

بسم الله الرحمن الرحيم



## **HEBRON UNIVERSITY**

Faculty of Graduate Studies and Academic Research  
Management and Finance Department

# **Implications of Organizational Variables on Waste Management of the Stone and Marble Sector in the City of Hebron**

**انعكاسات المتغيرات التنظيمية لإدارة النفايات لدى قطاع الحجر  
والرخام في مدينة الخليل**

A Thesis

Presented to the Faculty of the Graduate Studies and Academic  
Research- Hebron University

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Waste Management of the Stone and Marble  
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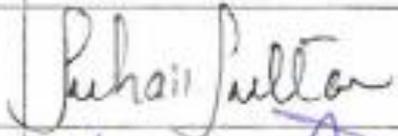
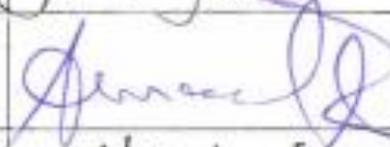
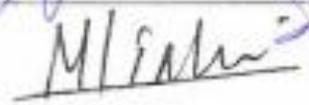
# انعكاسات المتغيرات التنظيمية لإدارة النفقات لدى قطاع الحجر والرخام في مدينة الخليل

# Implications of Organizational Variables on Waste Management of the Stone and Marble Sector in the City of Hebron

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والرخام في مدينة الخليل

By:  
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This thesis was successfully defended on June/4<sup>th</sup> /2014 and approved by:

Committee of Examiners	Title	Signature
Dr. Suhail Sultan	Supervisor	
Dr. Ibrahim Awad	External Examiner	
Dr. Mohammad Jabari	Internal Examiner	

## **Dedication**

*This effort is dedicated to my homeland; Palestine; its people whom I wish  
to get the most benefit of it.*

*Dedicated to my inspiration source and beacons of light through  
darkness: my mother, my brothers: Hasan, Marwan, Ghassan, Ayman,  
and Sadeq, my sisters: Na'ela and Halah.*

*To my soul mate; my Husband; Adel, to family and my daughter Salma  
who added luster to final touches.*

*To the memory of my father whom I wished so much to attend such an  
effort.*

*To those who support me behind the scenes.*

*To all who encourage, inspire and support me.*

## **Acknowledgement**

My sincere and deepest gratitude to ALMIGHTY ALLAH for granting me the chance to accomplish this study.

A million- mile- trip begins with a single step, same as any tough or difficult task. So that, it would be with greater value when it is accomplished with the help of supportive people.

Therefore, I would like to thank all who offered me help and support, through my study. Especially my supervisor,

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I would like to thank my University; Hebron University, lecturers; especially Dr. Rateb Jabari, Dr. Mohammad Jabari, Dr. Basel Natsheh and Mr. Monther Alqam for their encouragement and advice .And the committee of examiners for honoring me approving this study.

Also, would like to thank: Stone and marble

Union- Hebron Branch Staff, Jostone in Jordan, Stone and marble Center at Palestine Polytechnic University and Dr. Bassam Banat.

And all who offered help and support without exception.

## Summary

This study aimed to study the implications of organizational variables of waste management of stone and marble sector in the city of Hebron. Since it is considered as one of the most important industrial sectors in Hebron. And to evaluate current situation by observing waste management techniques if exist, or suggesting proper techniques. Also, to enhance performance by taking advantage of any possible academic industrial cooperation.

The analytical descriptive approach (qualitative and quantitative) was used; where the population of the study consists of (110) establishments specialized in stone and marble industry in the city of Hebron. Also, interview and questionnaire were used as study tools; interview was used to gather primary information, while questionnaire was used for gathering other required information and statistics.

Study sample consisted of (75) establishments, by calculating sample size using "Thompson's Formula", and then choosing random stratified sample, then analyzing information by using the Statistical Package for the Social Sciences Program (SPSS).

Study tool validity was performed by reviewing the questionnaire by a group of referees and expert arbitrators; language and statistical analysis referees. Along with applying a pilot study by circulating it to 5 random establishments and calculating the factor analysis as well.

On the other hand, study stability was checked regarding its various aspects, according to "Internal Consistency" method by calculating the (Chronbach Alpha) reliability equation, with total of 94% regarding questionnaire number of paragraphs.

Statistical analysis was performed by (SPSS) using: t- test, one way analysis of variance, Chronbach Alpha Formula, and Factor Analysis.

Study resulted that the level of reducing waste of stone and marble sector in Hebron was high. While the level of reusing and recycling waste was both Moderate. And the performance level of the mentioned sector was also moderate, considering growth and creativity in the first place, in addition to internal business, and customers, then came the financial issues.

Recommendations were summarized in raising level of education for both managers and workers by holding workshops and lectures, and participating in international exhibitions, in order to introduce the importance of such a sector. In addition to encourage using new suitable techniques in production and waste management which positively enhance the stone and marble sector.

## ملخص

هدفت هذه الدراسة إلى دراسة انعكاسات المتغيرات التنظيمية لإدارة النفايات لدى قطاع الحجر والرخام في مدينة الخليل، وذلك لما يمتاز به هذا القطاع من كونه قطاعاً هاماً ودعامة من دعائم الصناعة في مدينة الخليل. حيث هدفت أيضاً إلى تقييم الوضع الحالي للقطاع من خلال رصد طرق إدارة النفايات المستخدمة في حال وجودها، واقتراح طرق مناسبة، والاستفادة من أي تعاون صناعي أكاديمي يمكن أن يسهم في تحقيق تحسين أداء هذا القطاع.

من أجل إعداد هذه الدراسة، تم استخدام المنهج الوصفي التحليلي (الكمي والكيفي) وقد تكوّن مجتمع الدراسة من (110) منشأة تختص بصناعة الحجر والرخام في مدينة الخليل، وكذلك تم استخدام المقابلة والاستبانة كأداة لإجراء الدراسة؛ حيث تم استخدام المقابلة من أجل جمع المعلومات الأولية، ومن ثم استخدام الاستبانة كأداة لجمع البيانات الأخرى، وقد تم توزيعها على عينة الدراسة البالغة (75) منشأة بعد حسابها عن طريق معادلة "ثومبسون"، حيث تم اختيار عينة طبقية عشوائية، ومن ثم جرى تحليل البيانات باستخدام برنامج الحزم الإحصائية للعلوم الاجتماعية (SPSS).

وقد تم التحقق من صدق أداة الدراسة، حيث تم عرض الاستبانة على عدد من المحكمين لغوياً وموضوعياً وإحصائياً وذوي الخبرة والاختصاص. كذلك تم إجراء دراسة تجريبية (Pilot Study) حيث تم توزيع حوالي (5) استبانات بشكل عشوائي ومن ثم إجراء تحليل إحصائي مبدئي عن طريق حساب التحليل العاملي (Factor Analysis).

وتم أيضاً التحقق من ثبات أداة الدراسة، وذلك عن طريق اختبار الإتساق الداخلي (Internal Consistency) عن طريق حساب قيمة معامل كرونباخ ألفا (Chronbach Alpha) بمجموع (94%) بالنسبة لعدد فقرات الاستبانة. وقد تم إجراء التحليلات الإحصائية باستخدام برنامج (SPSS) وباستخدام كل من: اختبار - ت، اختبار تحليل التباين الأحادي، معامل الثبات "كرونباخ ألفا"، وحساب التحليل العاملي.

من أبرز النتائج التي خرجت بها الدراسة أن مستوى تقليل مخلفات الحجر والرخام في مدينة الخليل من وجهة نظر أصحاب المنشآت كان عالياً. وأن مستوى إعادة استخدام وإعادة تصنيع المخلفات كان أيضاً متوسطاً. وكذلك مستوى الأداء لدى القطاع المذكور كان متوسطاً، وقد كان في المقدمة الحرص على النمو والإبداع في المنشأة، آخذين بعين الاعتبار العمليات الداخلية، والأمور المتعلقة بالزبائن، والجوانب المالية فيها.

أما أهم التوصيات فتم إيجازها في العمل على رفع مستوى التعليم لكل من أصحاب المنشآت والعمال، وذلك من خلال عقد المحاضرات وورشات العمل، وكذلك المشاركة في المعارض الدولية، من أجل التعريف بأهمية هذا القطاع. ومن ناحية أخرى أن يتم تشجيع استخدام طرق تكنولوجية جديدة ومناسبة في الإنتاج وإدارة النفايات، والتي تسهم في تحسين أداء القطاع بشكل إيجابي.

## Chapter One:

### INTRODUCTION

#### **1.0 Study Structure:**

The study was classified into five main parts. Chapter one was specified for introductory idea about study problem, its main question(s), significance, objectives, hypotheses, terminology definition, study scope and limitations.

While chapter two talked about the literature review, where it discussed the theoretical framework, and analyzed some related previous studies.

Chapter three discussed the study methodology, population and sample, its validity and reliability, along with chapter four, which discussed the statistical analysis in details.

Chapter five presented the study findings and conclusion, and suggested some related recommendation, as an attempt for offering some ideas or solutions for the study main problem.

#### **1.1 Introduction:**

**E**very civilization- through ages- has its own distinguishing characteristics and features, whether social, political, financial, or any other features.

Palestine, a part of this universe, possesses a distinguishing features as well, whether related to its strategic location and natural resources among others, which partially was a reason for occupying it through different periods of time.

Furthermore, the city of Hebron, has special industrial features, specifically the stone and marble industry, which has a significant share of its industry, due to the nature of land composition and existence of mountains.

Through time, Stone and marble industry formed an integral sector, followed by forming the Union of Stone and marble in 1996 as a non-profit organization to manage the sector issues, problem solving and developing such an industry<sup>(1)</sup>. Normally, as any industry, producing waste along with products. Thus, obviously more waste means more consumption of raw material, which partially emphasizes the economical problem of scarce resources versus endless needs. Furthermore, such an issue may cause a significant problem to rise up, when the waste is disposed insufficiently, which may lead to a serious problem threatens our environment. Consequently, the current situation of stone and marble waste management formed a motive to carry out the study, as an attempt to output some ideas and recommendations for enhancing and developing such an industry.

## **1.2 Study Problem:**

Since stone and marble waste management is almost ignored, along with its related techniques; or the current used techniques are considered not effective, the idea of applying this study was suggested, hoping for having new effective, cost saving, improving techniques, in order to output the results and recommendations. Knowing that the average daily production of stone and marble waste is around 5 cubic meters<sup>(2)</sup>. Furthermore, identifying such matters will help the industrial sector to avoid such problems, or even to eliminate its negative effect, such negative effect can be classified as environmental or financial one.

Therefore, the problem approach may be depicted in the following main question:

**To what extent will the waste management contribute in enhancing the stone and marble sector in the city of Hebron, from establishments' managers' (owners') point of view?**

The answer to such question is expected to be with the form of statistics and steps as well, then translated into recommendations in order to lead to good management sector enhancement.

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<sup>(1)</sup>: Tarawa, Wisam, *The role of "Union of Stone and Marble industry" in developing its industry in the south of the West Bank according to members' point of view*, page 1, Hebron University, 2012.

<sup>(2)</sup>: Industrial Modernization Center, Palestinian Federation of Industry, *Palestinian Stone and marble Industry*, May 2005.

### **1.3 Study Questions:**

The main study question is:

**To what extent will the waste management contribute in enhancing the stone and marble sector in the city of Hebron, from establishments' managers' (owners') point of view?**

To answer the main question, sub questions were raised concerning several issues to be discussed. For instance:

1. Effect of waste management on the following approaches (or indicators) to the stone and marble sector:

- Sales (volume of trade)
- Exporting
- Number of employees
- Cost minimization and profit maximization
- Market share

2. Waste management techniques used so far:

- To what extent these techniques are fit or suitable to such a sector.
- Availability of applying new waste management techniques.

**Questions No. 1:** To what extent the level of reducing stone and marble waste in the city of Hebron is effective?

**Questions No. 2:** To what extent the level of reusing stone and marble waste in the city of Hebron is effective?

**Questions No. 3:** To what extent the level of recycling stone and marble waste in the city of Hebron is effective?

**Questions No. 4:** What are the techniques that could be used to manage the waste of stone and marble in the city of Hebron?

**Questions No. 5:** What is the level of performance of stone and marble sector in the city of Hebron, through waste management?

#### **1.4 Study Significance:**

The significance of the study derived from applying it to one of the most important industrial sectors, the stone and marble sector, which forms a significant part of our economy, especially in Hebron city.

Also, to enable the stone and marble sector to attain the most recent, safest, most correct methods of avoiding environment pollution.

Furthermore, study significance lies in its multi-dimensional aspects as a scientific, industrial, environmental (ecological) and economical study.

And, since stone and marble sector lacks and looks for such studies to help improving performance and circumstances.

On the other hand, some technical industrial information and tips, may help during the study performing, since the industrial field is considered as the researcher interest and work field.

#### **1.5 Study Objectives:**

The idea of adopting this study was emerged, in order to enhance performance of the Stone and marble sector through its waste management in the city of Hebron.

The main objectives of the study can be stated as follows:

- Evaluating the current situation of the stone and marble sector waste management from the following aspects:
  - Discussing the nature of waste management techniques used (if exist), and to which extent these techniques are fit or suitable to such a sector.
  - Studying any prospected new plans for such waste management techniques.
  - Taking the advantage from the cooperation between Academic sector and stone and marble sector as well
  - Concluding financially and socially feedback of applying waste management techniques, in order to contribute in developing such a sector.

- Enhancing the performance of stone and marble sector through waste management by adopting several management approaches:
  - Sales (volume of trade)
  - Export
  - Number of employees
  - Market share
  - Cost minimization and profit maximization.

## **1.6 Study Hypotheses:**

### **Introduction:**

This section represents study hypotheses within a statistical view, trying to examine the correlation between study variables.

**Main Hypothesis: There are no statistical significant differences in *waste management* of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners.**

This hypothesis will measure the differences according to the variables:

- **Years of experience**
- **Establishment year**
- **Legal status**
- **If establishment holds certificate of quality or not.**

And sub- hypotheses can be depicted as explained in section (4.3).

## **1.7 Study Terminologies:**

### **Procedural Definition:**

- **Waste Management:** The procedure(s) of managing the different stages of waste treating: collection, recovery and disposal of waste, taking into consideration the concept of waste reduction.

## **1.8 Study Scope and Limitations:**

The study has been performed in the city of Hebron and specifically, in the stone and marble sector establishments.

Some difficulties were encountered during performing the study, such as the difficulties during data collection stage, and while obtaining questionnaire answers from the respondents. Nevertheless, such difficulties disappeared by the help of other supportive parties.

## Chapter Two:

### Literature Review

#### 2.1 Introduction:

This chapter includes five parts; the first part discussed the theoretical framework of the study, which includes historical overview about Hebron city, overview of stone and marble sector. Second and third parts discussed definition of related terms, while the fourth part explained the idea of balanced scorecard, and finally, the fifth part included the previous studies discussion.

#### 2.2 Theoretical Framework:

##### 2.2.1 A Historical Overview of the city of Hebron

Hebron city was named after "Khalil Al-Rahman", which literary means "friend of the Merciful (ALLAH)", which is the name for the Prophet Ibrahim (PBUH), the grandfather of prophets, who came to this city in 2000 BC<sup>(3)</sup>.

The city of Hebron is the center of Hebron governorate, one of the oldest inhabited cities in the world, and its history dates back to more than 6,000 years, and is considered as the second holiest city in Palestine after Holy Jerusalem. And it accommodates one of the most important churches, the Abraham's Oak Holy Trinity Monastery<sup>(4)</sup>.

Population of Hebron city were estimated as (183,312) in the year 2011<sup>(5)</sup>.

The city lies on a hill with valleys in between, with area of 22.8 km<sup>2</sup><sup>(6)</sup>, rising 940 meters above sea level, around 33 kilometers to southern side of Jerusalem, and about 25 kilometers to the southern part of Bethlehem too. And is famous for its various industries, as: glass, pottery and others, also well known with agriculture and trading.

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<sup>(3)</sup> : (<http://www.hebron.edu/en/about-hu/hebron-city.html>)

<sup>(4)</sup> : *Industrial and craftsmanship Directory, Hebron Governorate*, Hebron Chamber of Commerce and industry (HCCI), 2012.

<sup>(5)</sup> : Palestinian Central Bureau of Statistics, 2011, *Hebron Governorate Statistical Yearbook (3)*, Ramallah, Palestine. (<http://pcbs.gov.ps/Portals/PCBS/Downloads/book1799.pdf>.)

<sup>(6)</sup> : (<http://ar.wikipedia.org/wiki>) (Hebron City).

### 2.2.2 Palestinian Industrial Sector

Industry is considered one of the most distinguishing features of Palestine and considered as the main component of Palestinian economy, by providing a local products, deployment, and increase in GDP<sup>(7)</sup>.

Regardless the fluctuation of industry indicators through decades, it is still in the foreground as a distinctive characteristic of Palestinian economy.

Since 1940's up to the present time, many problems faced industry, such as<sup>(8)</sup>:

- Lack of investments capital
- Rising cost of raw material
- Industrial establishments were classified as small establishments
- Obstacles set by occupation authorities against industry
- Drawbacks of sales level
- Consumers' low purchasing power
- Decrease of demand for local products
- foreign competition
- Transportation cost (for certain industries)

The Palestinian central bureau of statistics mentioned that industries in Palestine are classified since 1997 as <sup>(9)</sup>:

1. Extractive industries, as: stone and marble extraction and manufacturing.
2. Manufacturing industries, with larger share.

Data of The Palestinian central bureau of statistics mentioned that the contribution of GDP of the industrial sector was (5728) million dollars with a percent of 2.3%.

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<sup>(7)</sup>: Tarawa, Wisam, *The role of "Union of Stone and Marble industry" in developing its industry in the West Bank according to members' point of view*, page 31, Hebron University, 2012.

<sup>(8)</sup>: (<http://www.wafa.ps/english/index.php?action=detail&id=12216>).

<sup>(9)</sup>: Previous reference.

Table (2.1) shows the contribution of GDB by industrial sector for the years 1985, 1999, 2002, and 2007 <sup>(10)</sup>:

Year	1985	1999	2002	2007
Contribution of GDB by industrial sector	8%	17%	12%	16%

Table (2.1): Contribution of GDB by industrial sector for the years 1985, 1999, 2002, and 2007.

According to a study performed by Palestinian Federation of Industry and Industrial Modernization Center, tasks and qualifications of industrial sector includes <sup>(11)</sup>:

1. Preparing and developing industrial programs and studying the industrial sector demands.
2. Representing the industrial sector issues at other formal and informal parties, inside or outside Palestine.
3. Developing its professional competitive abilities.
4. Participating in industrial and economic events.
5. Cooperate with ministries in preparing industrial and economical agreements.

### **2.2.3 Stone and Marble Sector**

Stone and marble were used since the existence of first civilizations, due to its physical and mechanical characteristics and availability as a natural raw material in different locations and shapes<sup>(12)</sup>. In Palestine, many vivid examples depict clearly the stone and marble historical existence, as Abraham mosque, churches, Al-Aqsa mosque, and other ancient buildings.

The industry was basically focused in Nablus, Jerusalem, and Hebron, with a percentage of 2.9% of industrial establishments in the year of 1965, where primitive methods were used in excavating and forming the stones.

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<sup>(10)</sup>:Tarawa, Wisam, *The role of "Union of Stone and Marble industry" in developing its industry in the West Bank according to members' point of view*, page 32, Hebron University, 2012.

<sup>(11)</sup>: Industrial Modernization Center, Palestinian Federation of Industry, *Palestinian Stone and marble Industry*, May 2005.

<sup>(12)</sup>: Alqadi, Bassem, *Local economic development opportunities using participatory appraisal of competitive advantage*, page33, Hebron University, 2010.

Through years after, this industry has been developed in a qualitative manner whether increase of establishments' number, or the technology used, which positively reflected on production quantities and product quality enhancement<sup>(13)</sup>.

The stone and marble industries represent 15% of the overall number of the industrial establishments in Hebron governorate and count (490) establishments<sup>(14)</sup>, varying as manufacturing establishments or workshops or even quarries.

The portfolio of the stone and marble industries varies and includes but not limited to: Raw blocks, Dimension stones, Building stones, Tiles, Slaps, Stone decorative products, Basins and sinks, and Headstones.

#### **2.2.4 The Stone and Marble industry in numbers**<sup>(15)</sup>

- Occupies around (15,000 -20,000) direct jobs.
- Composes 13% of total non-agricultural employment.
- Forms US \$400 million in scales.
- Represents 5% of GDP.
- Represents 20% of GNP.
- Obsesses 20,000 dunums of reserves.
- Forms US \$30 billion value of reserves.

#### **2.2.5 Union of Stone and Marble**

The Union of Stone and Marble (USM) was established in 1996 as a non-profit, nongovernmental establishment, based on memberships, aims to defending members' interest and promoting to the Palestinian stone and marble industry, with proper structure and technology used<sup>(16)</sup>.

Main branch is in Bethlehem in addition to branches in Jenin, Nablus, and Hebron city.

Main markets are: Local, International and Israeli markets.

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<sup>(13)</sup>:previous reference

<sup>(14)</sup>: *Industrial and craftsmanship Directory, Hebron Governorate*, Hebron Chamber of Commerce and industry (HCCI), page 93, 2012.

<sup>(15)</sup>: *Palestine Business Focus Magazine*, Palestine, volume 5, 2012.

<sup>(16)</sup>: Tarawa, Wisam, *The role of "Union of Stone and Marble industry" in developing its industry in the West Bank according to members' point of view*, page 31, Hebron University, 2012.

The Union of Stone and Marble (USM) is the sole trade organization to represent stone and marble companies in Palestine. Its membership has now grown to 354 companies, comprising quarry operators, factories, exporters and stone crushers, and it aims to raise the profile of the sector and plays a leading role in driving its growth and shaping its strategy for the future <sup>(17)</sup>.

One of the cooperative achievements was establishing the Stone and marble Center in Palestine Polytechnic University in the year 2009, as a unique partnership between the public sector (Ministry of Palestinian National Economy) and the academic sector (Palestine Polytechnic University), accomplished by the UNIDO and funded by the Italian Government <sup>(18)</sup>.

The main activities of Union of Stone and Marble are <sup>(19)</sup>:

- Representing the interests of its members and the broader sector in all aspects;
- Creating job opportunities for Palestinians through the expansion of the industry;
- Playing a major role in the economic and industrial policies;
- Increasing production efficiency to maintain a competitive edge over foreign producers – e.g. training in management, marketing, quality, control and production skills
- Promoting high quality standards so as to be compatible with international market requirements;
- Developing the sector by promoting the use of state-of-the-art technologies;
- Opening new foreign markets and offering new opportunities for companies to work with foreign partners and improve access to foreign markets
- Coordinating and cooperating with international organizations to provide technical assistance to the sector
- Establishing the "partnership-based" stone and marble center with the ministry of national economy and Palestine Polytechnic University.

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<sup>(17)</sup>: *Palestine Business Focus Magazine*, Palestine, volume 5, 2012.

<sup>(18)</sup>: Stone and marble Center website: (<http://www2.ppu.edu/en/community-service/industrial-synergy-center/1306-community-services/stone-and-marble-center.html>).

<sup>(19)</sup>: *Palestine Business Focus Magazine*, Palestine, volume 5, 2012.

Main objective of union of stone and marble <sup>(20)</sup>:

1. Representing the Palestinian stone and marble industry among governmental private and international establishments, and defending members' interests and welfare.
2. Having a positive influence on general policies concerning this industry.
3. Developing working skills managerial and technically in order to increase production and exports.
4. Organizing Palestinian participation in international exhibitions and conferences regarding this industry.
5. Forming an interactive communication channels between Palestinian manufactures and potential investors and other customers.
6. Enhancing role of union as an available source of information about manufacturers and stone market through the world.
7. Enhancing and developing relations between members and solving potential problems.
8. Enhancing competitive advantage for the natural Palestinian stone products.

#### **2.2.6 Problems and constrains facing the Stone and marble Industry <sup>(21)</sup>:**

- Obtaining raw material: whether related to:
  - *Concretion area*: locating under Palestinian (A or B areas) or Israeli (C area) authority, and the availability of granting permission to work at C areas.
  - *Quarries detection*: most who work in excavating are using traditional ways which waste time, effort and money.
- Israeli checkpoints procedures.
- Lack or absence of industrial zones.
- High manufacturing costs.
- Lack of waste treatments techniques or stations for both solid and liquid waste.
- Lack of skills and qualifications.

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<sup>(20)</sup>: Union of Stone and Marble website:(<http://www.usm-pal.ps/etemplate.php?id=5>)

<sup>(21)</sup>:Tarawa, Wisam, *The role of "Union of Stone and Marble industry" in developing its industry in the West Bank according to members' point of view*, page 39, Hebron University, 2012.

Such problems especially the issue of waste treatment, formed a motive to perform such a study, especially that the researcher works in the industrial field, and in the industrial zone in specific. Also, the study problem is not confined to industrial or economic problems, but also includes ecological and social issues as well, which influence the society in all aspects. So the study was considered and performed.

## 2.3 Definition of related Thesis terms:

Thesis related terms are discussed as follows:

### 2.3.1 Competitive Advantage of an establishment:

The concept of "competitive advantage" indicates (the higher position in the industry in which it operates, as compared with competitors). (Sultan, Suhail, 2007).

And so, through the competitive advantage the economic competitiveness arises, which is defined as (an exclusive properties owned by company, its maintenance and use of the competitive process). (Sultan, Suhail, 2007).

It is worth to mention that; according to (Barney)<sup>(22)</sup>; the success of a competitive firm can be measured by both *objective* and *subjective* criteria. *Objective* criteria include return on investment, market share, profit and sales revenue, while *subjective* criteria include enhanced reputation with customers, suppliers, and competitors, and improve quality of delivered services, as illustrated by the researcher in table (2.1).

Objective criteria	Subjective criteria
<ul style="list-style-type: none"><li>• return on investment</li><li>• market share</li><li>• profit and sales revenue</li></ul>	<ul style="list-style-type: none"><li>• enhanced reputation with customers, suppliers, and competitors</li><li>• improve quality of delivered services</li></ul>

Table (2.2): Objective and Subjective criteria needed to a firm to succeed:

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<sup>(22)</sup>: Sultan, Suhail Sami, *The Competitive Advantage of Small and Medium Sized Enterprises: The Case of Jordan's Natural Stone Industry*, Maastricht University, UMU MERIT, Netherlands, 2007.

## **2.4 Waste and Waste Management:**

### **2.4.1 Definition of Waste and Waste Management:**

**Waste:** anything that is no longer privately valued by its owner for use or sale and which is, or will be, discarded. (Waste Management Report).<sup>(23)</sup>

**Stone and marble waste:** the powder or "liquid powder" resulting from cutting and polishing stone blocks or marble boards during manufacturing.<sup>(24)</sup>

This can be classified into solid (powder) and liquid waste (liquid powder).

**Waste Management:** management of the collection, recovery and disposal of wastes, including options for waste reduction. (Waste Management Report)<sup>(25)</sup>.

### **2.4.2 Importance of Waste Management:**

Generally, waste management importance is summarized in being a fundamental component to any manufacturing or production enterprise.

On the other hand, it is often difficult to find a use for all the waste produced, and so, it is necessary to have a waste management plan. Hence, the waste produced is forming a threat to worker health and safety, and a burden on the environment. Moreover, its disorderly accumulation onsite portrays an image of irresponsibility, hampering local support for the company. Through implementation of a proactive waste management strategy; the unnecessary fines, occupational exposures, and environmental degradation can be avoided. Additionally, an opportunity exists for companies to distinguish themselves as a socially responsible and environmentally considerate operation.<sup>(26)</sup>

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<sup>(23)</sup>: Waste Management, Productivity Commission Inquiry Report, No.38, 2006.

<sup>(24)</sup>: Stone and marble union documents.

<sup>(25)</sup>: Waste Management, Productivity Commission Inquiry Report, No.38, 2006.

<sup>(26)</sup>: *Best Practices of the Natural stone Industry*, University of Tennessee Center for Clean Products, 2009.

### 2.4.3 Benefits of Proper Waste Management:

Proper waste management can propose the following advantages in brief:

- Improved health and safety: for both environment and work force.
- Reduced storage, transport, and disposal costs: less waste means reduced expenses, effort and storage places.
- Potential generation of revenue: creating a secondary company revenue stream by reselling some useful parts waste (parts that could be reused or recycled).
- Increased Efficiency: decreasing the amount of raw material lost during manufacturing, and increasing the quantity of profitable product in return.
- Enhancement of company reputation: comprehensive, proactive waste management practices can result in a socially responsible reputation, a greater community acceptance, and a good company image. <sup>(27)</sup>

### 2.4.4 The 3R's:

The previous paragraph leads to the 3R's concept, which means Reduce, Reuse and Recycle as the following brief description:

**Reduce:** means using fewer resources in the first place, and trying to produce the least waste. It is considered as the most effective of the 3 R's and the place to begin.

**Reuse:** means that before we recycle or dispose of anything, we have to consider whether it has life left in it or not, for example, food scraps can become compost, an opened envelope can become a shopping list, a magazine can be shared, and so on.

**Recycle:** recycling is the "R" that has caught on the best. Partly, this is because there are so many recycling programs these days which make recycling so easy. Where items can be reshaped or reproduced in another shape, or even for another purpose of use, for example, paper recycling. <sup>(28)</sup>

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<sup>(27)</sup>: *Previous reference.*

<sup>(28)</sup>: source: (<http://www.nrdc.org/thisgreenlife/0802.asp>).

## 2.5 The Balanced Score Card (BSC):

In order to measure the performance level or rate of a certain establishment, Balanced Scored Card (BSC) technique may be used as an indicator for the mentioned purpose. Balanced Scored Card is defined as "a comprehensive system used to measure performance from a strategic perspective, where we translate the strategy of business planning into strategic objectives, measure, targets, and initiatives".<sup>(29)</sup>

Balanced Scored Card is considered as a very successful technique to solve the insufficiency of classical financial control systems in the organization, and since it is organization related, so that, its initiatives or dimensions are considered as: shareholders, customers and employees.

According to (Kaplan and Norton), there are five principles to help establishments achieve a breakthrough performance through using Balance Scorecards, where they referred to two words: "***Alignment and Focus***" in order to transform the Balanced Scorecards from performance into strategic management, as follows:<sup>(30)</sup>

Principle 1: Translate the Strategy to Operational Terms.

Principle 2: Align the Organization to the Strategy.

Principle 3: Make Strategy Everyone's Everyday Job.

Principle 4: Make Strategy A Continual Process.

Principle 5: Mobilize Leadership for Change.

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<sup>(29)</sup>: Mohammad Ahmad Abu Qamar, *Evaluation the performance of Bank of Palestine using the Balanced Scorecard*, Islamic University, Gaza, Palestine, 2009.

<sup>(30)</sup>: Kaplan, Robert S., and Norton, David P., *Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part II*, Accounting Horizons, Vol. 15 No. 2, June 2001.

## 2.6 Related Literature Review:

### 2.6.1. Previous studies:

#### 1. **Competitiveness Measurement System in the Advertising Sector, Rocio Poveda- Bautista, Monica Garcia- Melon, Doris C Baptista, 2013:** <sup>(31)</sup>

This study presented a new approach to find indicators that can be used to measure companies' competitiveness and performance in an efficient and reliable way. It aimed to assist managers of companies within a specific industrial sector. This is done by providing information about their relative position in the market, and so to define better action plans which may improve the company's performance. It adopted industry of Venezuela as a case study.

This approach combines the following methods:

- The use of Analytic Network Process (ANP).
- A Multi-Criteria Decision Method (MCDA).
- Balanced Score Cards (BSC).

This could be achieved by defining a number of competitiveness indicators based on performance with setting of the advertising sector. So, we get a competitiveness index, then the company will know its relative position with respect to other companies.

In addition, we can establish a ranking of ordered companies by their competitiveness level. The study also focused on the improvement plans. Those plans should promote **Creativity, Innovation** and the use of **new technology**.

The stages for applying improvement plans are described in figure (2.2) and as follows:

- ❖ Analysis of the value chain of the industrial sector
- ❖ Definition of experts in the industrial sector
- ❖ Determination of the competitiveness indicators (CI's)
- ❖ Company prioritization based on the ANP model
- ❖ Validation of the results by the experts

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<sup>(31)</sup>:Rocio Poveda- Bautista, Monica Garcia- Melon, and Doris C Baptista, *Competitiveness Measurement System in the Advertising Sector*, 2013.

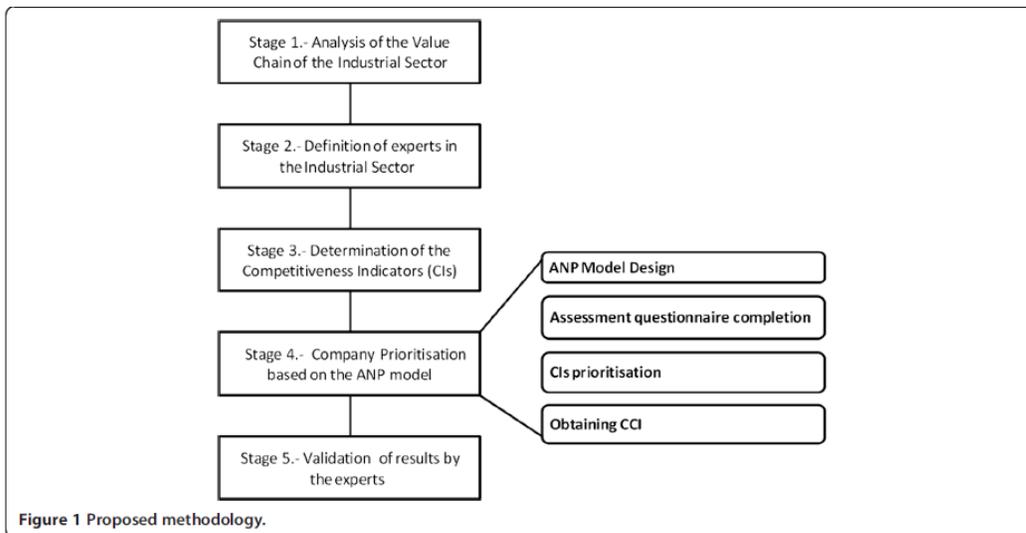


Figure (2.2): proposed methodology for measuring performance.

The study represented the following results:

- Growth and creativity were the most contributing indicators to the competitiveness advertising sector, and then came the internal process indicators.
- The need to foster and adopt creativity of employees to help develop such a sector.
- The use of new technologies allows customers to participate actively in services.

Recommendation proposed by the study:

- Combining the Analytic Network Process (ANP) and Balanced Score Cards (BSC) approaches to define competitiveness indicators for assessment procedure. Noticing that there is no need to measure all areas in a competitiveness system, but only relevant ones.
- Stimulate the creativity of employees.
- Introducing new services capability.
- Use of new technologies.

**2. The role of "Union of Stone and Marble Industry" in developing its industry in the West Bank according to members' point of view, Wisam Tarawa, 2012: (32)**

This study aimed to determine the role of Union of Stone and Marble Industry in developing its industry, whether concerning representation, marketing, training, or even problem solving, from the point of view of its members in the West Bank. All in terms of financial dimension, customers, internal processes and growth and creativity.

The study explained the significance of this sector among other sectors, and the importance of this vital industrial sector, where 197 members sample was used for performing the study questionnaire, in the governorates of: Hebron, Bethlehem, Nablus and Jenin.

Several results were concluded:

- The majority of the union members were of holders of high school certificates or lower, then Bachelor's degree and Diploma, and at last those of graduate degree certificates holders formed the minority among members.
- The percentage of 39.8% of facilities was for sole proprietorship organizational structure, 35.2% for private- joint stock, and 25% for the typical public company structure.
- Furthermore, results showed that the degree of evaluation of the representative role of the union was high, while the degree of evaluation for the role of training was moderate, the same moderate degree was for the role of marketing, as well as the role of solving problems.
- A significant result was that the level of contribution of the union in developing its industry was moderate, in terms of the following dimension:
  - ❖ Achieving the financial dimension of the related facilities.
  - ❖ Investigation of customer dimension.
  - ❖ Investigation of internal processes.
  - ❖ Investigation of growth and creativity.
- Also, results indicated that there is a statistically significant correlation between the role of the union (in representation, marketing, training and

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<sup>(32)</sup>Tarawa, Wisam, *The role of "Union of Stone and Marble industry" in developing its industry in the West Bank according to members' point of view*, Hebron University, 2012.

problem solving) and its contribution to the development of the industry in terms of its financial dimension, customers, internal processes, and growth and creativity.

The study suggested the following recommendations:

- The necessity to work on and prepare for a promotional strategy for the union in collaboration with some involved institutions.
- Activating the role of the union regarding training and capacity building for members, and after determining their training needs and issues, and activating the role of the Stone and Marble Center as well.
- Classifying problems according to priority in order to solve them.
- Improving union participation in developing the stone sector by performing certain activities to develop the financial, customer, internal processes, and growth and creativity dimensions.

### **3. Evaluation of the performance of Bank of Palestine using the Balanced Scorecard, Mohammad Ahmad Abu Qamar, Islamic University, Gaza, Palestine, 2009:** <sup>(33)</sup>

This study aimed to evaluate the performance of Bank of Palestine by using the balanced scorecard, and then developing the balanced scorecard by adding a fifth dimension, which is the social dimension. This social dimension states that "the organization has to build a social role" that positively benefit and significantly impact the society which will also achieve many benefits to the organization that will improve its competitiveness position. The researcher used the descriptive methodology, with 133 correspondents, which was considered a small number, so the researcher performed a census. The questionnaire used was specifically designed to answer the study's questions and meet its objectives.

The study proposed the following most significant results:

- Bank of Palestine's management implements strategic management but doesn't implement the balanced scorecard methodology as a comprehensive system for strategic management.
- The Bank of Palestine's strategic goals are compatible with the balanced scorecard dimensions. In addition, financial and nonfinancial strategic performance measurements are being used, but that all doesn't mean that the balanced scorecard is being implemented.
- The Bank of Palestine's performance is strong and suitable according to the five dimensions.
- The bank's interest to the balanced scorecard dimensions varies by small percentages as follows:
  - Internal Operations Dimension: 82%
  - Customers Dimension: 82%
  - Financial Dimension: 80%
  - Learning & Growth Dimension: 78%
  - Social Dimension: 73%

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<sup>(33)</sup>: Mohammad Ahmad Abu Qamar, *Evaluation of the performance of Bank of Palestine using the Balanced Scorecard*, Islamic University, Gaza, Palestine, 2009

- The Bank of Palestine contributes to support the society, although not as much as it does contribute to other dimensions.

The study also proposed the following recommendations:

- The Bank of Palestine should adopt the balanced scorecard.
- The Bank of Palestine should implement the balanced scorecard as it is considered a complete system for strategic management, and its implementation will achieve lots of benefits which will contribute in the reinforcement of the bank's competitive position.
- The Bank of Palestine should attract cadres and highly qualified personnel who are capable to implement the balanced scorecard.
- Holding specialized training courses about the balanced scorecard.

**4. Cluster Competitiveness Assessment, Eight Industrial and Services Clusters in the West Bank and Gaza, Said Abu Hijleh and others, 2007, Palestine:** <sup>(34)</sup>

The study aimed to identify both key clusters and key policy; key clusters with a strong potential of generating employment exports and investment. And key policy and institutional constraints and exploit opportunities.

Also, it aimed to establish effective public/ private coalitions organized around a reasonably defined, common set challenges and opportunities.

Furthermore, to define a consensus vision for industry clusters and economic growth, and help develop actionable strategies to stimulate the growth to viable industry clusters. Those clusters are supposed to be a key engine to sustainable business investment for the West Bank and Gaza.

The study showed many results regarding the eight industries discussed in it. Here, we state those related to the Stone and Marble Sector, most important that there are eight important industries and services in West Bank and Gaza. Those industries and services are considered critical to the Palestinian economy, where the Stone and Marble industry is one of them.

And the Stone and Marble industry in the West Bank and Gaza is successful and growing, where it ranked the 12<sup>th</sup> place in the world in the year 2002.

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<sup>(34)</sup>: Said Abu Hijleh and others, *Cluster Competitiveness Assessment, Eight Industrial and Services Clusters in the West Bank and Gaza*, 2007, Palestine.

**5. The Competitive Advantage of SMEs The Case of Jordan's Natural Stone Industry, Suhail Sami Sultan, Maastricht University, Netherlands, 2007:** <sup>(35)</sup>

This study is an application for a case study about natural stone industry in Jordan, and discussed the competitive advantage of small and medium enterprises in the stone sector. Its main objective was to explore the main factors which lead to achieve the competitive advantage for the mentioned enterprises. In addition to get to know those factors which need to be improved in order to enhance the competitive advantage of such enterprises.

The questionnaire and interview were used as study tool for data collection from enterprises working in the stone industry.

The study presented many important results, and concluded that there are so many differences among the factors affecting the competitive advantage of the enterprises forming the study population. All was explained by showing that there are major differences concerning the performance indicators in (financial, customers, internal business and growth and creativity), which were used according to the Balanced Scorecard.

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<sup>(35)</sup>: Sultan, Suhail Sami, *The Competitive Advantage of Small and Medium Sized Enterprises: The Case of Jordan's Natural Stone Industry*, Maastricht University, UMU MERIT, Netherlands, 2007.

## **6. The Stone and Marble Sector, Palestinian Federation of Industries, Industrial Modernization Center, 2005:** <sup>(36)</sup>

The study aimed to explain the circumstances surrounding stone and marble sector, and so to determine its needs and problems exist.

Also, aimed to help the mentioned sector in general, and the enterprises owners -who work at the same sector- in particular, to solve obstacles and problems facing this vital industry.

A questionnaire was used as the study tool, to gather information from stone and marble enterprises' owners, engineering offices, contractors and property owners.

Results showed that the mentioned sector is suffering from several weaknesses, such as: lack of strategic planners for enterprises, the type of administration of individual, limited usage of information technology, inexistence of incentives, absence of marketing teams, absence of appropriate production management, lack of proper pricing system and strict rivalry concerning pricing.

Also, the results showed that most strength for the sector are: availability of skilled labor force, accumulated acquired experience about the industry, the willing for learning, ability to export and heading for new markets.

On the other hand, it was explained by the study that stone and marble stone is facing certain threats, some threats as: unstable political circumstances, inexistence of shipping ports for direct export, absence of appropriate infrastructure which support the industry, occupational constrains and deterring concretion at "C" area.

Concerning the opportunities, the study showed that the most important opportunity is the existence of natural supply on natural stone.

In addition, the study explained that family business and self- financing system is the most common existed system among enterprises -of the mentioned industry-, and the majority of the machinery is of Italian origin.

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<sup>(36)</sup>: *Palestinian Federation of Industries*, Industrial Modernization Center, The Stone and Marble Sector, 2005.

Recommendations of the study came as follows:

- The importance of performing a comprehensive geological study, to determine inventory of natural raw stone quantities.
- The importance of encouraging cooperation and agreements between stone and marble enterprises.
- Developing management and marketing issues of the enterprises is a must.
- Seriously taking into consideration production monitoring and control, and concentrating on quality control.
- The importance of activating the role of stone and marble sector and performing its activities, and so, concentrating on the idea of encouraging the enterprises for cooperation among them, and taking paying attention for training and capacity building.

## 2.6.2. Summary of previous studies:

A summary of previous studies main points were arranged in table (2.1), as study methodology and study main results.

Table (2.3): Summary of previous studies:

Study Title	Author/ Year	Methodology	Main Results
Competitiveness Measurement System in the Advertising Sector	Rocio Poveda-Bautista and others/ 2013	Combined three qualitative methods: (ANP, MCDA, and BSC). Focused on improvement plans, which should promote <b>Creativity, Innovation</b> and the use of <b>New technology</b> .	Growth and creativity were the most contributing indicators to competitiveness, then internal process indicators. Also, the need to foster and adopt creativity of employees. And the use of new technologies allows customers to participate actively in services.
The role of "Union of Stone and Marble Industry" in developing its industry in the West Bank according members' point of view	Wisam Tarawa/ 2012	Determined the role of Union of Stone and Marble Industry in developing its industry; (concerning representation, marketing, training, and problem solving); from the point of view of its member qualitatively. In terms of financial dimension, customers, internal processes, and growth and creativity.	The degree of evaluation of representative role was high, while degree of evaluation and role of marketing and solving problems were moderate. And level of contribution of the union in developing its industry was moderate, all in terms of its financial dimension, customers, internal processes, and growth and creativity.
Evaluation of the performance of Bank of Palestine using the Balanced <u>Scorecard</u>	Mohammad Ahmad Abu Qamar/ 2009	Used a descriptive qualitative methodology by evaluating the performance of Bank of Palestine by using BSC, then developing BSC by adding a fifth dimension (social dimension).	Bank of Palestine's management implements strategic management but doesn't implement the BSC methodology as a comprehensive system for strategic management. And that its strategic goals are compatible with the BSC dimensions. Also, Bank's performance is strong and suitable according to the five dimensions.
Cluster Competitiveness	Said Abu Hijleh and others/ 2007	Identified both key clusters and key policy, and to	There are eight important industries and services in West Bank and Gaza,

<p>Assessment, Eight Industrial and Services Clusters in the West Bank and Gaza</p>		<p>establish effective public/private coalitions organized around a reasonably defined, common set challenges and opportunities for the Palestinian Industry in both quantitative and qualitative way. And to define a consensus vision for industry clusters and economic growth.</p>	<p>and are considered critical to the Palestinian economy. The Stone and Marble industry in the West Bank and Gaza is successful and growing, where it ranked the 12<sup>th</sup> place in the world in the year 2002.</p>
<p>The Competitive Advantage of SMEs The Case of Jordan's Natural Stone Industry</p>	<p>Suhail Sami Sultan/ 2007</p>	<p>Explored main factors which lead to achieve competitive advantage for certain enterprises. And to get to know those factors qualitatively which need to be improved in order to enhance the competitive advantage of such enterprises. Questionnaire and interview were used as study tools.</p>	<p>There are so many differences among factors affecting competitive advantage of study population (enterprises). And there are major differences concerning the performance indicators in (financial, customers, internal business and growth and creativity), which were used according to the BSC.</p>
<p>The Stone and Marble Sector, Palestinian Federation of Industries</p>	<p>Industrial Modernization Center/ 2005</p>	<p>Explained the circumstances surrounding stone and marble sector, and determine its needs and problems exist. And to help solving obstacles and problems facing this vital industry. A questionnaire was used as a qualitative study tool, to gather information.</p>	<p>The mentioned sector is suffering from several weaknesses, mostly lack of strategic planners for enterprises. And strength as availability of skilled labor force. And facing threats like: unstable political circumstances, and absence of appropriate infrastructure. Also, opportunities as: existence of natural supply on natural stone. In addition, the study explained that family business and self- financing system is the most common existed system among enterprises -of the mentioned industry-, and the majority the machinery is of Italian origin.</p>

### **2.6.3. Differences and similarities of the study to other studies:**

This study – according to the researcher- specialized in the area of Hebron city, and discussed the implication of organizational variables of waste management of stone and marble sector specifically.

While other studies discussed other fields, some discussed measuring performance, and other studies discussed industries in general, or some other sector. Also, some studies applied the tools for more than one sector and output some general results, unlike the present study.

On the other hand, the previous studies had a vast role in enriching the present study, and granting leading headlines through data collection and along study preparing.

## Chapter Three:

### Methodology

#### 3.1 Introduction:

This chapter presents the methodology of the study, its population, the tools of data collection and methods of verifying its validity and reliability, in addition to procedures of the study and statistical analysis.

#### 3.2 Study Conceptual Model:

The independent variables dependent variables are illustrated in the following **conceptual framework table**:

Dependent Variables	Independent Variables
Facts of waste management at the stone and marble sector from the following aspects: <ul style="list-style-type: none"><li>• Waste management processing units (techniques) availability.</li><li>• Availability of technical capabilities.</li><li>• Applicability.</li><li>• Environmental management.</li></ul>	<ul style="list-style-type: none"><li>• Job title, age, education, years of experience</li><li>• Location, establishing year, legal status, number of employees</li></ul> Quality certificates

Table (3.0): Conceptual framework table.

#### 3.3 Study Scientific Approach:

The study used the descriptive quantitative and qualitative approaches, since both are considered to be the most suitable study approaches for such kind of studies. Both approaches are the most convenient to fulfill the study objectives since both work on describing facts regarding positions as they stand or describing what is already existent and collection of data and information which would be later classified, organized and expressed quantitatively; they would also be interpreted accordingly in order to reach an understanding of the relationship between the phenomenon and its different factors using convenient study tools.

The study was performed by using both interview and questionnaire; the interview for primary data collection (appendix D), and the questionnaire for surveying as well.

Sampling survey was used for the study, along with the questionnaire (Appendices B and C) as tools for data collection.

### 3.4 Study Population:

The study population consists of the owners of all stone and marble establishments in the city of Hebron, with total of (110) establishments and workshops for the years 2011 and 2012<sup>(37)</sup>. (9) of them were workshops, so the establishments were 101 which represented the real sample population.

### 3.5 Study Sample:

The study sample consists of (75) stone and marble establishments, located in the city of Hebron, and chosen by simple random sample method. Sample size was calculated using Thompson equation through the web as follows<sup>(38)</sup>:

Steven Thompson's Equation

$$n = \frac{N \times p(1-p)}{\left[ \left[ N-1 \times \left( d^2 \div z^2 \right) \right] + p(1-p) \right]}$$

Where: **n**: sample size

**N**: population

**Z**: Z-score corresponding to the level of significance 0.95 and equal to 1.96.

**d**: The margin of error and is equal to 0.05.

**p**: Proportion of the property offers and neutral = 0.50.

According to the equation sample size is (80), while (75) responded. So, sample constituted (74%) of study population, where tables (3.1) to (3.9) demonstrate sample demographic characteristics of the respondents.

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<sup>(37)</sup>: Union of Stone and Marble Survey of 2011.

<sup>(38)</sup>: (<http://faculty.ksu.edu.sa/70810/DocLib18/Forms/AllItems.aspx>)

### 3.6 Sample demographic characteristics:

Tables (3.1) to (3.9) demonstrate the demographic characteristics for the sample (respondents), according to the following variables: Job title, age, education, years of experience, establishment location, year of establishing, legal status, number of employees, the establishment holds a certificate of quality or not, all as follows:

Table (3.1): Sample demographic characteristics of respondents according to job title:

<b>Job Title</b>	<b>Number</b>	<b>Percent %</b>
Owner of the establishment	30	40.0
Manager of the establishment	18	24.0
Other	27	36.0
Total	75	100

#### 3.6.1 Sample distribution according to "job title" variable:

Findings given in table (3.1) indicate that 40.0 % of sample respondents were owners of establishment, while 24.0% are managers, and 36.0% are employees.

64% of respondents were even managers or owners. This indicates credibility of answers.

Table (3.2): Sample demographic characteristics of respondents according to age:

<b>Age</b>	<b>Number</b>	<b>Percent %</b>
Less than 30 years	28	37.3
30 to 40 years	20	26.7
More than 41years	27	36.0
Total	75	100

### 3.6.2 Sample distribution according to "age" variable:

Findings given in table (3.2) indicate that 37.3 % of sample members are less than 30 years, while 26.7% are between 30 and 40 years, and 36.0% are more than 41 years old.

More than 60% of respondents were under 40 years old; this indicates that respondents were young.

Table (3.3): Sample demographic characteristics of respondents according to education:

Education	Number	Percent %
Tawjihi and below	50	66.7
Diploma	9	12.0
B.A. and Graduate studies	16	21.3
Total	75	100

### 3.6.3 Sample distribution according to "education" variable:

Findings given in table (3.3) indicate that 66.7 % of sample members are having Tawjihi or less, while 12.0% are having Diploma, and 21.3% are having B.A. degree and higher.

About 70% of respondents were with Tawjihi certificates and below, this indicates that majority of respondents are with average education level.

Table (3.4): Sample demographic characteristics of respondents according to years of experience:

Years of experience	Number	Percent %
Less than 5 years	11	14.7
5 to 10 years	16	21.3
More than 10 years	48	64.0
Total	75	100

### 3.6.4 Sample distribution according to "years of experience" variable:

Findings given in table (3.4) indicate that 14.7 % of sample members are having experience of less than 5 years, while 21.3% are having 5 to 10 years, and 64.0% are having more than 10 years of experience.

Majority of establishments have more than 10 years of experience. This imposes a good indicator of credibility with wisdom and experience.

Table (3.5): Sample demographic characteristics of respondents according to location:

Location	Number	Percent %
In the industrial zone	71	94.7
Outside the industrial zone	4	5.3
Total	75	100

### 3.6.5 Sample distribution according to "establishment location" variable:

Findings given in table (3.5) indicate that 94.7 % of sample members are having the establishment inside the industrial zone, while 5.3% are outside the industrial zone.

Around 95% of establishments are in the industrial zone, this forms a suitable and important motive when taking any improving action for the stone and marble sector, and made it easier to apply, especially in stone and marble waste management.

Table (3.6): Sample demographic characteristics of respondents according to establishing year:

Establishing year	Number	Percent %
1995 and before	29	38.7
1996 to 2000	20	26.7
2001- 2005	14	18.7
2006 and after	12	16.0
Total	75	100

### 3.6.6 Sample distribution according to "year of establishment" variable:

Findings given in table (3.6) indicate that 38.7 % of sample members declared that the establishments have been established in the year 1995 or before, and 26.7% between the years 1996 and 2000, while 18.7% between the years 2001 and 2005, and 16.0% at the year 2006 or after.

Majority were established before the 2000 recession.

Table (3.7): Sample demographic characteristics of respondents according to legal status:

Legal Status	Number	Percent %
Limited liability company	34	45.3
Public	26	34.7
Individual	15	20.0
Total	75	100

### 3.6.7 Sample distribution according to "legal status" variable:

Findings given in table (3.7) indicate that 45.3 % of sample members mentioned that their establishments are limited liability, while 34.7% are Public, and 20.0% are individual.

Table (3.8): Sample demographic characteristics of respondents according to number of workers:

Number of workers	Number	Percent %
Less than 5	18	24.0
5 to 10	38	50.7
11-20	13	17.3
More than 20	6	8.0
Total	75	100

### 3.6.8 Sample distribution according to "number of workers" variable:

Findings given in table (3.8) indicate that 24.0 % of sample members declared that number of workers is less than 5 workers, and 50.7% between 5 and 10 workers, while 17.3% between 11 and 20 workers, and 8.0% are employing more than 20 workers.

Table (3.9): Sample demographic characteristics of respondents according to having quality certificate or not:

<b>Holds a certificate of quality?</b>	<b>Number</b>	<b>Percent %</b>
Yes	10	13.3
No	65	86.7
Total	75	100

### 3.6.9 Sample distribution according to "having quality certificate or not" variable:

Findings given in table (3.9) indicate that 13.3 % of sample members announced that the establishments is having a certificate of quality, while 86.7% is not having any certificate of quality.

## 3.7 Method and tools of data collection:

The study was performed by using both interview and questionnaire as mentioned in section (3.3); the interview for primary data collection (appendix D), and the questionnaire for surveying as well.

Sampling survey was used for the study, along with the questionnaire (Appendices B and C) as tools for data collection. Based on literature review, and for inspecting implication of contextual variables on waste management of stone and marble sector, in the city of Hebron, the questionnaire was established, consisting of three main sections:

The first section included general information about quested members, specifically about: job title of the respondent, age, education, years of experience, establishment location, year of establishment, legal status, number of employees, having certificate of quality or not.

However, the second section included a scale, designed for measuring the extent of adopting techniques regarding stone and marble waste management. This part was formed of (32) paragraphs, classified within 4 main subscale as follows: Reducing waste, Reusing waste, Recycling Waste and waste management techniques.

While the third part included another scale for measuring stone and marble performance, consisting of (21) paragraphs, classified in four main subscales of the Balanced Scorecards as follows:

- (a) Growth and creativity inside the establishment
- (b) Internal Business
- (c) Customers
- (d) Financial issues.

Five- point Likert Scale (strongly agree, agree, moderate, disagree, and strongly disagree) was used, in addition to the (Yes, No) question scale.

### **3.8 Validity of study tool:**

Study tool was validated by reviewing the questionnaire by a group of referees and expert arbitrators (appendix A), such as language referees, and statistical analysis referees, who offered advice and useful notes. Such notes were taken into consideration when adjusting the questionnaire into its final format (appendices B and C). Also, by applying a pilot study by circulating it to 5 random establishments to check questionnaire validity and reliability as a startup.

On the other hand, validity of study tool was measured statistically by calculating the "Factor Analysis" reading for questionnaire paragraphs, as explained in tables (3.10) to (3.14):

Table (3.10): Findings of "Factor Analysis" calculation of questionnaire paragraphs, regarding to the field of (Reducing waste):

<b>No.</b>	<b>Paragraph</b>	<b>R</b>
1.	The establishment has been designed based on proper layout	0.63
2.	A feasibility study has been conducted for the establishment before being established	0.55
3.	New machines are used in the establishment	0.62
4.	Skilled labor are being employed (graduate of industrial schools and students of industrial automation)	0.60
5.	Workers are being trained continuously	0.60
6.	High-quality raw materials are used	0.60
7.	Proper storage mechanism of the raw stones are followed	0.61
8.	Proper storage mechanisms are used for stones after production	0.48
9.	Production lines are controlled for quality insurance	0.63
10.	Production is performed according to various uses and measurements (thickness)	0.61

Values given in the above table explain the "Factor Analysis" calculations for most values of questionnaire paragraphs regarding the aspect of (Reducing waste) are statistically accepted, which reflects the internal consistency of paragraphs, and that the paragraphs are participating together in measuring the subject of the study.

Table (3.11): Findings of "Factor Analysis" for questionnaire paragraphs regarding the subscale of (Reusing waste):

No.	Paragraph	R
1.	Making wall chains (fences)	0.60
2.	Building antiques and decorations	0.48
3.	Added during building walls (during pouring the concrete)	0.60
4.	Used during paving the roads	0.64
5.	Used for tiling	0.60
6.	Other suggestions	0.85

Values given in the above table indicate the "Factor Analysis" for most of questionnaire paragraphs regarding (Reuse waste) are statistically accepted, which refers to the internal consistency for the paragraphs, and that the paragraphs are participating together in measuring the subject of the study questionnaire according to the conceptual framework of the study.

Table (3.12): Findings of "Factor Analysis" for questionnaire paragraphs regarding the subscale of (Recycling waste):

No.	Paragraph	R
1.	Transforming the remains of the waste into small pebbles and aggregate	0.54
2.	Using part of the waste in the tiles' composition	0.71
3.	Using dry powder as a component of manufacturing chalks	0.74
4.	Transforming part of the waste into one of the paints' components	0.83
5.	Using dry powder as a component of gypsum	0.76
6.	Other suggestions	0.60

Values given in the above table indicate the "Factor Analysis" for most of questionnaire paragraphs regarding (Recycle waste) are statistically accepted, which refers to the internal consistency for the paragraphs, and that the paragraphs are participating together in measuring the subject of the study questionnaire according to the conceptual framework of the study.

Table (3.13): Findings of "Factor Analysis" for questionnaire paragraphs regarding the subscale of (Waste treatment techniques):

No.	Paragraph	R
1.	Liquid waste are treated by using the Silos	0.75
2.	Liquid waste are treated by using the deposition pools	0.72
3.	Liquid waste are treated using Filter Press	0.65
4.	Liquid waste are treated through municipality treatment station	0.74
5.	Solid waste are disposed in the stone crusher	0.67
6.	Solid waste are disposed in unknown lands	0.84
7.	Liquid waste are disposed in the sewage network	0.66
8.	Liquid waste are disposed in unknown lands	0.69
9.	Liquid waste (slurry) are disposed in special dumps for municipality	0.68
10.	Liquid waste (slurry) are disposed in special dumps for the establishment	0.80

Values given in the above table indicate the "Factor Analysis" calculated values for most of questionnaire paragraphs regarding (Waste treatment techniques) are statistically accepted, which refers to the internal consistency for the paragraphs, and that the paragraphs are participating together in measuring the subject of the study questionnaire according to the conceptual framework of the study.

**Table (3.14): Findings of "Factor Analysis" for questionnaire paragraphs regarding the subscale of (Performance of Stone and Marble Sector):**

<b>No.</b>	<b>Paragraph</b>	<b>R</b>
1.	The availability of job opportunities	0.42
2.	Enhancing the productivity of workers through training	0.71
3.	Achieving workers' satisfaction	0.63
4.	Ensuring workers' loyalty	0.60
5.	Motivating workers	0.75
6.	Enhancing quality of products	0.60
7.	Granting a good reputation (image) for the establishment	0.61
8.	Conducting development studies for the establishment	0.71
9.	Creating new products	0.73
10.	Adding new production lines	0.68
11.	Using modern technology	0.69
12.	Achieving customer satisfaction (current customers)	0.75
13.	Attracting new customer (reaching new markets)	0.76
14.	Enhancing and increasing advertising campaigns	0.61
15.	Improving delivery of product	0.68
16.	Reducing costs of production	0.60
17.	Increasing production rate	0.88
18.	Increasing the exports rate	0.92
19.	Maximizing profit margin	0.82
20.	Pricing suitability among market sectors	0.75
21.	Encouraging participation in exhibitions	0.50

Values given in the above table indicate the "Factor Analysis" calculated values for most of questionnaire paragraphs regarding (Performance of Stone and marble Sector) are statistically accepted, which refers to the internal consistency for the paragraphs, and that the paragraphs are participating together in measuring the subject of the study questionnaire according to the conceptual framework of the study.

### 3.9 Reliability of study tool:

Study reliability was calculated regarding to its various aspects, according to "Internal Consistency" method by calculating the (Chronbach Alpha) reliability equation, results of calculations are explained in table (3.15).

Table (3.15): Results of "Chronbach Alpha" reliability equation for questionnaire regarding its various aspects and paragraphs:

No.	Subscale	Number of paragraphs	Alpha value
1.	Reduce waste	10	0.69
2.	Reuse waste	6	0.61
3.	Recycle waste	6	0.71
4.	Waste treatment techniques	10	0.73
5.	Learn and growth inside the establishment	5	0.81
6.	Internal business inside the establishment	6	0.86
7.	Customers	4	0.84
8.	Financial issues	6	0.91
9.	Total degree	21	0.94

Results given in the above table indicate that the study has a good degree of reliability regarding to its various aspects and paragraphs.

### 3.10 Statistical Analysis:

After collecting the required information using the questionnaire, such information was reviewed as a pre-process to prepare it for computerized statistical analysis. This was performed by assigning specified serial digits to the questionnaire paragraphs. In other words, transforming the verbal phrases into ascending serial numbers for the paragraphs, where the answer "Strongly Agree" was assigned the number (5), "Agree" was assigned the number (4), "Undecided" was assigned the number (3), "Disagree" was assigned the number (2), and "Strongly Disagree" was assigned the number (1).

In other words, the degrees were assigned in a way that as the degree number becomes higher, the performance of Stone and Marble Sector in the city of Hebron increases as well, and vice versa.

The required statistical analysis for the information was performed by processing numbers and points, then calculating percentages, average values and standard deviation.

And so, the study hypotheses were examined by using the following statistical tests:

- t.test
- One way analysis of variance
- Chronbach Alpha Formula
- Factor Analysis

All were performed by using the Statistical Package for the Social Sciences (SPSS).

In order to understand the values' indicators, a mathematical mean score scale is arranged, according to the equation of both the maximum and minimum values as follows:

$$\text{Max. value} = 5$$

$$\text{Min. value} = 1$$

$$(\text{Max. value} - \text{Min. value}) / \text{mean value}$$

$$(5 - 1) / 3 = 1.33.$$

The mathematical mean score indicators are illustrated in tables (3.16) and (3.17) according to the range-score:

Table (3.16): The mathematical mean score scale indicator (regarding performance Level):

<b>Mean Score</b>	<b>Performance level</b>
1 - 2.33	Low
2.34 - 3.67	Moderate
3.68 – 5	High

Table (3.17): The mathematical mean score scale indicator (regarding 3 R's and waste management techniques):

<b>Mean Score</b>	<b>3 R's and waste management techniques</b>
1 – 1.49	Low
1.50 – 2	High

## Chapter Four:

### Statistical Analysis and Study Findings

#### 4.1 Introduction:

This chapter includes a comprehensive, detailed explanation for study findings regarding enhancing performance of stone and marble sector through waste management in the city of Hebron, in order to answer study questions and objectives, and so to verify hypotheses by using the proper statistical techniques.

#### 4.2 Study Questions:

##### 4.2.1 Question No. 1:

**What is the level of reducing stone and marble waste in the city of Hebron, from establishments' managers' (owners') point of view?**

To answer the above question; numbers were calculated, so the mean scores, standard deviations, and percentages as well, in order to calculate the level of reducing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners, as illustrated in tables (4.1) and (4.2).

Table (4.1): Level of reducing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners:

Variable	Numbers	Mean Score*	Standard Deviation	Percentage %
Stone and Marble Waste Reducing Level	75	1.69	0.20	84.5

\*Mean is out of 2 points.

The above information obviously explain that the level of reducing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners was HIGH, where the mean score for the mentioned level as a total degree was (1.69), with standard deviation of (0.20).

Table (4.2): Calculations for the indicators of reducing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners, ranked in a descending order:

<b>Stone and Marble Waste Reducing Indicators</b>	<b>Mean Score*</b>	<b>Standard Deviation</b>	<b>Percentage %</b>
Production is performed according to various uses and measurements	1.99	0.11	99.5
Production lines are controlled for quality insurance	1.93	0.25	96.5
High-quality raw materials are used	1.84	0.36	92.0
New machines are used in the establishment	1.83	0.38	91.5
The establishment has been designed based on proper layout	1.73	0.44	86.5
Proper storage mechanisms are used for stones after production	1.69	0.46	84.5
Proper storage mechanism of the raw stones are followed	1.67	0.47	83.5
A feasibility study has been conducted for the establishment before being established	1.60	0.49	80.0
Workers are being trained continuously	1.53	0.50	76.5
Skilled labor are being employed (graduate of industrial schools and students of industrial automation)	1.16	0.36	58.0

\*Mean is out of 2 points.

The contents of the above table explain indicators of reducing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners, classified according to degree of importance, where the variable of (Production is performed according to various uses and measurements (thickness)) was on the foreground among other variables, as most important, with mean score of (1.99). Then the variable of (Production lines are controlled for quality insurance) with mean score of (1.93), after that the variable of (High-quality raw materials are used) with mean score of (1.84), followed by the variable of (New machines are used in the establishment) with mean score of (1.83), the variable of (The establishment has been designed based on proper layout) was next with mean score of (1.73), where the variable of (Skilled labor are being employed (graduate of

Industrial schools and students of industrial automation)) was with lowest degree with mean score of (1.16).

From the researcher point of view, the variable of (Production is performed according to various uses and measurements (thickness)) gained the highest Mean score, because it works in bidirectional benefit, where it achieves the idea of waste reducing, along with the principle of meeting market demands. While the variable of (Skilled labor are being employed (graduate of Industrial schools and students of industrial automation)), was ranked with lowest mean, is because employing skilled labor force high salaries which is not favorable in such an industry.

#### 4.2.2 Question No. 2:

**What is the level of reusing stone and marble waste in the city of Hebron, from establishments' managers' (owners') point of view?**

To answer the above question; numbers were calculated, so the mean scores, standard deviations, and percentages as well, in order to calculate the level of reusing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners, as illustrated in tables (4.3) and (4.4).

Table (4.3): Level of reusing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners:

Variable	Numbers	Mean Score*	Standard Deviation	Percentage %
Stone and Marble Waste Reusing Level	75	2.38	0.67	47.6

\*Mean is out of 5 points.

The above information obviously explains that the level of reusing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners was MODERATE, where the average for the mentioned level as a total degree was (2.38), with standard deviation of (0.67).

Table (4.4): Calculations for the indicators of reusing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners, ranked in a descending order:

<b>Stone and Marble Waste Reusing Indicators</b>	<b>Mean Score*</b>	<b>Standard Deviation</b>	<b>Percentage %</b>
Used for tiling	3.43	0.85	68.6
Others: (other options)	2.55	1.44	51.0
Making wall chains (fences)	2.35	1.25	47.0
Building antiques and decorations	2.32	1.27	46.4
Used during paving the roads	1.85	1.06	37.0
Added during building walls (during pouring the concrete)	1.84	1.04	36.8

\*Mean is out of 5 points.

The contents of the above table illustrate indicators of reusing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners, classified according to degree of importance, where the variable of (Used for tiling) was on the foreground among other variables, as most important, with mean score of (3.43). Then the variable of (Others: (other options)) with mean score of (2.55), after that was the variable of (Making wall chains (fences)) with mean score of (2.35), followed by the variable of (Building antiques and decorations) with mean score of (2.32), the variable of (Used during paving the roads) was next with mean score of (1.85), where the variable of (Added during building walls (during pouring the concrete)) was with lowest degree with mean score of (1.84).

The variable (used for tiling) was ranked as highest is due to the easiness of applying such an activity compared to the other options mentioned.

### 4.2.3 Question No. 3:

**What is the level of recycling stone and marble waste in the city of Hebron, from establishments' managers' (owners') point of view?**

To answer the above question; numbers were calculated, so the mean scores, standard deviations, and percentages as well, in order to calculate the level of recycling stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners, as illustrated in tables (4.5) and (4.6).

Table (4.5): Level of recycling stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners:

Variable	Numbers	Mean Score*	Standard Deviation	Percentage %
Stone and Marble Waste Recycling Level	75	2.46	0.70	49.2

\*Mean is out of 5 points.

The above information explains that the level of recycling stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners was MODERATE, where the mean score for the mentioned level as a total degree was (2.46), with standard deviation of (0.70).

Table (4.6): Calculations for the indicators of recycling stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners, ranked in a descending order:

Stone and Marble Waste Recycling Indicators	Mean Score*	Standard Deviation	Percentage %
Transforming the remains of the wastes into small pebbles and aggregate	4.19	1.34	83.8
Using part of the waste in the tiles' composition	3.01	1.45	60.2
Others: (other options)	2.99	0.26	59.8
Using dry powder as a component of manufacturing chalks	1.79	1.26	35.8
Using dry powder as a component of gypsum	1.45	1.05	29.0
Transforming part of the waste into one of the paints' components	1.36	0.86	27.2

\*Mean is out of 5 points.

The contents of the above table illustrate indicators of recycling stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners, classified according to degree of importance, where the variable of (Transforming the remains of the wastes into small pebbles and aggregate) was on the foreground among other variables, as most important, with mean score of (4.19). Then the variable of (Using part of the waste in the tiles' composition) with mean score of (3.01), after that the variable of (Others: (other options)) with mean score of (2.99), followed by the variable of (Using dry powder as a component of manufacturing chinks) with mean score of (1.79), the variable of (Using dry powder as a component of gypsum) was next with mean score of (1.45), where the variable of (Transforming part of the waste into one of the paints' components) was with lowest degree with mean score of (1.36).

#### 4.2.4 Question No. 4:

**What are the techniques for waste management of stone and marble in the city of Hebron, from establishments' managers' (owners') point of view?**

To answer the above question; numbers were calculated, so the mean scores, standard deviations, and percentages as well, for waste management techniques of stone and marble in the city of Hebron from the point of view of establishments' managers or owners, also classified according to degree of importance, as illustrated in table (4.7).

Table (4.7): Calculations for waste management techniques from the point of view of establishments' managers or owners, ranked in a descending order:

<b>Stone and Marble Waste Management Techniques</b>	<b>Mean Score*</b>	<b>Standard Deviation</b>	<b>Percentage %</b>
Solid wastes are disposed in the stone crusher	1.93	0.25	96.5
Liquid waste are treated by using the Silos	1.79	0.41	89.5
Liquid waste (slurry) are disposed in special dumps for municipality	1.44	0.50	72.0
Liquid waste are treated by using the deposition pools	1.41	0.49	70.5
Liquid waste are treated using Filter Press	1.37	0.48	68.5

Liquid waste (slurry) are disposed in special dumps for the establishment	1.33	0.47	66.5
Solid waste are disposed in unknown lands	1.29	0.45	64.5
Liquid waste are disposed in unknown lands	1.25	0.43	62.5
Liquid waste are disposed in the sewage network	1.21	0.41	60.5
Liquid waste are treated through municipality treatment station	1.20	0.41	60.0

\*Mean is out of 2 points.

The above table classifies the waste management techniques of stone and marble in the city of Hebron from the point of view of establishments' managers or owners, classified according to degree of importance, where the variable of (Solid wastes are disposed in the stone crusher) was on the foreground among other variables, as most important, with mean score of (1.93). Then the variable of (Liquid waste are treated by using the Silos) with mean score of (1.79), after that the variable of (Liquid waste (slurry) are disposed in special dumps for municipality) with mean score of (1.44), followed by the variable of (Liquid waste are treated by using the deposition pools) with mean score of (1.41), the variable of (Liquid waste are treated using Filter Press) was next with mean score of (1.37), where the variable of (Liquid waste are treated through municipality treatment station) was with lowest degree with mean score of (1.20).

#### 4.2.5 Question No. 5:

**What is the level of performance of stone and marble sector in the city of Hebron, through waste management, from establishments' managers' (owners') point of view?**

To answer the above question; numbers were calculated, so the mean scores, standard deviations, and percentages as well, for the level of performance of stone and marble sector in the city of Hebron, through waste management, regarding the point of view of establishments' managers or owners, at study sub-scales and total degree, as illustrated in tables (4.8–4.12).

Table (4.8): Calculations for the level of performance of stone and marble from the point of view of establishments' managers or owners, at study sub-scales and total degree:

<b>Study Sub-scale (Balanced scorecard sub-scale)</b>	<b>Numbers</b>	<b>Mean Score*</b>	<b>Standard Deviation</b>	<b>Percentage %</b>
Creativity inside the establishment	75	4.00	0.68	80.0
Internal business inside the establishment	75	3.89	0.88	77.8
Customers	75	3.72	0.97	74.4
Financial issues	75	3.56	1.06	71.2
Total degree	75	3.79	0.75	75.8

\*Mean is out of 5 points.

The above information explains that the level of performance of stone and marble sector in the city of Hebron from the point of view of establishments' managers or owners was HIGH, where the mean score for the mentioned level at total degree was (3.79), with standard deviation of (0.75).

Therefore, regarding performance; (Considering "Creativity" in the establishment) was first, taking into consideration (the Internal business inside the establishment), (Customers' related issues), and the (Financial issues) as detailed above.

Knowing that the four subscales of the balanced scorecard were used as performance measuring tool, for the stone and marble establishments, so that performance can be enhanced as needed.<sup>(39)</sup>

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<sup>(39)</sup>:Mohammad Ahmad Abu Qamar, *Evaluation of the performance of Bank of Palestine using the Balanced Scorecard*, Islamic University, Gaza, Palestine, 2009

Table (4.9): Calculations for indicators of stone and marble sector performance regarding the sub-scale of (Considering "Growth and creativity" in the establishment) from the point of view of establishments' managers or owners, ranked in a descending order:

<b>Indicators of Stone and Marble Sector Waste Management in the city of Hebron, regarding the sub-scale of (Growth and creativity)</b>	<b>Mean Score*</b>	<b>Standard Deviation</b>	<b>Percentage %</b>
Ensuring workers loyalty	4.21	0.84	84.2
The availability of job opportunities	3.99	0.87	79.8
Enhancing the productivity of workers through training	3.97	0.90	79.4
Motivating workers	3.96	0.96	79.2
Achieving workers' satisfaction	3.91	0.91	78.2

\*Mean is out of 5 points.

The above table explains the indicators of performance of Stone and Marble Sector in the city of Hebron, through Waste Management regarding the sub-scale of (Growth and creativity), from the point of view of establishments' managers or owners, classified according to degree of importance, where the sub-scale of (Ensuring workers loyalty) was on the foreground among other sub-scales, as most important, with mean score of (4.21). Then the sub-scale of (The availability of job opportunities) with mean score of (3.99), after that was the sub-scale of (Enhancing the productivity of workers through training) with mean score of (3.97), followed by the sub-scale of (Motivating workers) with mean score of (3.96), where the sub-scale of (Achieving workers' satisfaction) was with lowest degree with mean score of (3.91).

From the results mentioned above, we can notice that application of waste management guarantees a continuous job for the workers, which means "ensuring loyalty" and "availability of job opportunities", and naturally leads to "enhancing productivity through training workers", and so to "motivating workers" and "achieving workers' satisfaction" as well.

Table (4.10): Calculations for indicators of stone and marble sector performance regarding the sub-scale of (Internal Business inside the establishment) from the point of view of establishments' managers or owners, ranked in a descending order:

<b>Indicators of Stone and Marble Sector Waste Management in the city of Hebron, regarding the sub-scale of (Internal Business)</b>	<b>Mean Score*</b>	<b>Standard Deviation</b>	<b>Percentage %</b>
Granting a good reputation (image) for the establishment	4.40	0.90	88.0
Enhancing quality of products	4.07	1.11	81.4
Using modern technology	3.93	1.15	78.6
Adding new production lines	3.75	1.19	75.0
Creating new products	3.69	1.19	73.8
Conducting development studies for the establishment	3.55	1.31	71.0

\*Mean is out of 5 points.

The above table explains the indicators of performance of Stone and marble Sector in the city of Hebron, through Waste Management regarding the sub-scale of (Internal Business), from the point of view of establishments' managers or owners, classified according to degree of importance, where the sub-scale of (Granting a good reputation (image) for the establishment) was on the foreground among other sub-scales, as most important, with mean score of (4.40). Then the sub-scale of (Enhancing quality of products) with mean score of (4.07), after that was the sub-scale of (Using modern technology) with mean score of (3.93), followed by the sub-scale of (Adding new production lines) with mean score of (3.75), the sub-scale of (Creating new product) was next with mean score of (3.69), where the sub-scale of (Conducting development studies for the establishment) was with lowest degree with mean score of (3.55).

From the results mentioned above, we can notice that application of waste management grants a good image for establishment, which makes the establishment willing to keep on enhancing product quality, and using modern technology, or even adding new production

lines or creating new products, which may lead to conducting development studies for the establishment. In other words, all factors take place in harmony for the benefit of the establishment.<sup>(40)</sup>

**Table (4.11):** Mean scores, standard deviations and percentages for indicators of stone and marble sector performance, through waste management in the city of Hebron, regarding the sub-scale of (Customers) from the point of view of establishments' managers or owners, ranked in a descending order:

<b>Indicators of Stone and Marble Sector Waste Management in the city of Hebron, through Waste Management regarding the sub-scale of (Customers)</b>	<b>Mean Score*</b>	<b>Standard Deviation</b>	<b>Percentage %</b>
Achieving customer satisfaction (current customers)	3.99	1.08	79.8
Attracting new customer (reaching new markets)	3.75	1.20	75.0
Improving delivery of product	3.72	1.13	74.4
Enhancing and increasing advertising campaigns	3.43	1.28	68.6

\*Mean is out of 5 points.

The above table explains the indicators of performance of Stone and Marble Sector in the city of Hebron, through Waste Management regarding the sub-scale of (Customers), from the point of view of establishments' managers or owners, classified according to degree of importance, where the sub-scale of (Achieving customer satisfaction (current customers)) was on the foreground among other sub-scales, as most important, with mean score of (3.99). Then was the sub-scale of (Attracting new customer (reaching new markets)) with mean score of (3.75), followed by the sub-scale of (Improving delivery of product) with mean score of (3.72), where the sub-scale of (Enhancing and increasing advertising campaigns) was with lowest degree with mean score of (3.43).

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(40):*Palestinian Federation of Industries*, Industrial Modernization Center, The Stone and Marble Sector, 2005.

Naturally, any customer -for a certain establishment- can be attracted with new methods of production, or new ways of money saving, or even environment protection, so that, customer will be satisfied, and new customers will be attracted to deal with the establishment, which will encourage the owners or managers to deliver products more easily for customers, and so to increase advertising campaigns.

**Table (4.12):** Calculations for indicators of stone and marble sector performance regarding the sub-scale of (Financial Issues) from the point of view of establishments' managers or owners, ranked in a descending order:

<b>Indicators of Stone and Marble Sector Waste Management in the city of Hebron, through Waste Management regarding the sub-scale of (Financial</b>	<b>Mean Score*</b>	<b>Standard Deviation</b>	<b>Percentage %</b>
Reducing costs of production	3.87	1.25	77.4
Maximizing profit margin	3.75	1.24	75.0
Increasing production rate	3.64	1.24	72.8
Increasing the exports rate	3.59	1.23	71.8
Pricing suitability among market sectors	3.55	1.23	71.0
Encouraging participation in exhibitions	2.99	1.50	59.8

\*Mean is out of 5 points.

The above table explains the indicators of performance of Stone and Marble Sector in the city of Hebron, through Waste Management regarding the sub-scale of (Financial Issues), from the point of view of establishments' managers or owners, classified according to degree of importance, where the sub-scale of (Reducing costs of production) for the establishment) was on the foreground among other sub-scales, as most important, with mean score of (3.87). Then the sub-scale of (Maximizing profit margin) with mean of (3.74), after that was (Increasing production rate) with mean score of (3.64), followed by (Increasing the exports rate) with mean score of (3.59), the sub-scale of (Pricing suitability

among market sectors) was next with mean score of (3.55), where (encouraging participation in exhibitions) was with lowest degree with mean score of (2.99).

From the results shown above, it is obvious that any establishment manager or owner is obsessed with cost saving, and maximizing profit margin, in order to be able to increase production and exports rate, which leads to make suitable pricing strategy, and so gives a chance to participate in exhibitions.

### **4.3 Study Hypotheses:**

**4.3.1 There are no statistical significant differences in *waste management* of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the variables: years of experience, establishment year, legal status, if establishment holds certificate of quality or not.**

Regarding the mentioned variables, sub- hypotheses are stated as follows:

#### **4.3.1.1 Hypothesis No.1:**

There are no statistical significant differences in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the respondents' (years of experience):

To verify the validity of the mentioned hypothesis, the (one way analysis of variance) test was used in order to examine the differences in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the respondents' (years of experience), as illustrated in table (4.13):

**Table (4.13):** Findings of (one way analysis of variance) test for the differences in waste management, from the point of view of establishments' managers or owners according to the respondents' (years of experience):

Study Sub-scale	Source	Degree of Freedom	Sum of Squares	Mean Score	F- value	Sig.
<b>Waste Reduce</b>	Between groups	2	0.004	0.002	0.045	0.956
	Inside groups	72	3.156	0.044		
	Total	74	3.159	-----		
<b>Waste Reuse</b>	Between groups	2	0.863	0.432	0.935	0.397
	Inside groups	72	33.211	0.461		
	Total	74	34.074	-----		
<b>Waste Recycle</b>	Between groups	2	0.708	0.354	0.700	0.500
	Inside groups	72	36.419	0.506		
	Total	74	37.127	-----		

The values given in the above table indicate that there are no statistical significant differences in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the respondents' (years of experience), and so the first hypothesis is **accepted**.

Table (4.14): Mean scores and standard deviation values for waste management from the point of view of establishments' managers or owners according to respondents' (years of experience):

<b>Study Sub-scale</b>	<b>Years of Experience</b>	<b>N</b>	<b>Mean Score</b>	<b>Standard Deviation</b>
<b>Waste Reduce</b>	-5	11	1.68	0.18
	5-10	16	1.69	0.21
	+10	48	1.70	0.21
<b>Waste Reuse</b>	-5	11	2.62	0.70
	5-10	16	2.26	0.55
	+10	48	2.37	0.71
<b>Waste Recycle</b>	-5	11	2.62	0.58
	5-10	16	2.57	0.53
	+10	48	2.39	0.78

#### **4.3.1.2 Hypothesis No.2:**

There are no statistical significant differences in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to (establishment year):

To verify the validity of the mentioned hypothesis, the (one way analysis of variance) test was used in order to examine the differences in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to (establishment year), as illustrated in table (4.15):

Table (4.15): Results of (one way analysis of variance) test for the differences in waste management from the point of view of establishments' managers or owners according to (establishment year):

Study Sub-scale	Source	Degree of Freedom	Sum of Squares	Mean Score	F- value	Sig.
<b>Waste Reduce</b>	Between groups	3	0.182	0.061	1.446	0.237
	Inside groups	71	2.978	0.042		
	Total	74	3.159	-----		
<b>Waste Reuse</b>	Between groups	3	1.071	0.357	0.768	0.516
	Inside groups	71	33.003	0.465		
	Total	74	34.074	-----		
<b>Waste Recycle</b>	Between groups	3	1.737	0.579	1.161	0.331
	Inside groups	71	35.391	0.498		
	Total	74	37.127	-----		

The values given in the above table indicate that there are no statistical significant differences at in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to (establishment year), and so the second hypothesis is **accepted**.

Table (4.16): Mean score and standard deviation values for waste management from the point of view of establishments' managers or owners according to (establishment year):

<b>Study Sub-scale</b>	<b>Establishment Year</b>	<b>N</b>	<b>Mean Score</b>	<b>Standard Deviation</b>
<b>Waste Reduce</b>	-1995	29	1.71	0.20
	1996-2000	20	1.75	0.17
	2000-2005	14	1.62	0.24
	+2006	12	1.65	0.20
<b>Waste Reuse</b>	-1995	29	2.44	0.70
	1996-2000	20	2.49	0.64
	2000-2005	14	2.34	0.74
	+2006	12	2.13	0.58
<b>Waste Recycle</b>	-1995	29	2.41	0.88
	1996-2000	20	2.49	0.67
	2000-2005	14	2.72	0.53
	+2006	12	2.22	0.29

#### **4.3.1.3 Hypothesis No.3:**

There are no statistical significant differences in the waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the respondent's (legal status):

To verify the validity of the mentioned hypothesis, the (one way analysis of variance) test was used in order to examine the differences in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the establishments' (legal status), as illustrated in table (4.17):

Table (4.17): Results of (one way analysis of variance) test for the differences in waste management from the point of view of establishments' managers or owners according to the establishments' (legal status):

Study Sub-scale	Source	Degree of Freedom	Sum of Squares	Mean Score	F- value	Sig.
<b>Waste Reduce</b>	Between groups	2	0.046	0.023	0.537	0.587
	Inside groups	72	3.113	0.043		
	Total	74	3.159	-----		
<b>Waste Reuse</b>	Between groups	2	0.499	0.250	0.535	0.588
	Inside groups	72	33.575	0.466		
	Total	74	34.074	-----		
<b>Waste Recycle</b>	Between groups	2	0.269	0.134	0.262	0.770
	Inside groups	72	36.859	0.512		
	Total	74	37.127	-----		

The values given in the above table indicate that there are no statistical significant differences at in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the establishments' (legal status), and so the third hypothesis is **accepted**.

Table (4.18): Mean Score and standard deviation values for waste management from the point of view of establishments' managers or owners according to the establishments' (legal status):

<b>Study Sub-scale</b>	<b>Legal Status</b>	<b>N</b>	<b>Mean Score</b>	<b>Standard Deviation</b>
<b>Waste Reduce</b>	Limited liability company	34	1.68	0.21
	Public	26	1.68	0.20
	Individual	15	1.74	0.18
<b>Waste Reuse</b>	Limited liability company	34	2.46	0.70
	Public	26	2.28	0.64
	Individual	15	2.40	0.68
<b>Waste Recycle</b>	Limited liability company	34	2.41	0.65
	Public	26	2.54	0.62
	Individual	15	2.44	0.96

#### **4.3.1.4 Hypothesis No.4:**

There are no statistical significant differences in the waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the variable (if establishment holds certificate of quality or not):

To verify the validity of the mentioned hypothesis, the (t-test) was used in order to examine the differences in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the variable of (if establishment holds certificate of quality or not), as illustrated in table (4.19):

Table (4.19): Results of (t-test) for the differences in waste management from the point of view of establishments' managers or owners according to the variable (if establishment holds certificate of quality or not):

Study Sub-scale	Certificate of Quality	N	Mean Score	Standard Deviation	Degree of freedom	T- value	Sig.
<b>Waste Reduce</b>	YES	10	1.85	0.13	73	2.606	* 0.011
	NO	65	1.67	0.20			
<b>Waste Reuse</b>	YES	10	2.73	0.43	73	1.748	0.085
	NO	65	2.33	0.69			
<b>Waste Recycle</b>	YES	10	2.66	1.01	73	0.703	0.498
	NO	65	2.43	0.65			

The values given in the above table indicate that there are statistical significant differences in the waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the variable (if establishment holds certificate of quality or not), where the differences reside within the sub-scale of (Waste Reduce), for the sake of establishments that are granted quality certificates, where it was obvious that such establishments do consider waste reduce much more than those with no quality certificates, as explained through mean score values in table (4.19), and so the fourth hypothesis is **refused**.

According to the researcher opinion, the reason why establishments that are granted quality certificate were capable of applying waste Reduce inside their establishments, is that they have a kind of awareness of waste management approach, and that they have accepted the idea of the quality, which is attaining customer satisfaction, so they naturally will adopt the waste Reduce to get the benefit of it, such benefits related to financial issues, internal business of the establishment, and also, the growth and creativity issues inside the establishment.

According to the researcher opinion, the reason why the level of performance level increases as the level of Reducing waste increases, and vice versa. And specifically within the sub-scales of both "Internal Business" and "Customers", is that both have sub-issues which are related to different steps occurring inside the establishment, which can enhance the process of Reducing waste or increasing the level of performance. Such steps as: (Enhancing quality of products, Granting a good reputation (image) for the establishment, Conducting development studies for the establishment, Creating new products, Adding new production lines, or even using modern technology). All are performed by the establishment in order to have communication channels with their customers, and consequently achieving other issues like: (Achieving customer satisfaction (current customers), Attracting new customer (reaching new markets), Enhancing and increasing advertising campaigns, and Improving delivery of products).

On the other hand, the mentioned hypothesis can be depicted as a sequence of interrelated steps, establishments' owners tend to attain customer satisfaction. This encourages them to apply the mentioned steps of internal business inside the establishment, most steps are taken into consideration due to adopting Reducing waste of their industry. For example, trying to reduce the waste during manufacturing the stone and marble will result in better product quality, especially when using new technology. This will consequently grant the establishment a better image for customers, increasing demand for its products, and so performance level increases.

This sequence can be applied to the other steps to prove the relationship between Reducing waste, and other variables.

## Chapter Five:

### **Findings, Conclusion and Recommendations**

#### **5.1 Introduction:**

This chapter demonstrates summary of study findings, and a comprehensive presentation of study recommendations.

#### **5.2 Study findings:**

This section summarizes major study findings and conclusions, regarding study sample characteristics, study sub-scales and hypotheses as follows:

##### **5.2.1 Findings related to study sample characteristics:**

1. **Job title:** questionnaire results show that 40% of respondents were owners, where 24% were managers, while 36% were having other job title. This means that the majority of respondents were either owners or managers.

Conclusion: since the category of (other job title) with 36% were mostly owners and managers at the same time, it was inferred that most establishments; managers prefer to discuss their establishment issues individually, away from other employees interference.

2. **Age:** results show that 37.3 % of sample members were less than 30 years, while 26.7% were between 30 and 40 years, and 36.0% were more than 41 years old, in other words majority of sample members were young.

Conclusion: the reason why most respondents were even owners or their sons, in other words, were young, may be because most old owners could not read or write and let their sons lead the establishment, and that was a fact, which emphasizes the first conclusion.

3. **Education:** results show that 66.7 % of sample members were having Tawjihi or less, while 12.0% were having Diploma, and 21.3% were having B.A. degree and higher.

Conclusion: majority are below Tawjihi which reflects the lack of education and the need for enhancing education level, in order to prevent any negative effects on establishments.

4. **Years of experience:** results show that 14.7 % of sample members were having experience of less than 5 years, while 21.3% were having 5 to 10 years, and 64.0% were having more than 10 years of experience.

Conclusion: most of respondents were having more than 10 years of experience, which relatively gives a good indicator, where experience reveals problem faster and more accurately, and reflects awareness of both problems and need for such an industry, which in turn lead to more effective conditions and environment for enhancing performance of the establishment as an individual.

Also, 10 years of experience do not contradict with the young managers, since the education rate was not that high, which means young sons enroll in their family business early, and so, acquire more years of experience.

5. **Location:** results show that 94.7 % of sample members are having the establishment inside the industrial zone, while 5.3% are outside the industrial zone.

Conclusion: the existence of majority of establishments within industrial zone area gives a positive indication of availability for applying any enhancement plan or strategy.

6. **Establishing Year:** results show that 38.7 % of sample members declared that the establishments have been established in the year 1995 or before, and 26.7% between the years 1996 and 2000, while 18.7% between the years 2001 and 2005, and 16.0% at the year 2006 or after.

Conclusion: major establishments were found before 1995, which also reveals more experience and good conditions of industry before the recession of year 2000 and after.

7. **Legal status:** results show that 45.3 % of sample members mentioned that their establishments are limited liability, while 34.7% are Public, and 20.0% are individual.

Conclusion: most establishments were limited liability, known as "family business", minority were individual, which may lead to possibility that these establishments start as individual, then develop to become a family company owned by the establisher and his family members, mostly his sons or brothers.

8. **Number of workers:** results show that 24.0 % of sample members declared that number of workers is less than 5 workers, and 50.7% between 5 and 10 workers, while 17.3% between 11 and 20 workers and 8.0% are employing more than 20 workers.

Conclusion: the largest value was for (5-10) workers, which is not a large number of workers (manager with few workers as assistants or technicians), which do explain and emphasize the previous conclusion as family owned establishments.

9. **Certificate of quality:** results show that 13.3 % of sample members announced that the establishments is having a certificate of quality, while 86.7% is not having any certificate of quality.

Conclusion: around one tenth of the establishments with certificate of quality, clearly shows lack of awareness and education, also means that they mainly depend on experience, which is not enough alone to upgrade industry level.

This conclusion agrees with the study of **Industrial Modernization Center (The Stone and Marble Sector, Palestinian Federation of Industries)**, which concluded that the stone and marble industry is suffering from several weaknesses, such as lack of strategic planners for enterprises, and limited usage of information technology.

### 5.2.2 Findings related to study sub-scales:

#### **Regarding waste management techniques sub-scale:**

1. **REDUCE:** results show that the level of reducing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners was HIGH, with percentage of (84.5%) and mean score of (1.69), which reflects the ability and readiness for applying the other two principles (REUSE and RECYCLE).
2. **REUSE:** results show that the level of reusing stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners was

MODERATE, with percentage of (47.6%) and mean score of (2.38), which also reflects the ability and readiness for applying the RECYCLING principle and waste management techniques.

3. **RECYCLE:** results show that the level of recycling stone and marble waste in the city of Hebron from the point of view of establishments' managers or owners was also MODERATE, with percentage of (49.2%) and mean score of (2.46), which means the need for awareness and intensifying more efforts in applying the waste management techniques starting with the 3R's principle.

#### **Regarding performance of stone and marble sector sub-scale:**

1. **Growth and creativity:** results of respondents' answers show that the level of performance of stone and marble in the city of Hebron from the point of view of establishments' managers or owners regarding **growth and creativity** was HIGH, with percentage of (80.0%) and mean score value of (4.00).

Justification: This implies that newly-hired workers tend to enhance their performance by learning and training, so the ability to do so came from both managers and workers.

Also, this agrees with the study of **Rocio Poveda- Bautista and others (Competitiveness Measurement System in the Advertising Sector)** which concluded that "Growth and creativity were the most contributing indicators to measuring performance", then came the other indicators.

2. **Internal business:** results of respondents' answers show that the level of performance of stone and marble in the city of Hebron from the point of view of establishments' managers or owners regarding **internal business** was HIGH, with percentage of (77.8%) and mean score value of (3.89).

Justification: This implies that since the priority of any establishment owner is keeping own establishment on track of cost minimization, and profit maximization, also, there exist the motive of keeping and developing own business.

3. **Customers:** results of respondents' answers show that the level of performance of stone and marble in the city of Hebron from the point of view of establishments' managers or owners regarding **customers** was HIGH, with percentage of (74.4%) and mean score value of (3.72).

Justification: Although the majority of stone and marble establishments do not have quality certificates, but still the tendency for having quality certificates do exist, and so to attain customer satisfaction. Also, the vision and perspective of reaching new markets and specializations, which lead to good establishment image among peer establishments or even rivals.

The previous three indicators' results agree with the study of **Mohammad Ahmad Abu Qamar (Evaluation of the performance of Bank of Palestine using the Balanced Scorecard)**, which indicated that when management implements strategic management especially BSC methodology, will have a suitable and satisfactory performance, according to the five dimensions mentioned in the study.

4. **Financial issues:** results of respondents' answers show that the level of performance of stone and marble in the city of Hebron from the point of view of establishments' managers or owners regarding **financial issues** was MODERATE, with percentage of (71.2%) and mean score value of (3.56).

Justification: Although the (customers) sub-scale indicates high degree, the (financial issues) moderate degree is relatively accepted, due to existence of import- export obstacles and barriers, and the tendency from most owners' side NOT to reveal their financial status in details. And the total degree of (75.8%) and mean score of (3.79) –which is considered high –confirms it all.

### 5.2.3 Findings related to study hypotheses:

Results of study regarding to hypotheses are explained in table (5.1) below.

Table (5.1): study hypothesis and status of acceptance or refusal according to study results:

No.	Hypothesis	Status of acceptance or refusal
1.	There are no statistical significant differences in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the respondents' (years of experience)	Accepted
2.	There are no statistical significant differences in waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to (establishment year)	Accepted
3.	There are no statistical significant differences in the waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the respondent's (legal status)	Accepted
4.	There are no statistical significant differences in the waste management of the stone and marble sector in the city of Hebron, from the point of view of establishments' managers or owners according to the variable (if establishment holds certificate of quality or not)	Refused

### 5.3 Recommendations

قال تعالى: "إن الله لا يغير ما بقوم حتى يغيروا ما بأنفسهم". (الرعد 11).

Naturally, to apply enhancement, establishments have to start from basics, in other words, the establishment management, whether starting enhancing by its strategy, employees, managers, activities. In addition to the support from union of stone and marble, and other concerned parties as well.

#### **How to apply?**

Depending on study results, the level of Reducing, Reusing, and Recycling waste was even High or Moderate. On the other hand, using "skilled labor (graduate of Industrial schools and students of industrial automation)) came with low degree. Accordingly, it is recommended to:

1. Encouraging to raise level of education for both managers and workers, by:
  - a. For managers or owners: by providing specialized training courses by Union of Stone and Marble, and Chamber of Industry and Commerce.
  - b. For workers: can be achieved either by:
    - i. Imposing a term of certain level of education when employing, at least diploma as an example.
    - ii. Or: offering training courses by the establishment with the help of Union of Stone and Marble and Chamber of Industry and Commerce.
    - iii. Or: offering educational scholarships for workers funded by more than one party, for example funded by the establishment, Union of Stone and Marble, Chamber of Commerce and other funding countries collaboratively.
    - iv. Trying to reinforce the cooperation between the academic sector and stone and marble sector. The stone and marble sector at Palestine Polytechnic University is an existing example.
    - v. Disseminating the awareness of importance of this industry and the efficiency of waste management, by the academic sector, which can be achieved by: Holding lectures, visiting tours to related establishments and parties during academic courses, and hosting members of stone and marble establishments to present information about their industry.

2. Arranging regular –scheduled lectures and workshops with the cooperation of Union of Stone and Marble and establishments to follow up any issues which may contribute in enhancing the sectors conditions in general as a start.

This is emphasized by the results in section (5.2.1): (job title, age, education and years of experience).

Regarding waste management techniques, section (4.2.4), were classified according to degree of importance, where disposal occurs in crushers came on top of techniques, and waste treatment at municipality station was with lowest degree, it is necessary to:

3. Confirming using new suitable techniques for designing, manufacturing, waste disposal, packaging, marketing, and other related activities.
4. The necessity of rule legislation by the Ministry of National Economy and Palestine Standards Institution to control waste disposal, and supporting this both the government (the Ministry of National Economy and the Palestine Standards Institution) and the establishments, by offering funded projects, whether machines or techniques. Along with exerting intensified and continuous efforts by Ministry of National Economy, Palestine Standards Institution, Hebron Chamber of Commerce and Union of Stone and Marble together in order to build an integral structure of stone and marble industry, and continue with continuous cooperation.
5. Getting the most benefit from the experience of managers, and existing workers, in applying waste management principle, and trying to offer training for the newly-hired workers, by setting up orientation lectures, meetings, or even specifying scheduled times during the working days, for question answering, suggestions. Since experience exchange will save time, effort, and provide better perspective for both workers and establishment.

Considering the result of performance level in page 54, it is necessary to have some improving and developing steps as:

6. Since most establishments are located in the industrial zone, this makes it a motive for them to take a collective action towards having a serious attitude for improving their conditions at the industrial zone.
7. Participating in global exhibitions, to achieve bidirectional benefits; letting the business world know we do exist as Palestinian stone and marble industry, and acquiring new experience and other enhancement ideas for such a sector. Also, using advertising campaigns for introducing the industry to the market, and for financial purposes as well.

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## Appendix A:

### List of Questionnaire Arbitrators

No.	Name	Title	University/ Establishment
1.	Dr. Bassam Banat	Assistant Professor, Faculty of Arts	Al-Quds University
2.	Dr. Fadel Eideh	Lecturer- AlQuds Open University	AlQuds Open University
3.	Eng. Haitham Rayyan	Head of Hebron office- PSI	Palestine Standards Institution
4.	Eng. Jawad El-Haj	Manager of Stone and Marble Center	Palestine Polytechnic University
5.	Eng. Maher Hushayesh	Executive Manager for Union of Stone and Marble- Bethlehem	Union of Stone and Marble
6.	Dr. Maher Jaabari	Assistant Professor and Head of Industrial Synergy Center-PPU	Palestine Polytechnic University
7.	Dr. Mohammad Jaabari	Dean of Finance and Management Faculty	Hebron University
8.	Dr. Mohammad Taha Sayyed Ahmad	Head of Palestinian Concrete Society	International Center for Engineering and Geological Studies- Hebron
9.	Mr. Nidal Neiroukh	Instructor- Department of Accounting	Al-Quds University
10.	Dr. Suhail Sultan	Assistant Professor- PPU	Palestine Polytechnic University
11.	Mrs. Taghreed Tamimi	Arabic Language Lecturer- PPU	Palestine Polytechnic University
12.	Mr. Wisam Tarawa	Head of Hebron office- USM	Union of Stone and Marble
13.	Mr. Khaldoun Zughair	English Language Lecturer-PPU	Palestine Polytechnic University

## **Appendix B:**

**In the name of Allah Most Compassionate Most Merciful**

**Hebron University  
Faculty of Graduate Studies and Scientific Research  
Master of Business Administration Program (M.B.A.)**



**Questionnaire of Study titled:**

**Implication of Organizational Variables on Waste Management of the  
Stone and Marble Sector in the City of Hebron**

**Dear respected owners**

*Greetings*

The researcher is honored to present to you a questionnaire designed for the above titled study. This comes as a partial completion of the requirement of Master of Business Administration (MBA) at Hebron University – Palestine.

The questionnaire aims to study the implication of organizational variables of waste management of the stone and marble sector. The spatial boundaries of the study have been limited to the city of Hebron.

We hope that you, kindly, answer the questions of the questionnaire accurately and objectively. The accuracy of the questionnaire depends on your answers' accuracy, and the information collected from you shall be used only for scientific research.

**Thank you for your cooperation**

**Supervisor:** Dr. Suhail Sami Sultan

**Researcher:** Ghadah Mohammad Neiroukh

**Note:** In case you desire to receive the results of the study, you are kindly requested to provide us with your email or fax number.

## Sections of the Questionnaire

### Section One: General Data

Plases put (X) inside the box that fits perfectly your choice

#### A. General information of the questionnaire respondent:

**Job Title:** Owner of the establishment  Manager of the establishment

other: *please specify*

#### **Age:**

Less than 30 years  30 to 40 years  41-50 years

More than 50 years

**Education:** Tawjihi and below  Diploma  BA

Higher Studies

**Years of Experience:** Less than 5 years  5- 10 years  More than 10 years

#### B. Information about the Establishment

##### Location

In the industrial zone (Al-Fahs)  Outside the industrial zone, please specify:

##### **Establishing Year:**

1995 and before  1996-2000  2001-2005  after 2006

##### **Legal status:**

Limited Liability Establishment  Public  Individual

##### **Number of workers:**

Less than 5  5-10  11-20  More than 20

##### **The establishment holds a Certificate of Quality:**

Yes, Mention it  -----  No

**Section two: The management of stone and marble wastes in Hebron according to the following fields:**

**Field One: (Reducing wastes)**

Kindly answer the following questions according to its availability at your establishment by putting (×) in the space provided:

No.	Statement	Yes	No
1.	The establishment has been designed based on proper layout		
2.	A feasibility study has been conducted for the establishment before being established		
3.	New machines are used in the establishment		
4.	Skilled labor are being employed (graduate of Industrial schools and students of industrial automation)		
5.	Workers are being trained continuously		
6.	High-quality raw materials are used		
7.	Proper storage mechanism of the raw stones are followed		
8.	Proper storage mechanisms are used for stones after production		
9.	Production lines are controlled for quality insurance		
10.	Production is performed according to measurements and different uses		

**Field Two: Reusing Wastes**

To which extent reusing the wastes of stones and marble is applied at your establishment? Please tick (×) in the space that appropriately fits your choice:

No.	Statement	Too large	Large	Average	Little	Too little
1.	Making wall chains (fences)					
2.	Building beautiful views (antiques and decorations)					
3.	Walls are installed at the time of pouring concrete					
4.	It is used in paving the road before pavement					
5.	Used for tiling					
6.	Others: <i>please specify</i>					

**Field Three: Recycling Wastes**

Please choose the method which leads to wastes recycling. Please put (×) in the appropriate space that fits your choice:

No.	Statement	Always	Often	Sometimes	Rarely	Never
1	Transforming the remains of the wastes into small pebble					

2	Using part of the wastes in the tiles' composition					
3.	Using dry powder as a component of manufacturing chalks					
4.	Transforming part of the wastes to one of the paints' components					
5.	Using dry powder as a component of gypsum					
6.	Others: <i>please specify</i>					

#### Field Four: The process of Waste treatment

Please choose the mechanism/s used at your establishment

No.	Statement	Yes	No
	Liquid wastes are treated by using the Silos		
2.	Liquid wastes are treated by using the ----- ponds		
3.	Liquid wastes are treated using Filter Press		
4.	Liquid wastes are treated through municipality treatment station		
5.	Solid wastes are disposed in the stone crusher		
6.	Solid wastes are disposed in unknown lands		
7.	Liquid wastes are disposed in the drains network		
8.	Liquid wastes are disposed in unknown lands		
9.	Liquid wastes (slurry) are disposed in special dumps		

#### Part Three: The Performance level of Stone and marble sector in Hebron in light of Waste Management

Please put (×) in statement that fits your point of view:

**The application of waste management motivates achieving the following points for the establishment:**

No.	Statement	Strongly Agree	Agree	Moderate	Disagree	Strongly Disagree
<b>A</b>	<b>Matters related to the growth and creativity in the establishment</b>					
1.	The provision of job opportunities					
2.	Improving the productivity of workers through training them					
3.	Achieving workers' satisfaction					
4.	Keeping the workers safe					
5.	Motivating the workers					

<b>B Matters related to the internal processes of the establishment</b>						
1.	Improving the quality of products					
2.	Granting a good reputation for the establishment					
3.	Conducting development studies for the establishment					
4.	Creating new products					
5.	Adding new production lines					
6.	Using modern technology					
<b>A Issues related to customers</b>						
1.	Achieving satisfaction of current customers					
2.	Reaching new customer (new markets)					
3.	Increasing the awareness and advertising campaigns					
4.	Improving the way in which the product reaches the customer					
<b>A Issues related to financial situation</b>						
1.	Reducing costs of production					
2.	Increasing production at the establishment					
3.	Increasing the exports of the establishment					
4.	Increasing the profits of the establishment					
5.	The suitability of the prices for the different market sectors					
6.	Increasing the participation in the exhibitions					

**In case of having any other information that was not mentioned above, please add them here:**

-----  
 -----

**With sincere thanks and appreciation**

The researcher

## Appendix C:

بسم الله الرحمن الرحيم



جامعة الخليل  
كلية الدراسات العليا والبحث العلمي  
برنامج ماجستير إدارة الأعمال

إستبانة دراسة بعنوان

### انعكاسات المتغيرات التنظيمية لإدارة النفايات لدى قطاع الحجر والرخام في مدينة الخليل

السادة أصحاب المنشآت المحترمين

تحية طيبة وبعد،

تتشرف الباحثة بأن تطرح بين أيديكم إستبانة خاصة بالدراسة التي تقوم بإعدادها، وذلك استكمالاً لمتطلبات الحصول على درجة الماجستير في إدارة الأعمال (MBA) من جامعة الخليل/ فلسطين.

حيث تهدف إلى دراسة انعكاسات المتغيرات التنظيمية لإدارة المخلفات لدى قطاع الحجر والرخام، وقد اقتصرت الدراسة على مدينة الخليل كعنصر مكاني.

ونأمل من حضرتكم التكرم بالإجابة على أسئلة هذه الإستبانة بدقة وموضوعية، حيث أن صحة هذه الإستبانة تعتمد على صحة إجاباتكم، والمعلومات التي سيتم الحصول عليها لن تستخدم إلا لأغراض البحث العلمي فقط.

شاكرين لكم حسن تعاونكم

الباحثة

غادة محمد نيروخ

إشراف

الدكتور سهيل سامي سلطان

ملاحظة: في حالة رغبتكم بالحصول على نتائج الدراسة يرجى تزويدنا بالبريد الإلكتروني أو رقم الفاكس.

## أقسام الاستبانة

### القسم الأول: بيانات عامة

الرجاء الإجابة بوضع إشارة (X) في المربع أمام العبارة التي تناسب اختياركم  
أ- معلومات عامة حول معيئ الاستبانة:

المسمى الوظيفي:  صاحب المنشأة  مدير المنشأة  غير ذلك:  
حدد: .....

العمر:  أقل من 30 سنة  30-40 سنة  41-50 سنة  أكثر من 50 سنة.

المؤهل العلمي:  توجيهي فما دون  دبلوم متوسط  بكالوريوس  دراسات عليا  
عدد سنوات الخبرة:  أقل من 5 سنوات  5-10 سنوات  أكثر من 10 سنوات.

### ب- معلومات حول المنشأة

الموقع  في المنطقة الصناعية (الفحص)  خارج المنطقة الصناعية،  
حدد: .....

سنة التأسيس  قبل عام 1995 م  1996م-2000م  2001 م-2005م  بعد عام  
2006م.

الشكل القانوني  مساهمة خصوصية محدودة  عادية عامة  فردية.  
عدد العاملين  أقل من 5 عمال  5-10 عمال  11-20 عامل  أكثر من  
20 عامل.

المنشأة حاصلة على شهادة جودة  نعم، أذكرها: .....  لا.

**القسم الثاني: إدارة مخلفات قطاع الحجر والرخام في مدينة الخليل وذلك حسب المجالات الآتية:**

**المجال الأول: تقليل المخلفات (Reduce)**

الرجاء الإجابة عن الأسئلة التالية وذلك حسب ما هو متوفر لديكم، وذلك بوضع إشارة (×) في المكان المخصص

الرقم	العبرة	نعم	لا
1.	تم تصميم المنشأة وفق أسس هندسية سليمة.		
2.	تم عمل دراسة جدوى اقتصادية للمنشأة قبيل إنشائها.		
3.	يتم استخدام آلات حديثة في المنشأة.		
4.	يتم توظيف العمالة الماهرة (خريجي مدارس صناعية وتخصصات الأتمتة الصناعية).		
5.	يتم تدريب العاملين بشكل مستمر.		
6.	يتم استخدام مواد خام ذات جودة عالية.		
7.	يتم إتباع آليات التخزين الصحيح للحجر الخام.		
8.	يتم إتباع آليات التخزين الصحيح للحجر بعد التصنيع.		
9.	تتم مراقبة خطوط الإنتاج من أجل ضبط الجودة.		
10.	يتم الإنتاج وفق قياسات واستخدامات (سماكات) مختلفة.		

**المجال الثاني: إعادة استخدام المخلفات (Reuse)**

إلى أي مدى يتم تطبيق إعادة استخدام مخلفات الحجر والرخام في المنشأة؟ الرجاء وضع إشارة (×) في المكان الذي يناسب اختياركم

الرقم	العبرة	كبير جداً	كبير	متوسط	قليل	قليل جداً
1.	عمل سلاسل جدارية (أسوار).					
2.	بناء مناظر جمالية مثل (تحف وديكورات).					
3.	توضع في الجدران أثناء صب الباطون.					
4.	تستخدم في رصف الطرق قبل تعبيدها.					
5.	تستخدم للتبليط.					
6.	غير ذلك: أذكرها: .....					

### المجال الثالث: إعادة تصنيع (تدوير) المخلفات (Recycle)

الرجاء اختيار الطريقة التي تؤدي إلى إمكانية إعادة تصنيع المخلفات من وجهة نظرك، وذلك بوضع إشارة (×) في المكان المخصص بما يناسب اختيارك

الرقم	العبرة	دائماً	غالباً	أحياناً	نادراً	أبداً
1.	تحويل ما يتبقى من المخلفات إلى حصمة أو إحدى مشتقاتها.					
2.	استخدام جزء منها إلى إحدى مكونات تصنيع البلاط.					
3.	استخدام البودرة الجافة كإحدى مكونات تصنيع الطباشير.					
4.	تحويل جزء منها إلى إحدى مكونات تصنيع الدهانات.					
5.	استخدام البودرة الجافة كإحدى مكونات تصنيع الجبس.					
6.	غير ذلك: أذكرها: .....					

### المجال الرابع: آليات معالجة المخلفات (Waste Treatment)

الرجاء اختيار الآلية/ الآليات المستخدمة في منشآتكم

الرقم	العبرة	نعم	لا
1.	تتم معالجة المخلفات السائلة باستخدام الصوامع (السيلو).		
2.	تتم معالجة المخلفات السائلة باستخدام برك الترسيب.		
3.	تتم معالجة المخلفات السائلة باستخدام المكبس (Filter Press).		
4.	تتم معالجة المخلفات السائلة من خلال محطة المعالجة الخاصة بالبلدية.		
5.	يتم التخلص من المخلفات الصلبة في الكسارة.		
6.	يتم التخلص من المخلفات الصلبة في أراض مجهولة.		
7.	يتم التخلص من المخلفات السائلة في شبكة الصرف الصحي.		
8.	يتم التخلص من المخلفات السائلة في أراض مجهولة.		
9.	يتم التخلص من المخلفات السائلة (الروبة بعد عصرها) في مكبات خاصة بالبلدية.		
10.	يتم التخلص من المخلفات السائلة في مكبات خاصة بالمنشأة.		

### القسم الثالث: أداء قطاع الحجر والرخام في مدينة الخليل في ظل إدارة المخلفات

الرجاء وضع إشارة (×) في المكان المخصص أمام كل عبارة بما يتناسب مع وجهة نظرك حول:

تطبيق إدارة مخلفات الحجر والرخام يعمل على تحقيق الأمور التالية للمنشأة

الرقم	العبرة	أوافق بشدة	أوافق	بين بين	لا أوافق	لا أوافق بشدة
<b>أ- الأمور المتعلقة بالنمو والإبداع في المنشأة:</b>						
1.	توفير فرص عمل.					
2.	تحسين إنتاجية العاملين من خلال تدريبهم.					
3.	تحقيق رضا العاملين.					
4.	الحفاظ على العاملين.					
5.	تحفيز العاملين.					
<b>ب- الأمور المتعلقة بالعمليات الداخلية للمنشأة:</b>						
6.	تحسين جودة المنتجات.					
7.	منح سمعة جيدة للمنشأة بين نظيراتها.					
8.	القيام بأبحاث تطويرية للمنشأة.					
9.	ابتكار منتجات جديدة.					
10.	إضافة خطوط إنتاج جديدة.					
11.	استخدام تكنولوجيا حديثة.					
<b>ت- الأمور المتعلقة بالزبائن:</b>						
12.	كسب رضى الزبائن الحاليين.					
13.	الوصول إلى مستهلكين جدد (أسواق جديدة).					
14.	زيادة حملات الدعاية والإعلان.					
15.	تحسين طريقة إيصال المنتج للمستهلك.					
<b>ث- الأمور المتعلقة بالناحية المالية:</b>						
16.	تقليل تكاليف الإنتاج.					
17.	زيادة معدل الإنتاج في المنشأة.					
18.	تحقيق زيادة صادرات المنشأة.					
19.	تحقيق زيادة أرباح المنشأة.					
20.	ملائمة الأسعار لقطاعات السوق المختلفة.					
21.	زيادة المشاركة في المعارض.					

في حال وجود أمور أخرى غير واردة فيما تقدم وترغب بإضافتها، الرجاء ذكرها:

مع جزيل الشكر والتقدير

الباحثة

## Appendix D:

List of interviews performed:

No.	Name of interviewed person	Subject of interview	Date	Place
1.	Mrs. Banan	Stone and marble surveys	May, 2011	JoStone Office, Amman, Jordan
2.	Dweik, Eng. Yaser	Waste surveys	February, 2012	Joint Service Council for Solid Waste Management for Hebron and Bethlehem, Hebron, Palestine
3.	El- Haj, Eng. Jawad	Stone and Marble data	April, 2012	Stone and Marble Center, PPU, Palestine
4.	Hamarneh, Dr. Zeyad	Stone and marble surveys	May, 26 <sup>th</sup> , 2011	Natural Resources Authority, Amman, Jordan
5.	Hirbawi, Eng. Jawad	Previous studies	June, 2012	Hebron Chamber of Commerce and Industry, Palestine
6.	Shariaa, Eng. Mohammad	Waste Management	November, 22 <sup>nd</sup> , 2010	Al-Quds University, Palestine

## Appendix E:

Thesis review certificate:

مركز ياسر الثقافي للدراسات الأكاديمية والمهنية والترجمة القانونية  
Yasser Cultural Center –Academic & Vocational Studies \*  
مجاز من وزارة التربية والتعليم  
Licensed Ministry of Education & Higher Education  
Palestine – Hebron  
فلسطين – الخليل شارع الملك فيصل – بالقرب من مستشفى عاليه الحكومي  
Fax: 02-2252823 Tel: 02-2228852  
Email [Y.c.c.1987@hotmail.com](mailto:Y.c.c.1987@hotmail.com) - - 1395/3/8 رخصة رقم

Y.c.c.  
1987

### To Whom it May Concern

This is to certify that I've reviewed and corrected grammatical mistakes of the attached research prepared by Mrs. Ghada Neiroukh , this Aug.14<sup>th</sup>.2014

*Yasser O. Khatib*  
*High Licence in English Language*  
*And Literature – Damascus University,*  
*Syria*  
*Authorized translator by/*  
*Ministry of Justice – Palestine*

مركز ياسر الثقافي  
مجاز من وزارة التربية والتعليم  
Hebron  
1987  
Ministry of Education  
Yasser Cultural Centre  
14/8/2014

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