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A Research on Artificial Intelligence, Logistics analytics and Automation

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ABSTRACT

In today's situation, the whole world is fighting against the covid 19. In this situation, people are advice to follow certain curfews given by government. This lockdown and curfews created major loss in the business. Nowadays, the industry prefers the Automated Machine AM or robots for their production rather than the employees. So that it can reduce the number of workers in the industry and social-gatherings will be avoided and It will save the salary of employees. And while going with AM it will save time by producing huge number of products and it will also produce with the nil errors. In this covid situation, the logistics and Supply Chain Management SCM has been affected very much. Artificial intelligence AI is the developing field which helps the country to develop their nation's production. AM are helpful for packing and separating products according to their categories. Investment on AI will be high and it has high ability to sustain for long period. This paper is all about to analyze the Logistics Analytics LA, in that how an AI and AM is helpful for that production. And the impacts caused to the society.
Keywords : AI , SCM , LA , AM .

1. INTRODUCTION :

AI plays an important role in saving time, reducing costs, increasing productivity and accuracy with cognitive automation. It allows us to save time and money because it helps in automating various time-consuming processes and helps in demand forecasting. AI helps in logistics route optimization (Bullnheimer, B., Hartl, R.F., and Strauss, C., 1999), which helps in reducing the costs of shipping, which further aids in generating more profits. Computers using AI can gather, analyze information to make informed decisions within a matter of seconds and save time for humans. AI helps to completely

transform warehousing operations in the form of collecting and analyzing information or inventory processing. Robots are already being used widely for instance, inside warehouses to move, track and locate inventories (Ito, T. and Mousavi Jahan Abadi, S.M., 2002). Through AI, logistics players are able to leverage data platforms and create datasets to regulate patterns. To reduce the costs of shipping and make the shipping process itself faster, you can use AI to decide on the best routes. This is especially important in case you are a large e-commerce company with a lot of customers. They are always happy to get their orders as soon as possible, without any delays. And AI is what you need to analyze the existing routing, do the track route optimization. Therefore, you will be able to reach better results and bigger profits.

1.1 AIM OF THE RESEARCH :

The AI is not only about robots, however. The power of Big Data is allowing logistics companies to forecast highly accurate outlooks and optimize future performance better than ever before. The insights of Big Data, especially when generated by AI, can improve many facets of the supply chain like route optimization and supply chain transparency. This research is all about how the AI is helpful in LA.

1.2 NEED FOR RESEARCH :

Efficiency gains are difficult to measure as some companies generate their data from multiple points and multiple people. Such figures cannot be easily improved at the source, so algorithms are being used to analyze historical data, identify issues and improve data quality to the level where significant transparency on the business is gained.

1.3 OBJECTIVES :

- To evaluate the effect of an effective and efficient logistics system on timely customer response.
- To evaluate the impact of AI on production and data analysis

2. LITERATURE :

2.1. LOGISTICS ANALYTICS :

Logistics analysis has been viewed as an important element in the corporate strategy of many organizations. Logistics refers to a process that is associated with flow of information, goods, and services offered to suppliers and customers from the point of origin to the point of destination. It is commonly the complete process that starts from raw materials to the final disposal or sale of the finished goods. The modern day competitive environment has encouraged firms to reformulate their corporate strategies concerning SCM (Chan, F.T.S. and Chan, H.K., 2004). Global orientation is often favored by many firms for handing the complexities of relationships around the SCM when it comes to maintaining relationships(Baxter, N., Collings, D., and Adjali, I., 2003) with customers and suppliers from different geographic locations. There is an urgent need for striking a balance between the costs

of servicing customers with the need to generate customer value, and logistics analysis can help to define that balance point.

2.2. ARTIFICIAL INTELLIGENCE :

AI is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision.

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2.3. DATA ANALYSIS IN LOGISTICS :

In the field of logistics and warehousing (Frazelle, E.H., 2002), there is of course a lot of software that helps you with the optimal route, warehouse utilization and SCM. Especially in times of the Corona pandemic, it is important to have reliable supply chains. To monitor and optimize these supply chains and systems are needed. By making this data available, important KPIs (Key Performance Indicator) can be defined. Only through this internal business processes become visible and measurable. The various areas can be only optimized through this way— including material management, warehousing, transport, purchasing, etc. — and the supply chain be optimized.

How reliable is your supplier?

Reliability of Supplier = Number of goods delivered on time and in good condition / total goods.

Warehouse KPIs

Warehouse utilization = Occupied area / total area.

Inventory cost rate = inventory cost/inventory value.

3. RESEARCH METHODOLOGY :

Research methodology is the specific procedures or techniques used to identify, select, process, and analyze information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability.

3.1. Research Method and Design

The research method and design provide the framework that bound the research project. Quantitative studies focus mainly on providing an in-depth understanding of the central phenomenon while qualitative studies are focused on describing trends and explaining relationships between variables. Quantitative methodology is employed because it supports a deep, open-ended exploration of distribution practices and challenges in a bounded system, which is the distribution network of medicines in India. This research method is consistent with the purpose of the study, which focused

on understanding a phenomenon rather than measuring constructs. Therefore, Quantitative methodology is employed.

3.2. Research Method :

A qualitative study would not provide the depth of insight or details that are required to investigate the issue and is limited by narrowly defined variables. Therefore, quality research methodology was not selected. Mixed-methods research methodology is a combination of both qualitative and quantitative methods, typically using a pragmatic worldview, which includes multiple data types to understand the problem. A mixed method approach might have provided a further intense view into the research topic; however, the mixed method research approach was not most viable research option for this study given the additional complexity. The mixed method for research is not employed for this research. The quantitative research method incorporates open-ended questions that represent the basis for an in-depth exploration of the phenomenon. A quantitative approach provides a rich description of the activity taking place. The quantitative method is appropriate for studies that explore the specific phenomenon in a real setting that is not readily available using the qualitative method. Therefore, the quantitative research method was the most appropriate for this inquiry over other research methods.

3.3. Research Design :

The purpose of this quantitative study was to explore the usage of AI in the Logistics. The five major types of quantitative research design approaches include ethnography, grounded theory, phenomenology, content analysis, and case study. The case study research design approach was deemed most appropriate for this study. The use of a quantitative approach allowed me to collect data that are specific to a particular context to understand an issue, as recommended by several scholars. In the data collection process, the questionnaire represents one of the most important aspects of a quantitative case study.

3.4. Sampling :

The target population for this study was distribution managers, and the person managing the warehouse. The participants are identified based on their experience to ensure that their answers would help to respond the overarching research question posed in this study. Multiple types of sampling strategies and techniques are available to achieve the goals of quantitative research. Consequently, purposive sampling technique is used to gather participants for the study. A purposive sampling technique is a nonprobability sampling technique where the gathering of participants focuses mainly on individuals who could provide valuable insights regarding the phenomenon considered in the study. Purposive sampling requires researchers to select deliberate participants with an explicit purpose in mind, specifically to address the purpose of the research. However, it is critical to ensure that the sample size is not too small to achieve data saturation or too large that it is

difficult to conduct data analysis. The participants received an assurance that their privacy and confidentiality will be maintained all times. All data collected from participants will remain in a safe place and the data analyzed do not include their names.

3.5. Questionnaire :

1. pick tick your department
    - Strategic and finance
    - Engineering
    - Procurement
    - Sales/business development
    - supply chain/ logistics

2.Please tick the size of your business
    - up to 50 employees
    - up to 250 employees
    - up to 1000 employees
    - up to 5000 employees
    - up to 5000+ employees

3. Does your organization have a strategy to find an AI supplier?
    - Yes
    - No

4. How has AI impacted / influenced your business life?
    - ☐ not at all
    - ☐ not very much
    - ☐ neutral
    - ☐ a little bit
    - ☐ a lot

5.How much will AI change our industry in the next three years?
    - ☐ not at all
    - ☐ not very much
    - ☐ neutral
    - ☐ a little bit
    - ☐ a lot

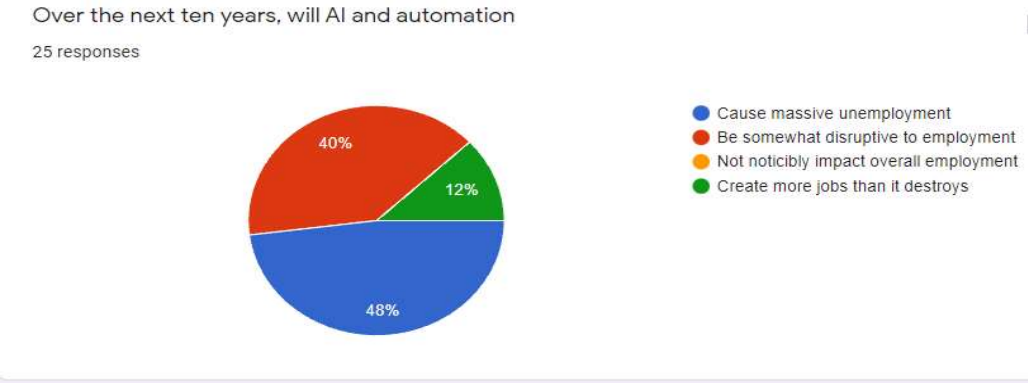
6. Over the next ten years, will AI and automation:
    - ☐ Cause massive unemployment
    - ☐ Be somewhat disruptive to employment

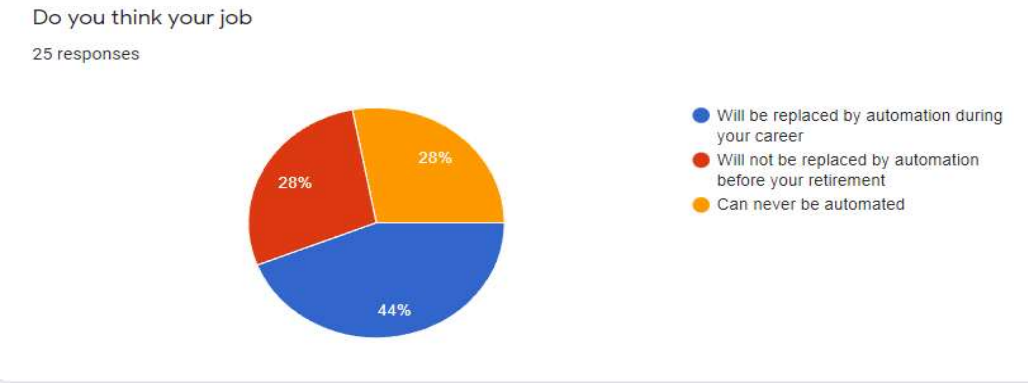
- ☐ Not noticibly impact overall employment
- ☐ Create more jobs than it destroys

7. Do you think your job:

- ☐ Will be replaced by automation during your career
- ☐ Will not be replaced by automation before your retirement
- ☐ Can never be automated

4. ANALYSIS AND INTERPRETATION





This is the questionnaire for the research methodology. This is the quantitative research method, this method is used to collect the data from the employees. Collected data from 25 people working in different industries. This will help us to analyze the data in the industry. This questions didn't collect any personal information for the safety of the employees. The question is "Over the next ten years, will AI and automation". This method gave some options so that they will provide answer according to it. The answer is displayed in the pie-chart. This pictorial representation provide the percentage of the members chose that option. This will helps us to provide the data needed.

5. CONCLUSION :

This research is all about the AI in LA. This research helps us to identify/analyze the data of the organization. AI will also helps the industry in the delivery of products, transportation and optimization of the routes so that it will reduce the time and cost of the production and delivery of the products.

From this research it came to know about the future of Logistics. This AI is developing in many countries for producing good products without any errors. This will also lead to unemployment. Came to know that AI is a boom to the industries but it will also reduce the number of employement.

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