An-Najah National University

Faculty of Graduate Studies

IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ON LABOR PRODUCTIVITY OF PALESTINIAN INDUSTRIAL SECTOR

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Dedication

After praise is to Allah. I dedicate this work to the beacon of knowledge and the chosen imam who was sent to guide the world, to master of creation and messengers, our noble (messenger Mohammed (peace be upon him

Countless thanks to everyone who encouraged me to do this research

To my family for its patience, support and prayers

my late father Subhi who left this life early

To my teachers who taught me

To myself for not never giving up

Acknowledgment

First of all, all gratitude is to Almighty Allah who made this work easy for me. Second, I would like to express our deep sense of gratitude and heart full thanks for my supervisors Prof. Dr. Abdul Naser Nour and Dr. Islam Abdeljawad for their engagement, advice, generous guidance support and patience during completion of this thesis.

Finally, our thanks go for to our professors in the department of tax disputes who have supported and help me to reach this point in this thesis.

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ON LABOR PRODUCTIVITY OF PALESTINIAN INDUSTRIAL SECTOR

I declare that 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.

Student's Name Assi Sobhi Att

Signature Asi

Date 16/10/2022

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IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ON LABOR PRODUCTIVITY OF PALESTINIAN INDUSTRIAL SECTOR

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Abstract

Information and Communication Technology (ICT), like software and hardware applications, positively affect productivity. These ICT and Software applications lower transaction costs, create job opportunities, promote organizational efficiency, and improve product quality. They also help firms to store, analyze, and communicate effectively with other organizations and businesses in the field. Therefore, researchers, firms, and investors worldwide are increasingly interested in this subject. The researcher has sought to investigate the effect of ICT on Palestinian laborers' productivity in the industrial sector. The researcher has used cross-sectional data from the Gaza Strip and the West Bank and data from the Palestinian Central Bureau of Statistics. In the study sample, all manufacturing firms in Palestine between 2013- 2018 processed data and companies that did not have study variables was excluded from the study. To accomplish the goals of this study, the researcher has used ICT indicators, including computer consulting services, databases, R&D (Research and Development), and computer program availability. The main promising finding is that increasing the investment in computer consulting services and programs increases labor productivity. However, the study findings reveal that there is no impact of R&D and databases on labor productivity. It has also found that laborers of higher wages are more productive. The West Bank labor force was found to be more productive than its counterpart in the Gaza Strip. One surprising finding, was regarding the firm size, which has no effect on labor productivity. Based on the results, the researcher strongly recommends that firms invest in ICT to increase productivity and profits.

Keywords: Labor productivity, Information and communication technology, industrial sector, investment in technology.

Chapter One

General Framework of the Study

1.1 Introduction

The spread of the COVID-19 virus created a massive change in the world and affected the global economy. The virus spread globally, leading to an economic crisis and unemployment. Many international companies went bankrupt, and many workers lost their jobs. The development of ICT could be a pivotal key asset to respond to the pandemic and assist people in daily life to mitigate the terrible effects of the virus on short, medium, and long-term bases. Politics and technological choices offer an opportunity to invest in innovative ICT solutions that would be applicable in the future for immediate use during critical times (Mauro & De Rango, 2020).

The development of ICT has become an essential part of economic sector plans. ICT contributes to tilting the economic growth through productivity by enhancing innovative nation production processes that lead to cost reductions, create job opportunities, reduce unemployment, and promote organizational efficiency. Additionally, it improves product quality and customer satisfaction, thereby enhancing the profitability of firms that lead to higher GDP (Gross Domestic Product) growth in the country.

In recent years, researchers have found a positive impact of ICT on productivity (Skorupinska & Torrent-Sellens, 2017; Christofzik, Elstner, Feld, & Schmidt, 2021). However, an earlier work completed by Solow in 1987 found that the ICT suffered from many limitations, and there was no evidence to that date that confirmed its productivity.

Against this background, the researcher has examined the effect of ICTs on the Palestinian laborers' productivity in the industry sector.

1.2 Statement of Research Problem

The economic growth of countries relies on industries in their development. Countries like China, the South Korea, and Taiwan are leading countries whose poverty levels have dropped, and their incomes have improved due to economic growth and industrial development.

In developing countries, some sectors are considered leading contributors to trade development and reduction of the balance of remittance deficit problems by manufacturing goods to replace imports or export abroad. In other words, the industrial sector is one of the most capable sector has the potential use modern technology to contribute to productivity upgrading.

The role of technology and innovation in structural change cannot be overstated. As innovation adds to "creative destruction," the process of old industries and firms declines. Thereupon, new initiatives and firms emerge and grow (Verspagen, 2000).

Since the use of information technology has become increasingly widespread in several industrial countries, it brings considerable changes in the firm's performance and characteristics, its production function, and the quality and composition of its factors of production, A great deal of the capital stock of companies involves the use of more computer equipment, as well as machinery, thus becoming more dependent on computer software and other electronic components. Therefore, several organizations have altered their production, sales, and administrative structures. After reviewing related data regarding economic development, this study has examined the relationship between ICT and Palestine's labor productivity sector.

1.3 Questions of the Study

The researcher raises one main question and another seven sub-questions to accomplish the study effectively.

What is the ICT impact on productivity in Palestine?

The sub-questions are as follows:

1. Is there a relationship between computer consulting services and labor productivity in the industrial sector in Palestine?

2. Is there a relationship between database and labor productivity in the industrial section tor in Palestine?
3. Is there a relationship between R&D and labor productivity in the industrial sector in Palestine?
4. Is there a relationship between computer programming and labor productivity in the industrial sector in Palestine?
5. Is there a relationship between advertising and labor productivity in the industrial sector in Palestine?
6. Is there a relationship between capital intensity and labor productivity in the industrial sector in Palestine?
7. Is there a relationship between labor wage and labor productivity in the industrial sector in Palestine?

1.4 Research objectives

The study's overall goal was to find out the impact of ICT on productivity. The researcher has focused on the industrial sector in Palestine using the available cross-sectional data which the Palestinian Central Bureau of Statistics (PCBS) published between 2013 to 2018.

1.5 Research Significance

The expected contributions of the study have broad applicability. The main expected achievements, including contributions to the field, can be summarized as follow: showing the importance of ICT and the benefits of investing in ICT for firms; ICT impact on firms. The researcher elaborates on the most common productivity measurements. The current study provides information about investing in or minimizing ICT costs and describes the average wage per worker to help institutions and decision-makers. The researcher also explores the annual value-added per worker—the percentage of companies that invest. Altogether, the investment in ICT in Palestine's industrial sector opens the door for researchers to take a step forward.

1.6 Organization of the Study

This study falls into four chapters. Chapter one gives a proper understanding of the research problem and its significance. It also includes a theoretical background and literature review. Chapter two presents the methodology of the study. Chapter three is devoted to the discussion of the study results. The last chapter comments on the results, draws conclusions, and offers recommendations.

1.7 Theoretical Background

This section presents a theoretical framework spanning productivity, concept, and measuring productivity. The researcher also defines ICT and comments on its advantages and disadvantages.The current study … also offers an explanation of ICT importance, wage efficiency theory, economies and diseconomies of scale, complementarity hypothesis, advertising, knowledge economy, and knowledge productivity. The researcher concludes with a comprehensive literature review..

1.8 Productivity

Recent and old studies have found that productivity plays an important role in companies' growth. However, scholars argue that managers usually neglect productivity as they believe in other important things to focus on to improve their production (Sink &Tuttle, 1989; Mtotywa, 2007). Comparatively, economists look at productivity as the natural source of economic growth, social entertainment, and raising the living level in any country regardless of its economic activity. Productivity growth and analysis of its factors give a deep look into economic activity and expose its weaknesses and strengths. Productivity allows organizations to achieve enhanced efficiency and effectiveness in their actions, completing the organization's goals of maximizing wealth (Al-Darrab, 2000).

Improve technology, and increase profitability, companies realize that productivity gains are one of their most effective methods. It is critical to watch manufacturing outputs (Miller, 1984). They also believe that there is no relationship between profits and the productivity of an individual. Still, the effect of increased productivity in terms of profitability is likely to be achieved in the long run (Tangen, 2002).

In recent years, productivity has attracted the attention of many researchers worldwide. They have focused on productivity and competition, R&D, patents and productivity, measurement, factor productivity, productivity and performance, and other factors that affect productivity.

1.9 Productivity Concept

Productive simply means efficiency. Productive efficiency includes essential parts such as labor, capital, and materials during the manufacturing process. Resource efficiency can be measured as a measure of productivity. The productivity success is based on the best usage of the resources and available data in the firm. In other words, productivity studies the relationship between inputs and outputs in the firm. This equation tests the productivity of an individual, a machine, a department, a whole company, or an entire nation (Guobys, 2022). Five different relationships can contribute to productivity improvements:

1. The output and input increase, but the input going up is proportionally less than the output going up.
2. The output goes up, but the input remains without change.
3. The output goes up, but the input goes down.
4. The output does not change, but the input goes down.
5. The output decreases, and the input decrease a lot.

Accordingly, higher production does not always translate into higher productivity.

1.10 Measures of Productivity

Productivity can be measured in many ways. When choosing a measure, one should taken into account the data availability and purpose. According to Organization for Economic Co-operation and Development (OECD), there are some measures. Some are arranged as a single factor, whereas others are multifactor. Table 1 illustrates some of the factors that are related to productivity measures. It might not be holistic because a single measure can be seen as an intermediate input. Assessing labor productivity depends on various factors like gross input.

Nevertheless, the table covers the most commonly used measures. These measures are usually labor, capital, and multifactor productivity (MFP). These usually refer to the

value-added of a particular input. However, they also can refer to the capital-labor energy material concept of gross output. Labor productivity measured by value added is considered by Scheryer (2001) as one of the most computed productivity statistics; after that, it is followed by the capital-labor productivity and capital, labor, energy, materials and services.

Table (1)

Major Productivity Measures.

Type of output measure	**Type of input measure**			
	Labor	**Capital**	**Capital and labor**	**Capital labor and intermediate capital and labor inputs (energy, material, and services)**
Gross output	labor productivity	Capital productivity	Capital-labor MFP	KLEMS-multifactor productivity
Value-added	labor productivity	Capital productivity	Capital-labor MFP	
	Single-factor or partial productivity measure			Multifactor productivity (MFP) measure

Note: OECD 2017

Several authors have suggested several methods to understand the various productivity measures. Different methods are used to understand those measures of firms and organizations Günter and Gopp, 2021). A quick review of existing approaches measuring productivity found that around 38 approaches were used between 1955 and 2020.

This study cannot cover all approaches. Therefore, the researcher has reviewed the most common classifications. An early work completed by Carlaw and McLellan (2003) tried to classify the measures mentioned above into three approaches.

1. Index number approach
2. Growth accounting approach
3. Distance function approach
4. Econometric approach

1.10.1 Growth Accounting

This concept tries to change the output growth into inputs through capital and labor However, this leads to create a change in the total number of productivity measures. Using growth accounting, one must specify the process of production that helps in understanding the output levels at a particular time of input factor productivity. The following four assumptions guide this growth accounting approach. The separation of technology from the total factor of productivity term is possible.

1. Returns to scale are constant in the production function.
2. The producers behave efficiently by maximizing profits.
3. During a market, everyone is a price taker who can only adjust quantities without affecting prices individually

1.10.2 Index Number Approaches to Measuring Productivity

Index numbers are used in most statistical agencies that produce regular productivity statistics. For example, countries like the US and Australia use a particular index approach to analyze the product market sector productivity. The researcher has found that both countries use the Tornqvist as an index. The productivity index can be calculated when the output is divided by the input quantity index.

1.10.3 Distance Function-based Approach

This approach measures the productivity factors for the purpose of separating the TFP. The reason for separating it is to create two components using this approach. Generally, distance functions (duals of cost functions) are discussed in consumer and production literature. It is noted that the changes in TFP can result in changes because of the shift towards the production frontier. Using this approach helps to determine whether reaching the maximum output level with the same level of inputs if production is efficient. To put it another way, it shows the distance between the output and production frontier.

1.10.4 Distance Function-based Approach

This approach estimates the parameters of a production function. The growth rates and production are interrelated. They can estimate the parameter reflecting technological progress. In other words, they are used as a measure of productivity growth. The

advantages of this approach mainly can be seen when getting accurate data regarding the production process. This approach also helps to get data about different production technology parameters. Data cannot be obtained using other different index numbers or growth accounting.

Since the outputs and inputs build this approach, it specifies production technology more flexibly. Other forms of factor-augmenting technological change can be introduced besides the growth of the index number approach implied by the Hicks-neutral formulation. Introducing the other factor-augmenting technology can cause a change other than the Hicks-neutral formulation implied by the growth accounting, index number approaches, account for adjustment costs, and variations in input utilization. Due to the sampling properties of production technology, testing the validity of the assumption supporting growth accounting and index number approaches within the same econometric framework. For example, growth accounting often assumes constant returns to scale that can be tested

1.11 Information and Communications Technology (ICT)

Definition

According to Dutton (2001), ICT is an "imprecise term frequently fundamental to broad areas of technologies and associated with the use of computers and communications."

UNESCO defines ICT as a "scientific, technological and engineering discipline and management techniques used in handling information and application and social, economic and cultural matters. (Unesco, 2021)

ICT Advantages

1. Globalization advantage: using ICT can make safe money, time, and effort since it allows many people to talk, meet, and make the trade without the need to travel outside the country using different tools such as video conferencing. It also helps the global economy to be interdependent and grow faster.
2. Cost-effectiveness: Email is without charges, without a doubt, cheaper than phone calls. By automating business practices, ICT has made them exceptionally cost-effective.

3. More Time – The items to be purchased can be obtained online and electronically complete the payment, allowing the customers to receive the product at their doorstep.
4. Creation of new jobs: With ICT, new job opportunities have been created.
5. Education: The computer and its software have made possible educational opportunities that were not previously available.

ICT Disadvantages

1. Blackmail: Threatening through the internet and stealing money or other valuable items from anyone via the internet.
2. Unemployment. Replacing humans with computers has obviously made some people lose their jobs. The reason for that is that their skills are no longer needed
3. Privacy: While information technology has helped humans communicate better, there are still privacy problems that people are always worried about.
4. Software viruses: Many known viruses make people feel unsafe regarding losing their devices. There are worms, Trojans, spam emails, and so forth.
5. Social media: People are attached to their smartphones, such as iPods and gaming consoles, forgetting about the outside world and social communication. (Apatan, 2019)

1.12 Importance of ICT

At present, a person cannot adapt to living without a smartphone or using the internet. The internet and smartphones have become sectional tools for a successful job. The ICT has become an integral part of every individual's life, and this importance in firms is also increasing. A recent report by Price waterhouse Coopers (PwC) stated, "Talent Mobility 2020: The Next Generation of International Assignments, concludes that individuals and institutions without a solid understanding of how to keep following the technology wave will have difficulty surviving the future international economy."

It is worth mentioning that ICT has revolutionized business practices in particular. Some scholars call on small and big firms to adopt the ICT because if they do not use it in their system, they will not survive in this competitive world. The use of ICTs is a tool for improving the competitiveness of the economy in a country and has a significant impact on company productivity and quality (Enríquez, Cuevas-Vargas & Adame,

2015). ICTs help companies find new markets, at low costs, with a high probability of success (Shin, 2007). Early research found that ICT can make communication more effective and un-costly (Brynjolfsson &Hitt, 2000).

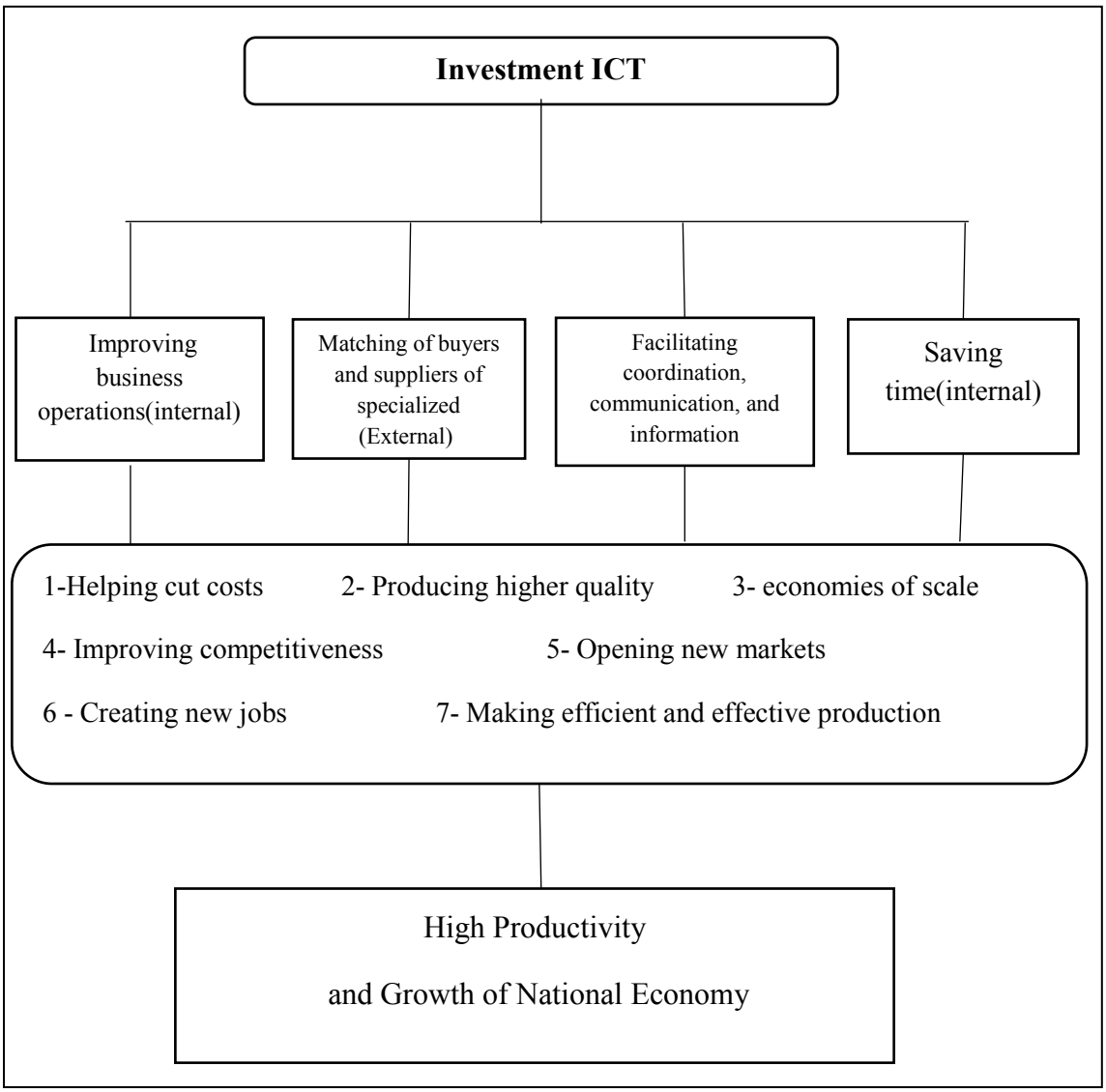
1.13 Benefits Associated with Using ICT:

ICT can enhance the living style and business operations. It also helps enhance organizational efficiency in all sectors of the economy. ICTs are used as inputs and outputs in production and transaction processes. As a result of ICT, firms can save indirect labor costs and increase productivity and direct costs such as input costs (Chowdhury &Wolf, 2003). In addition to these short-run effects of ICTs in production, ICTs also influence transactions all over the world. Scholars also argued that ICT could affect all transaction aspects, make transactions more flexible, and increase productivity.

Moreover, ICT can make more profits to firms because it helps them to find more potential customers through ads on the internet. (Grossman &Helpman, 2002). All these benefits create economies of scale and specialization and this leads to productivity growth (Grossman &Helman, 2022)In short, ICT enhances business processes and competitive advantage. ICT investments can be external or internal. Investments in internal ICT aim to reduce business costs, improve quality and speed, eliminate repetitive business processes, and increase business agility. Externally focused ICT investments are intended to improve the company's market position and help it gain a sustainable competitive advantage, particularly by increasing customer satisfaction. Figure 1 summarizes the importance of ICT.

Figure (1)

Importance of ICT



1.14 ICT Competitive Advantage

A competitive advantage is gained by offering consumers greater value by offering lower prices or providing greater benefits and services. While ICT can provide sustainable business value, it rarely offers a sustainable competitive advantage. The reason for this is that if a competitor has or soon will have captured the same ICT strategy, the competitive advantage would either be short-lived or nonexistent (Mata et al., 1995). There is no doubt that although ICT could provide sustainable business value, it rarely

offers a sustainable competitive advantage. This is because if a competitor already captured or soon would capture the same ICT strategy, the resulting advantage would be competitive: short-lived or non-existent (Mata et al., 1995). Because ICT is readily available, it is nearly a commodity or utility product (Carr, 2003).

The researcher disagrees regarding the competitive advantage of ICT. Powell and Dent-Micallef (1997) found that information technologies combined with sustainable resources tend to lead to competitive and business advantages . This finding also supported Brynjolffson and Hitt's (2000) finding that combination of ICT investments and complementary actions targeting new business processes, organization structures, and work practices can significantly increase business competitiveness. In contrast, Lin and Shao (2006) showed a negative relationship between competition and ICT.

1.15 Economies and Diseconomies of Scale and ICT

1.15.1 Economies of Scale

There are two types of economies of scale: internal and external. Falls in average costs arises from the growth of the business itself. Increase in the firm's output causes the firm's average costs to fall down.

Internal Economy of Scale

This scale refers to real economies that arise from expanding an organization's plant **size.**

Types of internal economy of scale

1. Technical economies refer to the company's cost savings as it grows larger, thanks to more efficient mechanical processes and machinery. In the case of a mass producer of motor vehicles, technical economies are likely as they can employ mass production methods and benefit from specialization and division of labor. Technical economies are very likely when processes can be scaled up easily.
2. In purchasing economies, it helps to obtain discounts when larger firms buy in bulk.

3. Administrative savings: They can distribute the administration and management costs of large firms among all their plants, departments, divisions, or subsidiaries
4. Financial economies; Due to the ability to borrow money more cheaply than small firms, large firms can save money. The reason is that they tend to have more valuable assets as collateral and lower risk, especially compared with Small companies.
5. Risk-bearing economies often, large firms, can bear business risks more effectively than smaller ones.

External Economies of Scale

As a matter of fact, the escalating number of firms in a particular area leads to an increase in the external economics of scale. This is a usual practice because when there are many firms in a relatively small area, it becomes sectional to adopt it. There are some examples of the external economic scale. One of the primary examples is qualified labor in a particular field. Some families shift their skills to young children so their profession can continue in the field. However, one of these professions is mechanical engineering which is related to the industry of the West Midlands car as well as Cowley works in Oxford. In addition, it has been found that the infrastructure transportation system is a vital issue to be studied by the relevant parties to offer the firms the facilities they need to function better. A good transportation system helps small firms save money and time and reach more potential customers. Equally important, firms help other organizations in their businesses by offering practical solutions to transport their product and introducing them to other firms in the field.

1.15.2 Diseconomies of Scale

Economic theory also predicts that a single firm may become less efficient if it becomes too large. The additional costs of becoming too large are called diseconomies of scale. Two types of diseconomies of scale are internal diseconomies and external.

Internal Diseconomies of Scale:

Many factors influence an organization's production cost; complexity of decision-making, the supervision process, and technical difficulties.

External Diseconomies of Scale:

The factors that restrict the expansion of an organization or industry include increased costs of production, scarcity of raw materials, and lack of skilled workers. A number of factors cause diseconomies of scale.

Examples of diseconomies:

1. Communication between departments, divisions, or the head office and subsidiaries often suffer in larger firms because it is difficult to maintain an effective information flow. Information lags can also make it difficult to respond quickly to market changes.
2. It can also be challenging for large companies with many divisions and departments to coordinate their operations. They may find it much harder than firms with fewer departments and departments. For instance, a small manufacturer's activities can be coordinated more quickly than that of a large manufacturer with thousands of employees.

The loss of management efficiency that occurs when firms become large and operate in uncompetitive markets is called inefficiency.

1.16 Complementarity Hypothesis

In terms of complementary resources, they are those that together generate super-additive value - rents that exceed the sum of all the rents obtainable from the standalone applications of those resources. In other words, complementarity exists when more of one input makes another more valuable.

Complementarity hypothesis assumes the following (Milgrom & Roberts, 1990):

1. Investment in ICT, per se, might have a minimal positive impact on productivity (in fact, the impact could even be negative).
2. The effects of ICT investment becomes highly positive when it is attached to organizational change.
3. Complementarity between ICT investment and organizational change can cause a delay that should be expected when investment in ICT is recorded and when observing an increase in productivity. This delay is entirely because of the

organizational change the firm has to undergo if it wants to reap the full benefits of ICT investment.

4. Distribution of skills among the workforce and the level of human capital are essential to measuring the impact of ICT investments and organizational change.
5. ICT investments may not benefit all firms equally since not all sectors (and firms) are capable of implementing successful organizational change

1.17 Wage Efficiency Theory

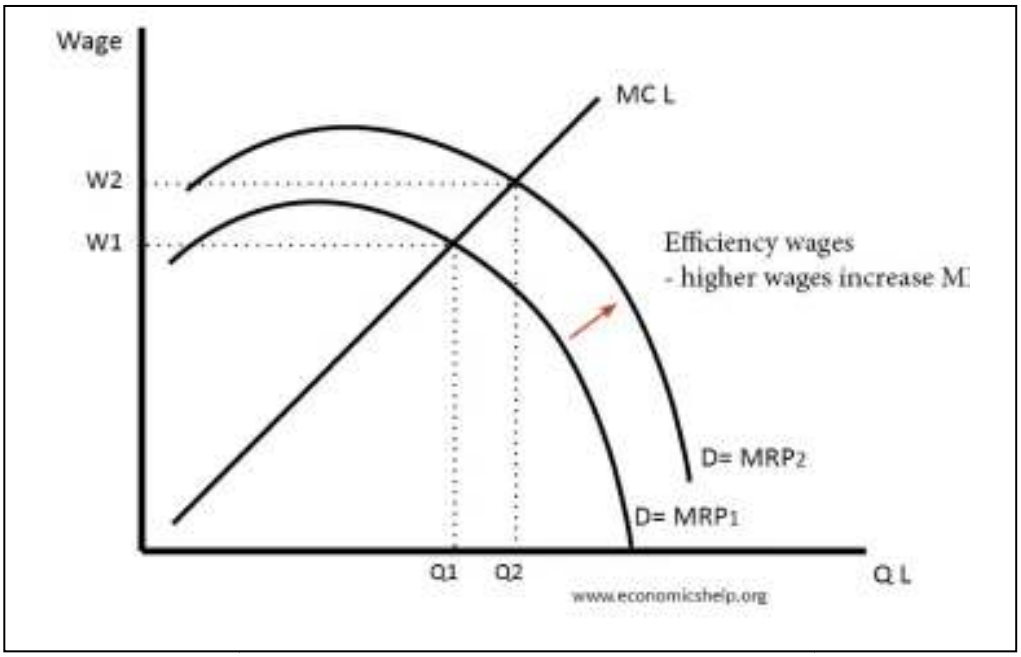
Theory and Hypothesis of Efficiency Wages

According to the efficiency wage theory, higher salaries can boost labor productivity by motivating employees to work harder.

As a result, if firms raise wages, increased staff retention and higher labor productivity offset some or all of the higher wage costs.

Figure (2)

Efficiency Wage



Theoretically, higher salaries should result in higher labor productivity (MRP). In this situation, wage increases can cover costs (Economicshelp, 2020).

Reasons for efficiency wage theory

"Shirking model": The argument goes that if workers are paid more, they have more to lose if they are laid off. As a result, if they have a job that pays significantly more than benefits or alternative jobs, they will be more motivated to impress and keep their boss. According to Shapiro and Stiglitz (1984), higher-paid workers will put in more effort and will not slack off. This wage is higher than the market rate. If employees are paid more, they might feel more devoted to the business and be prepared to put in more effort and commitment. In contrast, if they believe their boss is taking advantage of them, they will put in the minimum effort to get by while attempting to take more breaks and work less diligently. (Economicshelp, 2020).

'Gift-Exchanging' on the job market According to Akerlof (1982), a positive work environment depends on a "gift exchange" between employees. Companies may offer higher wages than the market would bear, and as a result, employees would be more responsible and proactive, with less expensive supervision.

Rebitzer (1995). Rebitzer observed a correlation between increased levels of supervision and lower salaries. Higher-paid employees were more motivated and required less management oversight.

Attraction of higher-quality labor

If a company pays more than the market clearing level, it will attract higher-quality workers who believe they can get a better-paying job elsewhere. (Economicshelp, 2020)

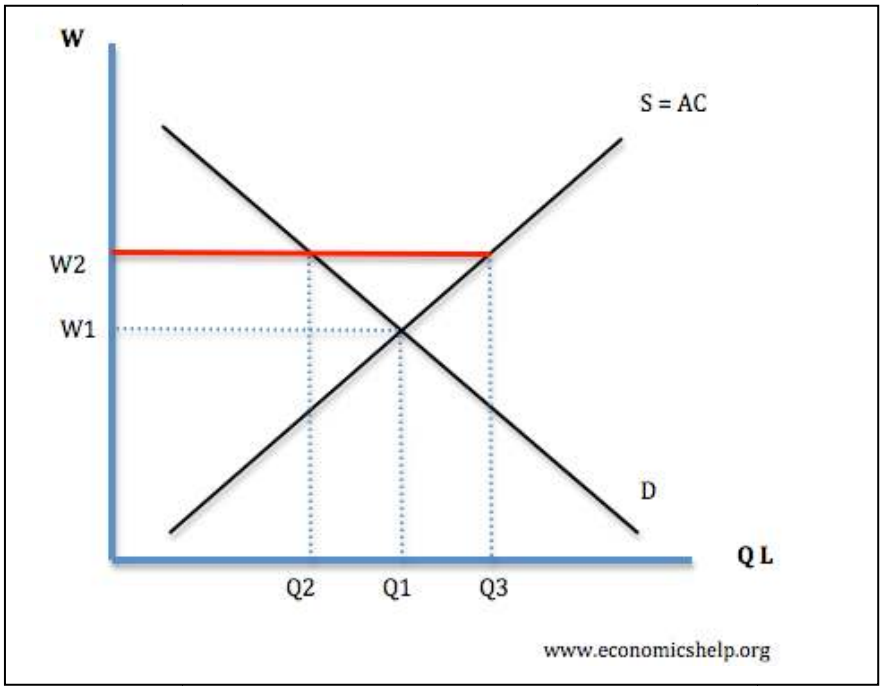
Nutritional theories

Raising salaries can help developing nations with meager pay rates reduce absolute poverty because better nutrition and health lead to higher-quality labor. (Economicshelp, 2020)

Efficiency wage theory and involuntary unemployment

Figure (3)

Efficiency Wage Theory



According to Shirking's models of Efficiency Wage Theory, businesses are enticed to pay a wage higher than the market clearing level. If this is the case and efficiency wage payments are widespread, it may lead to involuntary unemployment with salaries above the equilibrium and wages. (Economicshelp, 2020)

However, higher salaries can be achieved without affecting employment levels in a monopsony situation. (Economicshelp, 2020)

1.18 Advertising

Advertising is a way of communicating with customers about products and services. Nowadays, advertising uses every medium possible to spread its message. It uses television, print (newspapers, magazines, journals, etc.), radio, press, internet, direct selling, hoardings, mailers, contests, sponsorships, posters, clothes, events, colors, sounds, visuals, and even people (endorsements). Moreover, advertising plays a crucial role in influencing customers' perceptions and purchasing intentions (Rahman, Rodríguez‐Serrano., & Hughes, 2021). In terms of economic and productivity

performance, there is strong evidence that advertising investment firms outperform non-advertising investment firms. (Camino-Mogro, 2019).

1.19 Knowledge Economy

The first knowledge economy was characterized by the Industrial Revolution of roughly the 1760s to 1850s, initially in Britain and then in certain parts of Northern and Western Europe, with a particular focus on Belgium. Technological innovation was integral to economic growth in this period for the first time. There were ebbs and flows, recessions, and even depressions throughout the period, but the wealth of the countries affected continued to grow, and family incomes per capita grew along with it.

Therefore, the Malthusian theory, which states that prosperity will fuel population growth, would be defeated by food shortages. At the end of the nineteenth century, real wages and the population had risen, and agricultural and manufacturing production had responded to the new demand.

Cultural elements of the new knowledge economy first emerged in Britain, not in the continent, including a wider circulation of information, new teaching venues, and curricular reforms. There was no more crucial element among the elements than the integrated body of mechanical knowledge contained in lectures, texts, and curricula. French observers believed that industrial mechanics played a critical role in technological innovation. To better understand the knowledge economy we live in today, we should remember where and when a previous version began. (Jacob, 2014).

Knowledge economy dominates our world. Commentators and think tanks argue that developed countries cannot succeed in a globalized economy unless they specialize in knowledge-intensive activities. In the past five years, whole goods and occupations have proliferated, many based on ICT.

1.20 Knowledge Productivity

Knowledge productivity refers to the ability to transform knowledge into value. (Stam, 2007). This concept refers to an organization's ability to produce knowledge-based outcomes. Knowledge and productivity are not new concepts, but their relationship has been known for decades. There is even a view that they have been intertwined for several centuries (Warsh, 2006).

1.21 Literature Review

Early research on the relationship between ICT and productivity, It is called the "Solow Paradox." Solow (1987) gave his opinion of huge computer investments. However, there is no improvement in productivity. Solow "You can see the computer age everywhere but in the productivity statistics" (Solow, 1987). In the years following the Solow detection relationship, many researchers started to support it. (Roach 1987; Brynjolfsson & Hitt, 1993). Nevertheless, there is also evidence that ICT positively impacts labor productivity; supporters see the positive impact of information technology on productivity. The paradox is caused by wrong measuring of some of the inputs and outputs of ICT investments. There may be a delay between the investment in information technology and the time when its effects are verified. The use or mismanagement of ICT may not be the only factor that improves productivity.

Nowadays, studies about ICT are numerous and varied. However, the researcher cannot present all of them. Therefore, the researcher highlights recent studies directly related to the research topic.

Studies investigating the relationship between ICT and Productivity can be classified into macroeconomic, industrial, and microeconomic (firm-level).

1.21.1 Macroeconomic Level

Studies on macroeconomic level are rare due to the lack of data on ICT investment and usage (Skorupinska &Sellens, 2017). The majority of these studies positively impact productivity (Shahazi, 2021). Most macroeconomic and industry studies are based on the growth accounting framework on each output.. The researcher has reviewed some studies at the macro level.

Spiezia (2011) estimates the contribution of ICT using a two-step GMM. From 1996-2007, investments (categorized into the computer, software, and communication) contributed to the value-added growth in the business sector in 18 OECD countries. According to estimates, Japan contributes 0.3%, and Australia contributes 1.1% to production. It is assumed to be proportional to the corresponding share in total. The most considerable investment comes from computer equipment in almost all countries, except Finland and Japan, where communication and software are most dynamic. In

Germany and the United Kingdom, the ICT sector accounts for more than two-thirds of total factor productivity growth: about 60% in the United States and just below 50% in France and the Netherlands. In some other countries, TFP increased for the ICT sector while the entire business sector decreased.

Hodrab, Maitah and Smutka (2016) studied eight selected Arab countries' economic growth from 1995 to 2013 and examined these factors' impact. To examine this impact, they used panel regression econometrics and applied average least squares (OLS), random effects, and fixed effects models to the study sample of 341 observations, choosing the appropriate model using Hausman's test. As a basis for their analysis, they used a basic model including gross domestic product per capita as a factor of economic growth and the info density index as a measure of ICT capital and labor resources. They then extended the model with other standardized macroeconomic control variables and applied three regression methodologies. Results show that ICT positively impacted the selected Arab countries' economic growth and other factors except for inflation, which had a negative effect. The degree to which ICT impacts economic growth was less than that of other countries, particularly emerging and developed countries.

1.21.2 Industrial Level

At this level, we review the latest studies published in 2021 by Christofzik,Elstner, Feld and Schmidt. In the German economy, they use a utilization-adjusted total factor productivity measure. To unravel the productivity paradox, funding technology developed by (ICT) producing sectors significantly positively affected GDP. This might explain the German productivity paradox's similarity to the result (Oulton & Srinivasan, 2005).

1.21.3 Firm Level

There is a wide variety of methods and data used in the analysis. There is a variety of approaches that can also be applied to firm-level data.

Most of these studies have been done in developed countries. (Skorupinska & Sellens, 2017) focused on examining the relationship between ICT and productivity on complementary variables. For example, skills availability, organizational factors, innovations, and innovation can have an impact on productivity (OECD, 2003). In

macroeconomics, it is difficult to measure variables like these. For example, if we invest in ICT in two firms in the same sector, same value, and they differ in how they manage complementary organizational changes, there will be a difference in production between the two firms at the sector level.

At the firm level, studies are more accurate in measuring variables than at other levels because microdata help to differentiate among firms based on their output quality, and studies look at the competitive impact of ICT and the market share of new companies (Morrar,Abdeljawad, Jabr, Kisa,& Younis, 2017).

For instance, Taştan and Gönel (2020) analyzed the impact of ICT information on firm-level productivity in Turkey from 2007–2014. They completed the study by using a production function, different samples based on size and sectorsand funds.

The contribution of ICT labor is higher in companies that use specialized software; ICT labor has a higher elasticity in small and medium-sized firms, and larger firms have a more excellent marginal product than smaller ones. Compared to manufacturing, the service sector has a higher contribution to ICT labor. Skorupinska and Sellens (2017) used structural equation modeling and ordinary least squares. They examined direct and indirect determinants of labor productivity in a sample of 444 firms manufacturing in Eastern Europe in 2009. Fund wages were the primary direct determinant of labor productivity. The relationship between ICT and its complementarities and productivity has been indirectly established.

Brynjolffson and Hitt (2003) examined the relationship between computer spending and growth in output and MFP at 527 large U.S. firms using standard growth accounting and productivity measurement approach. They found that the contribution of computerization to productivity and output growth in the short term (1-year difference) was roughly equivalent to its cost. However, the ICT contribution was up to five times greater over more extended periods (5 to 7 years). The conclusion is that, to generate productivity gains, ICTs require investments in complementary assets, such as organizational capital, over a long period.

Reenen's (2010) study uses a firm-level dataset of 13 European countries from 1998-2008 to examine the impact of ICT capital on labor productivity. It was found that a

10% increase in ICT capital could lead to an increase in output between 0.9% and 0.23%, hence confirming the importance of ICT for growth.

Engelstätter (2009) examined many ICT applications to enterprise systems, including Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Customer Relationship Management (CRM), and labor productivity. Based on a production function, the analysis focuses on the productivity impact of adopting more than one enterprise system at a given time. Data refer to companies in the manufacturing and service sectors. The results confirmed the expected positive effect of enterprise systems on labor productivity and demonstrated complementarity between CRM and SCM, primarily if the necessary I.T. infrastructure is provided through the ERP system.

ICT applications are becoming more complex and broader, which has increased the need for highly skilled labor or external expertise. In order to use these technologies more efficiently, companies contract ICT consulting and outsource ICT maintenance and support. Abramovsky and Griffith (2006) used a large and representative dataset of U.K. firms to study how ICT investments affect outsourcing. It was found that more ICT-intensive firms purchased services and that they were more likely to buy offshore than less ICT-intensive firms.

Cerquera (2008) studied the impact of contracting ICT consulting on firms' innovation incentives. The study developed and estimated a theoretical model that explained how this decision to contract ICT consulting impacted innovative incentives for German firms. Furthermore, using the correlated random coefficient model examines the average effects of ICT consulting on firms' innovative incentives, effectively accounting for endogeneity and unobserved heterogeneity. One main finding was that ICT consulting increased innovation incentives in aggregate, according to a theoretical model. Another finding was that the theoretical model suggested that low productivity firms might evidence either lower, unaffected, or higher innovative incentives. Finally, ICT consulting did not affect the likelihood of product or process innovations.

Bartel.Lach, and Sicherman, (2005) provided evidence that technological change could increase outsourcing because leading-edge technologies can be used without the cost of

adopting new technologies. In addition, they found a positive correlation between an organization's ICT capital and the share of ICT-based services it outsources.

Several studies cover the idea of ICT comprehensively. The Solow Paradox speculation played a significant role in enhancing the economy in the last ten years. The ICT is concerned with measurement cases, especially regarding the ICT inputs and outputs issues. The influence of ICT on productivity is vital for organizational complements and intangible assets. Furthermore, one of the main points that was not overlooked was that several studies were conducted on ICT effects on life sectors; however, none were explicitly done in ICT reviews

1.22 ICT and Productivity Labor in Palestine

Difficulties beset the Palestinian economy. First of all, it is heavily reliant on the Israeli economy: in 2010, Israel accounted for more than 73 percent of Palestinian imports of goods and services. Second, Israel's economic limitations obstruct the establishment of a sustainable Palestinian economy. These constraints take numerous forms: control over raw materials, control over the borders of Palestinian regions, and obstruction of the creation of industrial zones. They cause political unrest and alter the investment environment. Third, public and private sectors lack the necessary skills and financial resources to support production. The industrial sector in Palestine is characterized by its small size and weak participation in the GDP, which did not exceed 13% in 2020.

There are approximately 21,000 industrial enterprises in Palestine. The nation's industrial enterprises employ 109,000 workers, 77% of whom were wage workers. The number of workers employed in industrial enterprises in Palestine decreased by 10.0% (84,318 workers in the West Bank and 25,322 in the Gaza strip). The number of unpaid workers (employers and family members) was 22.6% of the total number of workers, and wage earners were 77.4%. The compensation for wage earners amounted to $ 702.0 million. Between 1994 and 2020, the contribution of industrial activities to GDP decreased from 22% in 1994 to 13% in 2020. The Palestinian Authority's budget is mainly supported by international aid.

1.22.1 ICT Palestinian Sectors

The ICT sector has become one of the most important ….in the global economy and affects all economic sectors (Oshikoya & Hussain, 2007). According to the OECD (2017), in 2015, value-added from the ICT sector and subsectors accounted for 5.4% of the total value added for OECD countries. In Palestine, an underdeveloped economy affected by colonial military occupation, the ICT sector's contribution to GDP in 2018 was 3.2%. Production volume was at constant prices of $ (771.1) million. The number of firms operating in sector was 1310.

IT is one of the most rapidly growing Palestinian sectors, with the highest annual increase in the added value of participation in the Palestinian economy. It is almost the only sector capable of maintaining steady growth rates under the siege and closure by the Israeli occupation. As a result, the Palestinian economy has benefited from this sector on two levels in its quest to build a knowledge economy (Farwaneh, 2016).

The Central Bureau of Statistics of Palestine and the reports of international institutions show that the information technology sector plays a vital role in the Palestinian economy, thanks to the advantages mentioned above and it provides job opportunities for qualified and specialized cadres of university graduates in this field.

The value and impact of ICT, as general-purpose technologies, arise mainly from their uses in other economic and social sectors. There are three characteristics of this ability.

1. Technology is of particular importance for economic and social development
2. It increases the efficiency of economic and social processes.
3. It enhances the effectiveness of cooperation between different stakeholders.
4. It increases the volume and scope of information available to individuals, businesses, and governments. It has increased the interaction between them.

The activation of these capabilities depends not on technology alone but on the interaction between these technologies and other factors, especially the human capabilities necessary to benefit from them. They are all establishing a community.

Information depends on technological development, and there are two broad and complementary perspectives on harnessing ICT for social and economic development.

1.23 Previous Studies in Palestine

Farwana (2016) studied the impact of the information and communications technology sector on Palestinian GDP between (2000-2014). T Farwana examined the relationship between the independent variables. These variables are number of fixed telephones, number of mobile phones, number of internet users, number of employees, intermediate consumption, production, compensation of employees, and number of operating institutions. As measured by Palestinian GDP, economic growth is the dependent variable. He found a positive correlation between the number of mobile phones and intermediate consumption. However, other variables were not significantly correlated. The reason is the string used for the place in the model and modern information technology sector and communication. Abu Dahir (2021) used a descriptive-analytical approach and inductive method to illustrate the role of the information technology sector in sustainable development. The working environment of the Palestinian ICT sector lacks most of the foundations of economic, legal, and political organization.

Morrar et al. (2019) provided evidence that many ICT indicators positively impacted labor productivity in the service sector productivity in Palestine, using firm-level data from 793 Palestinian service firms during 2011. Indicators for ICT use included internet usage, e-commerce, networks, websites, and smartphones. ICT (mainly the internet) in commerce (e-commerce) is a critical lever of labor productivity in service firms. ICT-intensive firms are more productive than less ICT-intensive ones, and using mobile phones for services other than sending and receiving calls dramatically increases the labor productivity of service firms. Using websites and computer networks does not improve labor productivity.

Birabkh and Tnira (2020) studied the impact of ICT investments on Palestine's unemployment from 2000 to 2016. Researchers used econometric methods to estimate the regression relationship between the independent variable (gross fixed capital formation in ICT in constant prices) and the dependent variable (unemployment rates) in Palestine. It was found that increasing investment in ICT by 1% would reduce unemployment in Palestine by 0.006%, indicating a negative correlation between ICT investment and unemployment.

Hasan (2022) analyzed the impact of information technology investments on financial performance, as an investment in technology includes hardware, software, and technology systems. ATMs (Automated Teller Machine) are the dependent variable measured by asset return. This was done by applying to the banks listed on the Palestine Stock Exchange, with the conclusion that investments in information technology affected financial performance since a medium negative relationship was found between hardware and software and return on assets. The study also found a positive and moderate relationship between ATM prevalence and return on assets, recommending that banks consider financial performance when investing in financial technology and technical devices. Therefore, banks should determine the optimal and appropriate spending on technology.

Ayyash (2021) examined the impact of information technology (IT) on Palestinian economic development. It was a quantitative study, and the questionnaire was adapted from well-known studies. Using SPSS, the data were analyzed using multiple regression and convenience sampling. The finding of this study revealed that all hypotheses were true. Therefore, all four aspects of IT- IT valence, IT resource commitment, IT organizational commitment, and IT competency- have a positive and significant effect on economic development.

Due to a lack of information and dearth of research on ICT in Palestine, the researcher decided to conduct this study.

1.24 Hypotheses Development

A new change in the world includes intense competition, business environment, marketing strategies, and consequent changes in cost structures, all of which have been argued to be forcing corporations to adjust their production cost management policy. In fact, costs as tool effects are factors that affect the successful performance of a financial institution. Any change affects the company's continued profitability and productivity (Laitinen, 2014). ICT is constituted by investments in hardware, software, and communication media. The fast technological developments in microprocessors'

production and increasingly low prices have enormously reduced the cost of computers and other computing and communication equipment.

There is a consensus among economists that ICT investments lead to productivity gains only if complementary factors of production accompany them. In particular, the available evidence points to the importance of two “intangible” assets. The first step is developing organizational conditions within the firm that support its use, such as decentralized decision-making and external information gathering. The second step is the undertaking of significant investments in human capital, notably in order to increase ICT-related skills. Reorganizing the firm around new technology is one of the requirements for developing ICT firms; however, this reorganization requires time and, more importantly, involves costs, such as retraining workers, consultants, and managers (Aboal & Tacsir, 2018). This is called the complementarity hypothesis, which goes back to Milgrom and Roberts (1990). According to the following intuitions, firstly, investment in ICT is likely to have a low positive impact on productivity. ICT investment becomes much more effective when paired with organizational change. Secondly, because of the complementary nature between ICT investment and organizational change, a lag may occur between the time we invest in ICT and the time we observe its productivity-enhancing effects. This lag happens due to the organizational changes that the firm needs to undergo to reap the benefits of ICT investment fully. Fourthly, human capital and the distribution of skills among the workforce play a decisive role in determining the impact of ICT. Finally, the ICT investment benefits may differ for all firms because not all firms can implement successful organizational change. (Biagi, 2013). Many studies have emphasized that ICT, to be genuinely productive, requires investment in complementary factors. For example, Bresnahan,Brynjolfsson, and Hitt (2002) analyzed the interaction between organizational change, human capital, and ICT firms. Investing in ICT needs to have primary knowledge reserve in the use of technology (Zhu,Li, Yang, & Balezentis, 2021). This knowledge often cannot be acquired within an institution but is often acquired from experts or specialized institutions specializing in the same area. Researchers in the economic growth theory and the technological innovation area have studied the relationship between investment in ICT and productivity for some decades.

Hypotheses of the Study

1. H0: There is no relationship between computer consulting services and Palestine's labor productivity sector.
2. H0: There is no relationship between the database and Palestine's labor productivity sector.
3. H0: There is no relationship between Palestine's R&D and labor productivity sector.
4. H0: There is no relationship between computer programs and Palestine's labor productivity sector in Palestine

Chapter Two

Methodology of the Study

2.1 Introduction

As stated earlier, the researcher tries to investigate the impact of ICT on the productivity of laborers. To that end, the researcher has used data from the economic survey series cross-sectional data of 2013-2018 that was published by PCBS. Data were analyzed using the Eviews program. This chapter presents the methodology employed in this study to accomplish its objective.

2.2 Population and Sample of the Study

In the study sample, the researcher included all firms in Palestine between 2013- 2018. For data collection, the researcher used PCBS's published data, using the cross-sectional method to obtain the target sector's data comprehensively. The data obtained by the researcher presents different aspects of these firms, such as mining, quarries, monthly expenses, and so forth, the researchers have processed data and company that did not have study variables was excluded from the study.

2.3 Definitions of Variables

2.3.1 Independent Variables

After reviewing previous studies on the subject of the study, PCBS and ICT were classified into four variables according to the available data ،computer consulting services, database, R&D and computer program.

1. Computer Consulting Services

Nowadays, computers have become one of the key factors for the success of any business, regardless of how big it is. It is common for large companies to benefit from computerization but too small to hire specialists to develop their working systems.

Recently, many private consultants have tried to work individually for firms or whatever they are asked to do by their clients. It is also noted that big firms hire programmers for a long time to develop their databases, like setting up the network, designing the user manual, building the website, and giving advanced computer classes.

Consultants may develop a secure system for the company. It is worth mentioning that these consultants differ from each other in terms of their specialization.

2. Database

Databases are used to store, maintain, and retrieve information. Databases collect data based on what they are designed for. They can be considered as a store of certain information. Firms use this detailed information to decide specific matter. The researcher presents some examples of how firms try to use datasets effectively:

- Improve firm's processes: some firms obtain information regarding their business. This information includes sales, trades, taxes, and customer satisfaction. This information is analyzed, and a decision can be made to develop their business and increase profits.
- Keep track of customers: A database also can have some kind of information about citizens. As an illustration, there are some online platforms, especially social media, which collect their users' information like their names, interests, behavior, and secure personal health information
- R&D: This is a valuable method for growing and improving a firm. R&D involves understanding the market and customer needs and developing products and services to meet those needs. Firms with an R&D strategy can succeed more than those without an investment R&D strategy. It can lead to increased productivity, innovation, and competitive advantage for business.
- A computer program is a set of instructions stored anywhere that can be interpreted and executed by a computer, called most frequently a program.

2.4 Dependent Variable: Labor Productivity

According to OECD, labor productivity is. the worker's output per each input unit. In general, labor productivity can be measured as the average output per hour of labor added value per employee. Labor productivity can be measured for a firm, a process, or a country. This equation calculates productivity by subtracting the intermediate consumption costs from the sales and is regarded as a more accurate measure.

2.5 Control Variable

Controlled variables usually are these parts of the study when the researcher can control them while conducting the research. They are also used to study the effect and relationships between particular elements. As it remains constant, it allows researchers and scientists to test and better understand the relationship between other variables. The control variable ensures that test results can be fairly compared and not skewed.

Control variables affecting Palestinian labor productivity.

1. Size: Many studies have examined the connection between ICT and firm size, particularly regarding differences in the adoption of ICT by firms.. The adoption of advanced technologies increases with the size of firms and plants.
2. The Gaza Strip: Because of the Israeli occupation of Palestine, Palestinians suffer from Israeli interference in their daily life activities. Many Palestinians lost their jobs and could not have a safe life to feed their children. Palestine has been stolen and divided into three areas. The Gaza Strip and the West Bank are inhabited by Palestinian, whereas Israel occupies the other parts of the country. The blockade of the Gaza Strip has been going on for more than a decade and continues to this date. The Gaza Strip has been added as a controlled variable for these reasons.
3. Advertising: It is a way of informing customers about products and services.
4. Capital intensity: It is regarded as a firm's measure of operating leverage, and levels of capital intensity differ by industry.
5. Labor wages: Wages are the remuneration or reward for labor. Wages can be divided into two categories: nominal and real wages. Nominal wages refer to money wages. In contrast, 'real wages' refer to the commodities and services that money wages can provide. Factors affecting wages include the following.
   a. Demand and supply of labor: Demand for specific skills can increase the price paid if supply is low and demand is high.
   b. Productivity: Productivity is another criterion measured in terms of output per person-hour.
   c. Ability to pay off the organization. In general, companies with a high level of sales and a high-profit margin tend to pay higher wages than companies that lose money or earn low profits because of a high cost of production or low sales.

d. Rates prevailing in the market: It is also called a 'comparable wage' or a 'going wage rate' and is widely used. Generally, compensation policies for an organization conform to the wage rates applicable to its industry and community. They are usually done for several reasons: (I) Competitors must maintain competitive wage levels.(II) Different government regulations make uniform wage rates attractive positions. (III) Some firms encourage their employees to practice this. Thus, they can get a better work environment in terms of wages, workplace, and others.
e. Cost of living. Using this criterion, a living wage is built based on the index of acceptable living costs.
f. Trade Union's bargaining power: Trade unions influence wage rates. It is generally believed that trade and wages have an apparent influence.
g. Job's requirements. the higher the wage, the more complex the job.

2.6 Model of the Study

The model of regional labor productivity has been developed for empirical analysis based on critical papers in the literature on regional growth (Shahnazi Rouhollah, 2021; Skorupinska &Sellens, 2017; Morrar, Abdeljawad et al., 2019; Taştan & Gönel 2020).

Ln (Q/L)=B_0+B1*(Computer consulting services). B_2*(Databases) + B_3*(R&D) +B_4*(Computer program) +B_5 *(Advertising) + B_6 *ln(Capital intensity) +B_7* ln(labor wage) + B_8 ln(Firm size)+B_9 *(Gaza)+Ui

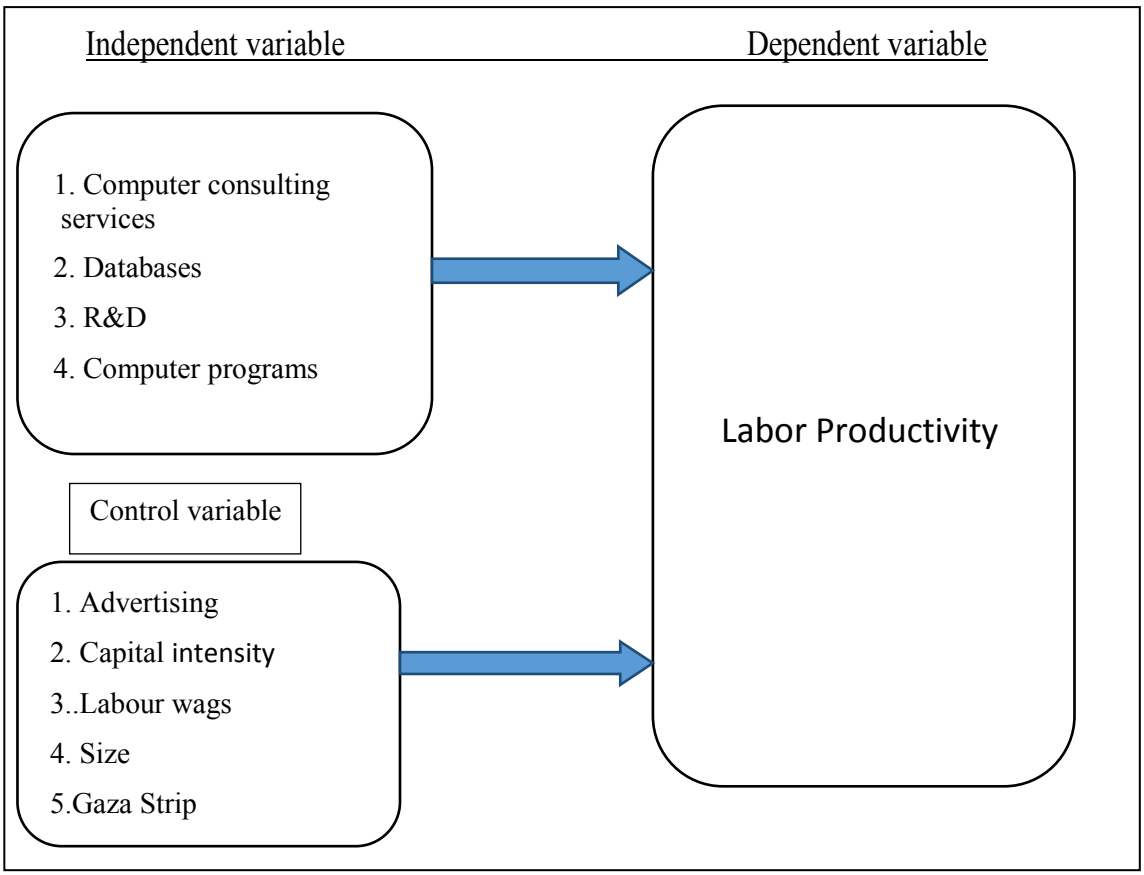
Table (2)

Measurement and Definitions of Variables

Variable	Definition
(Q/ L) Labor Productivity	Value-added per employee. Using this method, it measures total production in the firm divided by the number of employees.
Computer consulting services	Dummy variable: If the company invests in computer consulting services, you give number 1. If not, then you offer 0.
Database	Dummy variable: If the company invests in a database, you give number 1. If not, then you offer 0.
R&D	Dummy variable: If the company invests in R&D, you give number 1. If not, then you offer 0.
Computer program	Dummy variable: If the company invests in computer programs, you give number 1. If not, then you give 0.
Advertising	Dummy variable: If the company invests in computer programs, you give number 1. If not, then you give 0.
Capital intensity	measured by Logarithm Market Value Total Assets at the end of year
Labor wages	measured by Logarithm Total Wage Labor / Number of Laborers
Firm size	Logarithm number of laborers
Gaza	Dummy Variable: Companies where they work: The Gaza Strip got number 1 and the West Bank got number 0.

Figure (4)

Model of the Study



Chapter Three

Results and Discussion

3.1 Introduction

The researcher in this part of the study presents the results of the answers to the study questions. The chapter starts with the ICT effect on productivity. Every year, the PCBS publishes data related to economic sectors that come to meet the basic economic data requirements for preparing the national accounts of Palestine by the United Nations System of National Accounts (2008). The form includes the following variables:

1. Employees of institution and compensation of such employees
2. Value of production of primary and secondary activity
3. Production expenses, taxes for the government, and subsidies
4. Inputs from various trade
5. Net and assets enterprises additions to and depreciation of assets during year of attribution
6. Selection of a regular randomized one-stage sample. One-stage Model System Random Sable represents all companies. The researcher obtained data from the industrial sector between 2013-2018. The processing of this data on Excel, for example, was collected in three currencies: NIS, JD, and USD. The average rate of exchange of the dollar per year was taken from particular websites and the consolidation of data by the operation of the dollar.

The researcher in this part of the study presents the regression analysis results and responds to the formulated hypothesis.

3.2 Descriptive Statistics

The total population of the study sample was 10,065 individuals. Industrial company individuals for the Palestinian industry sector from 2013 to 2018 were 1,595 in 2013, 1,659 in 2014, 1,621 in 2015, 1,661 in 2016, 1,823 in 2017, and 1,706 in 2018. The researcher did not include any sample after 2018.

Table 3 statistically shows the study's variables. The average Ln number of laborers in 2018 was $1.609438, and their Ln average productivity was 13.03037$. Ln Average wages were $ 11.41592$, and Ln Average capital was $ 12.19489$.

Table 4 presents the firms' sample in Palestine from 2013-2018 and shows the number and percentage of a firm that invested in ICT. It should be also noted that the firms that invested in R&D and database were few compared to the rest of the variables. This subject needs further research to see why there was little investment in R & D and databases.

Table (3)

Statistical Description of Study Variables

Variable	Mean	Median	Maximum	minimum	Std. Dev.
Productivity labor	13.0327	13.03037	17.87833	7.203327	1.026574
Size	1.77618	1.609438	7.600902	0	1.215243
Capital Intensity	12.10209	12.19489	19.12022	0.652247	1.418377
Labor Wage	12.83474	11.41592	22.71161	6.620073	3.610045

Table)4(

Number and Percentage of Firms Spending on ICT in Palestine

Year	2018	2017	2016	2015	2014	2013
Number of Firms	1706	1823	1661	1621	1566	1595
Computer Consulting Services	243	253	192	202	178	166
	14.3%	13.8%	11.6%	12.5%	10.8%	10.4%
Databases	26	6	1	3	3	3
	1.5%	0. 32%	0. 06%	0. 18%	0.18%	0.18%
R&D	20	4	4	4	4	5
	1.1%	.21%	.24%	.24%	.24%	.31%
Computer Program	249	313	234	250	189	200
	14.5%	17.1%	14%	15.4%	11.3%	12.5%
Advertising	480	459	482	539	544	496
	28.1%	25.1%	29%	33.2%	32.7%	31%

Table 5 shows the firms' number in the study sample in Palestine from 2013-2018. It also presents the percentage of firms that invested in ICT. This table shows that investments in ICT in West Bank are better than in the Gaza Strip. Beyond that, Gaza has been subjected to many wars and has been under siege because of the Israeli occupation.

Table (5)

Number of of Firms.

Year	2018		2017		2016		2015		2014		2013	
	West Bank	Gaza Strip	West Bank	Gaza Strip	West Bank	Gaza Strip	West Bank	Gaza Strip	West Bank	Gaza Strip	West Bank	Gaza Strip
Number of Firms	1135	571	1228	595	1108	553	1066	555	1061	505	1238	357
Computer Consulting Services	10.49 %	3.75 %	16.04 %	9.41 %	13.54 %	7.59 %	15.76 %	6.13 %	13.57 %	6.73 %	11.07 %	8.12 %
Databases	1.11 %	0.41 %	0.33 %	0.34 %	0.09 %	0.00 %	0.19 %	0.18 %	0.19 %	0.20 %	0.24 %	0.00 %
R&D	0.88 %	0.29 %	0.16 %	0.34 %	0.36 %	0.00 %	0.00 %	0.72 %	0.28 %	0.20 %	0.24 %	0.56 %
Computer Programs	7.62 %	6.98 %	13.76 %	24.20 %	11.10 %	20.07 %	13.32 %	19.46 %	12.35 %	11.49 %	12.52 %	12.6 1%
Advertising	17.23 %	10.90 %	22.88 %	29.92 %	27.44 %	32.19 %	29.92 %	39.64 %	34.59 %	35.05 %	32.31 %	26.8 9%

Table 6 shows the number of laborers in the industrial sector. A laborer's average yearly wage is based on the total wages and compensation they receive and the total compensation they receive. The average wage of laborers in 2013 was 5,126 dollars and in 2018, it was 5,217 dollars. It also shows the value of production (value-added) and average productivity per employee.

Table (6)

Number of Laborers in Industrial Sector

	2018	2017	2016	2015	2014	2013
Number of firms	1706	1823	1661	1621	1566	1595
Number of employees in Palestinian industrial sector	28438	28628	24808	23950	23993	24181
Total wages of employees	148,366,952	153,611,788	143,732,501	139,837,078	129,482,013	123,947,434
Average employees' wages in dollars	5217	5366	5794	5839	5397	5126
Productivity of Palestinian industrial sector in dollars	28,218,781,482	29,685,963,545	24,530,726,506	24,527,746,129	22,553,682,899	19,172,501,447
Average productivity per employee	992291	1036956	988823	1024123	940011	792875

Table 7 shows the labor population in the industrial sector in West Bank and the Gaza Strip. A laborer's average yearly wage is based on the total wages and compensation they receive and the total compensation they receive. The average wage of laborers in the West Bank was better than the Gaza Strip; in addition, the average productivity per employee from Gaza was less than that in the West Bank.

Table (7)

Number of Laborers in Industrial Sector

Year	2018		2017		2016	
	West Bank	**Gaza Strip**	**West Bank**	**Gaza Strip**	**West Bank**	**Gaza Strip**
Number of employees in Palestinian industrial sector.	21532	6906	21980	6648	18861	5947
Total wages of employees.	123858631.8	24508320.11	127153255	26458533	114703851.1	29028649.73
Average employees' wages in dollars.	5752	3548.	5784	3979	6081	4881
Productivity of Palestinian industrial sector in dollars.	23347758358	4871023125	23109959637	6576003908	18237589658	6293136848
Average productivity per employee.	1084328.365	705332.0482	1051408.537	989170.263	966947.1215	1058203.607
Number of firms.	1135	571	1231	592	1108	553
Year	**2015**		**2014**		**2013**	
	West Bank	**Gaza Strip**	**West Bank**	**Gaza Strip**	**West Bank**	**Gaza Strip**
Number of employees in Palestinian industrial sector.	18071	5879	18071	5922	20567	3614
Total wages of employees.	111131760.3	28705317.56	111131760.3	18350253.17	108683351.7	15264082.53
Average employees' wages in dollars.	6149	4882	6149	3098	5284	4223
Productivity of Palestinian industrial sector in dollars.	17664992387	6862753742	17664992387	4888690512	16461026202	2711475245
Average productivity per employee.	977532.6427	1167333.516	977532.6427	825513.4265	800361.0737	750269.852
Number of firms.	1066	555	1066	500	1238	357

Table 8 shows the total amount of investment in ICT in all firms in Palestine. It should be noted that spending on R&D databases was poor.

Table (8)

Total Amount of Investement in ICT in Palestine(in dollars)

Year	Computer consulting services	Databases	R&D	Computer program	AD
2018	5463008.45	3489829.308	6007904.752	45009616.84	165364676.3
2017	4382317.964	140282.0892	850390.86	47275325.26	41565731.25
2016	7663005.751	3458187.408	6395922.68	59158852.83	36757741.67
2015	4787312.118	105551.908	35213106.58	22061714.07	41127433.7
2014	6606932.373	91545.6	705902.4	7039723.347	47173126.84
2013	6605850.988	124001	8059269.252	8781024.679	33308591.5

3.3 Multicollinearity

Multicollinearity is defined as the situation when two or more predictors are highly correlated. As a result of multicollinearity, it may be challenging to determine the impact of each predictor on the response. It also helps to determine which variables to include in the model. Other problems caused by multicollinearity include the following:

1. The coefficients might be inflated or poorly estimated.
2. There may be coefficients with meaningless signs.
3. The standard errors for these coefficients may be inflated.

A simple method for identifying multicollinearity is computing the variance inflation factor (VIF). VIF calculates that the coefficient estimate's standard error is inflated due to multicollinearity.

When all variables are VIF < 5, this does not indicate a multicollinearity problem in the model. Table 12 in the appendices shows all the values were less than 2, so there was no multicollinearity. *(Maddala, 1992)*

3.4 Autocorrelation

Autocorrelation describes the level of correlation of the same variables between two successive time intervals.Therefore, the Durbin-Watson test was used to determine whether there was autocorrelation. The test's result of 1.84 shows that there was no proof of autocorrelation. (Maddala, 1992)

3.5 Heteroscedasticity

Heteroscedasticity often refers to the dependent variable's variance changing over time. Heteroscedasticity makes the analysis process more difficult because many regression methods consider equal variance. When specific subpopulations have different variations than others, heteroscedasticity arises. Any measure of statistical dispersion, such as variance, can be used to define "variability" in this context. The regression analysis has the potential to be heteroscedastic. Statistical significance tests can be invalid if the modeling mistakes are uncorrelated and normally distributed, and their variances are constant for estimated effects. Similarly, some standard tests assume that disputes within groups are the same when employing a location test to look for variations between subpopulations. (Maddala, 1992)

The null hypothesis of no heteroscedasticity was rejected based on the white heteroscedasticity test result. Table 12 in the appendices shows that the probabilities of 0.0007 and 0.0007 were more petite than the significance level of 0.05. This finding shows heteroscedasticity, which causes estimations of the coefficients to be off. This will result in inaccurate conclusions regarding the relevance of variables based on values. Using standard errors and variance-covariance estimates from Newey-West (Newey and West, 1987), the likelihood of this happening is eliminated (HAC).

3.6 Estimation Results

Table 9 presents the regression results of this research model. It shows that this model explains 20.70% of the total variability in labor productivity's profitability (R-squared). The remaining79.30 % of the variation in the profitability is not mentioned in this model, but rather it is found in the error term. An F-statistic of 289.8833 implies that the null hypothesis that the model was not adequate should be rejected since the p-value of the f-statistic was 0.000, which was sufficiently low, indicating the model was well fitted at a 1% level of significance.

Table (9)

Estimation Results (HAC Standard Errors & Covariance (Bartlett Kernel, Newey-West fixed)

Variable	Coefficient	t-Statistic	Prob.
Computer consulting services	0.1194	3.3637	0.0008
Databases	0.1652	1.0508	0.2934
R &D	-0.1899	-1.2937	0.1958
Computer programs	0.2057	6.3202	0.0000
Advertising	0.1255	5.4941	0.0000
Capital	0.2764	34.4046	0.0000
Labor wages	0.0144	3.7216	0.0002
Firm size (Number of laborers as an indicator)	-0.0102	-1.0301	0.3030
Gaza Strip	-0.2983	-11.5564	0.0000
C	9.5308	85.9738	0.0000
R-squared	0.2070		
Adjusted R-squared	0.2063		
F-statistic	289.8833		
Prob(F-statistic)	0.0000		

3.7 Testing Research Hypotheses

The regression analysis results presented in the tables are used in this section to analyze each of the nine hypotheses proposed in Chapter 1. The researcher used covariance, standard errors and HAC (Bartlett kernel, Newey-West fixed). The null hypothesis (Ho) states that if the p-value (the prob chi-square distrubation) were more significant than 0.05, the null hypothesis in this instance would be accepted. If the test p-value were also less than 0.05, the null hypothesis would be rejected in this instance.

3.7.1 Computer Consulting Services

H0: There is no relationship between computer consulting services and Palestine's labor productivity sector.

The regression analysis results (see Table 9) show a significant positive relationship between computer consulting services and labor productivity. Therefore, this hypothesis

was rejected. However, the complementarity hypothesis (Milgrom and Roberts, 1990) states that using ICTs can only lead to productivity gains if a complementary factor of production is in place. For example, a firm may invest in industrial machinery to help with production. This industrial machinery needs programming specialists to operate and maintain it to become more efficient and productive. This problem can be overcome by outsourcing specialists or hiring experts within the organization. It depends on the firm's size and the cost-benefit analysis. In general, hiring them remains the best option if a large company wishes to hire experts. Considering that most institutions in Palestine are small to medium-sized, external consultancy is the best solution. Computer consulting services, as complementary investment software and hardware, are consistent with this study's result and different from Cerqueira's (2008). Cerqueira found that ICT consulting did not impact the likelihood of introducing product or process innovations. It turns out that ICT consulting negatively affected the value of innovation introduced into products and processes.

3.7.2 Databases

H0: There is no relationship between databases and Palestine's labor productivity sector.

According to the regression analysis (see Table10), there was no significant correlation between the databases and labor productivity; thus, this hypothesis was accepted. This study's result differs from Le Mouel, Schiersch and Belitz's (2008) results. They found that the company productivity data increased with more knowledge-based capital R&D software and databases.

In Palestine, the percentage of companies which had databases was relatively low. There was a ratio of 1.11% investing in databases in the West Bank and 0.41% investing in databases in the Gaza Strip. The total study sample firms (1, 135) (571)is controversial and opens up prospects for future research. Firms do not know the importance of investing in databases for the speed of storage, access to information, saving time and effort, and accessible communication to customers. Establishing a database may cost more than its benefits.

3.7.3 R&D

H0: There is no relationship between Palestine's R&D and labor productivity industry sector.

The regression analysis in Table 9 shows no significant correlation between R&D and labor productivity. Therefore, this hypothesis was accepted. This result differs from Blnh and Tung's result (2020) on R&D. The expenditures are positively correlated with output growth like Radło and Tomeczek (2022). It was confirmed that R&D was a factor affecting labor productivity and positively impacted labor productivity. However,, many studies concurred with this study or showed negative effects. For example, Tuna, Kayacan, and Bektas (2015) analyzed the relationship between R&D expenditures and economic growth in Turkey from 1990 to 2013. They found a causal relationship between R&D expenditures and economic growth did not exist. A lack of R&D effect on labor productivity in Palestine could be attributed to the very few companies that invested in R&D.

3.7.4 Computer Programs

H0: There is no relationship between computer programs and Palestine's labor productivity sector.

The regression analysis results (see Table 9) show a significant positive relationship between computer programs and labor productivity. Thus the hypothesis above was rejected. Therefore, this result means firms that have invested in computer programs leveraged the benefits of ICT discussed in the study's theoretical framework, including improving business operations, facilitating coordination, communication, and information processing, matching buyers and suppliers in the same field, and saving time. All these together improve productivity. To clarify the idea, the researcher reviewed the study's results. Kalwar, Khan, Phul, Wadho, Shahzad and Marri, (2022) compared the performance before and after implementing an ERP case study for a manufacturing company fund. As a result of the industrial and financial System implementation in 2021, the company saved 48, 272.5 hours in 2021 compared with the

manual approach. It reduces the average cost of a unit of production and increases economies of scale in firms.

This result was consistent with much previous research findings (Zhu, Li, Yang & Balezentis 2021; Engelstätter, 2009).

Control Variables

3.7.5 Advertising

According to the regression analysis (see Table 9), advertising positively impacted labor productivity. Therefore it was not accepted. This result was in line with results of previous research (Camino-Mogro, 2019) that firms which invested in in advertising had a higher TFP(4%), higher labor productivity (24%), and higher gross revenue(84%) when compared with firms that did not invest in advertising. Additionally, firms that invested in advertising two years later had a higher TFP (3 %), higher labor productivity (23 %), and higher gross revenue (76%).

3.7.6 Capital Intensity

The regression analysis results (see Table 9) show a significant positive relationship between capital intensity and labor productivity. Therefore, this hypothesis was rejected. This result is consistent with other previous research findings (Ayelign, 2019).

3.7.7 Labor Wage

A regression analysis (see Table 9) shows a significant positive relationship between labor wage and labor productivity. Therefore, this hypothesis was rejected. This result is consistent with the Efficiency Wage Theory developed by Alfred Marshall and supported by Katz (1986), Shapiro, and Stiglitz (1984). Efficiency Wage Theory suggests that a higher wage can increase labor productivity because workers become more motivated to work with a higher wage. Hence, by increasing wages, firms can recoup at least some of their higher wage costs through increased staff retention and higher productivity.

3.7.8 Firm Size

The regression analysis results (see Table9) show no significant relationship between firm size and labor productivity. Therefore, this hypothesis was accepted. This result means labor productivity in the Palestinian industry was not affected by the number of laborers in the firms. In other words, the increase in the number of laborers or the reduction in the number of laborers did not affect the productivity of the single laborer.

This result was different from the study of Morrar et al. (2019) In the Palestinian service sector, the larger the company is (the measured logarithm ofthe number of labors), the more labor productivity is.

3.7.9 Gaza Strip

Results of the regression analysis (see Table 9) show that Gaza's productivity was lower than that of the West Bank.

In Gaza, the industrial sector operates in an unstable environment. Israel's aggression against the Gaza Strip has been renewed from time to time, destroying infrastructure, factories, and institutions. Moreover, Israel has been imposing a blockade on the Gaza Strip for more than 15 years.. This is why Gaza has a low level of labor productivity. This result is similar to that of the study by Morrar et al. (2019).

Table (10)

Summary of Results

Variables	Effect on Labor Productivity
Computer consulting services	Positive relationship
Databases	No relationship
R&D	No relationship
Computer programs	Positive relationship
Advertising	Positive relationship
Capital intensity	Positive relationship
Labor wage	Positive relationship
Firm size (Number of laborers as an indicator)	No relationship
Gaza Strip	Negative relationship

Chapter Four

Conclusions

4.1 Introduction

In this part of the study, the researcher elaborates on the final considerations and suggests a couple of recommendations for other researchers and interested parties. Study the following sections:

1. Conclusion
2. Recommendations
3. Research limitations
4. Suggestions for future research

4.2 Conclusion

This study has examined the effect that ICT could have on the productivity of laborers in the industrial sector in Palestine at firm level. The researcher used the cross-sectional data available from the Gaza Strip and West Bank for six years between 2013 and 2018. Based on the theoretical framework, previous studies, and available data from PCBS, the researcher developed a model to measure the ICT's effect on the productivity of laborers in Palestine. The researcher completed the study using ICT indicators as an independent variable, including computer consulting services, databases, R&D, computer programs, and labor productivity as dependent variable. The researcher added controlled variables: firm size, Gaza Strip, advertising , capital intensity, and labor wages. A key idea in this paper was that ICT allows related companies in the field to make their production more organized in the whole country. However, it was also stressed that investments in complementary intangible assets must accompany these reorganizations, essentially the results of firms learning how to best use the flexible inputs.

The researcher's main finding is that there was a significant effect of ICT. This impact clearly affected the Palestinian industrial sector. Therefore, increasing investment in ICT leads to increasing the labor productivity in industry. Therefore, labor productivity achieves greater efficiency and effectiveness in firms' activities, leading to economies of scale toward achieving organization goals in maximizing wealth. In addition, it

increases Palestine's economic output and growth. The ICT's successful implementation is mainly achieved through two channels: the computer consultation and firms' purchase of the computer programs. According to the regression analysis, computer consulting services positively correlate with labor productivity. This is consistent with the idea that there are complementarities between ICT and outsourced services. In fact, many firms have the option of outsourcing their ICT-related work to solve the problem of the unavailability of internal skills. As a result, outsourcing has become one of the most com-mon practices used by nearly all organizations, whether private, public, or large, in order to remain competitive.

Based on the regression analysis, the researcher has found that computer programs positively affected laborers' productivity. Therefore, it can be understood that there is a higher level of productivity in firms that purchase computer programs. According to the theoretical framework of the first chapter, the positive relationship can be explained by the benefits of investing in ICT, including improving business operations, facilitating coordination, communication, and information processing, matching buyers and suppliers in the same field, and saving time. All these together lead to improve productivity.

In the same fashion, the regression analysis shows no significant correlation between labor productivity and the R&D and databases. This result is explained by the firms in the Palestinian industrial sector that have R&D investment. The database is minimal compared to other study variables. There was a ratio of 0.88% of firms investing in R&D, 1.11% investing in the databases in the West Bank, 0.29% firms investing in R&D and 0.41% investing in the database in the Gaza Strip of the total study sample firms: 1,135 and 571.

Additionally, the study results showed that the economic indicators of Gaza were less than those in the West Bank because of Israeli wars and the blockage on Gaza Strip. It is worth mentioning that the closure policies have been imposed on the Gaza Strip for more than ten years. The study found that the percentage of West Bank firms that invested in ICT was more than the percentage in the Gaza Strip. West Bank workers in

the industrial sector usually get better salaries than those workers in Gaza Strip. Having this in mind, the labor productivity in West Bank is somehow better than the productivity in the Gaza Strip.

Finally, the effect of the controlled variable was as follows: labor productivity increased when wages were raised. The researcher believes that the reason behind this result is simply related to good salaries because high salaries make workers more productive in their work. This motivates Palestinian industrial sector firms to increase wages to improve labor productivity. Firms that invest in advertising had higher labor productivity. The researcher did not find a relationship between firms' size and laborers' productivity in Palestine's industry sector. However, the researcher found a positive relationship between capital intensity and labor productivity in the industry sector in Palestine.

4.3 Recommendations

1. A firm that does not invest in ICT must do so to increase productivity and profits.
2. Palestinian firms are encouraged to increase their investment in ICT to increase productivity and profits.
3. There is an urgent need for a mechanism to enhance firms' participation in and production of knowledge.
4. Palestinian industrial sector firms are advised to raise labor wages to increase labor productivity
5. Policymakers have enacted new laws and legislation by the government that stimulate investment ICT. The knowledge economy leads to increase of productivity and growth in the national economy.

4.4 Research Limitations

The limitations of this study are related to the source of data. The only data source available was from the PCBS, which does not guarantee all variables related to ICT, such as internet usage and data available up to 2018. No data was available for 2019 and 2020 because of the Covid 19 pandemic

4.5 Suggestions for Future Research

The researcher suggested future research into ICT's effect on labor depending on other variables, such as creativity and innovation, internet usage, labors skill, and organizational change. Further research is recommended to investigate the ICT's effect on different West Bank and Gaza Strip sectors. Researchers are also encouraged to study ICT management policies in Palestinian firms.

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Appendices

Appendix (1)

Tables

Table (11)

Heteroscedasticity Test: Breusch-Pagan-Godfrey

F-statistic	3.20093	Prob. F(9,9993)	0.0007
Obs*R-squared	28.75431	Prob. Chi-Square(9)	0.0007

Heteroscedasticity often refers to the dependent variable's variance changing over time. Heteroscedasticity makes the analysis process more difficult because many regression methods consider equal variance. When specific subpopulations have different variations than others, heteroscedasticity arises. Any measure of statistical dispersion, such as variance, can be used to define "variability" in this context. The regression analysis has the potential to be heteroscedastic.

Table (12)

Multicollinearity Test Using Variance Inflation Factor

Variable	Coefficient Variance	Centered VIF
Computer consulting services	0.001261	1.243414
Databases	0.024711	1.016951
R&D	0.021552	1.028765
Computer programs	0.00106	1.28121
Advertising	0.000522	1.135621
Capital	6.46E-05	1.053449
Labor wage	1.50E-05	1.047025
Number of laborers	9.72E-05	1.390041
Gaza Strip	0.000666	1.081346
C	0.012289	NA

Multicollinearity Test Using Variance Inflation Factor: A simple method for identifying multicollinearity is by computing the variance inflation factor. Inflation reached out of calculating the standard error of the coefficient estimate is inflated as a result of multicollinearity.

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الملخص

إن الانتشار الواسع لتكنولوجيات المعلومات والاتصالات في العالم، مثل تطبيقات الأجهزة والبرمجيات، وتأثيرها الإيجابي على الإنتاجية، والتي تمثلت بخفض تكاليف المعاملات وخلق فرص عمل وتعزيز الكفاءة التنظيمية، وتحسين نوعية المنتج وظهور أشكال جديدة لتخزين البيانات، وتحسن التواصل داخل حدود المنظمة مع الشركاء التجاريين، والعملاء الخارجيين. ونتيجة لذلك أصبحت تكنولوجيا المعلومات والإتصالات محطة اهتمام لدى الباحثين والشركات والمستثمرين في مختلف أنحاء العالم.

تهدف هذه الدراسة إلى قياس أثر تكنولوجيا المعلومات والاتصالات على إنتاجية العامل في القطاع الصناعي الفلسطيني، استخدمت الدراسة بيانات فعلية تم الحصول عليها من الجهاز المركزي للإحصاء الفلسطيني لكل من الضفة وقطاع غزة تغطي الفترة الزمنية من (2013–2018) وبناءاً على البيانات المتوفرة باستخدام مؤشرات تكنولوجيا المعلومات والتي تشمل (خدمات استشارات الكمبيوتر، برامج الكمبيوتر، البحث والتطوير، قواعد البيانات) كمتغير تابع وانتاجية العامل كمتغير مستقل وتم إضافة خمس متغيرات ضابطه وهي (حجم الشركة، رأس المال، أجور العمال، الإعلانات، قطاع غزة).

وتوصلت الدراسة إلى عدة نتائج منها: زيادة الاستثمار في خدمات استشارات الكمبيوتر، وبرنامج الكمبيوتر؛ يزيد من إنتاجية العامل في قطاع الصناعة الفلسطيني. في المقابل تبين عدم وجود علاقة بين البحث والتطوير وقاعدة البيانات وإنتاجية العامل. أظهرت الدراسة أن العمال ذوو الأجور الأعلى هم الأكثر إنتاجية، إنتاجية العمل في الضفة الغربية أعلى منها في غزةً. أوصت الدراسة الشركات التي لا

تستثمر في تكنولوجيا المعلومات والإتصالات بالاستثمار في تكنولوجيا المعلومـــات والاتصـــالات وأن تزيد الاستثمار في الشركات التي تستثمر لزيادة الإنتاجية والأرباح فيها، واقترحت على الشركات فـــي القطاع الصناعي الفلسطيني زيادة الأجور زيادة إنتاجية العامل.

الكلمات المفتاحية: تكنولوجيا المعلومات والاتصالات، إنتاجية العامل في الضفة الغربية وقطاع غـــزة، الاستثمار في التكنولوجيا، القطاع الصناعي.