add no value in transactions and operations.

تقضي المستودعات أو التقليل من المراحل و الخطوات الزائدة التي لا داعي لها ولاتضيفأيقيمةفي المعاملات و العمليات.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
IV 5.1	The Depots are committed to specific steps to accomplish tasks. تلتزم المستودعاتبالخطوات المحددة لإنجاز المهمات.					
IV 5.2	The Depots are keen to sequence the operations to reduce excess motion. تحرص المستودعاتتتابعالعملياتللحدمنالحركةالزائدة.					
IV 5.3	The Depots take into account the suitability of the crew with the size of the task. تراعى المستودعات تكافؤعدد الطاقم مع حجم المهمة.					

6- Extra processes "العملياتالإضافية":

Eliminating or minimizing the existing and added stages that are worthless in the process, thus wasting the performance effort.

تقضي المستودعات أو التقليل من المراحل الموجودة والمضافة التي لا قيمة لهافي العملية مما يضيعجهد الأداء.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
IV 6.1	The Depots are performed transactions in process of value. تنجز المستودعات معاملاتها ضمن مراحل ذات قيمة.					
IV 6.2	The Depots have continually monitored their operations to reduce any additional process. تراقب المستودعات عملياتها بإستمرار لتقليص أي عمليات إضافية.					
IV 6.3	The Depots combine all similar operations to perform faster tasks. تدمج المستودعات كل العمليات المتماثلة لإنجاز أسرع للمهام.					

7- Non-Utilized Talent "المواهب غير المُستغلة":

The Lack of waste in exploiting and investing in competencies, abilities, for Depots crews in favor of mission objectives.

عدم وجود هدر في استغلال واستثمار الكفايات، القدرات لديمنتسبي المستودعات لصالح أهدافالعمل.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
IV 7.1	The Depots encourage new ideas. تشجع المستودعات الأفكار الجديدة.					
IV 7.2	The Depotsmotivate the existing talentsand exploit it for work. تحفز المستودعات المواهب الموجودة لإستثمارها لصالح العمل.					
IV 7.3	The Depots retain the existence talent. تحافظ المستودعات على بقاء المواهب.					

Dependent Variable and its Elements

Dependent Variable (Competitive Advantage) (الميزة التنافسية) :المتغير التابع

The uniqueness and difference in the (Time, Quality, Costs, and Innovation) that increase the value of output and gain the benchmark between the competitors.

التفرد و الإختلافففي (الوقت، الجودة، الكلفُ، و الإبداع) والتي تزيد من قيمة المُخرَج و كسب المقارنة المرجعية بين المنافسين

1- Time "الوقت":

Reducing the time period associated with completing the operations tasks of the beneficiaries.

تقليصالمدة الزمنية المرتبطبإتمام مهامالعمليات للمستفيدين.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
DV1.1	The Depots are committed to prepare the shipments in short time. تجهز المستودعات الشحنات في وقت قصير.					
DV1.2	The Shipments arrive at depots points at the estimated time. تصل الشحنات لنقاط المستودعات في الوقت المقدر.					
DV1.3	The beneficiaries receive their shipments on time. تستلم الجهات المستفيدة شحناتهم في الوقت المحدد.					
DV1.4	The timing of completion of depots operations is acceptable to beneficiaries. تكون توقيتات إتمام العمليات بالمستودعات مقبولة لدى المستفيدين.					

2- Quality "الجودة":

Providing what meets the expectations of the beneficiaries in completing the tasks.

تقديم ما يتوافق مع توقعات المستفيدين في إتمام إنجاز المهمات.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
DV2.1	The Depots are concerned with beneficiaries' opinions to determine the level of completion of the operations. تهتم المستودعات بآراء المستفيدين لمعرفة مستوى إنجاز العمليات.					
DV2.2	The Depots have Quality Control (QC) departments. تتواجد في المستودعات أقسام لمراقبة الجودة.					
DV2.3	The Depots secure the beneficiaries with what they need to support their convoy on the road. تؤمن المستودعات شحنات المستفيدين بما يلزم من إسناد قوافلهم على الطريق.					
DV2.4	The Depots use Statistical Process Control "SPQ"to monitor operations. تستخدم المستودعاتالتدقيقالإحصائي لمراقبة العمليات.					

Dependent Variable and its Elements

3- Costs "ألكلف":

Rationalizing the expenditures "spending" to minimum limit on operations and projects.

ترشيد الإنفاق إلى حدودة الدنيا على العمليات و المشاريع.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
DV3.1	The Depots utilize waste of stock (empty cases, metal) with companies for cutting cost to buy a new stock. تستغل المستودعات مخلفات المخزون (فوارغ، معادن) مع الشركات لخفظ كلف شراء مخزون جديد.					
DV3.2	The Depots have effective expertise in rationalizing costs. تمتلك المستودعات الخبرات الفاعلة في تقليل الكلف.					
DV3.3	The Depots balance their projects between low costs and performance. توازن المستودعات في مشاريعها بين الكلف المنخفضة و الأداء.					
DV3.4	The Depots considered as benchmark to other weapons. تعد المستودعات مقارن مرجعي بين نضرائها في الأسلحة الأخرى.					

4- Innovation "الإبداع":

Singularity of design of ideas as an added value to increase the performance of operations to support beneficiaries to the completion the tasks.

الإنفراد بالتصميم للأفكار كقيمة مضافة لرفعأداء العملياتوإسنادالمستفيدينفي إنجاز المهام.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
DV4.1	The Depots create methods that enhance the value delivered of beneficiaries. تبتكر المستودعات أساليب تخدم متطلبات المستفيدين.					
DV4.2	The Depots are differentiated by an innovator crew. تتميز المستودعات بطاقم مبدع.					
DV4.3	The Depots design their operations to be compatible with the beneficiaries' needs. تصمم المستودعات عملياتها لتتوافق مع احتياجات المستفيدين.					
DV4.4	The Depots do a brainstorming session among their crews to generate ideas. تقيم المستودعات حلقات العصف الذهنيبين طواقمها لتوليد الأفكار.					

Mediator Variable and its Attributes

Mediator Variable (Workforce Agility "WFA" attributes) (المتغير الوسيط"سمات رشاقةالقوىالعاملة"):

Are complementary features of the Organization and its crews consists a set of (Flexibility, Adaptability, Motivation, Training, Participation, and Empowerment) use to respond quickly and flexibly to the sudden change and adapt easily to unexpected external and internal environmental changes.

سماتتكامليةللمنظمة و طاقمها تشمل (المرونه، التكييف، الدافعية، التدريب، المشاركة، و التمكين) و تستخدم للاستجابة السريعة و التغير المفاجئوالتكيف بسهولةمعالتغيراتالبيئيةالخارجية و الداخليةغيرمتوقعة.

1- Flexibility "المرونة":

Depots response to sudden change in the external and internal environment and to perform different tasks in one.

إستجابة المستودعات للتغير المفاجئ في البيئة الخارجية و الداخلية و العملبمهاممختلفةفي آنواحد.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
MV1.1	The Depots respond to sudden environmental change. تستجيب المستودعات للتغير البيئي المفاجئ.					
MV1.2	The Depots perform their tasks simultaneously amid pressures of environmental change. تؤدي المستودعاتمهامها في آن واحد وسط ضغوطات التغير البيئي.					
MV1.3	The Depots encourage exchanging information to accomplish tasks effectively. تشجع المستودعات تبادل المعلومات بين أقسامها لإنجاز المهام بفاعلية.					

2- Adaptability "التكيف":

Full compatibility of the Depots to the environmental shift in the tasks to modify and develop patterns and behaviors to better fit the new environment.

الإنسجام التاملمستودعات للتحول البيئي المفاجي في المهمات بتعديلو تطويرالأنماطوالسلوكياتلملائمةالبيئةالجديدةبشكلأفضل.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
MV2.1	The Depots achieve rapid harmonization with sudden environmental changes for new environmental work. تحقق المستودعات الإنسجام السريع مع التغير البيئي المفاجئ لبيئة عمل جديدة.					
MV2.2	There is a desire for the Depots to learn new tasks تتوافر الرغبة لدى المستودعاتلتعُلم المهام الجديدة.					
MV2.3	The Depots adjust their plans to respond to environmental changes. تعدل المستودعات خططها إستجابة للتغير البيئي.					

3- Motivation "الدافعية":

The engine that drives the Depots crews to do their duties to perform tasks with enthusiasm and mastery to the end.

المحرك الدافع لطواقم المستودعات للقيامبالواجبات و أداء المهامبحماسية و إتقان للنهاية.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
MV3.1	The Depots provide a positive working environment. توفر المستودعات بيئة عمل إيجابية.					
MV3.2	The Depots operate as a team. تعمل المستودعات بروح الفريق.					
MV3.3	The Depots stimulate the development ideas with encouraging rewards (financially, day off, advantages) تحفز المستودعات الأفكار التطويرية بمكافآت تشجيعية (مادية، إجازات، مميزات).					

Mediator Variable and its Attributes

4- Training "التدريب":

The process of acquiring the skills, experiences and knowledge of the Depots' workers in their current and future jobs in a way that reflects on their performance and behavior.

عملية إكساب المهارات و الخبرات و المعارف للعاملين في المستودعات بوظائفهم الحالية و المستقبلية بشكل ينعكس على أدائهم و سلوكياتهم.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
MV4.1	The Depots involve their crews in different training courses. تشرك المستودعات طاقمها في دورات تدريبية مختلفة.					
MV4.2	The training achieves the workforceAgility attributes. تهتم المستودعات بالتدريب لتحقيق سماتالقوىالعاملة المرنه .					
MV4.3	The Depots consider the career path in their training plans. تراعي المستودعات متطلبات المسار الوظيفي في خططها التدريبية.					

5- Participation "المشاركة":

Contribution, participation and involvement in operations to highlight the capabilities and effectiveness of warehouses and their staff as a team in accomplishing tasks.

المساهمة و الإشتراك و التعشيق في العمليات لإبراز قدرات وفاعليةالمستودعاتو طاقمهاكفريق عمل في إنجاز المهام.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
MV5.1	The Depots involve their crews in making the necessary decisions to cope with environmental change. تشرك المستودعات طواقمها في صناعة القرارات اللازمة لمواجهة التغير البيئي.					
MV5.2	The beneficiaries contribute with their opinions to the development of Depots operations. تساهم الجهات المستفيدة من خلال تقديم آرائها في تطوير عمليات المستودعات.					
MV5.3	The Depots rotate their crews among their duties to enrich their expertise تدور المستودعات طواقمها بين واجباتهم لإثراء الخبرات.					

6- Empowerment "التمكين":

An authorization of powers in the power of decision making in the chain of command of duties within a limit to align the Depots tasks.

تخويل الصلاحيات في سلطة إتخاذ القرار في التسلسل القيادي بحدود الواجباتبمايتماشىمعمهماتالمستودعات.

		5 أتفق بشدة Strongly Agree	4 أتفق Agree	3 محايد Neutral	2 لا أتفق Disagree	1 لا أتفق بشدة Strongly Disagree
MV6.1	The Depots exercise the powers of authority in the chain of command. تمارس المستودعات تخويل الصلاحيات في التسلسل القيادي.					
MV6.2	The Depots are given an extraordinary decision authority to deal with the situations on time. تمنح المستودعات سلطة القرار الاستثنائي للتعامل مع الحدث في وقته.					
MV6.3	The Depots drive to interact closely with the powers of authority. تدفع المستودعات بالتفاعل عن قرب مع العمل بتخويل الصلاحيات.					

Appendix (3)

بسم الله الرحمن الرحيم

سفارة مملكة البحرين
مكتب الملحق العسكري
المملكة الأردنية الهاشمية - عمان

Embassy Of Kingdom of Bahrain
Military Attache Office
Hashemite Kingdom Of Jordan

الرقم: م ع / د ج / 6 - 177
التاريخ : 4 / 5 / 2017

عطوفة الأستاذ الدكتور محمد الحيلة المحترم
رئيس جامعة الشرق الأوسط

السلام عليكم و رحمة الله و بركاته

الموضوع : الدراسات الجامعية

1. نهدي لكم تحياتنا ويطيب لنا إعلامكم بأنه لا مانع لدينا من استمرار الرائد مهندس غسان المحاميد في رسالته المعروضة على اللجنة العلمية الموقرة للمناقشة بعنوان (The Effect of learn – six sigma on competitive advantage : An Empirical study in Bahrain Defence Force) ، على أن لا يكون لمحتوى الرسالة أي بيانات سرية تمس قوة دفاع البحرين وأن تكون اللجنة المشرفة خاضعة للسرية .

2. لإجراءاتكم لطفاً .

وتفضلوا بقبول فائق الاحترام و التقدير

العقيد الركن مهندس
خليفة بن عبدالله آل خليفة
الملحق العسكري البحريني

منطقة العبدلي - حي الشميساني - شارع فارس الخوري - ص.ب ٩٤٠٩٢٨ عمان ١١١٩٤ الأردن - مكتب: ٠٠٩٦٢٦٥٦٢٥٨٥٨ - فاكس: ٠٠٩٦٢٦٥٦٢٥٨٥٥
Abdali - Shmeisani neighborhood - Faris Alkouri Street - P.O.Box 940928 Amman 11194 Jordan - Office: 0096265625858 - Fax: 0096265625855
milatt1@hotmail.com