

An-Najah National University
Faculty of Graduate Studies

**Innovation in Knowledge Intensive
Business Services in Palestine:
*A conceptual framework***

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III

Dedication

To anybody beleives in serving the humanity.

Acknowledgments

Thanks to God at the beginning and the end and every time. Thanks for my father, mother , brother and sister for supporting me along my life.

الإقرار

إننا الموقع أدناه مقدم الرسالة التي تحمل عنوان

Innovation in Knowledge Intensive Business Services in Palestine: A conceptual framework

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Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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Table of Contents

DEDICATION	III
ACKNOWLEDGMENTS	IV
DECLARATION	V
TABLE OF CONTENTS	VI
LIST OF TABLES	IX
LIST OF FIGURES	IX
LIST OF ABBREVIATIONS	XII
ABSTRACT.....	XIII
CHAPTER ONE INTRODUCTION	2
1.1 OVERVIEW	2
1.2 BACKGROUND ON THE PALESTINIAN ECONOMY	4
1.3 SIGNIFICANCE OF THE RESEARCH.....	5
1.4 PROBLEM STATEMENT	6
1.5 RESEARCH OBJECTIVES & RESEARCH QUESTIONS	7
1.6 THESIS STRUCTURE.....	8
CHAPTER TWO LITERATURE REVIEW.....	11
2.1 OVERVIEW	11
2.2 BACKGROUND AND DEFINITIONS	11
2.3 HISTORICAL BACKGROUND AND GLOBAL EXPERIENCE	13
2.4 REASONS OF THE SERVICES SECTOR GROWTH	16
2.5 THE SERVICE SECTOR IN PALESTINE	18
2.5.1 The Palestinian Context.....	18
2.5.2 Potentials and Limitations of THE PALESTINIAN services sector.....	20
2.6 KNOWLEDGE INTENSIVE BUSINESS SERVICES.....	22
2.7 INNOVATION AND KNOWLEDGE EVOLUTION IN THE SERVICE SECTOR	25
2.7.1 Service Innovation.....	26
2.7.2 Conceptual Perspective for Innovation in Services.....	28
2.8 INNOVATION IN KIBS	30
CHAPTER THREE RESEARCH METHODOLOGY.....	42
3.1 OVERVIEW	42
3.2 RESEARCH DESIGN AND APPROACH.....	42
3.3 RESEARCH STRATEGY	43
3.4 RESEARCH FRAMEWORK AND METHODS	44
3.4.1 Phase One: Desk Research	45
3.4.2 Phase Two: Empirical Survey and Data Collection	45

VII

3.4.3	Phase Three: Data Analysis.....	46
3.4.3.1	The Econometrics Analysis Methodology.....	46
3.4.3.2	Measuring the impact of innovation on the economic performance- Ordinary Least-Squares Regression (OLS).....	46
3.4.3.3	Measuring the effect of obstacles of innovation on the probability of KIBS 48	
1.	Logistic regression (Logit model).....	48
2.	The Binomial Distribution.....	48
3.	The Logit Transformation.....	49
4.	The Logistic Regression Model.....	50
5.	Estimation and Hypothesis Testing.....	50
6.	Maximum Likelihood Estimation.....	50
3.4.4	Phase Four: Conclusion and Recommendation.....	51
3.5	RESEARCH DATA.....	52
3.6	RESEARCH POPULATION AND SAMPLE SIZE.....	52
3.6.1	Study Population:.....	52
3.6.2	Study Sample.....	53
3.7	EMPIRICAL SURVEY AND DATA COLLECTION.....	54
3.8	QUALITY STANDARDS FOR THE RESEARCH TOOL.....	57
3.8.1	Pilot study.....	57
3.8.2	Validity.....	58
3.8.3	Reliability.....	59
	CHAPTER FOUR.....	62
	KNOWLEDGE INTENSIVE BUSINESS SERVICE IN PALESTINE.....	62
4.1	OVERVIEW.....	62
4.2	INTRODUCTION TO KIBS SECTOR IN PALESTINE.....	62
4.3	BUSINESS SERVICE SECTOR MARKET ANALYSIS.....	64
4.3.1	Business Service Sector Demand.....	65
4.3.2	Business Services Required by MSMEs in Palestine.....	66
4.3.3	Business Related and Professional Services Sector Value Chain.....	68
4.3.4	Business Service Sector Market Development Opportunities.....	70
4.4	BUSINESS SERVICE SUB SECTORS ANALYSIS.....	74
4.4.1	Financial Services Sector.....	76
4.4.2	Information and Communications Technology Services.....	78
4.4.3	Business Related and Professional Services.....	80
	CHAPTER FIVE.....	85
	EVALUATION OF IINNOVATION PERFORMANCE DATA ANALYSIS.....	85
5.1	OVERVIEW.....	85
5.2	POPULATION CHARACTERISTIC.....	85
5.2.1	Number of Employees in the Firms.....	85
5.2.2	Gender Segregation of Employees:.....	86

VIII

5.2.3 Establishment Dates	87
5.2.4 Population Categories and Activities	88
5.3 INNOVATION PERFORMANCE IN THE KIBS ACTIVITIES	90
5.4 INNOVATION PERFORMANCE BASED ON FIRMS REVENUE.....	94
5.4.1 The differences in Product Innovation in Respect TO TOTAL Revenues ..	94
5.4.2 The differences in Process Innovation in Respect TO TOTAL Revenues...	96
5.4.3 The differences in Organizational Innovation Regarding Total Revenues ..	97
5.4.4 The Differences in Marketing Innovation with Respect to Total Revenues	98
5.5 THE INNOVATION PERFORMANCE BASED ON THE NUMBER OF EMPLOYEES.....	99
5.5.1 The differences in Product Innovation in Respect to the Number of	
Employees	99
5.5.2 The Differences in KIBS Firms Process Innovation in Respect to the	
Number of Employees	100
5.5.3 The Differences in Organizational Innovation in Respect to the Number of	
Employees	102
5.5.4 The Differences in Marketing Innovation with Respect to THE NUMBER of	
Employees	103
5.6 DOES EXPORT IMPROVE THE INNOVATION PERFORMANCE FOR KIBS?.....	105
5.7 THE IMPACT OF INNOVATION ON THE ECONOMIC PERFORMANCE OF KIBS FIRMS	
106	
CHAPTER SIX OBSTACLES TO INNOVATION	111
6.1 CHAPTER OVERVIEW	111
6.2 INNOVATION OBSTACLES ANALYSIS	112
6.3 IMPACT OF INNOVATION OBSTACLES ON INNOVATION PERFORMANCE.....	114
CHAPTER SEVEN.....	120
CONCLUSIONS & RECOMMENDATIONS	120
7.1 OVERVIEW	120
7.2 CONCLUSIONS	120
7.3 RECOMMENDATIONS	125
REFERENCES.....	129
APPENDICES	140
APPENDIX A: RESEARCH TOOL - QUESTIONNAIRE	141
الملخص.....	ب

List of Tables

Table 1 Definitions of the services sector	11
Table 2: Share of the service sector in total value added in major countries	16
Table 3 : The division of the KIBS by Miles et al. (1995)	25
Table 3: KIBS categories as per the	53
Table 4: Cronbach's Alpha for Reliability Test.....	59
Table 5: Cronbach's Alpha Coefficient of the Questionnaire	60
Table 4: The KIBS scale in Palestine (Industrial Survey 2015).....	76
Table 5: Breakdown of Business Related services sub-sectors innovation in the West bank, 2011.....	82
Table 6: The classification of KIBS firms in Palestine	90
Table 7: Innovation performance of KIBS firms.....	92
Table 8: Innovation output in KIBS firms in 2014, 2015	94
Table 9: ANOVA for the product innovation in regards to total revenue.....	95
Table 10: Scheffe analysis for the ANOVA of the product innovation in regards to total revenue	95
Table 11 : ANOVA for the process innovation in regards with total revenue	96
Table 12 : Scheffe analysis for the ANOVA of the process innovation in regards with total revenue	97
Table 13 : ANOVA for the organizational innovation in regards with total revenue	97
Table 14 : ANOVA for the marketing innovation in regards with total revenue	99
Table 15 : ANOVA for the product innovation of KIBS firms based on the number of employees	100
Table 16: Scheffe analysis for the ANOVA product innovation of KIBS firms based on the number of employees.....	100
Table 17: ANOVA for the process innovation of KIBS firms based on the number of employees	101
Table 18 : Scheffe analysis for the ANOVA process innovation of KIBS firms based on the number of employees	101
Table 19 : ANOVA for the organizational innovation of KIBS firms based on the number of employees	102

Table 20 : Scheffe analysis for the ANOVA organizational innovation of KIBS firms based on the number of employees	103
Table 21: ANOVA for the Marketing innovation of KIBS firms based on the number of employees	104
Table 22 : Scheffe analysis for the ANOVA the Marketing innovation of KIBS firms based on the number of employees.	104
Table 23 : The different in Product innovation performance in regards with firm who export to Israel	105
Table 24 : The different in Product innovation performance in regards with firm who export to foreign countries other than Israel.....	106
Table 25: The regression analysis for the relationship between innovation outputs and KIBs economic performance	109
Table 26 : Obstacles of innovation in KIBS in Palestine in 2014, 2015.....	113
Table 27: Number of workers in KIBS in Palestine.....	114
Table 28: The impact of obstacles of innovation on innovation activities in KIBS firms.....	118

List of Figures

Figure 1: <i>The structure of the research</i>	9
Figure 2 : Model of Service Innovation.....	33
Figure 3: Research Framework.....	44
Figure 4: The questionnaire structure.....	55
Figure 5: Market System for the Supply and Demand of Business ServicesSource: DFID research 2011.....	65
Figure 6: Value chain of business related and professional services	69
Figure 7 : Innovation Indicators.....	72
Figure 8: Number of Employees.....	86
Figure 9: Female to male percentage	87
Figure 11: Innovation Performance in KIBS sub sectors	92

List of Abbreviations

BSP	Business Service Providers
CAD/CAM	Computer- Aided Design and Computer-Aided Manufacturing
DFID	Department for International Development
EC	European Commission
EDI	Electronic Data Interchange
ERP	Enterprise Resource Planning
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GIZ	Gesellschaft für Internationale Zusammenarbeit
ICT	Information and Communication Technology
IT	Information Technology
KIBS	Knowledge Intensive Business Services
KIS	Knowledge Intensive Services
MAS	Palestinian Economic Policy Research Institute
MSME'	Micro, Small and Medium Enterprises
Paltrade	Palestinian Trade Centre
R&D	Research & Development
ROI	Return on Investment
SAP, BAAN	Computer Software's Names
SPSS	Statistical Package for the Social Sciences
U.S	United States
UAE	The United Arab Emirates
UK	United Kingdom
WB & G	West Bank & Gaza

XIII
**Innovation in Knowledge Intensive Business Services in Palestine: A
conceptual framework**

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Abstract

This research aims to introduce a structural analysis for the innovation in the Knowledge Intensive Business Services (KIBS) in Palestine; which is expected to contribute to an improvement in the economic performance and labor productivity. To this end, an assessment of the innovation performance for fourteen KIBS subsectors, considering different factors, including internal capabilities, enabling environment, sources of innovation, limitations, and obstacles, as well as the impact of innovation on the organizational performance. The study is conducted using a cross sectional data for a sample of 305 firms through a quantitative survey approach.

Results show that there is a weak innovation performance in KIBS firms in Palestine in general, Also, the analysis of the obstacles of innovation shows that there is a significant association between innovation performance and the obstacles of innovation the firm may face. The cost factor was found to be the greatest factor having negative impact on all types of innovation. However, the knowledge factor was found to have a positive impact.

The findings of this study encourage the strategic integration of the innovation within the KIBS, bringing global experiences and learning from others, bringing other actors to the innovation systems, and improving the innovation infrastructure in Palestine.

Chapter One

Introduction

Chapter One

Introduction

1.1 Overview

Economic growth is one of the major development components that most of the countries are targeting and it is demonstrated through the citizen's livelihood, power dynamics, and the quality of life.

Throughout decades, observations and studies have shown that the economic structure is shifting from agriculture to manufacturing and services. That is, countries and governments will be investing in the sectors that have greater value-added and impact on the economic growth (Kongsamut et al. 2000; Boppart, 2013).

Many countries have recognized that their largest and fastest-growing sector was the service sector, where analysis indicates that there is a positive relationship between the services sector contributing to the Gross Domestic Product (GDP), the employment rate, and economic growth. As a result, economic experts and researchers have for many years, started assessing the services sector components and its pathways of development.

Developing services is more sophisticated than developing products as the services mainly depend on non-tangible and invisible outputs, and thus, and in line with the technological revolution, require more creativity and innovative contribution to achieve sector development.

Gronroos (1990) defines the service industry as “an activity or series of activities more or less intangible nature that usually, but not necessarily,

take place in interactions between the customer and service employee, and/or physical resources or goods and /or systems of the service provider, which are provided as solutions to customer problems”. The inclusion of the major elements of the service is the strength of this definition, mainly the activities, interactions, and solution to customer problems (Gronroos, 1990)

According to U.S. Census Bureau, the service sector primarily consists of messenger services and warehousing, information sector services, securities, commodities and other financial investment services, rental and leasing services, professional, scientific and technical services, administrative and support services, waste management and remediation, health care and social assistance, and arts, entertainment and recreation services and truck transportation (*Investopedia, 2014*).

The Knowledge-Intensive Business Services (KIBS) is a major component of the services sector that mainly focuses on providing experts and enterprises with the knowledge to facilitate the decision-making process, improve performance, and provide solutions and other services. KIBS work in different operational dimensions, and they could perform differently regarding innovation and development.

In developed countries and many of the developing countries, such as the United Arab Emirates (UAE), India, Turkey, Brazil, Singapore, etc. innovations in KIBS are becoming a leading contributor in developing and restructuring services sector and fostering the economic growth and employment. The innovation processes in KIBS could be made more organized and systematic and well-defined within a platform or a framework.

The primary objective of this research is to assess the innovative performance of KIBS in Palestine through considering the following different critical factors: internal capabilities within the firms enabling environment, sources of innovation, limitations, obstacles, and the impact of innovation on the organizational performance. These factors were analyzed through a set of quantitative methods.

The results and recommendations of this research can guide the KIBS and other actors on opportunities and areas of improvement to contribute to optimizing the adoption of innovation and therefore improving their economic performance.

1.2 Background on the Palestinian Economy

The Palestinian economy is regarded as a service economy, where the service sector's share of GDP has steadily grown from 50% in 1995 to 60% in 2009. More than 65% of labor forces in Palestine are also employed in services (Morrar and Gallouj, 2016).

Furthermore, Palestinian service sector suffers from "low productivity growth". This can mainly be attributed to the political instability, which constrains development and growth of services sector. Political instability also causes the distortions in the structure of services. Although the traditional services (retail trade, personal services, sale and repair of motor vehicles, and land transport, etc.) still form more than 70% of services in Palestine, they are regarded as being less productive and innovative in comparison to the nontraditional services like business services, which have

a higher potential for innovation and new service development mainly in KIBS.

Because the KIBS sector is hardly recognized in Palestine, it was considered as part of the general business services sector. That is because KIBS sector is categorized into several subsectors in the analyses or reflections in the national and public statistics, national plans or any other research and assessments,

1.3 Significance of the Research

The World Bank studied the Palestinian economy opportunities for more sustainable firms in the West Bank & Gaza and consequently stated that the company's performance was linked to their ability to acquire, adopt and implement new technologies and innovations. Researchers and experts have also revealed that the interaction with foreign customers, direct investments, consultants and international companies is of great importance since it introduces new mechanisms and concern in taking the risk of investing in innovation that Palestinian firms weren't familiar with before.

Moreover, Palestinian firms would prefer working in new domestic markets or introduce variations over existing projects, where the private sector should invest, innovate and become more internationally competitive to contribute to the economic growth (World Bank, 2012).

To the best of the researcher's knowledge, this is the first research in Palestine that sheds light on one of the most promising services sectors, the "KIBS," and studies the role of innovation in the improvement of its

economic performance. This research introduces a set of recommendations for the KIBS and the policymakers and related public institutions. The adoption of such recommendations would lead to improving the economic performance of this sector together with increasing the contribution of the service sector in GDP and employment.

1.4 Problem Statement

As the KIBS represents an important and promising category within the service industry, the service sector stands out as the source of knowledge revolution and the development approaches through innovation management, that could be applied to the KIBS. This, in turn, could create a great value addition to the service sector and significant improvement in the KIBS performance. Therefore, it is expected to result in high productivity, which leads to good Return on Investment (ROI) as in the Information and Communication Technology (ICT) sectors.

Unlike the other sectors, which have to go through a series of limitations and restrictions to get their resources, KIBS depends more on the human factor and skilled labor which is more accessible compared to other resources.

Therefore, it is important to develop a structural analysis for innovation in KIBS that defines the innovation types within the KIBS, the impact of innovation on the organizational performance, and the obstacles and sources of innovation. This structural analysis provides a better

description of the innovation in KIBS and contributes to facilitating the analyses and research in this sector.

Developing a structural analysis for innovation within the KIBS in Palestine is very beneficial to reveal the nature and types of innovation, management of innovation, the sources and obstacles, and its impact on new services development. Also, it provides a set of recommendations and policies to enable the KIBS and policymakers in both the private and public sectors to introduce a set of innovation activities and policies that could lead to the improvement of the services sector economic performance and then the economic growth.

1.5 Research Objectives & Research Questions

The main objective of this research is to test the ecosystem of innovation in KIBS in Palestine, considering the main indicators and factors that might affect the innovation process (types and size of the innovation activities, obstacles of innovation, and the impact of innovation on KIBS firms' performance)

The research aims to answer the following questions:

1. How are the KIBS firms classified in Palestine regarding scale, revenue, specialization?
2. What are the types and levels of innovation activities within the KIBS in Palestine?
3. What is the impact of innovation on the KIBS firms' economic performance taking into account the different types of innovation?

4. What are the obstacles of innovation management in Palestine, and to what degree do they hamper the innovation capabilities of KIBS firms?

1.6 Thesis Structure

This thesis is organized into seven chapters as follows: Chapter one introduces the thesis subject and its objectives. Chapter two presents the literature review of the service sector, KIBS and the innovation in KIBS and the type of innovation in services. Chapter three discusses the methodology of the research. Chapter four highlights the evolution of innovation in the KIBS in Palestine. Chapter five discusses the data analysis and innovation performance in the KIBS. Chapter six analyzes the innovation obstacles. Chapter seven includes conclusions and recommendations in addition to future research suggestions.



Figure 1: *The structure of the research*

Chapter Two

Literature Review

Chapter Two

Literature Review

2.1 Overview

This chapter surveys the literature about the economic shift toward the services sector, and the historical background on the evolution of the services sector, the status of the service sector in Palestine, and the knowledge-intensive business services and elaborating the innovation and knowledge evolution at the service sector, especially, the innovation in KIBS.

2.2 Background and Definitions

Several researchers and economic experts studied the significance of the services sector considering its structure and definitions, the difference between goods and services with regard to intangibility and invisibility as shown in Table 1:

Table 1 Definitions of the services sector

Author	Definitions
(Gronroos, 1990; Kotler, 1994)	The service is providing a solution for a specific issue of the customer .
(Gadrey el al. 1995; DISR,1999).	The service is a package of competencies that should be delivered to achieve customer's satisfaction .
Gronroos (1990)	Gronroos definition is more applicable to the service industry, where he defines it as "an activity or series of activities more or less intangible nature that normally, but not necessarily, take place in interactions between the customer and service employee, and/or physical resources or goods and /or systems of the service provider, which are provided as solutions to customer problems". The inclusion of the major elements of the service is the strength of this

	definition, mainly the activities, interactions, and solution to customer problems.
Gadrey et al. (1995)	Gadrey defines the production mechanism of services as “To produce a service is to organize a solution to a problem (treatment, an operation) which does not principally involve supplying a good. It is to place a bundle of capabilities and competencies (human, technological, organizational) at the disposal of a client and to organize a solution, which may be given to varying degrees of precision”.
Barras (1986; 1990)	Barras describes the service sectors as a more supplier-dominated sector which also relies on the manufacturing motivations to be able to produce innovation processes on subsequence phases.
(Hill, 1997)	Hill’s, was the most cited definition who defines the service as: “a change in the condition of a person, or a good belonging to some economic unit, which is brought about as a result of the activity of some other economic unit, with the prior agreement of the former person or economic unit”. Through this definition, Hill wants to consider the characterization of the service situation and their outcomes, which are both socio-technical and more synthetic.
Gadrey (2000)	"A service activity is an operation intended to bring about a change of state in a reality C that is owned or used by consumer B, the change being effected by service provider A at the request of B, and in many cases in collaboration with him / her, but without leading to the production of a good that can circulate in the economy independently of medium C”.The medium C in Garey's definition may be material objects (M), information (I), knowledge (K), or individuals (R).(Morrar, 2014). This definition expands Hill’s definition by adding the “service triangle” which introduces the service as a set of operations that are implemented through different interactions, defines it as: ” Gadrey Gadrey’s definition highlights the importance of the human and organizational capabilities in addition to the technological capabilities. Moreover, it differentiates between highly standard service products, quasi-good characteristics, customized services, and other based on forms of knowledge which usually resulted from co-production between the service provider and its client (Den Hertog, 2000).

2.3 Historical Background and Global Experience

The growing economy depends on changing the proportions and interrelations among the core sectors, mainly agriculture, industry and service and between the domestic, export-oriented, rural, urban, private and public sectors.

Previously, the agricultural sector was considered as the most important sector, but at present it has lost its primacy as income per capita rises, mainly in the industrial sector, in addition the increase the services sector. These two shifts have been called industrialization and post-industrialization. It should be noted that every growing economy is likely to go through these stages. This can also be explained by the structural changes in the demand of the consumer, and the labor productivity of the main economic sectors (Soubotina, 2004).

Great progress on the analysis of the service sector and its importance for modern economies has been recognized over the last three decades; these analyses can also be reflected in the development of the sub-sectors of the services sector.

In fact, the economic growth, at many points, is associated with the high growth in the services sector and depends on the positive correlation between the services sector share of GDP and per capita income, employment and economic growth and the structural shift of modern economies from agriculture to manufacturing and services. (Kongsamut et al. 2000).

For example, in 1870 the U.S. share of employment in agriculture was 40%. One hundred years later, the agriculture share was 4% of employment. Services, which was accounted for 20% of employment in 1870, absorbed 40% of the labor force by 1970 (Kongsamut et al. 2000).

Other countries also observe these changes in the value addition and the resource allocations shifts toward the services sector which led to more in-depth theoretical and empirical studies.

One of the most famous empirical studies was for Kongsamut et al. (1999) , who studied both a long-run data set comprising 22 countries and cross-section data sets of 123 non-socialist countries from 1970 to 1989. Both data sets confirm the development regularities. Growth in per capita income tends to be accompanied by a rise in services and a decline in the agricultural sector, both regarding labor employment and relative weight of GDP.

In the developing countries services sector has also been highly accelerated in the last two decades, knowing that in many developing countries the vast size of the services sector is related to the low growth in the industrial sector; India is one of the most prominent examples for the high growth of services sector mainly due to the high growth of knowledge and ICT. Unlike the other developing countries, which grew by exporting labor-intensive manufacturers, India has relied to a greater extent on services. (Eichengreen & Gupta, 2011).

Furthermore, the percentage of the growth of the exports of the commercial services for the developing countries between 1990 and 2000

exceeded that for the developed countries, which was 9% and 5.5% respectively. The practically strong export growth of commercial services appeared in the 49 least developed countries (WTO, 2001).

In general, the high-income countries today are considered post-industrializing (less reliant on the industry), while low-income countries are still considered industrializing (more reliant on the industry), where the services sector is relatively growing with the rest of the economy.

In the mid -1990s, services were accounted for around two-thirds of the world GDP, which is higher than half of the world GDP in 1980s. Moreover, the services output has witnessed growth by 2.9%, which is double the growth in the agricultural sector. Consequently, the services sector in the world GDP has increased and reached 64% in 2000, compared to 57% in 1990 (World Bank, 2001).

Additionally, considering the developed countries, such as UK, Italy, Japan and France, several indicators were used to measure the services contribution to the economy, which are sometimes considered as a reference for other countries to compare with, starting with the share of the services sector in the total value added in current prices ratios increased by 18% to 21 % from 1970-2003 as in shown in Table 2 below. The average of the services sector share in total employment for the major countries mentioned above including U.S. was 73.3%, ; the proportion of the producer services was 17%; the average of the ratio of services as intermediate inputs for production in manufacturing industries was 30%;the average for the

proportion of intermediate demand in total demand (output) for producer services was 60% . (Hyun-Jeong, 2006).

Table 2: Share of the service sector in total value added in major countries

		(%)					
		1970(A)	1980	1990	2000	2003(B)	B-A(%p)
Current prices	US	65.5	67.0	72.9	75.7	77.4	+11.9
	UK	53.7	56.0	64.2	71.8	75.0	+21.3
	France	54.3	60.8	67.9	72.5	73.6	+19.3
	Italy	51.3	55.6	64.4	69.4	70.8	+19.5
	Japan	49.8	56.9	58.7	66.6	68.5	+18.7
	Korea	44.7	47.3	49.5	54.4	57.2	+12.5
		1978(A)	1980	1990	2000	2003(B)	B-A(%p)
Constant prices	US	75.6	77.5	76.8	75.7	76.8	+1.2
	UK	67.8	68.2	68.2	71.7	73.1	+5.4
	France	64.7	65.7	70.2	70.8	71.4	+6.7
	Italy	61.7	62.8	66.4	68.0	69.1	+7.4
	Japan	59.0	59.8	60.1	65.0	65.8	+6.8
	Korea	55.3	57.4	54.5	54.4	54.6	-0.7

Source: Hyun-Jeong, 2006

2.4 Reasons of the Services Sector Growth

As mentioned earlier, the global economy has been witnessing an accelerating growth in the service activity since the end of the last century, where the services contribution to the global GDP increased from 55% to 70% between the 1977-2007 periods, which leads many countries structural shifts toward the service based economy. The economic development was mainly linked to the expansion of modern services, such as, financial services and business, which would result in rapid productivity growth for the economy compared to an economy depending on traditional services (Al Falah, 2013).

As the productivity growth in the sector is mainly generated from the productive service sectors, the main factors affecting the productivity are reflected in three levels: human level, which is consisting of skills, experiences, and capacities. The second level is the organizational level, mainly the structure, technology, and innovation, in addition to the third level, which is the national level, considering the public policies, regulations, economic growth, and globalizations. Furthermore, the lack of knowledge and experience are limiting the local economies ability to take advantage of the foreign direct investment (FDI) (Ismail et al., 2011).

One of the reasons for the services sector growth is the increase in income resulted in an increase in people's need and demand for more services in health, education and other areas. Meanwhile, the labor productivity in the services sector grows slower than agriculture and industry as most of the services jobs can't be filled by machines, which relatively makes the service more expensive. As a result, the employment in services sector increases faster than the agriculture and industry sectors due to the lower mechanization of the services sector. This eventually drove the services sector to lead the economy than other sectors (Chillimuntha, 2011).

Baumol (1967) stressed in his cost disease hypothesis, which was one of the most influential arguments in relation to this shift, that the structural shift towards the services was due to the lower productivity, high cost of this sector and higher prices. In other words, the services sector is less progressive (Hyun-Jeong Kim, 2007).

The technological improvements also contribute to change the traditional perspective about the services sector because of the inputs of the goods production or a low-value production sector. The services have become transportable and tradable, and modern services have been rapidly growing, such as banking, insurance, call centers, and remote access services, etc. and was also considered as final exports. Such services mainly depend on the networks, economy of scale, mass production, and division of labor (World Bank, 2012).

Moreover, modern services are moving toward more trading, where the rapid improvement in telecommunication is reflected in the recent growth of the services sector, although only 10% of the services value added is exported. Meanwhile the growth in the services value added exports are growing faster than other good exports, which are also applied to the modern services compared with the traditional services (education, tourism, etc.) (World Bank, 2012).

2.5 The Service Sector in Palestine

In this section, the Palestinian context and the impact on the economy, the service sector potential and limitations are discussed.

2.5.1 The Palestinian Context

Considering the uniqueness of the Palestinian economy context, the Palestinian economy faces several challenges, starting from the dependency on the Israeli economy, where 73% from the Palestinian good and services

are originally imported from Israel as reported in 2010 (PCBS 2012), adding to that the restrictions imposed by the Israeli authorities ,such as the control over raw materials, preventing the construction of industrial zones, and the control over the borders of the Palestinian's area. This resulted in political instability and diverted the investment climate. Another is the lack of competencies and financial resources in both public and private sectors that the productive sector is heavily suffering from. Therefore, the dependency on the foreign aids is the main support for the Palestinian authority's budget. One more challenge is connected with the technological revolutions and the ICT sector growth, which affected the Palestinian economy, accelerated economic openness, encouraged trade liberalization, and created a high competitive pressure on the fragile economy, (Morrar & Gallouj, 2016)

The World Bank (2012) report on prompting of the service sector in West Bank and Gaza towards sustainability of a future Palestinian state, analyzed the Palestinian economy from different perspectives, emphasizing that along with taking an outward orientation, WB&G should also recognize the potential of the services sector. WB&G have few natural resources and limited agricultural land. It is also difficult to compete with the mass-produced low value added manufactured goods; WB&G might focus more on building its services sector instead of taking the more traditional route to development through manufacturing. The report added that to be able to contribute to the services sector development, many factors should be considered, starting from the Palestinian context and taking into account the existing limitations and restrictions on resources. Moreover, the challenges

of improving the services sector, which provides intangible inputs, are leading to seek a nontraditional intervention that could create a great impact on the performance of the sector, where focusing on knowledge based components could be the opportunity.

2.5.2 Potentials and Limitations of THE PALESTINIAN services sector

The growth potential for the services sector is still not limited to the evidence for that was reported by the PCBS 2012 data, in which the Palestinian economy witnessed remarkable growth of 5.9%. and the GDP per capita increased by 2.7%. In the same year, the services activity recorded the highest growth rate of 13.2%. Moreover, the services sector's contribution to the GDP and employment was 57% and 62% respectively.

In addition to that, in 2013 the services sector was the biggest employer in the local market with 33.1% in the West Bank and 50.2% in Gaza Strip. Also in 2014, the employment rates of the services sector were reported to be 32.3% in the West Bank and 56.6% in Gaza.

The increase in GDP reported in 2015 reached 3.5%, and the largest contributor to the increase was the services sector, which rose to 3.1% and the total number of employees increased by 6.1%.

Furthermore, The PCBS's labor force data shows that the Palestinian services sector is still driven by the traditional services, which account for 85% of the services sector contributions to GDP and 98% of the total service employment. This raises serious economic concerns, knowing that these

sectors are considered to be low productive and employ mainly unskilled laborers. Moreover, relying on the governmental services is not effective in reducing the unemployment, as the expansion of the public sector is not basically linked to economic growth, in addition to the financial gaps within the Palestinian authority that affected the sector development.

The concerns extended to the distributive service subsector with the limited employment growth and demand, where the trade deficits are financed by the international aid as well. These concerns were also stressed by the report developed by the Palestinian economic policy research institute (MAS), which highlights the negative impact of the traditional service dominance. The results of the analysis of non-governmental firm-level data show that the dominance and expansion of the traditional services will lead to economic growth stagnation; therefore, the focus for the economic development should enhance the productivity growth and focus on the modern services (Al Falah, 2013).

Morrar & Gallouj (2016) also highlighted the restrictions and distortions, which affected the services sector growth and development since the 1970s, where certain services sub-sectors, such as the research and development (R&D), telecommunications and financial sectors were very small or didn't exist until the 1990s, Years later after Oslo Accords in 1993, more efforts were put into reform and structure of the services sector by the private and public sectors, mainly in terms of employment and GDP. Furthermore, during the second intifada, the Israeli siege affected the industrial sector, and its share of the GDP.,which resulted in an increase in

the services sector share, combined with the absorption of the employees in the traditional services sector (the workers who lost their jobs in Israel). This has increased the contribution to the employment rate.

Morrar and Gallouj (2016) also highlighted the flow of the foreign direct investment after the peace period and the signature of Oslo. Such flow was reflected in the increase of the local investors in more sectors including the business services. Despite the value added contribution of the services sector activities, mainly the R&D, telecommunication and computer, some related fields were still weak as a result of the control of Israel of the movement of goods and people across the frontiers of Palestine and the uncertainty of sustainability, which challenges the foreign investors, and the weakness of the manufacturing sector as well.

2.6 Knowledge Intensive Business Services

The heated debate about KIBS is related to the development of knowledge economy. Soubbotina, (2004) was one of the most important researchers that studied the knowledge revolution in her book “Beyond Economic Growth”. She described it as “the fastest-growing part of the service sector , which consists of knowledge- and information-related services such as education, research and development (R&D), modern communications (telephones and Internet), and business services. This is the result of the so-called knowledge revolution that started in the second half of the 20th century--a radical speeding up of scientific advances and their

economic applications in the form of new technologies as well as new consumer products”.

Chichilnisky (1997) studied the knowledge revolution, and stated that “We do not see, as previously thought, a transformation from industrial production to services but rather from a resource-intensive to a knowledge-intensive economy.”

Also, Hipp and Grupp (2005) add to that more and more service companies, which contribute to substantially to macro economic and social development. The trend towards a knowledge-intensive economy supports structures in which human capital and KIBS companies, in particular, play an important role as knowledge brokers and intermediaries.

The World Bank developed a framework for capturing the fundamental elements of knowledge economy (World Bank, 2003). The framework consists of five dimensions that facilitate the gauge of the knowledge economy and compares countries progress on that aspect:

- An economic & institutional regime, which encourages the efficient use of knowledge, to promote growth and increase the welfare and supporting the successful entrepreneurship,
- Creative, skilled and educated population that could create and use the knowledge.
- A strong infrastructure for information and communication, including research centers, consultants, and universities, with other organizations that maximize the benefit from the global knowledge and transfer it into products for local markets.

- An Effective innovation system supported by dynamic interaction between science, technology, and the world of business, which will be facilitating effective communication, dissemination, and processing information.
- Moreover, the fifth pillar is an intangible factor, which contributes to the efficiency of a society function moving forward, considers the collective trust, vision and determines a society's dynamics.

KIBS is the main component of the knowledge-intensive services (KIS). Many researchers largely discussed it. Tovoinen (2006) defines it as "Expert companies that provide services to other companies and organizations". More specifically, Bettencourt et al. (2002) define KIBS as "Enterprises whose primary value-added activities consist of the accumulation, creation, or dissemination of knowledge to develop a customized service or product solution to satisfy the client's needs".

Furthermore, according to Strambach (2001), KIBS has the following characteristics: they are human capital and know-how intensive, have a high degree of intangibility and the difficulty of standardization in their services. The main problems associated with defining and characterizing of KIBS stem from the fact that it is difficult to define and measure the knowledge-intensity of these services (Zieba, 2013).

The classification of KIBS is mainly proposed by Miles et al. (1995), which was considered the most practical classification, as they divide the KIBS into traditional professional services (KIBS I) and the businesses using or creating new technologies, as new knowledge-intensive services (KIBS

II). The first group of these services includes marketing, advertising, etc., while the second group covers services such as software design,

The divisions between KIBS I and KIBS II are shown in Table 3.

Table 3 : The division of the KIBS by Miles et al. (1995)

KIBS I: Traditional Professional Services, liable to be intensive users of new technology	KIBS II: New Technology-Based KIBS
<ul style="list-style-type: none"> • Marketing/advertising; • Training (other than in new technologies); • Design (other than that involving new technologies); • some Financial services (e.g., Securities and stock-market-related activities); • Office services (other than those involving new office equipment, and excluding “physical” services like cleaning); • Building services (e.g., architecture; surveying; construction engineering, but excluding services involving new IT equipment such as Building Energy Management Systems)); • Management Consultancy (other than that involving new technology); • Accounting and bookkeeping; • Legal services; • Environmental services (not involving new technology, e.g., Environmental law; and not based on old technology, e.g., elementary waste disposal services). 	<ul style="list-style-type: none"> • Computer networks/telematics (e.g. on-line databases); • Some Telecommunications (especially new business services); • Software; • Other Computer-related services - e.g., Facilities Management; • Training in new technologies; • Design involving new technologies; • Office services involving new office equipment); • Building services (centrally involving new IT equipment such a Building Energy Management Systems)); • Management Consultancy involving new technology; • Technical engineering; • Environmental services involving new technology; e.g., remediation; monitoring; Scientific/laboratory services; • R&D Consultancy and "high-tech boutiques."

2.7 Innovation AND KNOWLEDGE Evolution in the Service Sector

In this section, the development of the knowledge economy and the innovation evolution in the service sector, the conceptualization of the innovation in services, and finally, the innovation in KIBS are presented.

2.7.1 Service Innovation

Service innovation is considered a new and emerging topic of research, where most of the information on the innovation process focused mainly on the micro-level from manufacturing industry (Tether, 2005), where specific investigation on innovation in service sector began to increase rapidly at the new millennium (Schelling and Werr, 2009; Tether, 2005).

Service innovation was not categorized as the manufacturing innovation because the distinction between the process and product innovation is more complex and less helpful for services compared with manufacturing, which might be reflected in either process or product innovation, (Camacho and Rodriguez 2008). This is because in services products can be considered the process, as reflected by the simultaneous production and consumption of services (Tether, 2005).

The innovation literature neglected the characteristics of the services, which reflected on the definition of the service innovation, with the lack of the analytical tools for services. Scholars underestimate the innovation in service activities, as they depend on analytical tools designed for manufacturing or traditional technological view of innovation which were misleading and led to wrong conclusions, mainly about the impact of innovation in service on the economic performance with relation to the value

addition and productivity compared to the innovation in manufacturing as stressed by Gallouj and Savona (2009).

Morrar,(2014) analyzed data from a cross-sectional survey(CIS4) of all firms with over 10 employees in all 27 European Union (EU) member states.The results show the significance of the differentiation among the innovation performance between services and manufacturing sectors, where the R&D is found as an important source of innovation for both sectors, but with higher intensity in the manufacturing sector. The technological innovations were produced by the manufacturing firms more than the service firms, which produce more organizational innovation. The connection with public sources of information was stronger at the manufacturing firms than the service firms, where the service firms also use less protection for innovation.

The innovation in both sectors reported a significant positive relationship with economic performance. The non-technological innovation has more significant effect on the service sector, while the technological innovation has more significant effect on the manufacturing sectors, where the mixed strategy of technological and non-technological innovation can be considered the most effective innovation strategy for enhancing economic performance in both manufacturing and service firms (Morrar, 2014).

Stressing the importance of the innovation of services was one of the recommendations of the expert panel on service innovation in EU. It emphasizes the importance of developing a coherent framework to unlock the potential of service innovation for economic growth and structural

change. This should be reflected in the industrial and innovation policies at different levels to be able to meet the challenges of Europe 2020 (EU, 2011).

Service innovation involves the introduction of either improved or new service concepts, which can be introduced by manufacturing companies or service companies. Moreover, the innovation in service involves, but not limited to process, infrastructure, business models, commercialization, customer processing service, productivity and other hybrid forms of innovation, as were defined by the smart guide to service innovation published by the EU (EU, 2012).

The European Commission EC guiding books series states that the major role of the service innovation is driving the growth and structural change for the whole economy, which improved the productivity of the economy and is considered as a fuel for innovation in other industries. It also has a great potential to create new growth poles and lead macro economic impact markets. In fact, economic change can be achieved by adopting service innovation that will transfer the way we live, do business, and deal with each other (EU, 2012).

2.7.2 Conceptual Perspective for Innovation in Services

Service innovation was discussed earlier from three main conceptual perspectives: assimilation, demarcation, and synthesis approach (Gallouj and Weinstein, 1997; Coombs and Miles, 2000). This classification was then widely adopted by different researchers (Tather 2005, Miles, 2005; Drejer, 2004; De vries, 2004; Howells, 2006; Morrar, 2014).

The assimilation approach, which is also known as the technological approach, presumes that services sector is more supplier-dominated mainly in innovation activities. It should be noted that service companies were viewed as recipients of innovation. Therefore the impact of innovation in services sector, mainly on economic growth was assumed to be low, where followers of this approach also claim that the studies on innovation in manufacturing can be easily translated into the service sector innovation without adoption (Hanusch and Pyka, 2007; Gallouj and Savona, 2009; Droege et al.,2009).

The second perspective of the conceptual framework was the demarcation approach, which was also known as the service oriented approach. This approach was the opposite of the assimilation. It argues that services differ in character and nature from manufacturing and therefore the traditional measurements of the innovation (R&D staff and spending) lead to underestimating the innovation activities in services (Haunsch and Pyka, 2007).

The last perspective is the synthesis approach, which was also called the integrative approach. It mainly assumes that there is a great convergence between tangible products and services. This means that tangible elements are important for services sector and vice versa; intangible elements are increasingly becoming important for manufacturing sectors as well. Followers of this approach tend to seek a conceptual framework that can be applied to both tangible and intangible products (Miles, 2007; Dolfsma, 2004; Shelton, **2009**; Gallouj & Savona, **2009**).

Santos et al. (2014) implemented an assessment for the innovation in MENA region. They concluded that innovation firms in services sector tend to be smaller than average, while in the manufacturing sector, they are larger. Also, firms that perform innovation activities export on average a higher percentage of their production both firms in service sector or manufacturing sectors.

The recognition of the knowledge revolution and the importance of innovation and R&D in the Arab countries were minimal as stressed in the paper developed by Al Jawareen (2011), mainly about the reality of innovation and technology in the Arab world. He mentions that researches are stuck on the shelves in the libraries without considering the advantage of investing these research and efforts to develop the economic and social sector. Moreover, most of the Arab countries expenditure on R&D activities is less than 0.3 % of their GDP, which leads to a negative impact on the innovation performance in the Arab world.

2.8 Innovation in KIBS

Since the mid-1990s, there has been a significant increase in the attention paid to KIBS and their roles and functions in innovation systems. However, in comparison to the manufacturing sectors, KIBS remain poorly studied by analysts of innovation and technological change, and their future development has rarely been considered regarding policies and roles in their respective innovation and productive systems (Muller and Doloreux, 2007).

The integration of innovation was also recognized by Witt (1993,) who developed some principles for evolutionary economics. He also points out that “The structural change from a technology-based economy created by industrial production to a service society that regards knowledge as a central resource is reflected in a change of the innovation processes. In essence, the innovation process is viewed as a learning process that generates or acquires new knowledge, and allows its economic utilization’.

Many publications discuss the close relationship between KIBS and the levels of innovation and performance of the whole economy as stated Czarnitzki and Spielkamp (2003). They stated that “KIBS not only perform innovation activities in the service of the manufacturing sector, but they are also "bridges of knowledge" or "innovation bridges," connecting the manufacturing sector, science, and customers.”

Some researchers covered the regional level in their research on the innovation of KIBS as Schricke et al. (2012). They studied all factors associated with KIBS development in Europe and emphasis on their spatial patterns in European regions.

A conceptual framework for promoting innovation was developed for the developing countries by Aubert (2005) , who studied the innovation climate within the developing countries, needs and opportunities, the enabling environment, the evolution of innovation systems and policies.

Miles et al. (1995) highlight the significance of the Innovation and R&D within the service sector. “New US R&D data, designed to better represent services and small firms, suggests that 25% of R&D now takes

places outside of the manufacturing sector - and this share is apparently growing.

Gallouj et al. (1997) outline six innovation models that could be used for describing service innovation. They distinguish between radical innovation, improvement innovation, incremental innovation, ad hoc innovation, re-combinative innovation, and formalization innovation.

A comprehensive model for understanding innovation in services and other sectors in the same framework is not yet apparent in this literature. Such a model is increasingly needed as service functions can be seen to be prominent all over the economy, and thus, as service innovations are relevant -although to different degrees- in all industries. (Gallouj et al., 1997).

In order to discuss the map and analyze the diversity of innovations in greater details and in a structured way, Den Hertog (2000) introduced a four-dimensional model of service innovation as shown in Figure 3. Besides the technology innovation, the model points to the significance of such non-technological factors in innovation, such as new service concepts, client interfaces, and service delivery system.

According to the model of service innovation, any of the service innovation involves some combination of the dimensions as follows:

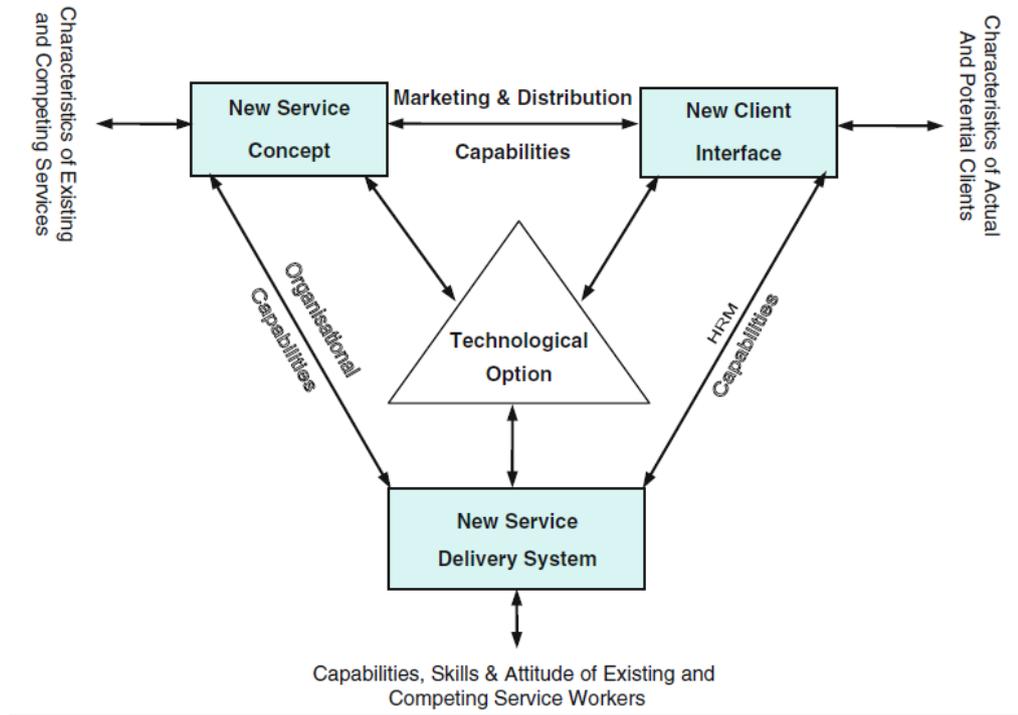


Figure 2 : Model of Service Innovation

Source: Den Hertog (2000)

Dimension 1: The Service Concept: Although not all service innovations have a strong novel conceptual element, many service innovations involve more intangible characteristics, such as new ideas of how to organize a solution to a problem. Conceptual innovations are much more likely to be found in service firms than in pure manufacturing firms.

Some examples of “conceptual innovations” are:

- Call center services — these installs, organize and recruit staff for their client’s call center which has emerged from temporary staffing offices on the basis of their initial involvement with providing temporary labor for call services.
- IT consultants who offer their client firms semi-standardized and incremental plans for implementing e-commerce;

- Benetton's development of a particular style of shopping outlets to give the brand name its own character, to create a specific shopping environment that is recognizable for their clients.

Dimension 2: The Client Interface: The client interface innovation is the design of the interface between the service provider and the clients, these interfaces are the focus of a good deal of service innovations.

In business services, in particular, clients are regularly part and parcel of the production of the service product. The interactions between the service provider and the clients can be a source of innovation. According to the high degree of co-innovation in new service development, the client interface innovation includes service providing manner innovation and service incepting manner innovation.

Examples of "client-interface innovations" include:

- The large-scale introduction of account management systems in professional organizations, such as economic consulting or IT firms, can in some cases be interpreted as a renewal of the client interface;
- Electronic data interchange (EDI), which represents an effort to establish common formats for electronic documents that allow for a wide range of interactions to be partially automated — including various elements of design as well as ordering and invoicing. Organizational challenges have made the take-up of EDI slower than anticipated but a substantial industrial use has developed.

Dimension 3: The Service Delivery System: The service delivery system innovation refers to the internal organizational arrangements that

have to be managed to allow service workers to perform their job properly, to develop and offer innovative services. It is closely related to the question of how to empower the employees; therefore, they can perform their jobs and deliver service products adequately.

Examples of “delivery system and organization innovations” include:

- The large-scale introduction of home shopping services or consumer e-commerce - may cause a substantial change in the ways in which service provider and client relate;
- Introducing e-commerce in business processes may require serious business process reengineering. E-commerce may not only have a substantial impact on the way in which the actual commercial transactions occur, but also the processes preceding and following the transaction;
- In more traditional shopping environments, the lengthening of retailer opening hours may have serious consequences for the type of customers it attracts, the type of products offered, the immediate availability of sales and after-sales service of different types, etc.

Dimension 4: Technological Options: Service innovation is possible without technological innovation, but there is a wide range of relationships between technology innovation and non-technological innovation in practice. Technology mainly plays a role as a facilitating or enabling factor, something much closer to supply-push, technology-driven innovation. Although IT is certainly not the only relevant technology in service innovation, it is often perceived as the great enabler of service innovation.

Examples of “technological innovations” include:

- Large retail stores increasingly resemble financial services in their IT use. For instance, the UK supermarket Tesco has set up an Internet service provider, and many supermarkets are offering banking and insurance services;
- Tracking and tracing systems enable transport service providers to monitor the progress of their fleet and thus to manage their transport services more closely

In practice, it may be the combination of the four dimensions that ultimately characterizes each particular service innovation. Because any service innovation involves some combination of the above-mentioned dimensions of service innovation.

Earlier, differentiation was made more specifically focusing on KIBS between three roles played by KIBS in supporting innovation in client firms, namely: facilitator, carrier and being a source of innovation. (Bilderbeek & den Hertog, 1997; Miles *et al.*, 1995). These three roles are briefly characterized below.

Facilitator: A KIBS firm is a facilitator of innovations if it supports a client firm in its innovation process, but the innovation at hand does not originate from this KIBS firm nor is it transferred (from other firms) by this KIBS firm to the client firm. Examples include:

- A management consultant helping a client to introduce a new account management system or developing a new service distribution channel;

- A technical engineering firm is seconding a team of its engineers to work with the technical engineers of the client to co-produce an innovative solution in, e.g., offshore platform construction or subsoil building.

Carrier

A KIBS firm is a carrier of innovation if it plays a role in transferring existing innovations from one firm or industry to the client firm or industry even though the innovation in question does not originate from this particular KIBS firm.

Examples are:

- An IT firm implementing and customizing advanced and innovative ERP software (SAP, BAAN) in a client firm;
- A management consultant specializing in CAD/CAM applications helping a major client (a shipyard) to specify the exact user needs and technical specifications of a new CAD/CAM program, and subsequently to implement it.

Source

A KIBS firm is a source of innovation if it plays a major role in initiating and developing innovations in client firms, usually in close interaction with the client firm. Relevant examples here include:

- An advertising agency developing and implementing a completely new campaign for a client;

- A provider of call center solutions advising and implementing a new call center for a client.

Based on the definition of knowledge-intensive service industry which was stated in “An empirical knowledge management framework for the virtual professional community in knowledge-intensive service industries” paper developed by Chen et al. 2012. It has the following characteristics:

(1) Knowledge-oriented: In knowledge-intensive service industries, the performance and accomplishment of each enterprise activity rely highly on the utilization of domain knowledge and experience to ensure that business models operate normally. Consequently, customer satisfaction and enterprise competitiveness increase.

(2) Knowledge expertise: Knowledge-intensive service industries are a service value chain of high-value knowledge. The establishment and supply of professional services are based on professional knowledge. Therefore, knowledge expertise must be checked when collecting knowledge to create quality services that meet customer requirements.

(3) Knowledge innovation: Service innovation is the primary goal for knowledge-intensive service industries. To provide excellent services to customers, enterprises enhance their innovative service abilities via knowledge innovation, which relies on empirical knowledge exchange and communication.

(4) Knowledge value-added: Collaboration is an important strategy for increasing competitive advantage of knowledge-intensive service industries. Thus, the scope of required knowledge has been extended from “point”

mode into “plane” mode, such that completed knowledge value added services can be provided to customers.

The KIBS in Palestine were highly affected by the second Intifada, which is reflected in the increase of the unemployment rate by 31% in R&D and 21% in real estate activities and ICT services in 2002.

Analyzing the Foreign Direct Investment influence on the service productivity growth, the Palestinian figures were reporting low contribution to the productivity, which is around 0.07, contradicting the research results of (Jones 2009 or Mei Hsu, Been-Lon Chen (2000)), highlight that in service sector, higher FDI inflow will lead to higher labor productivity

Adding to the above challenges, the policy gap, which remains even after Oslo accords, as in other developing countries such as the Gulf countries, Malaysia & India, supporting the development of the service sector were through establishing public policies. While in Palestine, minimal efforts were put to support the establishment of such strategies or developing the strategic capital and knowledge service because most of the policy discussions in Palestine were mainly about the development of the manufacturing sector (Morrar & Gallouj, 2016).

Export of services can also be considered an attractive alternative for West Bank & Gaza, which are mainly relying on the export of labor and goods, depending on the well-educated labor in West Bank & Gaza. A well-regulated telecommunication sector, benefiting from the fact that the modern services are relatively less affected by trade barriers and transportation costs, and require lower capital. (World Bank, 2012)

As was reported by the research that the specialization is not the only factor for growth, but the sophistication of goods exports. Furthermore, the research also shows that the high growth can be created by exporting of sophisticated services not only the export of regular services. Therefore the West Bank & Gaza should focus on investing in the human capital and telecommunication infrastructure. (World Bank, 2012).

Chapter Three
Research Methodology

Chapter Three

Research Methodology

3.1 Overview

This chapter provides the methodological approach followed to answer the research questions. Non-experimental methodology has been adopted, as will be discussed in this chapter. In addition, the different research steps will be elaborated, starting from the design, approach of the research and the research strategy, followed by the framework and methodology, ending with the research data and quality control of the research.

3.2 Research Design and Approach

This chapter elaborates the research design and breaks it down into different levels. As the ‘research design’ refers to the logical structure of the inquiry and articulates what data is required, from whom, and how it is going to answer the research questions (DECD, 2013).

A quantitative approach is adopted in this research in order to answer the research questions, which is a type of research in which a researcher or a team of researchers use statistical tools and instrument construction to test and demonstrate that their studies are credible and significant.

Moreover, different tools have been used in the research data collection and analysis. Firstly, a questionnaire has been developed, and a field survey has been conducted to obtain the data needed to test the hypothesis and answer the research questions. The analytical part includes a

set of statistical tools and econometrics models (descriptive statistics, ANOVA, Logistic analysis, OLS regression).

3.3 Research Strategy

This research is one of the first works that discussed the situation of innovation in the Palestinian economy and mainly in the service sector. Thus, it will contribute to creating a well-rounded picture of the reality of innovation, and generate new ideas and assumptions, highlighting the development of the hypothesis and tentative theories, determining whether it is feasible to study the topic in the future and provide directions as possible, refining issues in investigations that are more systematic and formulating research questions.

The descriptive part of this research is used to gain information regarding the current state of the phenomena and to describe, "What exists" concerning variables or conditions in a situation. Anastas (1999) mentioned that the descriptive research is usually adopted when the subject observed and studied in a completely natural and unchanged natural environment. Moreover, it is also used as a pre-cursor to more quantitative research designs with the general overview giving some valuable indicators as to what variables are worth testing quantitatively. Also, it can result in rich data that leads to important recommendations in practice.

As it has been mentioned previously, this research will develop a conceptual analysis for the innovation in KIBS in Palestine, where the current usage of the terms "structural analysis" or a "framework" and "theoretical framework" are still vague and imprecise. Earlier researchers defined structural analysis or framework as a network, or "a plane," of

interlinked concepts that collectively provide a comprehensive understanding of a phenomenon or phenomena. Accordingly, the concepts that constitute a conceptual analysis support one another articulate their respective phenomena and establish a framework-specific philosophy (Jabareen, 2009).

From other researchers' points of view, the conceptual analysis or framework is not merely a collection of concepts but rather a construct in which each concept plays an integral role. According to Miles and Huberman (1994), a conceptual framework “lays out the key factors, constructs, or variables, and presumes relationships among them.”

3.4 Research Framework AND METHODS

The research followed a systematic approach divided into four phases to develop the innovation framework for KBIS in Palestine.

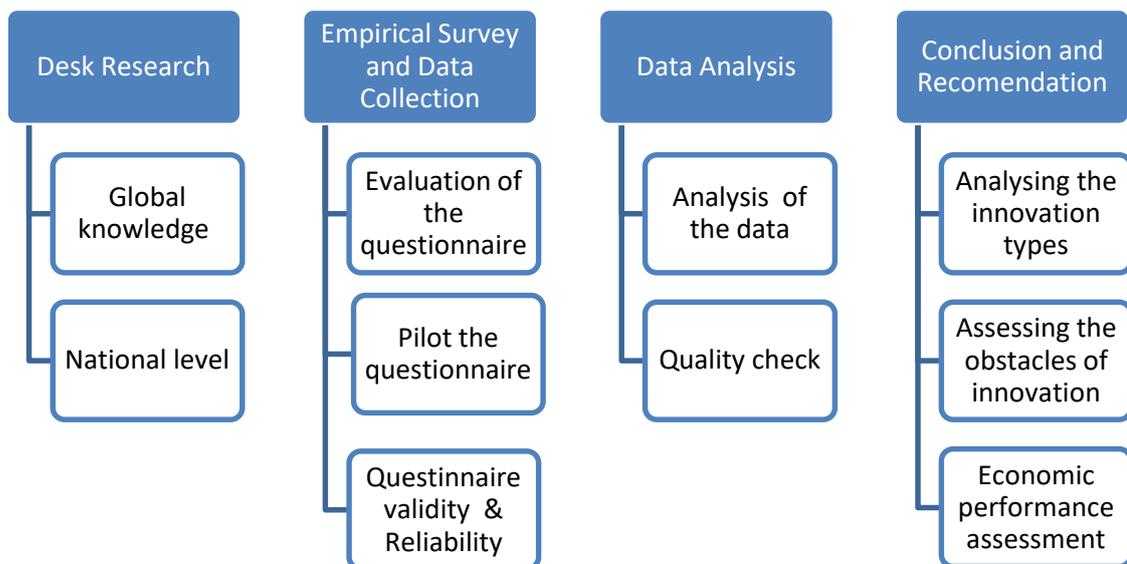


Figure 3: Research Framework

3.4.1 Phase One: Desk Research

A constructive desk literature review was conducted covering different aspects: the sectoral shift and the global experiences of KIBS and their influence on the economic empowerment as driving forces for development and economic strengthening in several countries that were studied and analyzed by different researchers worldwide, elaborating the innovation in services and KIBS as well and the Palestinian service sector and KIBS.

Moreover, literature review also highlights the major studies and research conducted considering the evolution of innovation in KIBS in Palestine, and analyzing the national statistics and published data in this sector that were very limited. This information contributed to formulating the theoretical background.

3.4.2 Phase Two: Empirical Survey and Data Collection

The development of the empirical survey for the data collection started with structuring the questionnaire to capture all the required information and knowledge to answer the key research questions, as will be addressed in the next sections. Moreover, the questionnaire was used to provide more quantified results that relate to the major components of assessing and analyzing the innovation in KIBS in Palestine. Also, there is no data source related to the innovation in KIBS since the subject of innovation is new and still needs focus from both the public and private sectors, mainly the data centers like the Palestinian Center Bureau of Statistics (PCBS).

3.4.3 Phase Three: Data Analysis

Both the professional software (SPSS), and E-views, were used to analyze the data collected through the questionnaire. The SPSS is mainly used in the descriptive statistics and correlation analysis. E-views are mainly used to analyze the econometric, both logistic regression and OLS regression analysis.

3.4.3.1 The Econometrics Analysis Methodology

In addition to the descriptive statistics for the main innovation indicators (size and types of innovation, obstacles of innovation, etc.), two econometric models were developed: The first measures the impact of innovation on the economic performance in the KIBS firms, while the second measures the effect of the obstacles of innovation on the probability of KIBS to introduce innovation output. These two models in addition to the descriptive statistics represent a structural analysis or framework for the innovation in the KIBS.

3.4.3.2 Measuring the impact of innovation on the economic performance- Ordinary Least-Squares Regression (OLS)

OLS regression is a generalized linear modeling technique that may be used to model a single response variable, which has been recorded on at least an interval scale. The technique may be applied to single or multiple explanatory variables and also categorical explanatory variables that have been appropriately coded. The basic framework for regression (also known

as multivariate regression, when we have multiple independent variables involved) is the following.: We have some dependent variable y (sometimes called the output variable, label, value, or explained variable) that we would like to predict or understand and some independent variables x_1, x_2, \dots, x_n that we are going to be used to make predictions for y .

Here, in this model, we empirically test the impact of innovation on the economic performance of KIBS firms using an econometric model. The regression equation is represented by the following function:

$$\text{Economic performance} = f(\text{innovation factors, other control variables}) \dots \dots \dots \text{Equation 1}$$

The dependent variable that represents the economic performance of KIBS firms is measured by the total revenue. Innovation factors are divided into two main parts: Innovation types and obstacles of innovation.

Innovation is represented by the four traditional types of innovation output; product innovation, process innovation, organizational and marketing innovation.

Barriers or obstacles of innovation represented by two types of barriers, internal and external barriers. Other control variables include the age of firm, firm size measured by the number of employees. Thirteen dummy variables were also introduced as control variables, such that each dummy variable represents one KIBS subsector. We have excluded The 14th KIBS sub-sector to avoid dummy variable trap. The excluded subsector is the training sub- sector.

3.4.3.3 Measuring the effect of obstacles of innovation on the probability of KIBS

In the second model, we measure the effect of innovation barriers on the ability of KIBS firms to introduce innovation output using logistic regression (Logit model). More discussion on the model component given before:

1. Logistic regression (Logit model)

Logistic regression is the appropriate regression analysis to conduct when the dependent variable is dichotomous (binary). Like all regression analyses, the logistic regression is a predictive analysis. Logistic regression is used to describe data and to explain the relationship between one dependent binary variable and one or more nominal, ordinal, interval or ratio-level independent variables.

2. The Binomial Distribution

The logistic regression model just developed is a generalized linear model with binomial errors and link logit.

We consider first the case where the dependent variable Y_i is binary, assuming only two values that for convenience we code as one or zero. For example, we could define:

$$y_i = \begin{cases} 1 & \text{if the } i\text{-th firm mention that it implement one of the innovation type} \\ 0 & \text{otherwise.} \end{cases}$$

.Equation 2

We view Y_i as a realization of a random variable Y_i that can take the values one and zero with probabilities π_i and $1 - \pi_i$, respectively. The distribution of Y_i is called a Bernoulli distribution with parameter π_i and can be written in compact form as:

$$P_r\{Y_i = y_i\} = \pi_i^{y_i}(1 - \pi_i)^{1-y_i} \dots \dots \dots \text{Equation 3}$$

From a practical point of view, it is important to note that if the predictors are discrete factors and the outcomes are independent; we can use the Bernoulli distribution for the individual zero-one data or the binomial distribution for grouped data consisting of counts of successes in each group. The two approaches are equivalent, in the sense that they lead to the same likelihood function and therefore the same estimates and standard errors.

3. The Logit Transformation

The next step in defining a model for our data concerns is the systematic structure. We would like to have the probabilities π_i depending on a vector of observed covariates X_i . The simplest idea would be to let π_i be a linear function of the covariates, say

$$\pi_i = x_i' \beta_1 \dots \dots \dots \text{Equation 4}$$

Where β is a vector of regression coefficients. This model is sometimes called the linear probability model. This model is often estimated from individual data using ordinary least squares (OLS). One problem with this model is that the probability π_i on the left-hand side has to be between zero and one, but the linear predictor $x_i' \beta_1$ on the right-hand-side can take

any real value, so there is no guarantee that the predicted values will be in the correct range unless complex restrictions are imposed on the coefficients.

4. The Logistic Regression Model

The i th observation can be treated as a realization of a random variable Y_i . We assume that Y_i has a binomial distribution:

$$Y_i \sim B(n_i, \pi_i) \dots \dots \dots \text{Equation 5}$$

with binomial denominator n_i and probability π_i . and with individual data $n_i = 1$ for all i . This defines the stochastic structure of the model. Suppose further that the logit of the underlying probability π_i is a linear function of the predictors:

$$\text{logit}(\pi_i) = x_i' \beta, \dots \dots \dots \text{Equation 6}$$

Where x_i is a vector of covariates and β is a vector of regression coefficients. This defines the systematic structure of the model.

5. Estimation and Hypothesis Testing

The logistic regression model just developed is a generalized linear model with binomial errors and link logit.

6. Maximum Likelihood Estimation

Although you will probably use a statistical package to compute the estimates, here is a brief description of the underlying procedure. The likelihood function for n independent binomial observations is a product of densities given by the following equation

$$P_r\{Y_i = y_i\} = \binom{n_i}{y_i} \pi_i^{y_i} (1 - \pi_i)^{n_i - y_i} \dots \dots \dots \text{Equation 7}$$

for $y_i = 0, 1, \dots, n_i$. Here $\pi_i^{y_i} (1 - \pi_i)^{n_i - y_i}$ is the probability of obtaining y_i successes and $n_i - y_i$ failures in some specific order, and the combinatorial coefficient is the number of ways of obtaining y_i successes in n_i trials.

Taking logs, we find that, except for a constant involving the combinatorial terms, the log-likelihood function is

$$\text{Log } L(\beta) = \sum \{y_i \log(\pi_i) + (n_i - y_i) \log(1 - \pi_i)\} \dots \dots \dots \text{Equation 8}$$

In our model, the random variable Y_i has a binomial distribution, where Y_i represents the probability of KIBS to introduce innovation output or not, i.e., $Y_i = 1$ if the firm implements innovation, and 0 if not. It is important to know that the dependent variable (innovation output) will be assessed using different indicators like the product, process, marketing and organizational innovation. X_i which represents the vector of covariates includes innovation impedances (enabling environment, external constraints, factors and risks), and other control variables like firm size, firm age and if the firm has export or not.

3.4.4 Phase Four: Conclusion and Recommendation

A set of recommendations and conclusions of the research are developed based on data analysis and assessments that provided a constructive conclusion for the results and a set of recommendations responding to conclusions and general recommendations from the other researchers to build on.

3.5 Research Data

The research depends on different data sources which were divided into primary data and secondary data; where primary data depends on the data and information collected for the research through the survey or any other tool while secondary data depends on the literature review of previous studies and analysis conducted by other researchers or institutions in addition to the journals, books, and publications relevant to the topic

3.6 Research Population and Sample Size

In this section, a description of the study population and the sampling processes will be discussed.

3.6.1 Study Population:

The research target population is the Palestinian KIBS firms in the West Bank. These firms are providing the consultancy services and knowledge products to different customers in Palestine locally and internationally. Although these firms were not categorized specifically by the Ministry of Economy or Chamber of Commerce, which follows the registration segments, the research followed the nearest categorization, which reached 1500 firm, as distributed as in Table 3 below:

Table 3: KIBS categories as per the

	KIBS areas	Number of firms	Percentage of the Population
1	Computer networks/telemetrics & Computer Software & Programs & Telecommunications	338	23%
2	Management Consultancy	306	20%
3	Technical engineering service & Design	456	30%
4	Temporary labor recruitment services	12	1%
5	Legal services	35	2%
6	Financial services (e.g. securities and stock-market-related activities); Accounting & bookkeeping	65	4%
7	R&D Consultancy and "high-tech boutiques"	33	2%
8	Marketing/advertising	169	11%
9	Training centers	86	6%
	Total	<u>1500</u>	<u>100%</u>

3.6.2 Study Sample

As stated earlier, the total population was 1500 firms, and the research targeted a sample size of 305 firms, mainly firms that have more than five employees to ensure the minimum level of operation and efficiency. The sample was geographically limited with firms in the West Bank only and did not include Gaza strip or Jerusalem firms due to the constraints imposed by Israel on implementing the survey in Jerusalem. Also, considering the reality of KIBS in Gaza is very poor due to 10 years of siege and three consecutive wars.

To determine the samples size for the research, the following formula was used

To calculate the value of the sample size (ss), the following equation is used:

$$ss = (z^2 * p * (1 - p)) / \varepsilon^2 \dots\dots\dots \text{Equation 9 Value of the Sample Size}$$

Where:

z = Z value (e.g. if the confidence level=95%, the Z value is 1.96)

p = percentage picking a choice (0.5 used)

ε = maximum error (0.05)

$$n = ss / (1 + (ss - 1) / N) \dots\dots\dots \text{Equation}$$

10 Corelation for limited population

Where:

n = correction for limited population (the final sample size)

N = population

ss = sample size

The results based on applying the two equations are:

$$ss = \frac{(1.96)^2 * 0.5 * (1 - 0.5)}{(0.05)^2} = 384, \quad n = \frac{384}{1 + \frac{384 - 1}{1500}} = 305$$

Based on the above equations, the sample size was 305 firms, noting that the middle management or senior management filled questionnaires. However, the questionnaire response rate was about 86% (263 of firms responded).

3.7 Empirical Survey and Data Collection

The empirical survey was collected through a structured questionnaire that was filled by different firms. Its structure was based on a deep analysis of the research questions and guidelines to reach the information required for the analysis and assessment. Also, it was designed in a way to provide space

for the firm to respond effectively and report their tailored innovation. To achieve that, the questionnaire was divided into six sections. The first section consisted of the cover letter that communicates the purpose of the research and the researcher's name and firm. The second section indicates the confidentiality and accountability commitment. The third section assessed the standardized demographic section of the firm. The fourth section studied the areas of assessment starting from the innovation type and performance measurement. The fifth section analyzes the source of innovation and networking, limitation of innovation, and finally the knowledge and external environment. as shown in figure 5 below, which describes the questionnaire structure. The full questionnaire is available in Annex 1.

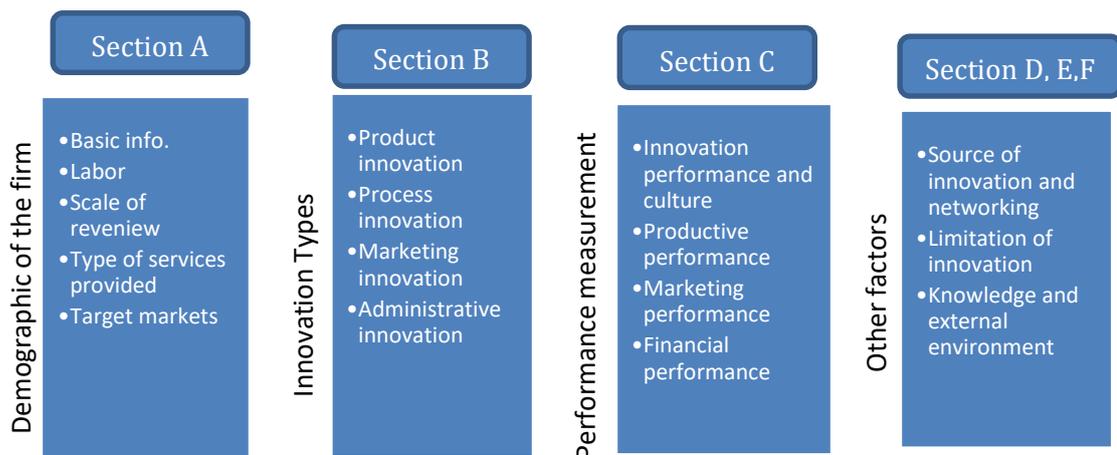


Figure 4: The questionnaire structure

Each section consists of the definition of the component and questions about the firm's adoption of innovation in the last three years period. Each question has a set of options, to rate from very high, high, medium, and low to inapplicable.

Section A: The demographic information of the firm consists of eight questions: labor scale, and gender, establishment and revenue, registration,

services provided by the firm, customers and markets to link the other variables with the scale of the firm and types.

Section B: Types of innovation, which consists of details about each type of the organizational innovation related to the KBIS mainly product innovation, process innovation, marketing innovation and administrative innovation.

The questionnaire indicated several functions, or activities, adopted by the firm under each type that can be considered the translation of adopting the innovation in that type to assess the availability of innovation. Therefore, each firm rated the level of innovation on a scale (1-very high, 2- high, 3-Medium, 4-low, 5- inapplicable) and the availability of these activities within their firms.

Section C: Performance measurement, which contributes to linking the level and type of innovation with the organizational performance and analyzing the correlation between these variables. The questionnaire studied the performance from different aspects, mainly the innovation performance and culture, productive performance, marketing performance, and financial performance. A set of activities were defined under each component and is rated based on the organizational performance.

Sections D, E, F: Other factors that heavily contribute and influence the level of innovation adoption and evolving within the firms and beyond. These factors start form the source of innovation and networking and the role played by the KBIS and other actors in the innovation system. Moreover, assessing the limitation of innovation and other obstacles are considered as

a constraint for innovation, and finally, the knowledge and external environment that can be reflected as the infrastructure of innovation within Palestine and beyond.

The questionnaire was also evaluated before the distribution through three professional reviewers; a pilot study was conducted with few key actors to validate the acceptance and the clarity of questions.

An online survey was initially developed, but it wasn't very effective even with intensive follow up, as the targeted groups didn't show any commitment to the online survey. Then, the data collection method were shifted to one to one survey questionnaires, which were distributed to a representative sample of 305 firm in KIBS sector, that targets the fourteen different KIBS types and other stakeholders to reveal the innovation practices, different affecting factors, and their relationship with the overall performance of the KIBS sector.

Firms were surveyed for their innovation behavior in both 2014 and 2015.

3.8 Quality Standards for the Research Tool

3.8.1 .Pilot study

The pilot study of this research is collected initially through the distribution of the questionnaire to three experts from different backgrounds. They were considered external evaluators for the questionnaire and the clarity of the questions and the structure, flow of questions and required information. They were also requested to provide their comments and feedback to develop the questionnaire. These comments were taken into

consideration in the development of the final version of the questionnaire. The questionnaire was initially designed in English and then translated to Arabic (the native language of the participants) to facilitate the communication of the questions and improve the responsiveness of the participants.

3.8.2 Validity

Assessing the validity of the research instrument is one of the major quality assurance tests to measure the reliability and validity of tools. This research depended on different factors to examine the validity of the questionnaire used for data collection:

Face validity: This was conducted earlier, at the beginning of the study, mainly after the development of the questionnaire and depends on the researcher's review of the questions and assesses their appropriateness to answer the research questions and data required for this study.

The development of the research questions: research development depends on the literature review for data collection, the structure of the questionnaire, the areas of assessments, methods, and questions that respond to the research questions.

The questionnaire was evaluated externally through the experts above review as mentioned above who also provided their comments on the clarity and flow of questions and information, which were addressed in the revised version of the questionnaire.

3.8.3 Reliability

In addition to the validity, reliability is also considered as the main component in the research quality assurance. Reliability was defined as the extent to which the results are consistent with time. The accurate representation of the total population under study is referred to as reliability and if the result of the study can be reproduced under the same methodology, then the research instrument can be considered reliable as defined by Joppe (2000).

To test the reliability of the research instrument, the Cronbach's alpha test was used to assess the internal consistency of the questionnaire items according to the rating in table 4

Table 4: Cronbach's Alpha for Reliability Test

Cronbach's Alpha (α)	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Source: (Farrell, 2012)

The Cronbach's alpha test was conducted to the questionnaire sections to capture the value of the Cronbach's Alpha for the different items in the questionnaire and the results as shown in table 5.

Table 5: Cronbach's Alpha Coefficient of the Questionnaire

Section	N of Items	Cronbach's Alpha	Internal Consistency
1.1 Product innovation	5	0.971	Excellent
1.2 Process innovation	7	0.905	Excellent
1.3 Organizational innovation	6	0.988	Excellent
1.4 Marketing innovation	4	0.990	Excellent
2.1 Source of data and collaboration	13	0.906	Excellent
2.2 Evaluation	8	0.948	Excellent
3.1 Internal obstacles of innovation	5	0.941	Excellent
3.2 External obstacles of innovation	7	0.978	Excellent

Chapter Four

Knowledge Intensive Business Service in Palestine

Chapter Four

Knowledge Intensive Business Service in Palestine

4.1 Overview

This chapter discusses the business services sector as a whole and the analysis of the market demands and potentials, followed by subsectors analysis for the main subsectors of the KIBS.

4.2 Introduction to KIBS Sector in Palestine

As mentioned earlier, the Palestinian economy is considered as a service economy, which the services sector constitutes the highest rate of the GDP compared to other sectors. Although KBIS sector is not categorized well in Palestine, due to the lack of research and studies analyzing it, KBIS can be tracked through the non-public services as these services are considered as complementary for other sectors. Therefore, it could be a great opportunity to invest more in analyzing this part of services sector and conceptualize it considering the global trends of the knowledge revolution.

Moreover, some of the subsectors were studied more than others; several studies were considered in addition to three main studies and research for the business services sector analysis mainly analyzing the market and opportunities for development as follows:

1. **Business Services Sector Market Analysis** – Palestinian Facility for New Market Development research, developed for Department for International Development (DFID) in the Middle East and North Africa Department Lead by Mohammad Nuisebeh, 2011.

This report presents the status of the business services sector in Palestine, examining the current supply of services and the demand for those services to identify ways to strengthen both supply and demand.

2. **Export Readiness and Potential for Private Sector**, - diagnostic study, developed by PALTRADE for the EU 2013.

The report covers four specific service sectors namely financial services, Information and communications technology (ICT), tourism and business and the related professional services.

3. **The West Bank and Gaza Investment Climate Assessment- Fragmentation and Uncertainty** developed by the World Bank 2013.

The objective of this assessment is to provide the Palestinian business community, the Palestinian Authority (PA), and the international development community with an empirical analysis of the investment climate under which Palestinian businesses operate. The report defines the key constraints on business and investment and identifies reform priorities for those aspects of the investment climate and constraints which are within the PA's control, as well as some policy recommendations for areas outside of the PA's control, but within the domain of development partner assistance agendas and/or Israeli policies.

These studies have heavily contributed to this chapter analysis of the sector.

4.3 Business Service Sector Market Analysis

The business service market analysis, which was conducted by The Department for International Development (DFID) through their research about business service sector market analysis, showed the structured format for this sector. As any other type of market dynamics, the business services sector is balanced by the demand and supply. To reach an effective market, the business service providers (BSPs) need to understand their consumers' needs and requirements to provide them with solutions and services that meet these requirements with an affordable price equivalent to the value of these services. On the other hand, consumers need to recognize that they have a problem and accept that they need to fix it through outside service.

Accordingly, they will be looking for such a service provider and learn what they want and how they can get it recognizing the value of this service to better assess the cost of their enterprise. As a result, market failure can be then defined by any change in these factors through the lack of supply or absence of demand. Furthermore, market failure can be reached by oversupply or high demand that can be met as in figure 6 below (DFID, 2011).

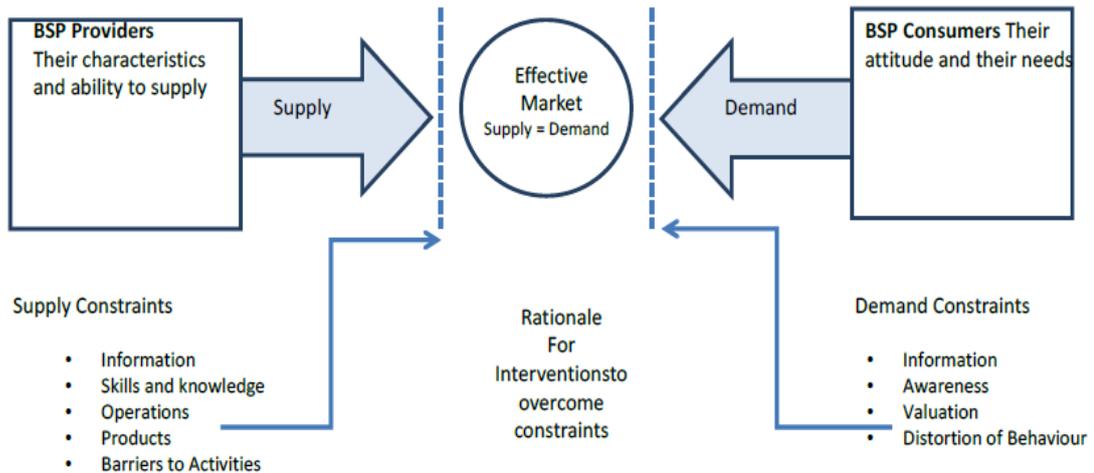


Figure 5: Market System for the Supply and Demand of Business Services Source:

DFID research 2011

4.3.1 Business Service Sector Demand

As part of the analysis of business services sector demand in Palestine, an overview on the micro, small and medium enterprises (MSME's) in Palestine requirements were assessed by the chamber of commerce, through their survey, showed that the demand for the business services was focused on three categories: training on the subject, consulting on problems, and provision of information's on the subject. noting that all these fields are within the KIBS fields. For instance, Banks reported the minimal requirement for support in financial management. On the other hand, the other selected fields like the commercial enterprises reflected their need for training in retail and wholesale trade, the development of marketing plans service and training. Moreover, the financial management training was a key requirement for 51% of the agricultural sector assessed enterprises, from which 46 % reported their need for more information on that topic as a result

of their need to improve their production and seek opportunities for financial support.

In line with the agricultural sector, construction also reported their need for consultancy on financial services in addition to training on marketing as a common theme between agriculture and industrial sector. Both sectors reported their need for productivity improvement services by 40% in the agricultural sector and 32% in the industrial sector.

Also, other topics like production, planning and information in production services were reported, especially for these large enterprises rather than smaller ones, which don't need this type of services. Part of the CCI survey results showed the gap between the real problems facing the different sectors and their beliefs that these types of problems can be solved through BSP's. For example, while marketing is considered as a big challenge for several sectors, 75% of the surveyed respondents reported that they don't need any support in developing their marketing plans. Moreover, the exporting performance, which was also nominated as a problem, 79% reported that they don't need consultancy in such topics. (DFID, 2011)

4.3.2 Business Services Required by MSMEs in Palestine

On the business service sector analysis, the report developed by GIZ funded project SEC analyzed the needs of MSMEs for business development services (BDS) in Palestine. The project surveyed the MSMEs in Palestine, in which involved 242 enterprises were targeted by the project. Therefore, we can't generalize these results for, but it will be important to consider them

and analyze them. In fact, this survey studied the performance of these MSMEs during two to three years examining their demand for business services over time and during their different development stages. SEC classified business services, as it is adapted to Palestinian context. They were divided into three main categories of training, consulting, and information as shown below:

- Training: Vocational management skills, language skills, computer skills, financial management, production management, and marketing.
- Consulting: Diagnostic studies, coaching and special consultations.
- Information: mechanics and products, skilled labors, raw materials, exhibitions, credit information and general issues.

The demand for business services was analyzed in this report in terms of size and enterprise type. The results showed that the demand on BDS has proportionately increased.

Services demand also varies by the development stage of the enterprises as startups and the self-employed are looking for vocational training and more information on financial institutions and credit. Furthermore, enterprises that have been in business realize the importance of management skills services. Micro enterprises demand to upgrade their machines or to visit exhibitions and to update their knowledge as they will need to adapt to market need to expand their client base and grow. This can be reflected in a service demand profile that consists of 25% training and 25% consulting and 50% information.

Small enterprises will have similar service demand on marketing studies in addition to selling products through improving sales techniques and acquiring basic management skills, improving potential activities and doing proper costing and improving pricing strategy. Human resource service areas were demanded by the more established small enterprises and most of the medium enterprises. (The SEC, 2005).

4.3.3 Business Related and Professional Services Sector Value Chain

As part of the opportunities analysis of the services sector conducted by PALTRADE, mainly assessing the export readiness and potential for the service, the assessment developed the value chain for the business related and professional services sector based on Porter's value chain concepts. It initially started with identifying the supporting activities or attributes in addition to identifying the primary activities/attributes of the business related and professional services in Palestine (Paltrade, 2013)

The study divided the supporting activities within the value chain into four factors; the first factor is people or human factor as one of the major resources affecting the provision of services. The second factor is the firm's infrastructure including the physical aspects and supporting systems (ICT, marketing tools, management systems, etc.). The third factor is the process of information which is not tangible from a customer perspective, but it can be addressed by insuring a solid communication strategy that provides the customer with sufficient information about the service production and delivery. The fourth factor is reliability; this attribute is associated with the

quality of service; therefore, it significantly bears the value of the provided services by the customer as the following figure 7 illustrates.

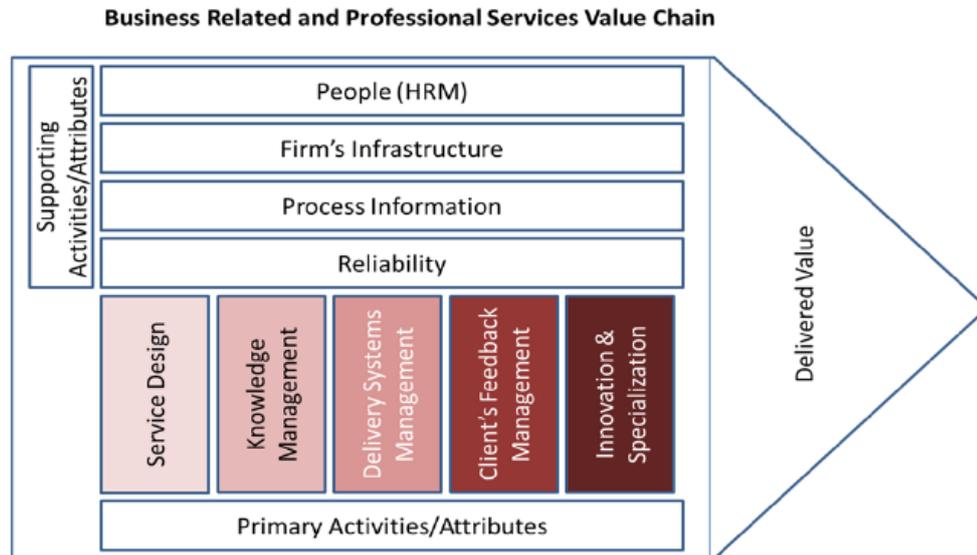


Figure 6: Value chain of business related and professional services

Also, the primary activities were categorized into five factors. The first primary activity is service design at which the value of service is defined and therefore depends on the firm's awareness of their customer needs and conduct market research to understand their target market requirements and design the service responding to that. The second primary activity is knowledge management, which is also a critical factor as the service providers should work on building good customer knowledge to manage their expectation and learn about their requirements and decision-making process. Also, customers are also expected to be aware of their needs and what type of services can be met, where service providers should match their services with the customer needs to turn into demand.

The third primary activity is the delivery system management, in which the company is perceived by the customers as part of the quality feedback management, which should be managed properly by the service providers in order to enhance trust and confidence among the clients and service aspects; therefore, service providers should consider appropriate delivery channels that are more convenient to their customers.

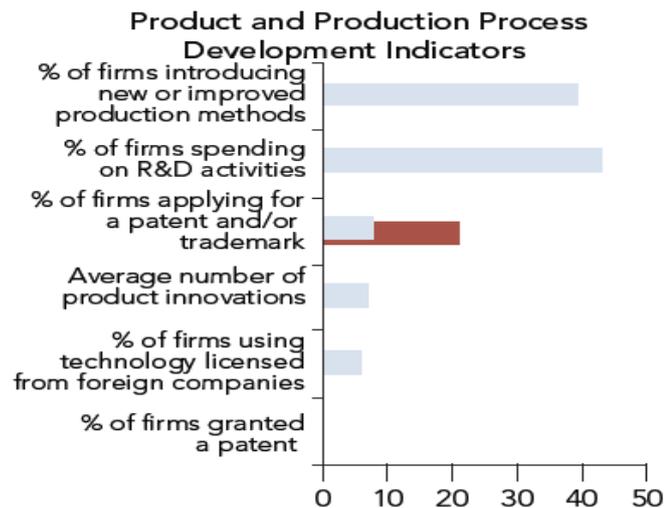
The fourth factor are the model, which is an innovation that is considered the most competitive advantage for service providers, in addition to the specialization, where both can enable the service providers to manage their services quality and gain a competitive advantage over other rivals (Paltrade, 2013).

4.3.4 Business Service Sector Market Development Opportunities

Analyzing development opportunities for the business service sector, the World Bank report developed in 2013 assessed the investment environment in the West Bank and Gaza and discovered that the West Bank firms level of business upgrading, technology use, and innovation is relatively high among the Palestinian firms. Unfortunately, the growing innovation ecosystem is separate from that in Gaza, where the report recommended investment in knowledge, skills, and innovation that could act to bridge the Palestinian economy with global economy through focusing on more technology driven entrepreneurship and higher value addition services. Considering the best-case scenario of this growth, the Palestinian economy will remain small and limited, and therefore the economic growth will

heavily depend on the investment in human resources and entrepreneurship of business community.

This report also analyzed the innovation performance of the firms through innovation indicators considering the product and process development and the knowledge acquisition indicators in addition to the technology use indicators, as shown in figure 8 below which shows that innovation indicators respectively have low development in their process or products, while purchasing or receiving business and development services were reported the highest in the West Bank. Moreover, using the technology was also higher in the West Bank (World Bank, 2013).



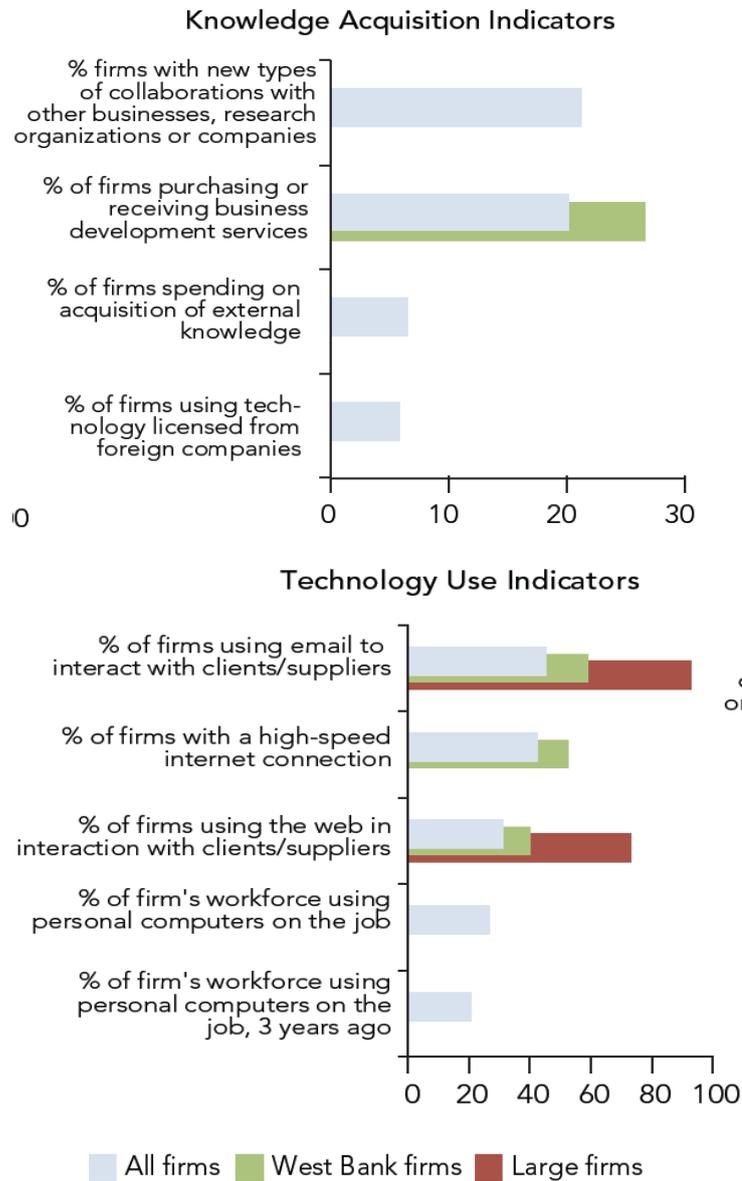


Figure 7 : Innovation Indicators

Furthermore, regarding the development of opportunities and constraints for the business service sector, as part of the sector analysis, the report developed by the World Bank, titled “Towards Economic Sustainability of a Future Palestinian State”, addressed the investment, innovation and training and highlighted that one of the limitations for the private sector development is the minimal exposure to foreign experience due to their limited access and travel restrictions in addition to the minimal

connections and opportunities. These factors limited the innovation and technology and enterprise learning. Furthermore, the report emphasized the importance of shifting the productivity into more high value added goods and services, which are not reflected in the Palestinian economy as it requires an increase in the investments, where this has not been reached so far by the Palestinian enterprises.

According to the different surveys and assessments, little innovation is achieved by the Palestinian firms, limited new products have been introduced to the markets in the previous years and limited investments in the internal learning and capacities. More analysis for the innovation obstacles will be discussed in Chapter Six (World Bank, 2012)

According to the Palestinian Trade Center report (Paltrade, 2013), Palestinian companies need to improve their ability to break through the regional and international markets to improve and build the competitive advantage in export markets. Several competitive and comparative factors are considered as gaps in the Palestinian firm's competitiveness, which heavily contributed to their export readiness, including innovation, quality of labors, IPR protection, advantageous trade agreements and standardization of services.

The interviewed firms showed a great level of awareness regarding the needed support and factors affecting their exporting potential and development of exporting strategies as they rated these factors: quality of service, quality best quality to price ratio, responsiveness to inquiries, innovation, unique expertise respectively.

Moreover, the report highlighted that the potential areas of intervention to address barriers and constraints, from which the companies stressed the importance of innovation and specialization, considering that the market size was a challenge in the previous years. Companies also requested the development of the sector promotion policies to be able to expand and penetrate other markets to enable them invests in innovation and focus more on specialization. Creating a fund for innovation is one important recommended action by the companies (Paltrade, 2013).

4.4 Business Service Sub Sectors Analysis

Major performance indicators for the sub sectors of the business service sector were analyzed through the industrial survey 2015 that was initiated by the PCBS. The survey highlighted that the total number of the private and non-profit firms in Palestine reached 130,747 firms from which 26.7% are service firms, where 33.6% from the workforces are working in these service firms, with an 18.8% production contribution to the total of 10,946.3 million USD production value for Palestinian firms. Moreover, the benefit of the service firms was reported 20.8% from the total of \$6,622.3 million.

Table 7 shows the scale of the KIBS in Palestine noting that the transactions levels are quite improving over the years. Nevertheless, these records are contributing to the service sector figures with minimal percentages compared to other services subsectors, which were highlighted as well through the growth of the services sector in Palestine; productivity

challenges” report, all the knowledge intensive sub sectors were accounted for just a small share of employees and firms in the services sector. Mainly, the percentage of firms, employees, compensation of employees, output, knowledge-intensive and capital intensive services, such as postal services, telecommunication, R&D and computer related activities and the business activities were all reported to have limited contribution.

For example, computer related services, and R&D sectors were accounted for around 0.4% and 0.1% of employment in the services sector, respectively. This shows that there is a weak interest in knowledge and R&D services in Palestine. This negatively affects the economic capability to innovation and development in Palestine. Moreover, postal services and telecommunications sectors reported a relatively high proportion of value-added output (around 20% of output and 24% of value added). This illustrates the prominent role that this sector plays, and appeals for more investment in it, as well as its inclusion in the core interest of public policy as shown in table 7.

Table 4: The KIBS scale in Palestine (Industrial Survey 2015)

	Economic activity	# of firms	#of employees	Avg. Wages employee (NIS)	Output (x\$1,000)	Intermediate consumption (x\$1,000)	Gross value added (x\$1,000)	G.F.C.F (x\$1,000)
1	Telecommunication	317	4,484	4,174	634,460	179,302	455,159	58,331
2	Computer programing & consulting	91	624	567	21,381	2,259	19,123	86
3	Information services activities	43	489	464	12,050	2,458	9,592	92
4	Legal & accounting services	1,920	4,197	2,082	83,781	20,579	63,202	3,320
5	Management consulting	46	293	246	12,101	1,784	10,317	20
6	R&D in the scientific field	46	144	142	1,421	758	1,615	116
7	Media & marketing research	389	1,803	1,507	32,852	10,165	22,687	307
8	Administrative, office activities & supportive activities	504	2,094	1,487	52,237	29,729	22,508	672

4.4.1 Financial Services Sector

According to the exporting readiness and potential of the services sector diagnostic study for Palestine, financial services industry in Palestine has been developing significantly during the past fifteen years. There are around nineteen local and international banks in addition to ten insurance companies, 350 exchange office, ten securities companies, seven leasing companies and two mortgage leading companies and the Palestinian stock exchange (Paltrade, 2013).

Furthermore, the study stated that the quality, cost of the services and the level of education and expertise offered by the sector could be identified as the strength of the sector compared to the weaknesses, which were demonstrated by limited identifications of brands and lack of specializations, lack of technology leadership and innovation. Therefore, this sector's competitive advantage can be summarized by the quality and standards and banking regulations in addition to the advantage of trade agreements and good financial infrastructure as well as the quality of price ratio and unique expertise (Paltrade, 2013).

Moreover, the World Bank report "Toward economic sustainability of a future Palestinian state", which collectively gathered the Palestinian economy information from different resources and agencies, stated that the financial sector has been steadily developing and was able to meet the demand of the private sector. However, it was mainly a bank based system, and it is still necessary to continue expanding the credit markets, developing the leasing, mortgage finance and point of sales, .etc. taking into account that the PA must continue to develop the regulatory and legal environment for the financial sector to allow this growth.

Reflecting on the Palestinian stock exchange (PSE) sub -sector, which is considered part of the KIBSs, which was established in the late nineties with a private shareholding company and has recently become a public shareholding company in 2010. The Listed companies reached only 48 in 2012. However, small size and family owned companies comprise most of the Palestinians enterprise limited the potential for the new applicants. Also,

PSE is still limited as 60% of the capitalization is accounted for three companies.

Moreover, the exporting readiness and potential of service sector diagnostic study for Palestine (2013), expressed the stability and steadiness of the stock exchange sector in Palestine and market capitalization as it passed several global financial crises with a minimal level of impact compared to the MENA region.

Different assessments have identified the innovation as a weakness in different sectors and have a great potential to contribute to the development of the performance of these sectors. (World Bank, 2013)

4.4.2 Information and Communications Technology Services

The information and communications technology (ICT) industry includes telecommunications operators, computer and software developers and electronic equipment manufacturers and resellers. According to the PALTrade report, the ICT sector has an important role to play in the sector development as it grew from 0.8% of the GDP in 2003 to 5% of the GDP in 2010, which is a dramatic change away from the traditional industry (PALtrade 2013),

Moreover, the Palestinian Information Technology Association of Companies (PITA) conducted several types of research and reports on the ICT market. For example, the Palestinian ICT Market Penetration Study indicated that the demand for the ICT services showed an upward movement earlier in the 90s, mainly after the Oslo accord had been signed; President

Arafat laid the foundation stone of the Palestinian ICT industry and privatization of the telecom sector. Today, ICT sector provides ICT products and services to several countries around the world and many prominent international customers including Intel, Cisco, Siemens, and Volvo.

PalTrade Report, 2013, also elaborated that converting the level of education into more high value added ICT labor is not a straightforward process. On the one hand, ICT sector development has a great advantage that it is not limited by the physical movement of goods or people, like the software development, Business Process Outsourcing (BPO) / Information Technology Outsourcing (ITO) and telecommunications technology. Moreover, the challenge remains how to scale the success stories developed through the support of the huge foreign actors like Google, Intel, Cisco and HP, which invested in the ICT sector development in Palestine.

Therefore, the ICT sector is considered one of the promising opportunities to create the Knowledge Based Economy (KBE), which is considered a self-reliant beneficiary from the advancement of the ICT solutions, as was stated in the National development plan 2011-2013 “ *A state with a strong, knowledge-based economy propelled forward by a pioneering private sector...* ” (Paltrade, 2013).

Nevertheless, the intellectual property rights law in Palestine can be considered a limitation for the development of the ICT sector and a barrier for the multinationals and foreign direct investments, as the laws are somehow outdated. This drawback stands although PA is preparing themselves to become an observing member in the world trade organizations.

Moreover, according to the Business Services Sector Market Analysis report developed by DFID, the ICT sector is receiving a considerable donor focus and experiencing good sector growth, where the main problem facing PITA that member enterprises still consider themselves rivals instead of full partners in an expanding sector with considerable potential as highlighted above. Examples abound where a lack of cooperation between IT companies with complementary skills and basic business conservatism of the companies resulted in missed opportunities in one of the fastest moving sectors in the world, where ICT was included. (DFID, 2011)

4.4.3 Business Related and Professional Services

According to the Paltrade report, business related and professional services sub sector are considered the largest sector regarding its constituency. This sector consists of different sub-sectors; mainly the legal services, invoicing and collection services, credit reporting services, architectural services, engineering services, design services, integrated engineering services, educational and training services, marketing and advertising services, financial services, management consulting, and business consulting, etc. Moreover, under this sector, enterprises in the research are considered small businesses. Around 70% of service firms employ less than ten employees with less than US\$1 million turnovers including exports. It is worth mentioning that most of the companies are young regarding operating as most of them were established during the past 15 years. (Paltrade, 2013)

Business and professional services sector is a rapidly growing and evolving sub sector in Palestine due to five primarily factors. The first factor is the high level of development projects activities funded by donors and implemented by technical agencies across a variety of thematic areas. The second factor is the entrepreneurial culture that showed a great resilience and tendency to recover with increased stability. The third factor is the principle of free market economy as the government adopted this principle and affected by multi-dimensional challenges. The fourth factor is the restrictions on mobility that have served to constrict tangible goods based sectors. Finally, the fifth sector is a human capital intensive that allowed it to overcome several periods of the intifada and other instabilities. (Paltrade, 2014)

As per Paltrade report, issues faced by this sector can be summarized in the legal framework, credential process of companies within various sub-sectors, the limited availability of relevant skills, the lack of specialization, weak governmental strategies and policies pertaining to the sector, small companies with limited competitive advantages in regional and international markets and the weak representation and technical support provided to the sector through specialized business associations (Paltrade 2013).

According to the BPS sector exporting strategy developed by Paltrade as part of an EU project, the lack of innovation is also considered as a major challenge, mainly for the management/business consulting and the marketing /advertising/public relations subsectors. Exploring that the natural reason for this is the relatively promising growth stages of the sector in general and the existing client relationship that focused on development based projects with a clear scope of work, and shaped the portfolio of these

enterprises. Moreover, sector operators do not have experience in complex projects requiring analytical /technical depth, which typically serve to promote innovation and new ideas generation. Price competition in the relatively small domestic market has also played a role in inhibiting investments regarding developing IP and innovation as shown in table 8.

On the one hand, some of the services sectors, such as ICT and financial services have developed specific strategic plans for these sectors in line with governmental economic development sector. Moreover, there was no evidence of a certain strategy of policies about business related services. This was also confirmed by the Ministry of National Economy staff members (Paltrade, 2014).

Table 5: Breakdown of Business Related services sub-sectors innovation in the West bank, 2011

SERVICE ACTIVITY	NO. OF ENTERPRISES	NO. OF EMPLOYEES	OUTPUT *	GROSS VALUE ADDED *
Civil Engineering	29	666	70781.7	34542.9
Publishing Activities	4	148	2098.4	1490.1
Legal and Accounting Services	1109	2523	15514.6	12246.7
Activities of head offices; management consultancy activities	17	114	1611.0	1340.2
Architectural and engineering activities; technical testing and analysis	524	1999	37263.5	27535.2
Advertising and market research	342	1109	42972.6	16128.3
Other professional, scientific and technical activities	462	1085	5956.4	3289.0

* (Value is Thousand US\$)

SOURCE | PCBS, ECONOMIC SURVEYS SERIES 2011, VOLUME 17, OCTOBER 2012.

Moreover, this sector's opportunities can be summarized in four main areas. The first area is the educated workforce in Palestine; it is very important for such a knowledge intensive sector, knowledge versus skills association should be created to improve the levels of competitiveness. The

second area is the fact that some companies already exist in some regional markets; their experience in service exporting is an asset to the sector. The third area is that more companies are willing to collaborate to improve their competitive advantage in the international markets. The fourth area is that Arab Spring is providing great opportunities as the demand for such services in those countries will be very high in the reconstruction and economic development process of those Arab Countries (Paltrade, 2013)

On the Business development services in Palestine, an analysis of demand and supply conditions report developed by MAS research institution recommended that business development services should work on providing new services. This contributes to the transfer of the Palestinian economy from low-value addition production into more high value added and high knowledge content (knowledge-based goods) and improves the economy more effectively (MAS, 2007).

Chapter Five

Evaluation of Innovation Performance Data analysis

Chapter Five

Evaluation of Innovation Performance

Data Analysis

5.1 Overview

This chapter analyzes the empirical data collected through the field exploratory survey and quantitative statistical analysis of the questionnaire using the SPSS software. This chapter initially discusses the characteristics of the study population followed by the descriptive analysis done to study the relationship between the innovation performance and the firm's activities, revenue, scale and a number of employees, the exporting and the impact of innovation on the organizational performance.

5.2 Population Characteristic

This section discusses the responding firms' characteristics from different aspects, starting with their size, and scale of employment, establishment dates and ending with the categorized activities or services provided by these firms.

5.2.1 Number of Employees in the Firms

According to the responding firms, 85% of the firms have less than 20 employees while 8% have 21-50 employees, and 6% reported that they have more than 51 employees and less than 100, while 1% has more than 100 employees as in the following Figure 9. This was also highlighted by

Paltrade report. Around 70% of services firms employ less than ten employees (Paltrade, 2013)

This reflects the economic analysis discussed earlier and the scale of the services sector firms as a limitation also for the innovation and this will also be studied in the analysis in the following sections.

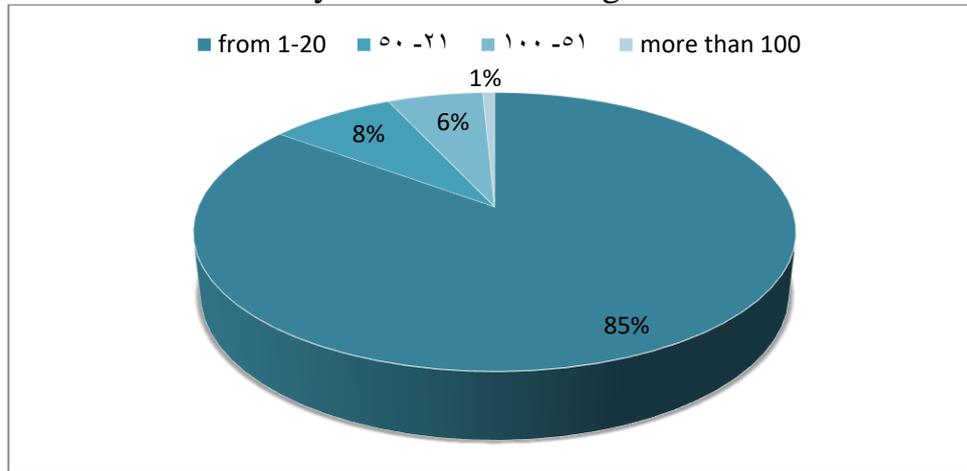


Figure 8: Number of Employees

5.2.2 Gender Segregation of Employees:

The research also assessed the gender segregation within the employees of the firms, where 43% reported that there are no females working at their firms, 47% reported that less than 20% of their employees are females. Moreover, only 9% of the firms reported that female employees working at their firms are between 20-50%. Finally, 1% of the firms have reported that more than 50% of their employees are females as shown in the following figure 10.

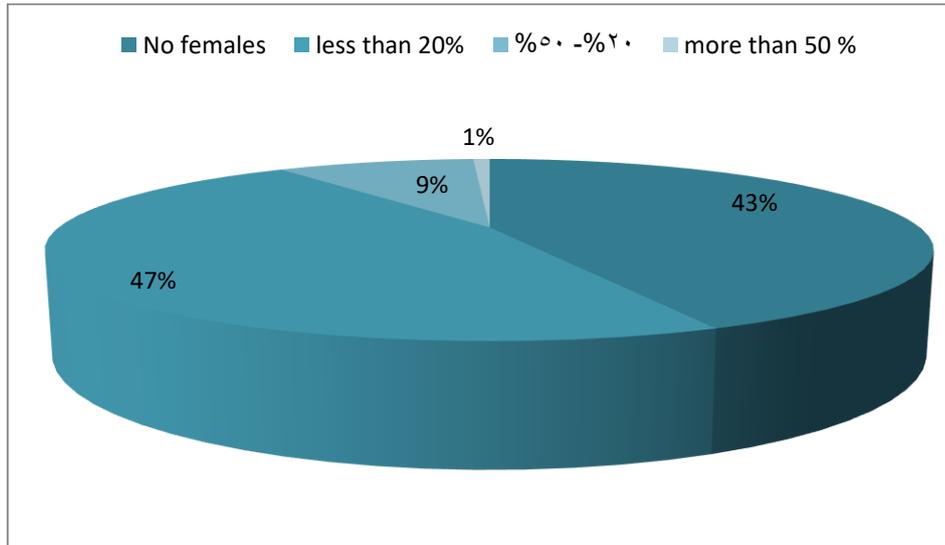


Figure 9: Female to male percentage

5.2.3 Establishment Dates

The establishment dates of the firms responded to the questionnaire showed 2003-2012 was the period that had the highest establishment date of the firms. Moreover, the periods before 2003 recorded lower rates of establishments of services firms. This response shows the growth of the services sectors in the early 90s, where the analysis showed that there were 34 firms registered during the period 1983-1992, then 92 firms were registered between 1993-2002, and 112 firms were registered between 2003-2012, while only five firms were registered in the period between 2013-2015 as shown in the following figure 11. Paltrade report stressed that most of the companies were young regarding operating as most of them were established during the past 15 years. (Paltrade, 2013)

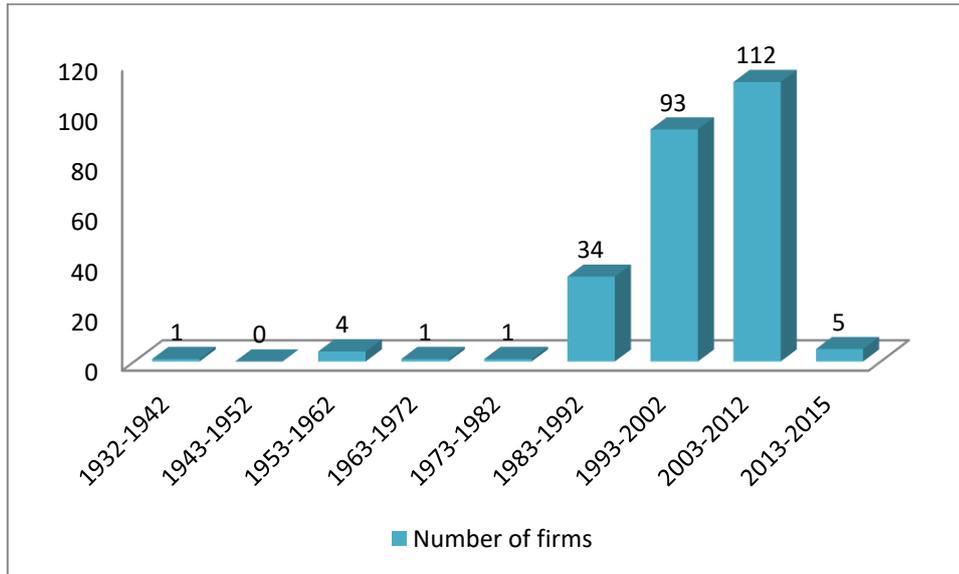


Figure 10: Establishment dates

5.2.4 Population Categories and Activities

According to the official Palestinian resources and data analysis, mainly by the Ministry of Economy, the KIBS sector is categorized into 14 activities as shown in Table 9. Computer networking and the computer software and programs fields are considered part of the ICT sector, which is significant growth and has a promising potential as elaborated in Chapter Four. Moreover, ICT sector comprises about 11% of firms surveyed. Table 9 shows that 44 of the surveyed companies reported working in computers software and programming that represent 14% from the total KIBS firms surveyed given that some of the firms could be working in programming and software and provide network services as well. Moreover, telecommunication firms surveyed are 19 firms representing 6% of the sample, and mainly include landlines and internet service providers.

Furthermore, 23 firms were surveyed and categorized as management consultants representing 8% from the sample. This includes companies providing management solutions, research and assessments, accounting and bookkeeping and other financial services, where 3% and 1% of the companies surveyed reported providing these services; some companies would provide these two services together.

Building services and technical engineering services and design are also considered as an overlapped sector, where 13% and 14% of the surveyed companies reported providing these services.

Moreover, six firms reported working in the legal services, and only 2% of the KIBS firms provided the temporary labor recruitments, depending on the limited availability of this field. While only one company reported working in environmental services due to the limitation of this field. Furthermore, around 4% of the firms provide the R&D services, which is a great percentage to study as a source of innovation. Also, around 1% of the firms provide marketing and advertising services, and this is also a great potential sector to assess. Finally, 11% of the companies provide training services.

Table 6: The classification of KIBS firms in Palestine

KIBS areas	Number of firms	percentage
Computer networks/telematics (e.g. on-line databases)	33	11%
Computer Software & Programs	44	14%
Telecommunications	19	6%
Management Consultancy	23	8%
Accounting and bookkeeping	9	3%
Building services	40	13%
Technical engineering service & Design	43	14%
Temporary labor recruitment services ⁵	4	1%
Legal services	6	2%
Environmental services	1	0%
Financial services (e.g. securities and stock-market-related activities);	4	1%
R&D Consultancy and "high-tech boutiques"	13	4%
Marketing/advertising	33	11%
Training centers	33	11%
	305	100%

5.3 Innovation Performance in the KIBS Activities

The survey analyzed the availability of the different types of innovation or innovation outputs and can be summarized by the innovation performance of the subsectors. Table 10 & Figure 12 show the innovation output (product, process, marketing, organizational) for the 14 KIBS subsectors. Regarding technological innovation (product and process innovation), the analysis showed that telecommunication and technical engineering service and design firms are the most innovative. This might be explained by the high financial and technical capabilities of these firms, and the availability of skills and technologies needed for such innovation. This was also stressed by Soubbotina, (2004) in her book "Beyond Economic Growth", as she

describes “the fastest-growing part of the services sector, which consists of knowledge- and information-related services, such as education, research and development (R&D), modern communications (telephones and Internet), and business services.

The innovation capabilities of marketing and advertising firms are consistent with the simple nature of product innovation in this sector. Firms in accounting and bookkeeping, labor requirement services, legal services, environmental service, R&D services, and training sector have no technological innovation output. These sectors are considered new and very small sectors with low employment of knowledge and technology. This can also be as a result of the underestimation of innovation in services by the scholars as they depend on the analytical tools designed for manufacturing or traditional technological view of innovation which were misleading and led to wrong conclusions, mainly about the impact of innovation in services on the economic performance in relation to value addition and productivity compared to the innovation in manufacturing as stressed by Gallouj and Savona (2009).

Computer networks/Telematics, computer software & programs, and marketing sectors perform better than other KIBS sectors with regards to non-technological innovation (marketing and organizational innovation). This might be explained by the low cost and the non-technical competencies and skills required for such innovation. Also, the workers in computer sector (software, hardware, and networks) are considered highly skilled labor with a high level of knowledge and competencies. Similar to technological

innovation, most of the firms in accounting and bookkeeping, labor requirement services, legal services, environmental service, R&D services, and training sector had never implemented marketing and organizational innovation in 2014 and 2015.

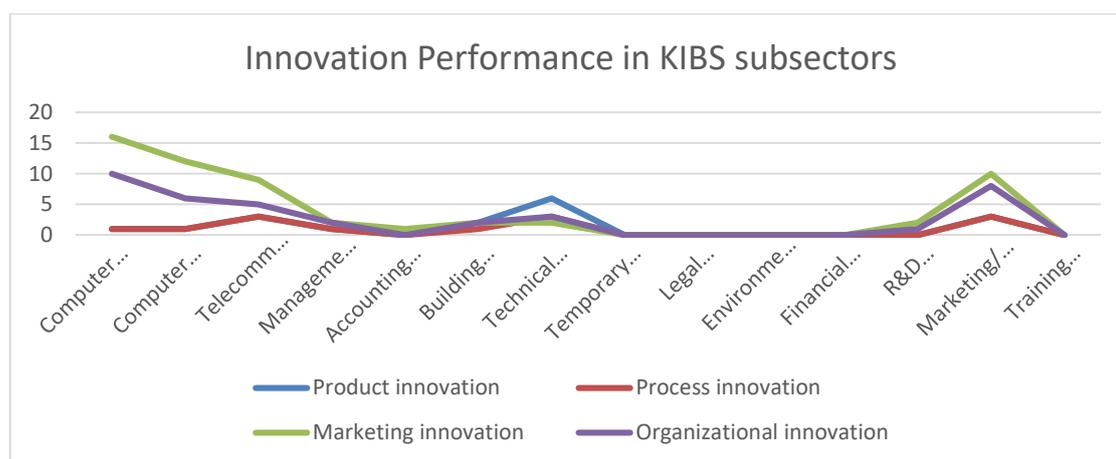


Figure 11: Innovation Performance in KIBS sub sectors

Table 7: Innovation performance of KIBS firms

KIBS activities	Number of firms			
	Product innovation	Process innovation	Marketing innovation	Organizational innovation
Computer networks/telematics (e.g. on-line databases)	1	1	16	10
Computer Software & Programs	1	1	12	6
Telecommunications	3	3	9	5
Management Consultancy	1	1	2	2
Accounting and bookkeeping	0	0	1	0
Building services	2	1	2	2
Technical engineering service & Design	6	3	2	3
R&D Consultancy and "high-tech boutiques"	0	0	2	1
Marketing/advertising	3	3	10	8
Total	17	13	56	37

Tables 10 and 11 summarize the analysis of the innovation outputs, mainly the percentage of firms introducing different types of innovation. The results show a very weak innovation performance in KIBS firms in Palestine, where only 17 firms from 263 (6%) introduce product innovation, 13 firms (5%) introduce process innovation, 56 (21%) introduce marketing innovation, and 37 firms (14%) introduce organizational innovation. This reflects the reality of business firms in Palestine that are mainly small firms with less than ten employees and having low ability to introduce new services.

As were highlighted by Morrar & Gallouj, in Palestine, minimal efforts were put to support the establishment of such strategies or developing the strategic capital and knowledge service. Most of the policy discussions in Palestine were mainly about the development of the manufacturing sector (Morrar & Gallouj,2016).

And According to the different surveys and assessments, little innovation is achieved by the Palestinian firms; limited new products have been introduced to the markets in the previous years in addition to the limited investments in the internal learning and capacities. (World Bank, 2012)

The analysis also found that non-technological innovation (marketing and organizational innovation) has the highest score for innovation performance. This is consistent with the fact that non-technological activities are the most important innovation activities in services generally and KIBS. Also, the low cost of marketing and organizational innovation in comparison with other types of innovation. This was also stressed by Morrar; the non-technological innovation has more significant effect on the services sector, while the technological innovation has more significant effect on the

manufacturing sectors, where the mixed strategy of technological and non-technological innovation can be considered the most effective innovation strategy for enhancing economic performance in both manufacturing and service firms (Morrar, 2014).

Table 8: Innovation output in KIBS firms in 2014, 2015

	Number of firms	Percentage
Product innovation	17	6%
Process innovation	13	5%
Marketing innovation	56	21%
Organizational innovation	37	14%
No innovation	124	47%

5.4 Innovation Performance Based on Firms Revenue

5.4.1 The differences in Product Innovation in Respect TO TOTAL Revenues

Tables 12, 13 show that there are differences between KIBS firm's product innovation behaviors with regards to their revenues. Table 12 clarifies that the firms with lower total revenue have more ability to make product innovation in comparison with higher revenue firms. These results may contradict many of the previous studies which show that firms with a total revenue will have more ability to innovate. This might be due to the fact that the lower revenue firms will be focusing on the competitiveness and increase their market share and revenue, and so they will be working on improving the products and include innovation, while the higher revenue firms reached a maturity level and stability in their market share and would focus on other factors, such as cost reduction and outreach rather than product innovation. This can also be related to the results Santos et al

reached in their assessment for the innovation in MENA region. They conclude that innovation firms in services sector tend to be smaller than average, while in the manufacturing sector, their size is larger on average, Santos et al. (2014)

Table 9: ANOVA for the product innovation in regards to total revenue

ANOVA					
Product Innovation					
	Sum of Squares	df	Mean Square	F	Sig. significant at <0.05
Between Groups	5.896	3	1.965	4.927	.002
Within Groups	95.325	239	.399		
Total	101.221	242			

Table 10: Scheffe analysis for the ANOVA of the product innovation in regards to total revenue

Multiple Comparisons				
Product Innovation - Scheffe				
Total Revenue (I)	Total Revenue (J)	Mean Difference (I-J)	Std. Error	Sig.
1\$- 10,000\$	11,000\$- 50,000\$	.11656	.10372	.738
	51,000\$- 200,000\$	-.05060-	.11378	.978
	more than 200,000\$	.39940*	.11777	.010
11,000\$- 50,000\$	51,000\$- 200,000\$	-.16716-	.11871	.577
	more than 200,000\$	.28284	.12255	.152
51,000\$- 200,000\$	more than 200,000\$	.45000*	.13117	.009

*. The mean difference is significant at the 0.05 level.

5.4.2 The differences in Process Innovation in Respect TO TOTAL Revenues

Firms have a great variation in their ability to introduce process innovation based on their revenues (see table 13). Table 14 explains that the firms with medium total annual revenue between \$51,000 and \$200,000 have more ability to introduce process innovation in comparison to firms with large total revenue (more than \$200,000). This can be explained by the nature of the Palestinian KIBS firms that incorporate some large revenue firms like banks and telecommunication and a large block of medium firms that try to gain more market share and compete with large firms. Therefore, these firms are expected to spend more on process innovation.

Table 11 : ANOVA for the process innovation in regards with total revenue

ANOVA					
Process Innovation					
	Sum of Squares	df	Mean Square	F	Sig. significant at <0.05
Between Groups	2.983	3	.994	3.255	.022
Within Groups	73.017	239	.306		
Total	76.000	242			

Table 12 : Scheffe analysis for the ANOVA of the process innovation in regards with total revenue

Total Revenue (I)	Total Revenue (J)	Mean Difference (I-J)	Std. Error	Sig.
1\$- 10,000\$	11,000\$- 50,000\$	.08116	.09078	.850
	51,000\$- 200,000\$	-.04819-	.09958	.972
	More than 200,000\$	.27756	.10307	.067
11,000\$- 50,000\$	51,000\$- 200,000\$	-.12935-	.10390	.671
	more than 200,000\$	.19640	.10725	.343
51,000\$- 200,000\$	more than 200,000\$	.32576*	.11480	.047

5.4.3 The differences in Organizational Innovation Regarding Total Revenues

Table 13 : ANOVA for the organizational innovation in regards with total revenue

ANOVA					
Organizational Innovation					
	Sum of Squares	Df	Mean Square	F	Sig. significant at <0.05
Between Groups	3.546	3	1.182	2.432	.066
Within Groups	116.130	239	.486		
Total	119.676	242			

Table 16 shows that the ability of KIBS to introduce organizational innovation is independent on their total revenues. This might be explained by the nature of organizational innovation that does not require intensive or complex technologies, but needs organizational skills and competences, new

methods and approaches. This means that most of the firms could introduce organizational innovation in their firms regardless of their total revenue. As also stressed by Morra that technological innovations were produced by the manufacturing firms more than the services firms, which produce more organizational innovation. The connection with the public sources of information was stronger at the manufacturing firms than the service firms, where the service firms also use less protection for innovation. (Morrar, 2014).

5.4.4 The Differences in Marketing Innovation with Respect to Total Revenues

Table 17 shows that the ability of KIBS to introduce marketing innovation is independent from their total revenues. This might be explained also by the non-complex nature of knowledge that might be needed for marketing innovation, i.e. the marketing innovation does not require heavy technologies, but knowledge and competences, which does not require too many resources mainly in the era of information and communication technology. This makes the marketing process come through using internet and social media.

Table 14 : ANOVA for the marketing innovation in regards with total revenue

ANOVA					
Marketing Innovation					
	Sum of Squares	Df	Mean Square	F	Sig. significant at <0.05
Between Groups	3.615	3	1.205	.828	.480
Within Groups	347.935	239	1.456		
Total	351.550	242			

5.5 The Innovation Performance Based on the Number of Employees

These sections will analyze the innovation performance in relation to the scale of the firm from the number of employees' perspective.

5.5.1 The differences in Product Innovation in Respect to the Number of Employees

Table 18 shows that the firms' ability to produce product innovation depends on the size of KIBs firms measured by the number of employees. Scheffe analysis in table 18 clarifies that larger firms with a number of employees above 100 have more propensity to introduce product innovation in comparison to small and medium sized firms. This result is consistent with most of the studies stating that innovation performance of large firms is better than small firms, but it also contradicts with the analysis of the firm revenue and product innovation, which shows that the lower revenue firms have higher product innovation ***

Table 15 : ANOVA for the product innovation of KIBS firms based on the number of employees

ANOVA					
Product Innovation					
	Sum of Squares	Df	Mean Square	F	Sig. significant at <0.05
Between Groups	24.483	3	8.161	27.406	.000
Within Groups	77.126	259	.298		
Total	101.609	262			

Table 16: Scheffe analysis for the ANOVA product innovation of KIBS firms based on the number of employees

Multiple Comparisons				
Product Innovation				
Scheffe				
Number of Employees (I)	Number of employees (J)	Mean Difference (I-J)	Std. Error	Sig.
5- 20	21- 50	-.11518-	.12454	.836
	51- 100	.02232	.14121	.999
	More than 100	3.48482*	.38758	.000
21- 50	51- 100	.13750	.18108	.902
	More than 100	3.60000*	.40382	.000
51- 100	More than 100	3.46250*	.40927	.000

*. The mean difference is significant at the 0.05 level.

5.5.2 The Differences in KIBS Firms Process Innovation in Respect to the Number of Employees

Table 20 shows that there are differences in process innovation behavior of KIBS based on the number of employees. These differences appear in large firms that have more ability to introduce process innovation

than small firms (see table 20). That is because they will be focusing more on the development of their processes since the large firms have huger scale of processes and transaction.

Table 17: ANOVA for the process innovation of KIBS firms based on the number of employees

ANOVA					
Process Innovation					
	Sum of Squares	Df	Mean Square	F	Sig. significant t at <0.05
Between Groups	15.315	3	5.105	21.707	.000
Within Groups	60.913	259	.235		
Total	76.228	262			

Table 18 : Scheffe analysis for the ANOVA process innovation of KIBS firms based on the number of employees

Multiple Comparisons				
Process Innovation				
Scheffe				
Number of Employees (I)	Number of employees (J)	Mean Difference (I-J)	Std. Error	Sig.
1- 20	21- 50	-.09524-	.11068	.864
	51- 100	-.09524-	.12549	.902
	more than 100	-2.73810*	.34444	.000
21- 50	51- 100	.00000	.16093	1.000
	more than 100	-2.83333*	.35888	.000
51- 100	more than 100	-2.83333*	.36372	.000

*. The mean difference is significant at the 0.05 level.

5.5.3 The Differences in Organizational Innovation in Respect to the Number of Employees

Tables 22 and 23 show that large firms have more ability to introduce organizational innovation in comparison to small firms. In addition, KIBS firms, with a number of employees between 51 and 100, have more performance in regards with organizational innovation than firms with a number of employees greater than 100. This might be explained by the nature of organizational innovation that does not require complex knowledge and technologies, and that medium size firms try to compete with large firms and obtain more market share.

Table 19 : ANOVA for the organizational innovation of KIBS firms based on the number of employees

ANOVA					
Organizational Innovation					
	Sum of Squares	Df	Mean Square	F	Sig. significant at <0.05
Between Groups	23.797	3	7.932	20.554	.000
Within Groups	99.958	259	.386		
Total	123.755	262			

Table 20 : Scheffe analysis for the ANOVA organizational innovation of KIBS firms based on the number of employees

Multiple Comparisons				
Scheffe				
Organizational Innovation				
Number of Employees (I)	Number of employees (J)	Mean Difference (I-J)	Std. Error	Sig.
1- 20	21- 50	-.20982-	.14178	.535
	51- 100	-.08482-	.16076	.964
	more than 100	-3.37351*	.44124	.000
21- 50	51- 100	.12500	.20615	.947
	more than 100	-3.58333*	.45972	.000
51- 100	more than 100	3.45833*	.46593	.000

*. The mean difference is significant at the 0.05 level.

5.5.4 The Differences in Marketing Innovation with Respect to THE NUMBER of Employees

Tables 24 and 25 show that large firms have more ability to introduce marketing innovation in comparison to small firms. This might be explained by the nature of the marketing innovation that does require more resources and outreach, but still reasonable for medium size firms to try to compete with large firms and obtain more market share. As also reflected in the World Bank report, that Palestinian firms would prefer working in new markets or introduce variation over existing projects, where the private sector should invest, innovate and become more internationally competitive in order to contribute to the economic growth (World Bank, 2012).

Table 21: ANOVA for the Marketing innovation of KIBS firms based on the number of employees

ANOVA					
Scheffe Marketing Innovation					
	Sum of Squares	Df	Mean Square	F	Sig. Significant at <0.05
Between Groups	22.202	3	7.401	5.441	.001
Within Groups	352.275	259	1.360		
Total	374.477	262			

Table 22 : Scheffe analysis for the ANOVA the Marketing innovation of KIBS firms based on the number of employees.

Multiple Comparisons				
Scheffe Marketing Innovation				
Number of Employees (I)	Number of employees (J)	Mean Difference (I-J)	Std. Error	Sig.
1- 20	21- 50	-.51228-	.26616	.298
	51- 100	-.18415-	.30180	.946
	more than100	2.86272*	.82834	.008
21- 50	51- 100	.32813	.38701	.869
	more than100	3.37500*	.86304	.002
51- 100	More than100	3.04688*	.87469	.008

*. The mean difference is significant at the 0.05 level.

5.6 Does Export improve the innovation performance for KIBS?

Tables 26 and 27 show that neither export to Israel nor to other foreign countries improve the product innovation capabilities of KIBS firms. This might be explained by the very low rate of export of KIBS firms, i.e. most of KIBS target the local market. In addition, KIBS is still a new and small size sector. Therefore, the size of export is still small.

These results were also highlighted by the World Bank report, in which modern services are moving toward more trading; the rapid improvement in the telecommunication sector is reflected in the recent growth of the services sector, although only 10% of the services value added is exported. Meanwhile the growth in the services of the value added exports are growing faster than other goods exports, which are also applied to the modern services compared with the traditional services (education, tourism, etc.) (World Bank, 2012).

Table 23 : The different in Product innovation performance in regards with firm who export to Israel

ANOVA					
Product innovation					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.218	1	.218	.562	.454
Within Groups	101.391	261	.388		
Total	101.609	262			

Table 24 : The different in Product innovation performance in regards with firm who export to foreign countries other than Israel

ANOVA					
PrOduct innovation					
	Sum of Squares	Df	Mean Square	F	Sig. Significant at <0.05
Between Groups	.090	1	.090	.232	.630
Within Groups	101.518	26	.389		
Total	101.609	26			

5.7 The Impact of Innovation on the Economic Performance of KIBS

Firms

The research empirically tests the impact of innovation on the economic performance of KIBS firms using an econometric model. The dependent variable that represents the economic performance of KIBS firms is measured by the total revenue. Innovation is represented by the four traditional types of innovation output: product innovation, process innovation, organizational and marketing innovation. Other control variables include the age of firm, firm size measured by the number of employees, barriers of innovation represented by two types of barriers: internal and external barriers. The researcher also introduced 13 dummy variables as control variables; each dummy variable represents one KIBS subsector. The researcher has excluded The 14th KIBS subsector to avoid dummy variable trap. The excluded subsector is the training sub sector.

After testing both multicollinearity using Variance inflation factor (VIF test, Heteroscedasticity using LM test, it was found that there is no trace for both multicollinearity and heteroscedasticity. Table 28 shows that the overall level of determination (R²) is equal 0.423, which is also significant at 0.05 level of significance.

Regarding the main dependent variables of innovation, the analysis showed that neither product, nor process, and marketing innovation has positive impact on the firm economic performance. This result is expected knowing that the rate of KIBS firms in the sample that introduces innovation is very low (see table 8). For example, only 15 firms from 263 (5.3%) introduce product innovation, 10 firms (3.8%) introduce process innovation 38 (14.4%) introduce marketing innovation. Meanwhile, in an expected result, organizational innovation has negative and significant impact of the economic performance of firms. This might show that firm's organizational change (restructuring plans, new management methods, business plans, strategic plans, etc...) is not efficient and has negative impact on the performance of KIBS firms. The political and economic instability in Palestine harden any plans for firms in Palestine.

This might also be due to the reasons explained by al Jawreen, as he stated that the recognition of the knowledge revolution and the importance of innovation and R&D in the Arab countries were minimal, mainly about the reality of innovation and technology in the Arab world. He mentions that the researches are stuck on the shelves in the libraries without considering the advantage of investing these research and efforts to develop the economic

and social sector, moreover, most of the Arab countries expenditure on R&D activities is less than 0.3 % of their GDP, which leads to a negative impact on the innovation performance in the Arab world. Al Jawareen (2011),

For the control variables, we find that the age of firm negatively impacts its economic performance. This is normal for Palestine, because most of the well-known and large KIBS firms are new and instituted after Oslo agreement in 1993. Therefore, we expect that the new firms perform better than the old ones. The firm size has a positive impact on the firm performance, which is a traditional and straightforward result and consistent with the results of most of the empirical firms in this field.

Regarding the KIBS subsectors, the researcher finds out that subsectors like computer networks, construction services, legal services; advertising and marketing service have more economic performance in comparison to other KIBS subsectors. This was reflected by the World bank report, which indicated that export of services can also be considered an attractive alternative for the West Bank & Gaza, which are mainly relying on the export of labor and goods, depending on the well-educated labor in West Bank & Gaza. A well-regulated telecommunication sector is benefiting from the fact that the modern services are relatively less affected by trade barriers and transportation costs, and require lower capital. (World Bank, 2012).

Table 25: The regression analysis for the relationship between innovation outputs and KIBs economic performance

Model	Coefficients ^a			T	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
(Constant)	33.410	12.971		2.576	.011
Product Innovation	.156	.199	.093	.785	.433
Process Innovation	-.055	.212	-.029	-.260	.795
Marketing Innovation	.082	.070	.088	1.165	.245
Organizational Innovation	-.359	.160	-.227	-2.242	.026
Internal Barriers to innovation	-.200	.116	-.169	-1.715	.088
External Barriers to Innovation	.459	.073	.655	6.293	.000
Age	-.016	.006	-.137	-2.448	.015
Firm Size	.413	.105	.230	3.934	.000
The firm provides computer programing services	-.605	.261	-.196	-2.314	.022
The firm provides computer networks/telematics services	.659	.302	.182	2.182	.030
The firm provides telecommunication services	-.516	.280	-.111	-1.841	.067
The firm provides management consulting services	-.248	.222	-.062	-1.116	.266
The firm provides accounting and bookkeeping services	-.542	.328	-.090	-1.649	.101
The firm provides building services	.458	.182	.154	2.509	.013
The firm provides Technical engineering service & Design	.089	.171	.030	.519	.604
The firm provides Temporary labor recruitment services	-.718	.454	-.085	-1.583	.115
The firm provides legal services	.792	.407	.104	1.944	.053
The firm provides environmental services	-.239	1.021	-.014	-.234	.815
The firm provides Financial services	.012	.522	.001	.023	.982
The firm provides R&D Consultancy services	.358	.264	.075	1.354	.177
The firm provides Marketing/advertising services	.490	.190	.153	2.582	.011
R ² =0.423 Sig=0.000					
Lagrangian Multiplier Test (chisq = 1.5, p-value = 0.32)					
a. Dependent Variable: Total Revenue					

Chapter Six

Obstacles to Innovation

Chapter Six

Obstacles to Innovation

6.1 Chapter Overview

Innovation obstacles and analyzing the sector challenges are one of the major areas to consider as part of studying the sector and understanding all the dynamics around it that might affect the development of the sector.

In this chapter, our goal is to present the result of the analysis from measuring the effect of hampering innovation on the ability of firms to introduce innovation. Obstacles to innovation, therefore, will be our independent variable, and innovation output is the dependent variable. The research used the innovation output index, where the firm's innovation output is represented by four dummy variables. Each of these variables is equal to one if the firm introduced a product, process, market or organizational innovation. This taxonomy of innovation output is based on the classification of innovation output used in the community innovation survey (CIS), which measures the performance of innovation in European countries, Norway and Iceland.

According to the report developed by Paltrade (2014), the main competitive constraints affecting the value chain of the business and professional service sector, were the enterprise level, policy and intuitional support, and the market entry related challenges.

The lack of collaboration across the sector is considered one of the major challenges at the enterprise level. Collaboration can be reflected in

networking to active partnerships in the project, which was absent, considering the limited innovation and the ideas of development. These factors significantly affected the growth of the business and professional subsector.

Moreover, the firms in the business and professional sector compete in a small environment, where the primary level is cost rather than the quality. Also, the competitiveness is restricted by the dependency to development partners as the main client base. Meanwhile the availability of the development partners' clients' base is considered an asset as well, but still the sector development and maturity require a diversified client base. The final challenge stated in the Paltrade report was the lack of specialized sector association and representative bodies. (Paltrade, 2014)

6.2 Innovation Obstacles Analysis

Obstacles to innovation were set as the main independent variable. They were divided into three factors: cost factor, knowledge factor and demand factor, where each factor includes a set of indicators (see table 29 below). Table 29 shows that the obstacles from the knowledge factor, which is represented by technology infrastructure (62%) and knowledge base (62%), mainly both are the most important hampers of innovation in Palestine. This might be explained by the weakness of technology infrastructure and the very small size of ICT sector and very low investment in this sector due to the political situation in the Palestinian territories. Cost factor was significantly reported by the high cost of innovation (61%) and lack of fund

from outside the firm (60.1%), both are also among the most important hampers of innovation. This might be explained by the fact that most of KIBS firms (more than 85%) in Palestine are considered small scale firms , where they employ less than 20 employees and might not be able to provide or to allocate money for innovation. Most of the firms denote that many of the innovative KIBS do not exist in the market (only 27% find no need for innovation due to the reason that prior innovations are considered an obstacle for innovation).

Table 26 : Obstacles of innovation in KIBS in Palestine in 2014, 2015

Obstacles of innovation		
Cost factor	Lack of funds within your enterprise	35%
	Lack of finance from sources outside your enterprise	60.1%
	Innovation costs too high	61%
Knowledge factor	Lack of qualified personnel	33.5%
	Lack of information on technology	36.9%
	Lack of information on markets	36.1%
	Lack of technology infrastructure in Palestine	62%
	Lack of knowledge base in Palestine	62%
	Difficulty in finding cooperation partners for innovation	53%
Demand factor	No need due to prior innovations	27.8%
	Weak of competition	57%
	Uncertain demand for innovative goods or services	55%

In addition to obstacles, the model includes a certain number of control variables: age of firm, firm size, and if the firm exports or not. Firm size is considered one of the key control factors and is measured by a

number of workers. As we have mentioned previously, table 30 below shows that around 85.2% of firms employ less than 20 employees, while only less than 1% employ more than 100 employees. This shows that Palestinian KIBS sector is considered small or medium sector. Most of the empirical studies find a positive relationship between firm size and innovation performance.

Table 27: Number of workers in KIBS in Palestine

Number of workers	Frequency	Percent
1- 20	224	85.2%
21- 50	21	8%
51- 100	16	6.1%
More than 100	2	0.8%

Firm age is another control variable that might affect innovation performance of KIBS. Old firms might have more experience and market share that might reflect on the financial capabilities and so innovation. Data shows that only 20% of KIBS existed before Oslo agreement in 1993 meaning that KIBS in Palestine is considered a modern sector. The last control variable is the export. Firms which export their services might have more ability and propensity to innovate due to high competition in the international market and the fluctuation of revenues from out of Palestinian market.

6.3 Impact of Innovation Obstacles ON INNOVATION Performance

This section presents and discusses the results of the research's empirical investigation, i.e., the impact of innovation obstacles on the innovation performance of KIBS firms in Palestine. A binary choice logit model was

employed to estimate the relationship. The model was running for each dependent variable (product, process, Organizational, and marketing) separately. Each dependent variable has two possibilities to innovate or not.

Table 30 presents the results of the model estimation. It shows that in case of product innovation, the cost factor is the most important obstacles to innovation, which supports what we have mentioned previously that more than 60% of KIBS firms in Palestine find that high innovation cost and lack of external fund are limiting their innovation capabilities or hamper them to do innovation. Demand factors represented by weak of completion and uncertain demand for innovative products are negatively impacting the ability of the firm to do innovation. This might be embedded to the uncertainty existed in the Palestinian economic due to the political instability and high fluctuation in income and employment. More than 200 thousand public employees did not receive their salaries for six months in 2014 because of the punishments Israel imposed against Palestine by not transferring the tariff taxes, which they collect on behalf of the Palestinian side as signed in Paris Agreement, the economic part of Oslo agreement.

A similar result for process innovation is obtained. The cost factor is the most obstacle for process innovation followed by demand factor. This confirms what we have mentioned that the demand for technological innovation (product and process innovation) is low due to the high related cost, mainly the high percentage of the Palestinian new services coming through imports, mainly from Israel. According to Palestinian Central Bureau of Statistics around 80% of Palestinian imports come from Israel.

This is considered costly in light of the low income and high ratio of unemployment in Palestine in comparison to the one in Israel, which negatively affects the demand for product and process innovation.

The knowledge factor is not a significant obstacle of innovation in both product and process innovation. This might be explained by the low ratio of product and process innovation in KIBS firms and so the decrease in demand for related knowledge and technologies. Also, service sector in Palestine is still considered new and new product development is growing slowly. The significantly of knowledge factor in marketing and organizational innovation confirms this result.

-+None of the control variables have significant impact on product and process innovation. This might be justified for the age variable knowing that most of KIBS are considered new as we have mentioned previously, so there is no age advantage might be present in case of product and process innovation. Data shows that only two firms among the KIBS firms, which were established before 1993, have product innovation. Large firms have no advantage on small firms regarding product and process innovation. This result contradicts many of the studies, which have significant and positive advantages for large firms regarding innovation. The insignificant impact of exports on product innovation might be explained by the low ratio of exports in KIBS sector; only 14% of KIBS export their products, and only 1% of exporting firms (only 3 firms) have product innovation, and less than 1% of exporting firms (only one firm) have process innovation.

Regarding marketing and the organizational innovation, table 31 shows a negative impact on both cost and demand factor, where cost factor seems to be more hampering innovation in comparison with demand factor. Meanwhile, knowledge factor indicates an unexpected result through its positive impact the innovation capabilities of KIBS firms. This might be explained by what Tourigny and Le (2004), who found out that obstacles of innovation indicate how successfully a firm can overcome these obstacles. In other words, the lack of knowledge base and technology infrastructure in Palestine, lack of qualified personnel and information on technology push firms to overcome these obstacles by finding innovative solutions for their marketing practices. Moreover, non-technological innovation (marketing and organizational innovation) in Palestine does not require heavy technologies or high developed knowledge and technology infrastructure. It depends mainly on using some new skills and experiences that might be obtained by simple and low-cost tools and approaches.

Table 28: The impact of obstacles of innovation on innovation activities in KIBS firms

	Dependent variable			
	Product innovation	Process innovation	Marketing innovation	Organizational innovation
Cost factor	-2.149**	-2.31*	-2.249***	-1.94**
Knowledge factor	-1.35	-1.77	3.75***	2.89**
Demand factor	-0.857**	-0.789*	-0.685**	-0.84**
Size	0.76	0.892	1.76**	1.93**
Ln(age)	-0.361	-0.835	-0.303	-0.66*
Export	0.728	-0.408	-0.334	-1.54
Constant	-1.615	-0.327	-4.56**	-1.69
Nagelkerke R ²	0.166	0.185	0.219	0.201
Ominibus test	14.5**	15.3**	30.6***	22.7***
N	263	263	263	263

sig at 0.01 ***

sig at 0.05**

sig at 0.10*

Regarding control variables, the analysis showed that the firm size positively affects marketing and organizational innovation. This is consistent with literature that stresses that large firms are able to produce innovation output. In Palestine, large firms in KIBS are mainly represented by telecommunication companies (PalTel and Wataniyya), and some IT firms, which have more capabilities in innovating new marketing solutions and new strategies, plans and administrative competences. Old firms have disadvantages in the organizational innovation, which might be explained by the novelty of KIBS sector and most of the innovative firms in telecommunications and IT, which are modern firms established after Oslo Agreement and the establishment of the Palestinian Authority.

Chapter Seven

Conclusions & Recommendations

Chapter Seven

Conclusions & Recommendations

7.1 Overview

This chapter summarizes the research results and presents the conclusion. It also presents the recommendations that are based on the research findings to develop the innovation performance in the KIBS in Palestine. Moreover, this chapter discusses the research contribution and the suggestions of conducting future studies.

7.2 Conclusions

This research introduced a structural analysis for the innovation in KIBS in Palestine through assessing the innovation performance considering different factors: the organizational capabilities, enabling environment, sources of innovation, limitations and obstacles of innovation, and the economic impact of innovation.

This research adopts a quantitative approach in order to answer the research questions. Descriptive statistics are first implemented to the most important innovation factors (innovation types, innovation types distributed by KIBS sector, obstacles of innovation, etc.). Analysis of variance (ANOVA) is also applied to figure out if there is a significant relation between the different types of innovation and economic performance factors (a type of innovation regarding the annual revenue, number of employees, etc.). Finally, two econometric models were developed: the first

measures the impact of innovation on the economic performance in the KIBS firms, while the second measures the effect of obstacles of innovation on the probability of KIBS to introduce innovation output or not. These two models in addition to the descriptive statistics represent a structural analysis or framework for the innovation in the KIBS. The whole quantitative analysis was applied through developing a survey which was distributed to a random sample of 305 KIBS firms in the West Bank, Palestine. The researcher retrieved 263 responses with a response rate of 85%.

This study covers fourteen KIBS areas, Computer networks/telematics (e.g. on-line databases), Computer Software & Programs, Telecommunications, Management Consultancy, Accounting and bookkeeping, Building services, Technical engineering service & Design, Temporary labor recruitment services, Legal services, Environmental services, Financial services (e.g. securities and stock-market-related activities), R&D Consultancy and "high-tech boutiques", Marketing/advertising, and finally the Training centers.

The collected empirical data through the field exploratory survey and quantitative statistical analysis of the questionnaire using the SPSS software, by which various statistical analysis tools were used to analyze the data set, and investigate the relationships and dependencies, was based on the defined factors in the regression model.

The research initially analyzed the characteristics of the population from different perspectives, mainly the scale through the number of employees, the gender segregation, age of the firms, and activities.

The research analyzed the availability of innovation or innovation output at the KIBS. The results show a very weak innovation performance in KIBS firms in Palestine, where only 17 firms from 263 (6%) introduce product innovation, 13 firms (5%) introduce process innovation, 56 (21%) introduce marketing innovation and 37 firms (14%) introduce organizational innovation. This reflects the reality of business firms in Palestine that are mainly small with less than 10 employees and have low ability to introduce new services.

The analysis of the correlation between the firm's revenue and the innovation performance shows that the firms with lower total revenue have more ability to make product innovation, while firms with medium total annual revenue between \$51,000 and \$200,000 have more ability to introduce process innovation..Meanwhile, the ability of KIBS to introduce organizational innovation is independent from their total revenues.This is also applied to the market innovation , which was independent of their total revenues factor.

The results of measuring the firm's scale about the innovation performance are that larger firms with a number of employees above 100 have more propensities to introduce a product, a process, an organizational and marketing innovation in comparison to small and medium sized firms.

The results from assessing the export factor on the innovation performance are that neither export to Israel nor to other foreign countries improve the product innovation capabilities of KIBS firms.

Regarding the economic performance, the analysis showed that neither product, nor process, and organizational innovation have a positive impact on the firm economic performance due to the limited scale of the sample size and innovation performance. While the expected result was that the organizational innovation has the negative and significant impact on the economic performance of firms. Moreover, the age of firm negatively impacts its economic performance, while firm size has a positive impact on firm performance.

Regarding the KIBS subsectors, the results show that subsectors like computer networks, construction services, legal services; advertising and marketing service have more economic performance in comparison to other KIBS subsectors.

The analysis of the obstacles to innovation shows that there is a significant association between innovation performance and the obstacles of innovation the firm may face. This study finds evidence that the obstacles are hampering the innovation in different levels, considering the different types of innovation that were assessed in this study, the cost factor (includes lack of funds and lack of finance from outside the firm and the high innovation cost) is the factor with the greatest negative impact on the product and process innovation as well as the organizational and marketing innovation, followed by the demand factor, which was reflected by the weak competition and uncertainty and impact of the prior innovation. On the other hand, the knowledge factor had a positive impact on some firms which are focusing on organizational and marketing innovation. That is, they were able to overcome and address it.

The conceptual analysis or framework consists of three dimensions that shape the innovation performance and its impact on the economic performance. The framework pillars are

- The recognition and segregation of the different types of innovation or innovation outputs, mainly the product, process, marketing, organizational innovation, which are considered the base for the framework, where firms should recognize what the suitable models or contrast between these types are , what fits their need and strategy and the priorities the most influential type relevant to their activities and demands of services and roles as carriers of innovation, facilitators or source of innovation. The firms should work on advancing their innovative outputs according to their strategies and plans.
- The second pillar is the characteristics of the firm that reflects their capacity for acquisition of knowledge and innovation, which can be reflected in the size of the firm and scale of employment considering their technical skills and capacities, date of establishment ,which would be translated into their maturity or their incentives for developments, type of services provided considering their role as transferring innovation or promoting it, technological services or non-technological, and finally their revenue , which would shape their financial capacity and affordability of innovation. These factors can heavily affect the availability of innovation within the organization. In fact, the firms should invest in the most effective factors that improve their capacity to acquire innovation more effectively.
- The third pillar is the obstacles of innovation , which can be reflected in three factors: the knowledge factor, which consists of lack of

knowledge and lack of infrastructure; the demand factor, which consists of weak competition and uncertainty in the demand of innovative services; the third factor is the cost factor, which consists of the high innovation cost and the lack of external financial sources to support the innovation.

It should be noted that that few factors from the institutional capacity could reduce the impact of these obstacles or support the firm to overcome these factors.

The research showed that there are great relationships between the mentioned pillars above and should be assessed by each component to assess and gauge the innovation performance and pathways to develop it.

7.3 Recommendations

Knowing the complexity of the Palestinian context and the potential of innovation in the Palestinian economy, different actors can unlock this potential and contributes to the innovation development in Palestine considering the recommendations below:

- **Strategically integrate the innovation within the KIBS strategies and plans.**

The KIBS should recognize the importance of innovation in improving their performance and drive the economic development, and integrate it into their strategies and allocate budgets for the development and integration of innovation and the integration of diversified types of innovation within their operations. As the research found that the KIBS lacked the awareness and introduced the innovation on the ad-hoc basis, not within a structural

framework and strategical integration. There should also be an investment in non-technological innovation with longer-term change, like market and organizational, which will have impact on the product and process innovation on the longer-term

- **Evaluation & Measurements for the innovation outputs.**

The KIBS firms must learn and understand the different types of innovation in services and become aware of the non-technological innovation and create systemic analysis to measure and evaluate their innovation outputs. Moreover, the customized innovative models should be sought to develop their services. As the research showed, the innovation level is very low and the firms lack their innovation performance and type. They even perceive the innovation from a traditional perspective as technological only.

- **Bringing global experiences and learning from others**

Firms could benchmark innovation from other semi-cultural firms with similar context, taking advantage from the exposure to the global experience and reflecting it on their firm's operations through bringing more innovation and investment .in creating networks and linkages with foreign firms. This can result in contributing to creating the demand for innovation within the targeted market.

- **Bringing other actors to the innovation systems**

Firms could create a local, regional or global partnership for technological innovation that will minimize the risk and costs and maximize the impact on the firm's capacity and the level of innovation. Moreover,

creating the awareness about the innovation contribution to the organizational performance and economy will attract the investors and different actors (governmental, private, etc.) to address the challenges and tackle the innovation obstacles.

- **Improving the Innovation Infrastructure**

The Palestinian authority could also contribute to minimizing the cost factor impact on the organizations by facilitating better infrastructure and investment in the research and providing support or incentives for innovative Private and public partnerships could have a greater impact on different levels. As the results showed that one of the major obstacles for innovation was the lack of infrastructure and the high cost of the innovation due to the R&D requirements and other factors.

- **The Enabling Environment**

The Palestinian authority could create a better enabling environment through facilitating the importing of innovation from foreign countries and also encouraging the companies for more innovation through incentives and more safe space with minimal risks from their side. This will have a multiplied impact on the KIBS sector and other services sector. As the analysis showed, one of the obstacles is the high risk and cost of innovation, where the government could contribute to creating more incentivized models and attractive investment opportunities for the different actors.

- **Investing in the productivity of the different services**

The Palestinian Authority should analyze and consider investing more to increase the productivity of the traditional service subsectors, which are

considered one of the biggest contributors to the services sector, through integrating more innovation and improving their productivity and value addition shares in the economy. This will also result in the improvement of the whole sector and consequently the greater economic development.

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Appendices

Appendix A: Research Tool - Questionnaire

السيدة/المحترم/ة

الموضوع: جمع بيانات لغرض البحث العلمي

تحية وبعد

يقوم الباحث بدراسة حول الإبتكار في الشركات الفلسطينية في خدمات الاعمال ذات الاستخدام العالي للمعرفة ، بهدف اعداد رسالة ماجستير بالادارة الهندسية، والإستبانة التي بين يديك هي أداة جمع البيانات في هذه الدراسة، إن تعاونكم مشكورين بتعبئة هذه الإستبانة بموضوعية سينعكس ايجابا على صدقية النتائج ومدى قبول توصيات الباحثين بهدف تطبيقها.

نحن نؤمن أن الوقت الذي ستستثمره في تعبئة هذه الإستبانة سيحقق مردودا على المدى الطويل على شكل قرارات وسياسات أكثر رشدا، ما يعني مستقبل أفضل لنا ولأبنائنا جميعا، لقد حاولنا في هذه الإستبانة تجنب اية أسئلة إعتقدنا ان لها حساسية خاصة، ومع ذلك نعدكم أن كافة البيانات ستستخدم لغرض البحث العلمي فقط ولن يطلع عليها غير الباحثين.

وتفضلوا بقبول فائق الإحترام

الباحثون

الموقع الوظيفي للمستجيب: _____

اسم المنشأة/ الشركة: _____

تهدف الأسئلة التالية إلى تحديد نوع الابتكار، الأبداع، المعوقات وصلات التعاون في مجال

الابتكار، نأمل منكم اختيار الإجابة التي تمثل منشآتكم أفضل تمثيل.

أولاً: معلومات عامة حول المنشأة

عدد العاملين:

1-20

21-50

51-100

100- أعلى

نسبة الاناث للذكور بالمنشأة: (1 أقل من 20% (2 20%-50% (3 أكثر من 50% (4 لا يوجد اناث

سنة تأسيس المنشأة: __________

مقدار الإيراد السنوي:

\$10,000-\$1

\$50,000-\$11,000

\$200,000-\$51,000

\$20,000- أعلى

ما هي طبيعة المنشأة القانونية:

شركة خاصة

شركة مساهمة عامة

شركة مساهمة خاصة

شركة قابضة

موسسة غير حكومية

مؤسسة حكومية

اي من الخدمات التالية يتم تقديمها من قبل منشأتكم؟ (بإمكانك اختيار أكثر من اجابة)

	الخدمات المالية – الاسهم	الخدمات الانشائية	أنظمة الكمبيوتر والبرامج
	الابحاث والتطوير	الاستشارات الهندسية والتصميم	شبكات الكمبيوتر
	التسويق والاعلان	خدمات التوظيف والعمالة المؤقتة	الاتصالات
	تدريبات وبناء قدرات	الاستشارات القانونية	الاستشارات الادارية
		الخدمات البيئية	المحاسبة ومسك الدفاتر

هل تقدم المنشأة خدماتها : (بحاجة لتوضيح)

للمستخدم نهائي

للمستهلك الوسيط

الاثنين معا

السوق المستهدف: أين قامت المنشأة بتقديم خدماتها خلال الثلاث سنوات

نعم لا

الماضية؟

محلي (داخل نفس المدينة أو المحافظة)

وطني (في كافة انحاء الضفة الغربية)

السوق الإسرائيلي

تصدير للخارج

ثانياً: مدى ونوع الابتكار

يهدف هذا القسم الى قياس مدى ونوع الابتكار في منشأتكم خلال آخر ثلاث سنوات مقارنة بالسنوات

التي سبقتها. الابتكار المقصود هو ادخال تجديد معين على مستوى المنشاه وليس بالضرورة على

مستوى السوق فقط

الابتكار في الخدمات (المنتجات) (Product/service innovation)

تعريف: هو إدخال خدمات جديدة او ادخال تحسينات كبيرة على الخدمات الحالية، الخدمات الجديدة هي تلك الخدمات الجديدة بالنسبة للمنشأة وليس بالضرورة جديدة بالنسبة للسوق.

هل قامت المنشأة بأي من التجديدات التالية خلال الثلاثة

سنوات الماضية؟

كبير جداً كبير متوسط ضعيف لا ينطبق

الى اي مدى حدث تطوير في كل من المجالات الآتية خلال

الثلاث سنوات الماضية:

<input type="checkbox"/>	جودة الخدمات الحالية				
<input type="checkbox"/>	تخفيض تكلفة تقديم الخدمات الحالية				
<input type="checkbox"/>	إدخال تحسينات على الخدمات زيادة سهولة الاستخدام وزيادة رضا العملاء				
<input type="checkbox"/>	تقديم خدمات جديدة بالنسبة للمنشأة				
<input type="checkbox"/>	تقديم خدمات جديدة بالنسبة للسوق				

الابتكار في عمليات تقديم الخدمة/ الانتاج (Process innovation)

تعريف: هو تطوير كبير في اجراءات تقديم الخدمة والياتها او الانشطة المساندة لعملية تقديم الخدمات

الى اي مدى ساهمت الأنشطة التالية في تطوير عمليات تقديم الخدمة/الانتاج في منشأتكم خلال الثلاث سنوات الماضية:

كبير جداً كبير متوسط ضعيف لا ينطبق

<input type="checkbox"/>	تحسين بعمليات تقديم الخدمة من خلال ادخال تكنولوجيا جديدة (تمتت الخدمات التي تقدمها، أساليب الإنتاج، المعدات او البرامج المحوسبة)				
<input type="checkbox"/>	الغاء الاجراءات أية أنشطة لا تضيف قيمة إلى عمليات تقديم الخدمة/الانتاج				
<input type="checkbox"/>	تخفيض التكاليف المرتبطة بعمليات تقديم الخدمة/الانتاج (أساليب تقديم الخدمة، المعدات او البرامج المحوسبة)				

الابتكار في عملية التسويق (marketing innovation)

تعريف: هو إدخال تصميمات أو طرق بيع جديدة أو ادخال تحسينات كبيرة من اجل زيادة جاذبية الخدمة المقدمة او من اجل

الدخول الى اسواق جديدة

الى اي مدى تم تطبيق الانواع التالية من الابتكار في مجال التسويق	كبير جداً	كبير	متوسط	ضعيف	لا ينطبق
في منشأتكم خلال الثلاث سنوات الماضية:					
تجديد حزمة الخدمة من خلال تغيير العروض والمرفقات	<input type="checkbox"/>				
تجديد في قنوات التسويق مع العميل	<input type="checkbox"/>				
تجديد في طرق توصيل الخدمات للعميل	<input type="checkbox"/>				
تجديد في أدوات التسويق (الترويج، الدعاية)	<input type="checkbox"/>				
تجديد في اليات التسعير	<input type="checkbox"/>				

الابتكار في العمليات الادارية والتنظيمية (Organizational innovation)

تعريف: هو تغيير جوهري في الهيكل التنظيمي للمنشأة او طرق الاداره بهدف تحسين استخدام المنشأة للمعرفة او جودة المنتجات

والخدمات او كفاءة العمل داخل المنشأة

هل طبقت المنشأة احد التغييرات الادارية التالية خلال السنوات الثلاث الماضية:	كبير جداً	كبير	بسيط متوسط	ضعيف	لا ينطبق
تجديد في الإجراءات والعمليات لتنفيذ أنشطة المنشأة	<input type="checkbox"/>				
تطوير نظام الجودة داخل المنشأة	<input type="checkbox"/>				
تجديد على انظمة ادارة الموارد البشرية	<input type="checkbox"/>				
تجديد على انظمة المعلومات الادارية داخل المنشأة	<input type="checkbox"/>				
تعديل على الهيكلية التنظيمية لتسهيل العمل الجماعي داخل المنشأة	<input type="checkbox"/>				
تطوير أنظمة الادارة داخل المنشأة	<input type="checkbox"/>				

ثالثاً: تقييم الأداء

يهدف هذا القسم إلى تقييم أداء المنشأة الإبتكاري، الإنتاجي، التسويقي، والمالي خلال آخر ثلاث سنوات مقارنة

بالسنوات التي سبقتها

مقاييس الاداء الإبتكاري وثقافة الإبتكار

وعى المنشأة بأهمية الإبتكار وبناء ثقافة الإبتكار داخل المنشأة

هل حدث اي تطوير على المنشأة حسب مؤشرات الإبتكار التالية
خلال السنوات الثلاثة السابقة

:

لا ينطبق	ضعيف \ لا تغير	متوسط	مرتفع	مرتفع جدا	
<input type="checkbox"/>	القدرة على تقديم خدمات جديدة للسوق قبل المنافسين				
<input type="checkbox"/>	نسبة الخدمات الجديدة الى إجمالي الخدمات				
<input type="checkbox"/>	عدد المنتجات والخدمات الجديدة خلال الثلاثة سنوات				
<input type="checkbox"/>	عدد التجديدات التي تم ادخالها إلى طرق وعمليات تقديم الخدمة				
<input type="checkbox"/>	تجديد وتحسين انظمة الادارة بما يتلاءم مع بيئة المنشأة				
<input type="checkbox"/>	تشمل استراتيجية المنشأة او خطتها السنوية على عناصر للتطوير و دعم الإبتكار والابحاث والتطوير				
<input type="checkbox"/>	تعمل المنشأة على ادارة الابحاث والتطوير والإبتكار بفاعلية				
<input type="checkbox"/>	الانظمة والقوانين الداخلية داعمة للإبتكار والابداع والابحاث				
<input type="checkbox"/>	وجود مساحة واليات استيعاب لمشاركة الافكار ونتائج الابحاث من قبل الموظفين والزبائن				
<input type="checkbox"/>	تقديم محفزات للعاملين لتحفيز الإبتكار والابداع				
<input type="checkbox"/>	عدد الإبتكارات المسجلة رسميا كحقوق ملكية فكرية				
<input type="checkbox"/>	رصد موازنة سنوية تطويرية كافية للمنشأة او للابحاث و تطوير				

الإبتكار بالمنشأة

التجديد بالمنشأة يتم بشكل تدريجي(تفاوت بين الاقسام والخدمات

(المختلفة)

التجديد بالمنشأة يتم بشكل كلي (على كل الاقسام والخدمات المختلفة)

مقاييس الأداء الإنتاجي وتقديم الخدمة

لا ينطبق	منخفض	متوسط	مرتفع	مرتفع جدا	كيف تقييم مستوى الأداء في اخر ثلاث سنوات فيما يخص المؤشرات الإنتاجية التالية مقارنة بالسنوات التي سبقتها:
<input type="checkbox"/>	مطابقة العمليات الإنتاجية والخدمات للمعايير والمواصفات المطلوبة				
<input type="checkbox"/>	تقليل تكاليف الإنتاج وتقديم الخدمة				
<input type="checkbox"/>	جودة الخدمات الجديدة المقدمة				
<input type="checkbox"/>	سرعة تقديم الخدمة والوصول للزبائن				
<input type="checkbox"/>	تنوع الخدمات المقدمة في نفس المجال مقارنة مع المنافسين				

مقاييس الاداء التسويقي

لا ينطبق	منخفض	متوسط	مرتفع	مرتفع جدا	كيف تقييم اداء المنشأة في اخر ثلاث سنوات فيما يخص المؤشرات التسويقية التالية مقارنة بالسنوات التي سبقتها:
<input type="checkbox"/>	رضا الزبائن				
<input type="checkbox"/>	تنوع قنوات التسويق				
<input type="checkbox"/>	إجمالي المبيعات				
<input type="checkbox"/>	الحصة السوقية				

مقاييس الاداء المالي

لا ينطبق	منخفض	متوسط	مرتفع	مرتفع جدا	كيف تقييم الأداء المالي لمنشأتك في اخر ثلاث سنوات فيما يخص المؤشرات المالية التالية مقارنة بالسنوات التي سبقتها:
<input type="checkbox"/>	العائد على المبيعات (الأرباح/ المبيعات)				
<input type="checkbox"/>	العائد على الأصول (الأرباح/ الأصول)				
<input type="checkbox"/>	صافي الدخل				
<input type="checkbox"/>	التدفقات النقدية التشغيلية				
<input type="checkbox"/>	نسبة موازنة تطوير الخدمات والمؤسسة من الموازنة العامة				

رابعاً: مصادر المعلومات ومدى التعاون في الأنشطة الابتكارية

التعاون في مجال الابتكار هو المشاركة الفاعلة في مجال الأنشطة الابتكارية مع جهات اخرى سواء كانت مؤسسات عامة او خاصة او غير هادفة للربح.

الرجاء تحديد درجة التعاون مع كل مصدر من مصادر المعلومات

التالية فيما يخص الأنشطة الابتكارية التي طبقتها المنشأة خلال آخر ثلاث سنوات:

لم يستخدم	قليل	متوسط	عالي	عالي جداً	
<input type="checkbox"/>	من داخل نفس المنشأة او أحد فروعها (الداخلية او الخارجية)				
<input type="checkbox"/>	موردي مدخلات تقديم الخدمة، المواد، البرامج المحوسبة، الخ				
<input type="checkbox"/>	الزبائن والعملاء				
<input type="checkbox"/>	شركات منافسة تعمل في نفس المجال				
<input type="checkbox"/>	شركات استشارية أو مؤسسات متخصصة في البحث والتطوير				
<input type="checkbox"/>	الجامعات ومؤسسات التعليم العالي				
<input type="checkbox"/>	مراكز الابحاث الحكومية				
<input type="checkbox"/>	المؤسسات غير الربحية				
<input type="checkbox"/>	المؤسسات المانحة				
<input type="checkbox"/>	البلديات والغرف التجارية				
<input type="checkbox"/>	خبراء عالمين				
<input type="checkbox"/>	المجلات العلمية				
<input type="checkbox"/>	المؤتمرات والمعارض				

خامساً: معوقات الابتكار

كيف تقيم اهمية كل من العوامل التالية كمعوقات للأنشطة الابتكارية في المنشأة خلال الثلاث سنوات السابقة

لم يستخدم	قليل	متوسط	عالي	عالي جداً	
<input type="checkbox"/>	المعوقات داخلية				
<input type="checkbox"/>	نقص التمويل داخل المنشأة				

<input type="checkbox"/>	سهولة تدفق المعلومات ومشاركتها بين اقسام المنشأة				
<input type="checkbox"/>	وجود قنوات لمشاركة المعرفة والمعلومات بين المؤسسات المختلفة				
<input type="checkbox"/>	وجود قوانين خاصة للملكية الفكرية				
<input type="checkbox"/>	وجود قوانين خاصة لبراءة الاختراع				
<input type="checkbox"/>	وجود تشريعات وقوانين لحماية الابتكار				

جامعة النجاح الوطنية
كلية الدراسات العليا

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إعداد

مي ربيع قاسم عبد الهادي

إشراف

د. راجح مرار

قدمت هذه الأطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في الإدارة الهندسية
بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس، فلسطين.

2017م

ب
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الملخص

يهدف هذا البحث إلى تقديم تحليل هيكلية للابتكار في المؤسسات الخدمائية ذات الاستخدام الاعلى للمعرفة في فلسطين ، ومن المتوقع أن يسهم هذا في تحسين الأداء الاقتصادي وإنتاجية العمل. تقييم أداء الابتكار في أربعة عشر قطاعاً فرعياً للقطاع، من عوامل مختلفة، مثل القدرات الداخلية، والبيئة التمكينية، ومصادر الابتكار، والقيود، والعقبات، وأثر الابتكار على الأداء التنظيمي. حيث تم استخدام البيانات المقطعية لعينة من 305 شركة من خلال نهج المسح الكمي.

وتبين النتائج وجود ضعف في أداء الابتكار في المؤسسات المستهدفة في فلسطين بشكل عام، مع وجود روابط واضحة بين الإيرادات والابتكار في المنتجات والعمليات. ويظهر التحليل الذي يعرض عقبات الابتكار أن هناك ارتباطاً كبيراً بين أداء الابتكار وعقبات الابتكار التي قد تواجهها الشركة. عامل التكلفة هو العامل الذي له أكبر تأثير سلبي على جميع أنواع الابتكار. وخلافاً لعامل المعرفة الذي كان له أثر إيجابي.

حيث شملت توصيات البحث بأهمية دمج الابتكار بشكل استراتيجي داخل المؤسسات الخدمائية ذات الاستخدام الاعلى للمعرفة في فلسطين، وتجلب الخبرات العالمية والتعلم من الآخرين، وجلب الشركاء الفاعلين الآخرين إلى أنظمة الابتكار، وتحسين البنية التحتية للابتكار.