



"Implementation of 4th revolution technology and its impact on the performance of warehousing"

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Abstract

The technological revolution will in general change the way we work and our lives and connect us to each other. In terms of size, complexity, and scale, technology transformation will be unlike anything humanity has experienced before. Moreover, its response will be integrated and comprehensive to include all stakeholders in the global system, whether from the private or public sector to civil and academic society. In the past, the first industrial revolution used steam and water in production, after that the second industrial revolution used electric energy to make production more than the first revolution, while the third revolution used electronics and information technology to complete production. As for the fourth revolution, which in our time, the digital revolution is used, which is characterized by a combination of technologies that block the lines between biological, physical and digital fields. The paper also discusses the scope of research on the implementation of the technology of the fourth revolution and its impact on warehousing performance.

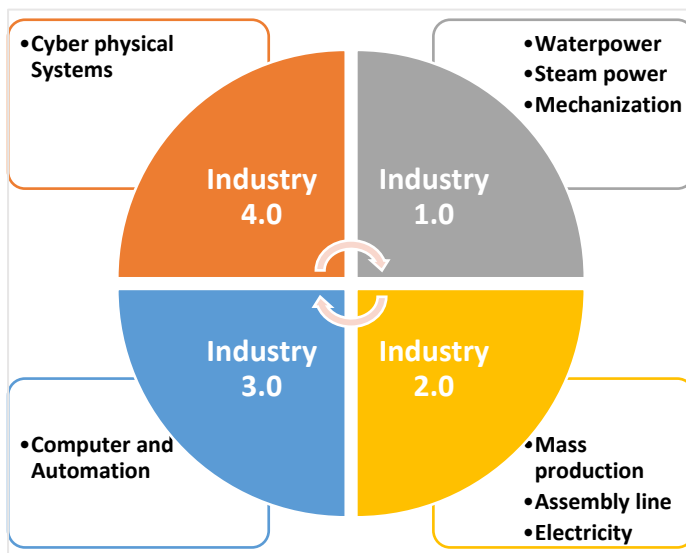
Key words: fourth revolution, warehousing, technology.

1. Introduction

It is known in our time that the fourth industrial revolution is the best in all respects in the use of technology as it is characterized by speed, scope and influence of systems. And the speed of the current breakthroughs is not like the past. When comparing the fourth revolution to the previous one, the fourth industrial revolution has developed exponentially, not linearly. Moreover, it may disrupt almost every industry in every country. Because of the breadth and depth of the changes herald the transformation of complete systems of production, management and governance.

Therefore, the Fourth Industrial Revolution represents a new stage in organizing and controlling the value-added chain. Where cyber-physical systems form the basis of industry 4.0 such as smart devices. Moreover, modern control systems are used, and they have software and processing systems via the Internet of Things.[1] Through this method, products and production methods are linked to the network allowing a new party to produce, create value and optimize in real time.

Figure 1 shows the types of industrial revolution and what it was carrying.



Figuer1 : Industrial Revolution

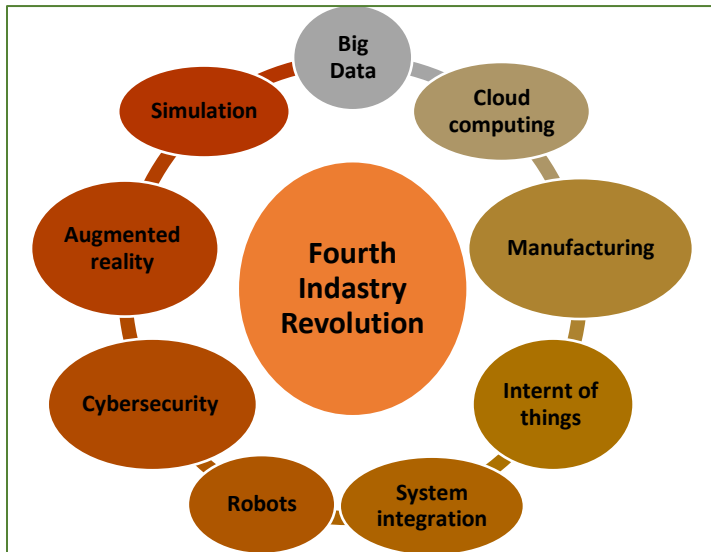
Where the fourth industrial revolution was defined as a name for the current trend in the development of manufacturing techniques and data exchange in it including cyber physical systems, Internet of things, cloud computing, cognitive computing, and smart factory creation. Moreover, the revolution is more complete than it was in the Third Industrial Revolution and the physical and digital world was blocked by cyber physical systems that are enabled through the Internet of Things. Also, the goal is to enable independent decision-making processes, monitor assets and processes in real time, and enable equality through early stakeholder participation, horizontal and vertical integration.

2. Fourth Industrial Revolution

To know the meaning of the Fourth Revolution is a combination of evolution and advancement of artificial intelligence that is controlled between physical, biological and digital factors. It is a great combination of technology, internet networks, and other related technological development.

The fourth major industrial age since the first industrial revolution in the 18th century is characterized by the incorporation of technologies that separate lines between physical and digital fields as it is considered a major development and is characterized by the penetration of emerging technology in many areas where it includes new ways for technology to become an integral part of societies where he stated [2] Professor Klaus Schwab said that this revolution is completely different from the previous three revolutions. This revolution is characterized by a great deal in technological progress and a radical improvement in the efficiency of business and institutions through technologies. It is mentioned that the word "Fourth Industrial Revolution" was used for the first time in 2016. It allows for better management and assistance in regenerating the natural environment. The current revolution is defined as an integrated, adapted, service-oriented, manufacturing process in which big data, high technology, and algorithms are included. Technology is the essence of the revolution, as interconnectivity is supported in the Fourth Revolution by the adoption of sensors, software, processor, and communication technology, including the Internet of Things, big data analytics, 3D printing, cloud, and report systems. According to [3]. He has said in his search for the definition of the fourth revolution in technology according to his opinion that are production systems so that they contain machines and have an intelligent sensor to process it and have in the commercial processes a system capable of self-control decentralized system and be of wireless communication and work smoothly and is considered a great success through The internet and the current smart programs are fast and easy.

Where the figure 2 shows the method of the fourth industrial revolution by its excellence in the use of its technologies.



Figuer2 : fourth industrial revolution

Therefore, Figure 2 illustrates how the fourth industrial revolution is a major advance in technology, as this development merges the physical, digital, and biological worlds, and the fourth industrial revolution is rapid, as countries must think about how to develop because of their breadth and depth, which leads to risks for organizations, but the real opportunity is to Their use is to give great opportunities to a number of people to positively influence their families, their community and their organizations.

3. The implementation of operations in the fourth revolution and its performance on warehousing

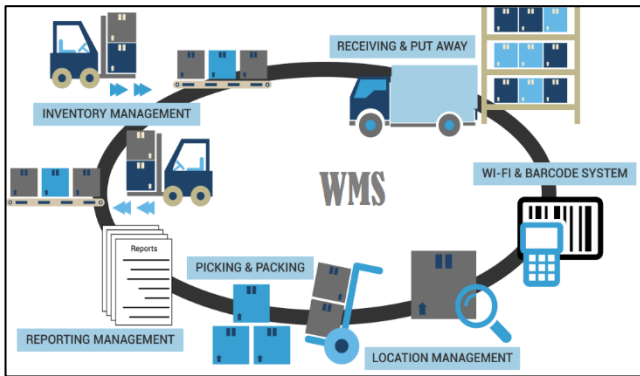
Warehousing is one of the most important parts of the supply chain. Moreover, it is not considered the most attractive, but it is connected to some as warehouses are stored and managed, but the benefit comes in the supply chain on several things, including

transportation, customs, storage, operations, and others.[4]

Where over the years there were principles of storage and did not change but evolved greatly thanks to modern technologies and thanks to trade via the Internet storage has become significantly advanced and there is a system through which warehouses can be managed better.

Warehouses are one of the most important things to focus on before starting a project as everyone in the idea is planning a medium or large project even if it is small and needs warehouses to focus and do to save materials to customers in the best way. But warehouses vary in terms of space, size, services, and security. So it must contain many services to save the rights of the client without harming the continuity of the project and its success, but in each warehouse, the control system must work either through the use of modern or old technologies and our time is considered in the fourth revolution specialized in information technology which is famous for all corporate technology systems in it to protect its goods from damage and save it to the customer in the best way in this project.

Humans have many ways to get benefits from the techniques used in warehouse operations many of them have strengths in performing tasks accurately but there may be some errors so the techniques that do tasks were used quickly and less expensive. According to [5]. He said several systems help maintain warehouse operations using Fourth Revolution technology without errors. Besides, there are several tools, including storage and automatic recovery systems, automatic carrier systems (AS/RS), AGV systems, and most warehouse operators use warehouse execution systems, namely WMS.



Figuer3 : WMS

This figure shows what the warehouse management system may do, where one of its advantages is that it is possible through knowing the warehouse design to calculate all the differences in the best way also the feature of tracking the inventory so that the product can be known through tracking it easily after using the barcode scanner. And the receipt of goods where it is allowed to store and retrieve the goods and know the selection and packing of the goods that come and then go for shipping where the system sends the bills of lading and packing the shipping bills and sends them to the beneficiary. It also enables work management that helps warehouse managers monitor the workers' performance in the warehouse and the dock management feature to facilitate the process of loading and unloading from trucks to the warehouse. Finally, the program assists managers in preparing periodic reports by analysing the performance of warehouse operations and finding areas for improvement.

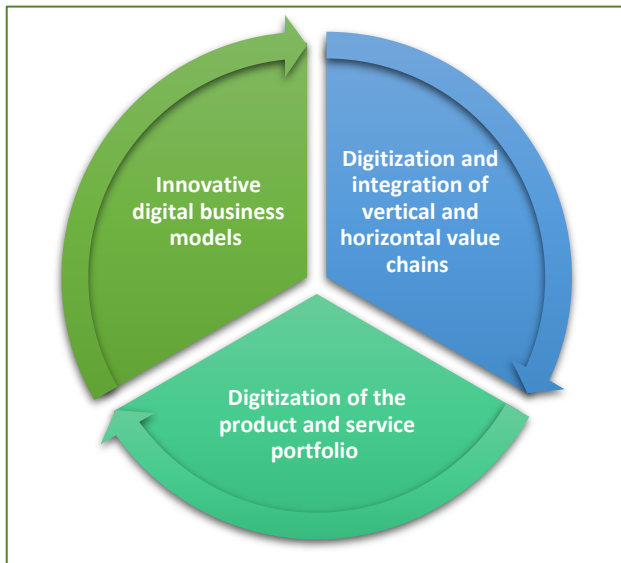
4. The benefits of applying the fourth revolution in warehousing

In the past two decades, to develop logistics and all its divisions, ICT has been included to get the best services, results and the benefit of adding technology and using the fourth revolution specifically in warehouses to avoid getting into any mistakes because warehouses are considered one of the most important

sections to save the company's products to customers. So, the writer [6]. He talked in his study that the benefit of using technology in warehouses to avoid any errors and easy access to product sites after receipt, inspection and order and that the machines do a faster work and cost less and get the customer satisfaction by gaining confidence in the existence of those techniques in working in the warehouse.

According to the mentioned [7]. In his research, the application of the Fourth Revolution in storage has many benefits, including in the use of the warehouse management system so that it is ideally complementary to independent operations. He said that one of the benefits is rapid data access, improved inventory accuracy and high efficiency, easy access to inventory, network preservation and control, and high security of warehouses.

According to the author [8]. The benefits of the fourth industrial revolution in the logistics sector or any other sector of the use of modern technology are characterized by things, namely the speed of business development thanks to technology and the ease of working technologies because of its low cost, wherein our current time technology has a great impact also gaining an increase in the volume of benefits for the employer. Furthermore, storage and transport costs are reduced. The various discoveries of the Fourth Industrial Revolution became coordinated and integrated thanks to techniques.

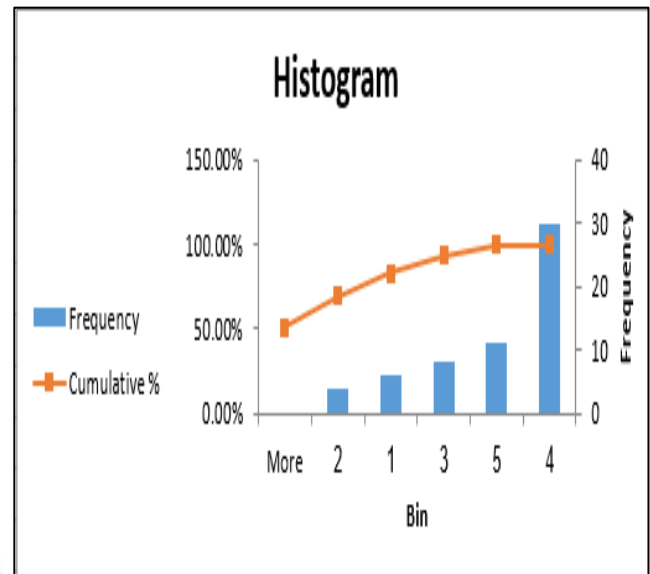


Figurer4 : Benefit of fourth industrial revolution in warehousing

5. Result Analysis

Initially I did a qualitative analysis of the performance of the techniques of the Fourth Industrial Revolution and its effect on storage. Where I can say that the techniques of the Fourth Industrial Revolution have a direct impact on warehouse performance and warehouse practices. Moreover, a qualitative and quantitative analysis was conducted to see the effect and others, but we must know the meaning of quantitative and qualitative analysis before that. [9] Qualitative data analysis is defined as a set of procedures and processes by which we can move to qualitative data collected through questionnaire questions to a form and interpretation by people and verify that the data is analyzed correctly. Also, in quantitative data analysis, [10] I must convert prime numbers to data by applying them in Microsoft Excel where the analysis includes some calculations of differences and frequency of variables as it is usually related to evidence that supports or rejects the

hypotheses formulated by the researcher in the early stages of the research. Therefore, Figure 5 shows the result that I did for the Excel quantitative analysis. Table 1 shows how the figure was extracted using two related questions to get this result.



Figurer5 : Histogram

	A	B	C	D	E	F
1	Bin	Frequency	Cumulative %	Bin	Frequency	Cumulative %
2	1	6	10.17%	4	30	50.85%
3	2	4	16.95%	5	11	69.49%
4	3	8	30.51%	3	8	83.05%
5	4	30	81.36%	1	6	93.22%
6	5	11	100.00%	2	4	100.00%
7	More	0	100.00%	More	0	100.00%

Table1 : Histogram Tables

Moreover, the results of the data analysis will help in improving work problems and the use of technologies in the organization, as the research presented a clear planning of information to help in collecting the data

required to perform storage in warehouses and provide good recommendations to improve storage methods and use the techniques of the fourth industrial revolution.

6. Conclusion and Future Research

The results of the research in this paperwork to discuss the application of the fourth revolution technology and its effect on warehousing performance. The paper discusses several points, including the beginnings of revolutions and the development of the fourth industrial revolution and its meaning as the research shows the extent of the information mentioned in the fourth industrial revolution section and also included some forms that may clarify what is required in a simple way, after that, the paper explores the advantages of the industrial revolution and the use of its technologies, what might lead. Moreover, how the industrial revolution helps in many areas and speeds up production in industrial organizations thanks to technologies. Therefore, the paper also included what are the processes of the fourth revolution techniques and their performance on warehousing where we knew that organizations need systems that help in speeding work and completing work without errors where they were he mentioned that the warehouse management system is the system that is used mostly after the development of technologies due to the speed of its work and the mastery of the system. Then it shows the benefits of applying the Fourth Industrial Revolution and its technologies to storage through production, transportation, devices and modern used machinery that are linked through systems that operate on a computer or phone screen to facilitate work and end work faster without delay. In the future, when I do research and as a researcher, I will initially do a study on the topic and the field of research to make sure of

the importance of the research and the results that I may get. Will it satisfy everyone and is a priority for a topic that facilitates obtaining information that is relevant to it. Moreover, I must make sure of many research requirements and identify the needs so that I can complete the research completely and in an excellent way to get better results in the conclusion. As a researcher, I have to study previous research related to the topic that I chose, where I must collect and analyze previous studies for the topic and then to communicate information that they did not deliver and to carry out research and develop it to achieve better results.

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