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EMERGING MARKET ECONOMY (EME) AND ARTIFICIAL INTELLIGENCE (AI): CONSEQUENCES FOR THE FUTURE OF JOBS

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Abstract

The need to properly endorse labor market reforms in order to ensure a proper transfer to jobs that gives workers a comparative advantage, to improve assurances and guarantees of equitable rights in order to promote competition and to steer those businesses toward market domination, the use of budgetary interventions such as tax and social security to avoid the impact of the existing transformation The recent surge of equipment and technical improvements arising from the advent of AI has created widespread fears regarding work losses. Fears regarding the expected and possible difference in disparities are further amplified. This study tried, for this purpose, to explore the EME of artificial intelligence and its consequences for the future of job. In order to evaluate the targets, quantitative and qualitative methods were introduced. Present research shows that it cannot be inferred if the advent of AI-based applications would contribute to widespread work reductions or inequalities. AI's influence depends on its sector of application, creativity and technology. In addition, the report confirmed a favorable association between the usage of artificial intelligence with work improvement, efficiency, sales and job loss increases.

1. Introduction

At the center of global economies are existence of complex decisions. Most times, these decisions are made under uncertainties. For instance; consumers seek to understand which product or service to purchase, the manager aims to run and keep operations in the factory efficiently while employees need to make the right career decisions. Not until the emergence of artificial intelligence, the natural intelligence seemed too well equipped to handle ranges of decision such as those mentioned. Now, artificial intelligence plays a major role in global workplace and economy and its impacts are already manifest in many different ways. There is a global competition to enjoy its benefits, and global leaders – the Asia and US are notable on the scene. To many, AI is the engine of EME growth and productivity. It can surge the efficiency of operation and greatly enhance the decision-making process by accessing and evaluating large data sets. It can lead to increase customer demand, produce additional income streams and create of new services and products, industries and markets and industries

Like the case of computer which improved decision-making process heralding a number of changes for the executives, white-collar jobs, and professional, machines and artificial intelligence has even momentous implications (OECD, 2017). Natural language processing, machine translation figure, speech and image recognition are some vital areas of knowledge surrounding AI. Other areas are; automatic text generation including as the processing journalistic pieces, machine generated customer assistants and company statements. More complex applications include; medical pundits assisted machines to evaluate and diagnose diseases, machine reviewed contracts for litigation, all sorts of self-driven vehicles and identification of patterns in the stock algorithms for efficient trading. Also, with the emergence of computers composing of paintings to musical programs, the proliferation of applications has also been noticed in the art.

Apparently, the common concern toward all these applications is that they undertake specific human capacities associated to speech, sentiment recognition, visual perception, and decision-making. This means that AI is gradually phasing out physical task while instituting mental ones. This unexpected emergence of applications in artificial intelligence has generated the feeling of largely increasing technological variations that is deemed to alter labor markets in yet unimaginable magnitude (Ernst, 2018). Analyst alerts that the emergence in artificial intelligence in the next few decades would lead to significant losses in job or job polarization. This will cause wealth and income disparities (Korinek & Stiglitz, 2017; Méda, 2016).

The Bank of America Merrill Lynch in 2015 reported the potential surge in inequality consequence upon automation. The study by Frey & Osborne (2017) referenced the study by Oxford University which documented that about 45 percent of work in the United State and 35 percent of all task in the United Kingdom stood the risk of being dislodged by machines win a period of 20 years.

In a related study by world bank (2016), many jobs stand the risk of being lost to machines in developing nations. World bank (2016) posted that about 69 per cent of jobs would be lost to machines68 in India; 77 per cent in China, Thailand will lose 72 per cent while Ethiopia will lose as high as 85 per cent. Other studies with almost similar conclusions include (Donepudi, 2017). Nevertheless, a common focus of these previous studies showed the potential destruction to jobs and seem to lack in the actual estimates of job destruction and the net replacement that would be ideal to evaluate the challenge of machine from the angle of policy. Furthermore, it is not clear the extent of conclusions to be made from the numerous available studies on artificial intelligence. Therefore, this position paper seeks to breach this knowledge lacuna to achieve a better knowledge of the social and economic implications of artificial intelligence. This study then possesses the following questions. Does the present day digital transformation seek to augment the labor market or create a destruction? What are the potential implications for job inequality and productivity in the face of the current AI applications? In other words, should a fast paced earnings and productivity be expected or should we be weary of technological rents which are consequence of AI. To answer this questions, the study sets the following objectives. To answer the research questions, this study outlines the following objectives which include to:

1. Understand the extent of job re-composition consequence of Artificial Intelligence (AI).
2. Identify EME and social implications of large-scale applications of AI.

2. The Concept of Artificial Intelligence and Specific Characteristics

John McCarthy, is the notable name behind Artificial Intelligence. John McCarthy began the research on the AI in 1955 and assumed that individual element of learning and other intelligence domains can be precisely defined and simulated by automation. Artificial intelligence refers to work processes of automation that would need intelligence as if performed by human being. The term artificial intelligence implies investigating intelligent problem-solving behavior and developing intelligent computer programs. Basically, there are two types of artificial intelligence: The Weak artificial intelligence: Here the computer is just an apparatus for investigating cognitive processes. Here intelligence is simulated by the computer The second is Strong artificial intelligence: In the strong artificial intelligence, the computer processes are self-learning and intellectual processes. With the appropriate software and programming, computer understand and optimize its behavior including automatic networking causing scaling effects.

When work places automate operations, job expansion is affected in three channels (Donepudi, 2018; Vivarelli, 2014). Firstly, the new technologies cause a direct substitution of tasks presently carried out by workers otherwise termed the displacement effect. The second is known as the complementary effect. Here an increase in jobs which are necessary to run, use, and supervise the novel

machines. This is otherwise called the skill-complementarity effect while the third, is a demand effect which comes both from lower prices and general surge in income consequence to higher productivity known as the productivity effect (Semmler & Chen, 2017), The assumption follows that when jobs are being substituted by automation, the whole jobs disappear completely. Secondly, skilled labor supply is inelastic therefore, in the event of a change in a skilled-biased labor demand consequence of the introduction of technology, increase unemployment and unfavorable working conditions is the outcome (Autor et al., 2006; ILO, 2015). Finally, the surge in demand which is as a result of higher productivity is expected to be uniformed across industries, despite the extent of automation. However, sectors with higher automation will witness a relative decrease in demand and so produce less employment opportunities in comparative to those that do enjoy automation. This will cause increase income inequality and job polarization (Bessen, 2016).

The growth of artificial intelligence has derived its roots from three associated trends: the presence of numerous databases, the accuracy of computing power and the increase in venture capital to finance new, technological and scientific projects. These have encouraged the fast development of novel applications in specializations where humans were considered to have a specific advantage: making predictions and implementing decisions with rewards regular yet manual tasks. Basically, these types of jobs were primarily seen in the services sectors, that employed – even in developing nations – more than 50 percent and in most cases, over 70 per cent of the labor force. Three (3) primary groups of jobs have become the focal point of AI programming. They include:

Matching Tasks: The most notable group of jobs concern all those task that focuses in matching demands and supply, particularly on markets having a heterogeneous services and products structure. Be it ride-hailing services such as Uber, Didi Xiuching, Lyft; hospitality or hotel services such as AirBnB, or Ebookers; retail such as Amazon), or even human resource management including LinkedIn and many others, machines have shown that they can be significantly faster, more reliable and efficient in identifying and sourcing matches in these markets. Consequently, it has assisted companies in saving cost on a number of operations including finding suppliers or customers and offering less costly but efficient outcome to their ever surging customer base but at the cost of poor working conditions to their employees and suppliers. Berg et al., (2018) mentioned that in the gig economy to be specific, there is an increase demand for micro-tasks. Oftentimes, the working conditions are below the national minimum thresholds. More so, there are concerns of privacy rights of the employees which are not or adequately protected, hence allowing employers the strong position to take worker's working conditions and rights for granted (De Stefano, 2018).

Classification Tasks: Initial use of artificial intelligence focused on text and image recognition methods, more particularly facial recognition. For instance;

the increase use of surveillance cameras and techniques. At the moment, however, an outburst and use of this applications have been witnessed in this angle, including in medical use such as X-ray image diagnosing, legal services in reading and grouping legal documents; auditing and accounting for fraud detection and the evaluation of balance sheets; in recruitment for screening of applicants. This has potentially threatened the specialization of a large number of paid workers particularly those engaged in the services industry. Yet it also shows bright signs towards enhancing significantly the productivity of the many workers in the service industries and in others as well: The generation of automatic text enables journalists and editors to focus on those principal, high-valued articles which attract and command a large following to their employers. In same view, automatized study designs assist scientists to pay attention on areas that shows promising signs of their experiments (for example in the development and advancement of new drug while supporting the computer to crop off all those research areas with high probability of failure (Cockburn et al., 2019). The democratization of pundit's knowledge which the emergence of AI applications comes with, however, possess inherent risk of expert abuse and deskilling. For example, the subject of facial recognition has currently cause industry stakeholders to seek a proper regulation of these system.

Process-Management Tasks: The final set of usage is the combination of the first two sets of tasks, identifying patterns and bringing various customers and suppliers together in the supply chain (Culey, 2012). This kind of highly interrelated network management is also notable the electric grids management and other complex infrastructures including building projects, and maintenance of finished projects. It is also employed to produce multi-modal transportation solutions to arrest inner-city traffic. Fujii & Managi (2018) opines that AI-based innovations comes with a new group of tasks which either cannot be adequately handled by humans because of their complex nature or have been too costly to be carried out by human workers,

3. The EME and Social Implications of Large-scale Applications of AI

The large-scale use of AI may yet produce extreme social and EME implications, notwithstanding of whether these uses are complementary, substitutes, or extensions of the available tasks. AI seeks to provide solutions to economic challenges. Not only does it hope to allow a more improved services and product diversification than what has been seen in recent times, but to provide a finer price margin on products than what the present market offers. Such price margin is, however, a two-edged sword, as the advantage it might give have to be juxtaposed against the limitations it carries. Nevertheless, it is certain that AI assist to reduce matching frictions. Despite its job substitution attribute, it also results to more opportunities for market and exchange. Finally, AI systems in their very attribute is an embodiment of technological change, and connotes implications for the market and skilled workforce.

3.1 Effect on Firms

First, digital system that do not have rivalry in the usage of their services and products often offer cumulative advantages to stakeholders and players who enter such market first. The moment the fixed costs for the creation of a novel digital product have been reached, a zero marginal cost having economies of scale bigger than previous waves of technological change is then operated, and (O'Neill, 2014). This will see the rise of super-star firms whereby, a few firms dominate, highly profitable position, and then potentially impedes competitive pressure by erecting entry barriers (Rahman et al., 2020; Autor et al., 2006). The second movers will work hard to access the market or concentrate on a little market segment with little opportunities for profit, hence, a great inequality is produced between individual firms. Korinek and Ng (2017) also confirmed this notion by affirming that technological changes as transformed many sector into super stars and has made just a small number of entrepreneur or experts control the demand of the wider market. This result to massive rewards, a wider gap with the other parts of the economy and a reducing share of income to labor (Autor et al., 2006).

3.2 Effect on Customers

AI-based systems create room for discrimination between various customer groups through segmentation of market and price differential. AI enables firms to forecast the behavior of the customers and how sensitive they are to price. For instance, based on the search patterns of previous consumer or as shown by the transactions from credit cards, individual prices can be charged by suppliers or predict individualized price for a service offered. In this way, firms get much larger surplus that what it had in the past. Though not much studies have been carried out on such price discrimination yet, a few studies give insight thereby enabling conclusion on the subject (Tirole, 1988; Gifford & Kudrle, 2010). This type of discrimination allows firms to offer same services and product to various customers but at varying price based on the relative willingness of the buyer to purchase. For instance; based on countries consumers trading characteristics, internationally traded goods have different prices for different countries.

3.3 Effects on Employee

In more recent developments, AI have been applied to human resource management as well. Apparently, this is what is now known as HR analytics. HR analytics aims precisely at a kind of price discrimination which attract employees to a company. These workers are differentiated between categories according to working conditions, fringe, wages, responsibilities or benefits. This kind of discrimination of working conditions has stirred concerns among Researchers. They belief that the discrimination is consequence from the fact that wages had been reserved wages for different class of people with similar jobseekers in the past. And these previous discriminations which were observed in the labor market leads to current discrimination. Those considered as ethnic minorities, the women may be disposed to accepting lower wage that is offered to them because they had been victims of entry barriers in the past. A recruitment system that is automated analyses this historic data and reinforce this kind of

bias, therefore allowing the continuation of employee discrimination (Ponce Del Castillo, 2018). Therefore, while it is believed that price discrimination would allow job expansions, it is not ideal in situations where there are variations in the readiness to pay, or accept job offers is dependent on previous discriminatory practices. Despite this, there is still a growing support for algorithmic decision-makers other than humans. According to Logg et al., (2018), though algorithms arrive with some level of biases, it is still considered less harmful comparable to what is perpetrated by the humans.

3.4 Effect on the Economy

The economy-wide application of AI bothers on fact that technological innovations which are based in the principles of AI are embedded in novel and most times cheap equipment, which are accessible to a wide range of consumers. Owing to Its digital nature and more so on the idea that a lot of AI-based expert systems can be operated from available smart devices such as mobile phone, there has been significant increase in its diffusion both in developing and emerging countries. The decrease in capital prices that is heightened by AI more certain than not would assist in boosting productivity particular in nations and regions that do not have enough funds or possess other barriers that would inhabit the diffusion of available technologies. For instance, systems are being developed by experts to assist farmers derive advance information on what and when to see so as to derive improve yields.

Presently, more than one-third of all employees worldwide are in the agricultural sector, such productivity surges the promise to change significantly the potential opportunities and income available to low-income countries. Finally, the implementation and delivery of policies depends primarily on precise and timely information about areas which requires intervention. Policy-makers have been assisted by AI based expert systems particularly in countries that have little fiscal resources, to better manage information and coordinate responses and interventions among sectors.

4. Methodology

4.1 Sources of Data

The primary sources of data are the questionnaire secondary and primary research. The different literature with regards the AI in relation to the future of works is gathered from the secondary source of data while the primary source is basically the questionnaire survey sent to respondents. The survey questionnaire used in this study consist of three sections. A reflects the social status of the respondents and this consist of their nationality, sex, age. Section B elicits responses on characteristics of Artificial. Questions on the extent of job re-composition and consequence of Artificial Intelligence (AI) is done in section C while EME and social implications of large-scale applications of AI is done in D. Most responses followed a 5 point Likert scale (strongly agreed, agreed,

neutral, disagree and strongly disagree. The statements are modified to fit the context of the current study on AI. All questionnaire was served online to participants.

4.2 Research Participants

The current research seeks to understand the EME of artificial intelligence and its implications for the Future of Work. A properly drafted research instrument was sent out on various platforms including WhatsApp, Instagram, Facebook and Twitter. A vast majority of people were then reached within a small time frame. Though many couldn't take part, the information from the available responses were enough to make conclusion. On these platforms, the participants were reached, their permission sought and served the questions upon their acceptance to take part in the survey. To make conclusions, about 100 participants were used.

4.3 Data Analysis

The study used a mixed-methods approach which comprise both the qualitative and the quantitative techniques to meet its objectives. Some of the descriptive statistics that is used in this research include; frequency, mean, and proportions. The inferential statistic which is used in this study is the correlation analysis. The data which were collected was analyzed with SPSS software as follows; For Objective one: to understand the extent of job re-composition consequence of Artificial Intelligence (AI), the qualitative method of estimation was used. Here, information is gathered mainly from the public domain. This is mainly the secondary type of analysis the while objective. Objective two "identify EME and social implications of large-scale applications of AI" was analyzed using correlation analysis.

Table 1: Profile of the respondents

Variables	**Frequency**	**Percentage (%)**
Gender		
Male	39	39
Female	61	61
Total	**100**	**100.0**
Age		
Less than 24 years	16	16
Between 24 and 39 years	13	13
Between 40 and 55 years	61	61
Over 55 years	10	10
Total	**100**	**100.0**
Education level		
Primary	10	10
High school	23	9
College	60	60

Others	7	7
Total	**100**	**100.0**

Source; Authors computation using SPSS, 2020

The table 1 above shows the distribution of the sampled respondents by ***Sex***, age and Origin of respondents. Over 100 respondents took part in the survey. About 61% of the respondent which counted about 61 was females while about 39 respondents representing 39% were males. For the distribution by Age, the result showed that out of 100 respondents sampled, the age distribution was as follows: 16 of the respondents representing 16% were less than 24 years. About 13 of them representing 13% had their ages between 24 and 39. The number of respondents who are between 40 and 55 years is 61 representing 61% of the respondent while 10(10%) were above 55 years old. In terms of educational background, 10(10%) of the respondent have acquired basic education. 23(23%) acquired the high school certificate and the majority have acquired a college degree.

5. Result of Analysis

The respondents were sampled by firm type, and Origin of respondents. Over 100 respondents took part in the survey. About 63% of the respondent which counted about 63 are from private establishments while about 37 respondents representing 37% are from the public establishments. According to origin of the respondents, the distribution is as follows; 49 (49%) are from Asia. Americans are 9(9%), Europeans are 28(28%), while those from other region are 14(14%). Evidently, the survey has a proper representation of both gender, all ages and are well educated. Also there is a fair representation of people from all regions of the world and from both the public and private sector.

Table 2: EME and social implications of applications of AI

	1	**2**	**3**	**4**	**5**
AI use	1				
Job Improvement	0.56	1			
Revenue	0.45*	.340**	1		
Job Loss	.317**	.658**	.358**	1	
Productivity	.860**	-0.10	-0.073	0.089	1

Source: Authors computation using SPSS, 2020

The table shows result of correlation analysis describing the relationship between Artificial use with four variables namely Job improvement, revenue, job loss and productivity. From the output above, there is a positive correlation between the application of AI application with all variables. Job Improvement (n= 100, r = 0.56, p >0.05), for revenue, it is (n= 100, r = 0.45, p <0.10), Job loss (n= 100, r = 0.31, p <0.05) and (n= 100, r = 0.86, p <0.05) for productivity. This result implies that increase application of Artificial intelligence, increases revenue base, productivity and also cause job losses. This result confirms earlier reports by Ponce Del Castillo (2018), Logg et al., (2018), Mazzucato (2013).

Extent of job re-composition consequence of Artificial Intelligence (AI)

Based on literature, Mazzucato (2013) opines that the task-based effects of applications of AI can be grouped as (a) task-substitution; (b) task complementarity; and (c) task expansion. AI has taken over the available task in a more efficient manner through the use of algorithms to properly match suppliers with consumers. This is substitution effects. In the area of task classification, AI based machines assist staffs in such specialty to focus more on those that demand particular attention while setting aside the regular and repetitive assignments to computer. This is a complementary effect. For process management task methods, AI based applications often perform tasks in which human workforce was not available to handle, particularly owing to the complex nature of the tasks; For this reason, it is not possible to conclude whether the emergence and development of AI-based applications will cause to widespread job losses or cause an increase in inequality. The effects of AI are dependent on its area of usage. However, the extent to which AI will re-compose tasks will in parts depend on innovations and technology as well as the policies which are instrument of desired social progress.

6. Conclusion and Recommendation

Following the identification of the characteristically effects of IA, the task-based effects of applications of AI can be grouped as (a) task-substitution; (b) task complementarity; and (c) task expansion. In the subject of matching applications, AI has taken over the available task in a more efficient manner through the use of algorithms to properly match suppliers with consumers. This is substitution effects. In the area of task classification, AI based machines assist staffs in such specialty to focus more on those that demand particular attention while setting aside the regular and repetitive assignments to computer. This is a complementary effect. For process management task methods, AI based applications often perform tasks in which human workforce was not available to handle, particularly owing to the complex nature of the tasks; For this reason, it is not possible to conclude whether the emergence and development of AI-based applications will cause to widespread job losses or cause an increase in inequality. The effects of AI are dependent on its area of usage. Conclusively,

the extent to which AI will re-compose tasks will in parts depend on innovations and technology as well as the policies which are instrument of desired social progress.

Artificial intelligence plays a major role in global workplace and emerging economy and its impacts are already manifest in many different ways. There is a global competition to enjoy its benefits, and global leaders – the Asia and US notable on the scene. To many, AI is the engine of economic growth and productivity. It can surge the efficiency of operation and greatly enhance the decision-making process by accessing and evaluating large data sets. It can lead to increase customer demand, produce additional income streams and create of new services and products, industries and markets and industries. Be it as it may, there is also the fear of its disruptive effect on the society. Scholars believe it may produce super firms, a significant gap between the developed and emerging economies and increase the demand for workers with certain skills while retrenching others. The latter consequence possesses far blow to the labor market. Researchers also alerts that it can increase inequality and deepens wages, tax base and cause price discrimination. While these fears remain a fact, there is no unanimous agreement on the extent in which these risks will materialize.

Consequently, this study sought to understand the EME of artificial intelligence and implications for the future of work. Based on available information, it is not possible to conclude whether the emergence and development of AI-based applications will cause a widespread job losses or cause an increase in inequality. The effects of AI are dependent on its area of usage. However, the extent to which AI will re-compose tasks will in parts depend on innovations and technology as well as the policies which are instrument of desired social progress. This study also confirmed previous findings which showed a positive relationship between application of Artificial intelligence with job improvement, productivity, increase revenue and job losses. Following this result, the following are some policy propositions

First, there is the need to support the adjustment of the labor market adequately to transit to tasks and jobs in which employees continue to derive comparative advantage, even as the utilize these novel technologies. Secondly, all firms should be guaranteed and assured of equal or level playing field by fostering competitiveness and guarding against market dominance by some firms. Third, tax and social protection should be reinforced to forestall both the effect of current transformation in the labor market, world of work and income equalities. Finally, international cooperation and social discussions should be enhanced to advance shared technological values among countries.

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