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An empirical analysis of the growth of artificial intelligence in socio economic environment

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Abstract. Artificial Intelligence (AI) is very evident in our daily lives and our economy, and it has had an impact on our environment in various ways. The competition to reap its benefits is growing worldwide, and world leaders - the US and Asia - are already taking action. Many people see AI as a way to improve productivity and economic development. It can improve process efficiency and greatly improve decision-making processes by examining large amounts of data. It can also lead to the creation of new products, services, markets, and sectors, leading to increased customer demand and new sources of revenue. Some are concerned that it could lead to the development of large corporations - institutions of wealth and knowledge - that would hurt the entire economy. It has the potential to widen the gap between developed and developing countries, as well as to increase the need for highly skilled workers while firing others; the latest trends can have a profound effect on the labor market. Experts also worry that inequality could worsen, reduce wages, and lower the tax base. The aim of this study was to learn how artificial intelligence is used in today's economy and what society thinks about its use.

Keywords: Artificial Intelligence, Digital Transformation, Industry 4.0, Industrial Revolution, Social Economic Environment.

1. Introduction

In 2011, the Hannover Fair in Germany introduced the production philosophy of Industry 4.0 as a complex concept. This concept has garnered considerable popularity because of its methodology, which is based on a new manner of organizing work at the industrial level using new technology and represents the future fourth industrial revolution. As a result, the first industrial revolution was marked by the use of machinery and the use of steam engines. The second industrial revolution saw an increase in electricity production, and a third saw an increase in automated production using power systems and informatics. Industrial 4.0 is a digital transformation that makes independent decisions, divided between all cyber-physical systems in which each component communicates [1].Figure 1 depicts the number of artificial intelligence patents published from the duration 2000 to 2015. The graph also describes the % of shares in AI related patents by different countries. Traditional production technologies are more networked, interconnected, and smarter than are used in the current Industrial 4.0 vision of building a

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Smart Factory. Instead of traditional supply networks, Industrial 4.0 requires a global digital network of supply chains that can adapt to change consumer wants and requests, supply chain member actions, and market conditions [2]. Industrial 4.0 is a digital transformation that makes independent, separate decisions for people across all cyber-physical systems where each component communicates. Products and equipment speak for themselves, and information is transmitted through sensors connected to a global network, which is connected to the entire supply chain that ensures that specific customer needs are met. In the Future, production plans must include interaction, material production, separation, real-time power, and flexibility [3].

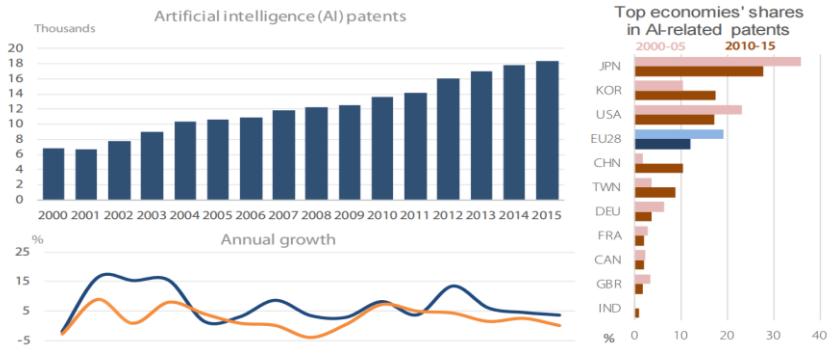

Figure 1. AI patents in socio economic growth
[Source: OECD, Science, Technology and Industry Scoreboard, 2017]

New opportunities for large-scale photography and sensors have frequently popped up, which may lead to new kinds of manufacturing and well-being. The gap between identifying vulnerable units and their actions is often a big component of the resource allocation dilemma – persons who are likely to die soon should not undergo hip replacement surgery, and rich people should not receive poverty help[4].In corporate applications, it is common to ignore these differences in order to determine risk; for example, as of 2017, Facebook's advertising promotion tool provided by advertisers optimizes consumer clicks but not because of the impact of advertising[5]. Because many doctors and engineers are not well trained in speculation, the problem is often not emphasized in marketing and interviews in the business world. With this detailed introduction, the aim of this study is to determine how artificial intelligence is applied to the existing economic system and what are the current predictions about the use of artificial intelligence technology in the future [6]. The following survey will also determine whether companies are using AI programs now and whether they plan to do so in the future. Choosing a research method that best illustrates the result is the first step in obtaining data. Following the identification of the research strategy, the design of the data collection and sample survey are the following steps to be taken in order to properly prepare the analysis / research results.

2. Research Methodology

The importance of choosing the right methods for collecting various data is important, as it can be important in determining what kind of information is needed. The process, strategies, and techniques used to obtain information to analyze and explain in order to obtain better knowledge of that situation are called research methods [7]. Quantitative, qualitative, and mixed research methods are the three basic types of research methods [8]. In this research, the quantitative research method is used. The result includes numerical data that can be measured or subdivided into statistical analysis. It encourages the study of habits or relationships, as well as similarities. This method of investigation is useful in finding the numbers. Experimental design and non-experimental design are the two main designs used in quantitative research. The test design distinguishes a guaranteed object in a controlled and uncontrolled environment and tracks the conditions in which the experiment is performed. In order to collect statistical data, the quantitative research method uses surveys / questionnaires with an objective format or test. These data collection systems can generate easily converted data into numbers. Open-ended

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queries, surveys, and interviews in the natural environment are some of the most widely used methods of data collection [9]. If research questions require event interpretation and textual data, a qualitative approach is preferred. If research questions require textual and numerical data, mixed methods are used. Because the purpose of this study is to find out how artificial intelligence is used in the existing economic system and when public speculation about AI is good or bad, a quality approach is preferred. Due to the limited research available and the fact that this is newly established, research is exploring and trying to understand the many uses and implications. The research topics of this study create the need for a sample of selected people for AI knowledge.

2.1. Data Collection

The purpose of the online survey was to see how intelligent technology influences the current economy and what people think about it. The first part of the survey contains closed-ended questions used to collect demographic data and learn about participants' backgrounds. Most surveys contain open-ended questions to capture as much information as possible about participants' experiences and opinions. Participants can submit their ideas in their own words when asked open questions. Due to the current rules of the COVID-19 epidemic, this survey was conducted with a relevant questionnaire instead of a personal interview. Closed survey questions attempt to determine respondent age, gender, current location, and higher education qualifications. Regardless of whether variability is required in the study, demographic data should be collected from quality research[10].For the survey to be most effective, it was important to have an audience that had been pre-tested in a particular field. Respondents are requested to provide a detailed description of their work experience, ideas about, and familiarity with the practical techniques used in answering these questions [11]. The first paragraph of the main part of the survey questions about participants' familiarity and their knowledge of the spy intelligence systems [12]. Participants were instructed at the beginning of the study to provide as much detail as possible to avoid over-responsive responses. A brief description is provided in the introduction to the study to help participants understand the study. To avoid fluctuating responses and ideas when translating, an online survey was written in English [13].

2.2. Sample Data

Research topics require a sample of people with a certain level of practical ingenuity. Because the goal of the study was to collect large amounts of data, participants in this study were required to complete secondary or higher education, are currently employed in the company, and have little or no knowledge of artificial intelligence technology. Respondents are handled in many ways once a sample of the population has been determined. The first step was to send an email in bulk to those who had contact information, which included about 20 participants. Second, follow-up messages and reminders of participants to complete a quality survey have been posted on social media platforms such as WhatsApp, Instagram, and Facebook. Another category of participants includes those who have already been hired and have worked for companies that have used AI technology. These people usually work from 9 a.m. to 5 p.m. and they are always looking for new and different innovations that follow. Instead of using statistical indicators, the judgment method / purpose of the sample allows for a complete sample of the population.

3. Experimental Analysis

The extended qualitative survey was completed by a total of 20 people. Figure 2 shows that 50 % of the participants are male and 50 % are female based on the data obtained. 'Prefer not to say' was not selected by any of the participants. Figure 2 depicts the total number of male and female participants in the full survey. In Figure 3, the age distribution of respondents displays that none of the participants choose the category ‘Prefer not to say’. 15% of the respondents are aged between 18-25, 25% are aged between 26-

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35, 40% are aged between 36-50 and 20% are aged 51 or above. Figure 3 also shows that a large majority of the participants are adults aged between 36-50.

Figure 2. Gender distribution of participants

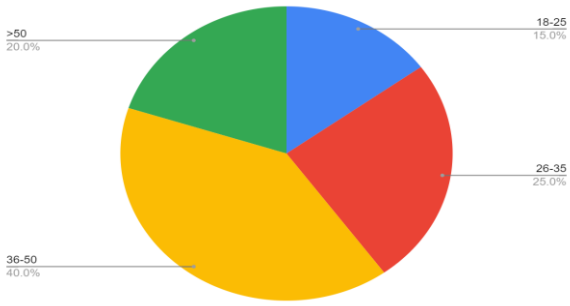

Figure 3. Age distribution of participants

Another criterion for the survey was the demographic component of the participants' present residence. Due to varying recognition of AI integrated devices in diverse areas, the present resident location was vital to mention. Another criterion was whether or not the person had some basic understanding of artificial intelligence. Because survey participants from countries with limited access to high-speed computers and smart phones would be unable to participate, this would be a vital feature of gathering useful data. As a result, people who were familiar with AI applications were more likely to stick with the survey and contribute to its completion. South India accounts for 58% of the population. North India accounts for 23%, Chennai accounts for 13%, and villages account for 6%.

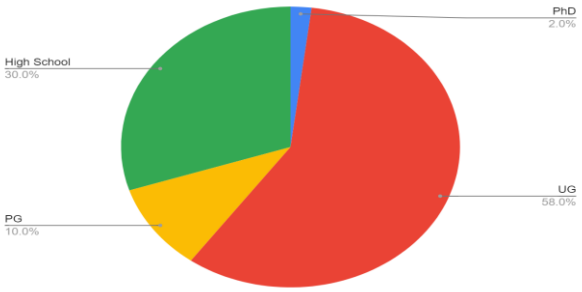

Figure 4. Educational achievement of participants

A minimum secondary education completion was one of the requirements for participation in the qualitative survey. Figure 4 shows that 2% participants have earned a doctorate and that more than half (58%) of the respondents have earned a bachelor's degree. 30% of the participants have completed high school and 10% have earned a master's degree. The survey in Table 1 is designed to determine whether participants have favorable or negative opinions about AI applications/technology in order to better contribute to the study's topic and analyze the research questions. After witnessing and experiencing the impact of artificial intelligence on the entire economy, participants developed unique perspectives on breakthrough technology.

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Table 1. Survey questions

No	Question
1	What are potential issues with AI becoming increasingly visible in our existing economy?
2	How might emerging AI grow efficiency in certain industries?
3	What about the negative opinions about AI technology?
4	What about the basic understanding of artificial intelligence?
5	Have often worked directly with artificial intelligence applications?
6	What about the working environment with AI usability?
7	What about the advancement of artificial intelligence technologies would disrupt the labor market?
8	Will artificial intelligence eliminate obsolete jobs?
9	What about the overall potential for its expansion to improve our economy's efficiency?
10	What about deep fake technologies?

One of the open-ended questions in the qualitative survey was, "What are potential issues with AI becoming increasingly visible in our existing economy?" The comments were consistent throughout the respondents. Many people believe that the advancement of artificial intelligence technologies would disrupt the labor market and reduce the demand for human capital. The majority of the respondents' responses are overwhelmingly unfavorable toward AI. The two most prominent topics that emerged from the comments were job replacement and job loss. A fear expressed by one individual was that artificial intelligence advancements could enhance and make deep fake technologies appear more legitimate, altering digital media and making it more difficult to distinguish between actual and fake material. Another attendee stated that some job replacements have already started. While reviewing the substance of the qualitative survey, several of the respondents expressed a more favorable view of AI increasing economic efficiency. According to one of the respondents, "Artificial intelligence will eliminate obsolete jobs while also creating new opportunities in the future." This statement admits that, as indicated in the studies above, there is no consensus on whether AI will create or eliminate jobs in the future. It is widely acknowledged that new employment will be created that will necessitate a wide range of skills and training, but this was not a major concern. Overall, the replies revealed a mix of negative (20%) and positive (80%) attitudes toward AI implementation. Despite the fact that artificial intelligence technology is still evolving, just a tiny percentage of the participants identified the overall potential for its expansion to improve our economy's efficiency.

4. Conclusion

The high amount of AI usage in the existing economic system is a major conclusion that can be made. Another finding of this study showed that advanced technology applied in organizations with initiative training had lower fear of replacement, and individuals who were concerned about artificial intelligence possibly replacing jobs had less involvement with AI in their workplace. The literature study has been

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bolstered by the data acquired from the qualitative survey, which included topics such as utilizing AI in the current economy and perceiving AI implementations. Participants encountered and witnessed the reinforcement of AI functions in some corporate procedures, as evidenced by the literature analysis and survey. The results on participants' fears of being replaced were also expected given AI's rapid expansion. The survey confirmed what had already been suspected: those individuals were worried about the forthcoming changes. As technology continues to transform the job market, new employees will need various skill sets and training in order to adapt to AI-enabled applications. People have already seen and experienced AI in a variety of businesses, and it is only a matter of time before AI expands its capabilities.

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