PalArch's Journal of Archaeology of Egypt / Egyptology

IMPACT OF ARTIFICIAL INTELLIGENCE AND AUTOMATION TECHNOLOGIES ON FINANCIAL MANAGEMENT

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Alim Al Ayub Ahmed, ABM Asadullah, Md. ShakawatHossain:Impact of Artificial Intelligence and Automation Technologies on Financial Management-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 18(1). ISSN 1567-214x

Keywords: Artificial intelligence, Financial Management, Automation, Paired Sample T- test

ABSTRACT

Is it possible that artificial intelligence, work place robots and automation could be a serious threat to work? Automation and artificial intelligence are beginning to enter many places of work and are getting involved in a number of financial task. With the understanding on the role that financial management has in the lives of many, becoming redundant consequent of application of machine in workplace may imply a threat to having a meaningful life. It becomes even more devastating when re-assigned roles no longer seem interesting or meaningful consequent on the emergence of robotics and artificial intelligence. The current therefore sought to provide direction on the subject. It investigated the variations that artificial intelligence and automation has on financial management. To do this, the study sampled about 120 respondents working in public and private firms and adopted the Paired Sample T-test to measure the influence of artificial intelligence and automation on financial management. It sought to answer the question; is there a significant increase in financial tasks output of AI and automation based financial task". The evaluation was done with the scores of financial tasks output compared at two periods; "before automation" and "after

automation". There was a significant increase in the financial tasks output scores from (M = 7.793, SD = 1.2567) before automation to (M = 16.7, SD = 1.60) after automation; t (120) = -50.940, p< 0.05 (two –tailed). Conclusively, AI and automation has a positive influence on financial management. New technologies will complement rather than substitute humans. Therefore, as recommendation, there is the need for professionals in society to gain some form of information technology skills to maximize the benefits from the use of AI and automation.

Introduction

Tim Reek is one of the numerous employees whose routine work- in his case arranging and piling plastic in his company- has been given out to a robot. Luckily for Tim, this did not imply that he had to look elsewhere for another job. Rather, he currently supervises the robotic arms as it piles up the bins, ensuring that everything moves smoothly, and arresting situations where necessary. He found his former job boring and physically exhausting. His new jobs, for which Tim got extra training, are non-routine and mentally exercising (Wingfield 2017). In his new assignment, Tim has much higher responsibility, and he discharges her capabilities for comprehension and decision-making to a greater extent. His new assignment and how he handles them now makes all the difference to the running of the warehouse than it was before. It looks as though Tim's job has is now given more meaning since the introduction of robots to work side by side with him.

At the same time, it is possible, however, that workplace robots could be a serious threat to work. For instance; the introduction of self-driving metros saw the task of metro drivers in Paris given in parts to the robots. A few fortunate metro drivers were given optional roles as managers while some others lost their jobs (Donepudi, 2018b). The new responsibility re-assigned to the fortunate ones were non-repetitive, non-exciting, and non-stimulating. However, a survey carried on metro drivers turned managers showed that they felt deprived of meaningful duty. Rather than take full responsibility of their work, they only responded in situation of emergency. Moreover, that they were not directly responsible for the safety of travelers anymore implied that the metro drivers certainly felt a loss of duty in their new assignments (Donepudi,2018a). This shows that work can also loss its meaning post robots introduction.

Robots and artificial intelligence are beginning to enter many places of work: ranging from the order-receiving robots in the warehouses to the delivery robots even in the university campuses to the bomb diffusing types working together in teams of soldiers (Royakkers and van Est 2015). Consequently, there is the need to reflect and rethink its implications, the ways and manner to make work meaningful now and in the future. The discussions so far by studies, scientist and philosophers' center on the threats which robotics in various work situation holds. For instance; the loss of dignity, regards to care robots and the duty gaps of the military robots (Sparrow, 2007; Sharkey 2014). With regards to work as a whole, the concern has only been on technological orchestrated unemployment consequent on the replacement of humans by robots and artificial intelligence (Brynjolfsson and McAfee 2016; Ford 2016). With the

understanding on the role that work has in the lives of many, becoming redundant may imply a threat to having a meaningful life (Danaher 2017). It becomes even more devastating when re-assigned roles no longer seem interesting or meaningful consequent on the emergence of robotics and artificial intelligence.

Artificial Intelligence and robotics led advancements are an undeniable in this present era. In many industries, artificial intelligence and robotics carry out many of human responsibilities. They are quicker, efficient, precise, and effective. Moreover, they allow and support the exploration of dangerous and hazardous sites including depths of space and the ocean – the areas where people cannot seem to reach because of the physical limitations. However, with the emergence of rapid application and progress recorded so far, there have been increased concerns among the workforce in all specialties regarding terms of the potential risk and the dangers to their employment. There is a basic fact which predicts that about one-third of current jobs will be taken up by robots in 2025 (Frey & Osborne, 2013; Lynch, 2015). Few questions become necessary at this moment. What are the impacts of robotics and artificial intelligence emergence on work? Will there be an increase in the ratio of jobless individuals? In other to answer this question, this study documents its objective below;

Objective of the study

The current study explores AI and robotics in details, its overall objective is to:

1. To investigate the variations that artificial intelligence, robotics and automation has on Financial Management.
2. To examine the impact of artificial intelligence, robotics and automation on work.

Hypothesis

The working hypothesis for this study is as scheduled;

H0; There is no significant increase in work output of AI, robotics and automation based financial task

Ha; There is a significant increase in work output of AI, robotics and automation based financial task

Technology substitute the jobs and not the work (Bowen 1966). Not all business and firms reason in this way. The perception or concern about the subject is often the potential risk of robotics, artificial artificial intelligence (AI), automation, internet of things, and technology and their ability to substitute basic jobs or generate new ones which vary from sector to sector (Ivanov, 2017). Generally, the notion is that technology will affect a lot of jobs and render many people jobless, as computers are becoming smarter, more sophisticated and more creative (West, 2015). There is an increasing need for low costs of business, rapid production, and consistent output. Firms are also particular about quality of the supply chains. For this reason, there is an increasing dependency on artificial intelligence, robotics,

automation and technologies (Webster and Ivanov, 2019). The implementation of technologies began in the manufacturing sector and later spread to the different sectors and the economy (Donepudi, 2018b).

At the present, in comparison with manual employee and the less educated ones, the pool of workers that are less fearful of robotics, artificial intelligence and technologies in the place of work are the managers, professionals, and literate individuals. However, researchers forecast that there will be an impact on jobs and roles in the near future (Dekker et al., 2017). A study of this nature is therefore important as reference manual, and policy. The study proceeds as follows. Having introduced the key in section one (1), section two (2) proceeds with the empirical and philosophical literature. In section three (3), the methods used to arrive at a conclusion is done. In section four (4), the result of analysis and discussion is done while section five (5) documents the conclusion and policy propositions.

Literature Review

Concept of Artificial Intelligence (AI), Robotics and Automation

Researchers have acknowledged that it is not easy to describe artificial intelligence (AI) (DeCanio, 2016). Burkhard (2013) opines that there are no general definitions for natural intelligence because a machine may be good in a particular financial task but is lacking in the other. For instance; a machine may adopt a range of languages for translating text, but translation quality may be lower than what human would have translated. More so, machines do not comprehend the meaning of the words that they translate; they apply statistical calculations to tell the most probable alternative word. For this reason, a distinction can be made between weak Artificial Intelligence and strong Artificial Intelligence.

Strong Artificial Intelligence (AI) is use to describe a system that possess superhuman intelligence which at the moment is yet to be actualized. Weak Artificial Intelligence is used to describe Artificial Intelligence that can do specific assignment which needs single human capabilities including visual identification or reasoning under probability. In this type of financial tasks, Artificial Intelligence can out do human capabilities. However, AIs are lacking in making ethical decisions, or managing social events. Weak AI is used to describe the ability to do those particular financial tasks that humans handle rather than replicating the manner humans actually reason (Hengstler et al., 2016). Irrespective these complexities, there are varied definitions for Artificial Intelligence. AI is described as the building of computers in ways that they think like man (Dilsizian and Siegel, 2014).

Based on cognitive aspect, Decanio (2016) describe AI as a range of scientific application that surpass human abilities, specifically of cognition. Niu et al. (2016) opines that AI seek to create machines that are intelligent and behave like human. These descriptions outline the role of AI in mimicking human thoughts and behaviors. and thought. Robots Service robots describes robots that assists human to do physical task including sorting, scrubbing, packaging instruments, and cleaning, assisting the old pour a liquid, serving as an office assistance or as a waitress in a restaurant

(Wang et al 2013;Yu et al 2012; Donepudi,2016; Xu et al 2013). The objectives of these robots include the provision of assistance to humans to do these financial tasks but without being supervised. Instead of a physical robot, process automation are software programmes that are configured to do the work which previously were done by humans. Here, information is taken into many electronic data inputs, where they are processed guidance or specific rules, and then the output is entered. These types are fitted in enterprise or customer relationship system (Willcocks et al., 2015). Arntz et al. (2016) and Balfe et al. (2015) have mentioned that automation as machine performed financial tasks other than human operators mostly to surge efficiency and decrease variability'. According to Parasuraman et al. (2000) automation takes effect in various levels and for various reasons, including information acquisition, analysis of information, selection and decision and for the implementation of actions. Depending on the category, automation level may be high or low.

Work-related Outcomes from the use of AI, Robotics and Automation

Many of the studies that examines the work-related consequences of new technologies has been carried out in the transport and healthcare sectors. General sectoral technological developments are also examined as well in this section.

Emerging technologies in the healthcare sector

There has been significant interest to the healthcare sector as regards the application of robot-assisted surgical processes. Robot-assisted surgery has minimal invasive while the patient recovery rate is faster than the normal (Yang et al., 2020). Studies suggest that robotic surgery might be simple for the surgeon to learn because it does not require long cognitive training (Bocci et al., 2013). Researchers are also seeking the considering the possibility of robotic procedures that is totally autonomous. For instance, an autonomous robot for mastoidectomy could remove 96% of wanted bones without destroying the critical bone structures. However, there is need for human supervision because of the possibility of a clinical error which may likely occur if the wrong commencing point is taken (Munske, 2012). Scientist are also considering the implementation of robot-base therapeutically interventions including the use of parorobots to mimic pet behavior just to support older patients suffering from dementia, using assistive robots to explore and play games with the elderly patients (Calo et al 2011;Khosla et al 2013), or the application of humanoid robots to communicate with children suffering from autism spectrum disorders (ASD) (Bekele et al 2013).

Emerging technologies in the transport sector

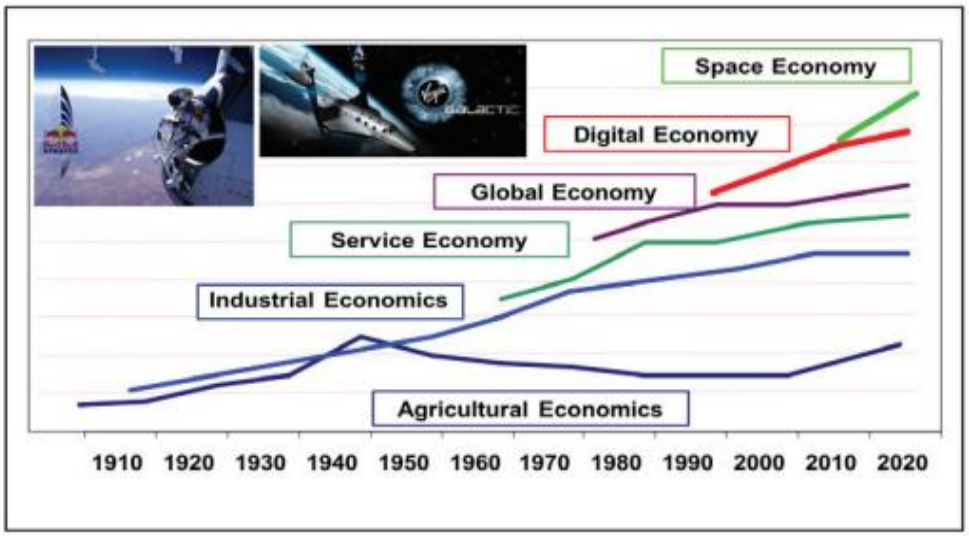
In the area of the transportation, studies have concentrated interactions bordering on human to computer or human to machine. In a research of rail signaling technology that examined and modeled a realistic automation in comparison to the experienced human rail signal, result showed that as the level of automation increased, the perceived financial task or responsibility of human operators deepen while consistency and performance surged (Balfe et al., 2015). Also, Van de Merwe et al. (2012) opined that the

installation of decision automated support for air traffic handlers that gives advice on optimal real-time trial was noted to surge the performance efficiency of controllers but without surging their workload. A research of smart vehicles reported that the experiences of human drivers' assisted technology were positive, without no significant levels of malfunction (Klumpp, 2018). Similar, in a related development, the French military staff had introduced robot in target identification.

Applications of emerging technologies routine administration in other sectors

Majority of studies that verified the applications of Artificial Intelligence have undertaken this financial task with the aim of enhancing efficiency, performance, and making improved decision. For instance, in the telecom industry, Artificial Intelligence has been utilized in the reducing the financial task of customer service employees such as tracking reasons behind contract cancellations and inn the overall management and effective management of customer service calls (Donepudi,2018a). Artificial Intelligence has been applied to assist develop a machine system for software security. With it specialists can identify, and sort essential artefacts that has to do with cybercrime (Fahdi, 2013). Assist the administrators of support system supervise, monitor and diagnose software systems such as Linux- (Lember et al.,2018). As same as assist in guiding logistics managers to enhance productivity in the warehouse productivity by work-loging and performing data analysis (Wirtz,2019). Create an office assistant to track work related items in interactions and different communication mediums including social media, chat, messaging, emails and calendar applications (Donepudi, (2018a). While it also reporters and public affairs analyst to sort through data to verify and investigate storytelling opportunities (Broussard 2015). In all of these instances, one thing remains critical, Artificial Intelligence is used to assist humans extend work capability and capacity. However, little or no evidence is provided on being displaced consequent of automation.

Figure 1: Automation in the Main Economics Cycles



Source: Cüneyt (2015)

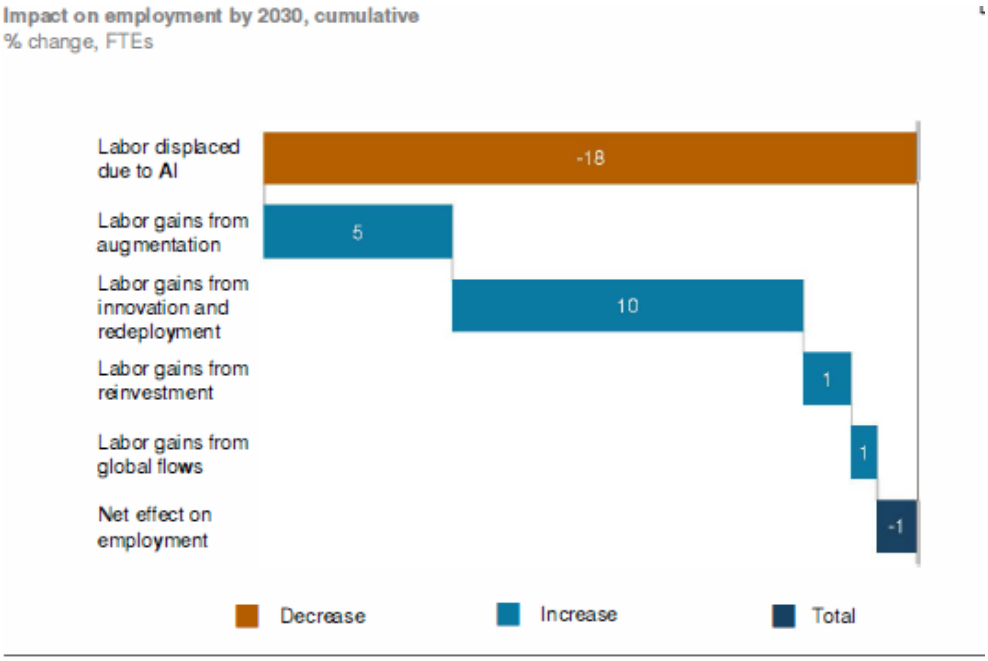
The applications of robotic automation have also been documented as adding major interest on investment. O2 documented that about 15 automated processes which used 160 robots produced about 600–800% return on investment. All internal jobs were intact while non was threatened at O2, (Lacity and Willcocks, 2016). Automation sciences have been reported in the literature as eliminating mundane or routine jobs but not replacing humans with machines. Automated assessment has been documented to have reduced the job load of engineering personnel in engineering laboratories (Donepudi,2018b). Robotics automated decision assistance has been studied and the data gathered show that the performance and accuracy of the controllers of air traffic can be surged without additional workload (Van de Merwe et al., 2012). Automation for the prevention of errors in the medical field have been documented to eliminate interpretive errors (Pimm et al.,2015). Operational pharmacies and medical distribution firms have also benefited from automation. Fatigue level can be observed on transport employees and drivers with automated evaluation in real time (Badke,2015). As mentioned by Donepudi (2017b) sales automation technology and its implication on performance and reported that based on learning and customer orientation, performance was moderated.

Potential Professions and Societal Impact

Employment levels

Artificial intelligence and robotics have profound and diverse implications for society and professions. Within the scope of this study, a few of these implication are briefly outlined. One of the major and likely social effect of the widespread adoption of the automation considered here is on employment levels. However, suggestion is not conclusive on this topic. There are those who predict significant-scale job losses occasioned through the automation of non-routine financial task, and there as those forecast that there will be no large-scale job losses. Concerns of significant 'technological unemployment' are not a new concept as it is known to basically follow every wave of new technological development. For the automation considered here, many scientists report major unemployment in future (Ford 2016; Brynjolfsson and McAfee 2016). For instance; Frey and Osborne (2013) who did an analysis on the adoption of 'machine learning' and use of mobile robotics science showed that over 47% of jobs in the US stood the risk of being eliminated. Their study assumed a 'job focused approach assuming the likelihood of a total jobs loss consequent on automation. This study has been cited and used in analyses in many economies. For instance Frey and Osborne ,2013 ; Deloitte, 2016) reported that about 850,000 UK public sector jobs which were mainly in the administrative and repetitive financial task could become automated in 2030. Analysis done by the Bank of England showed that about 15 million jobs residing in UK can be eliminated through the adoption of robotics and artificial intelligence (Donepudi, 2016).

Figure 2: AI adoption and absorption can affect employment in five key ways



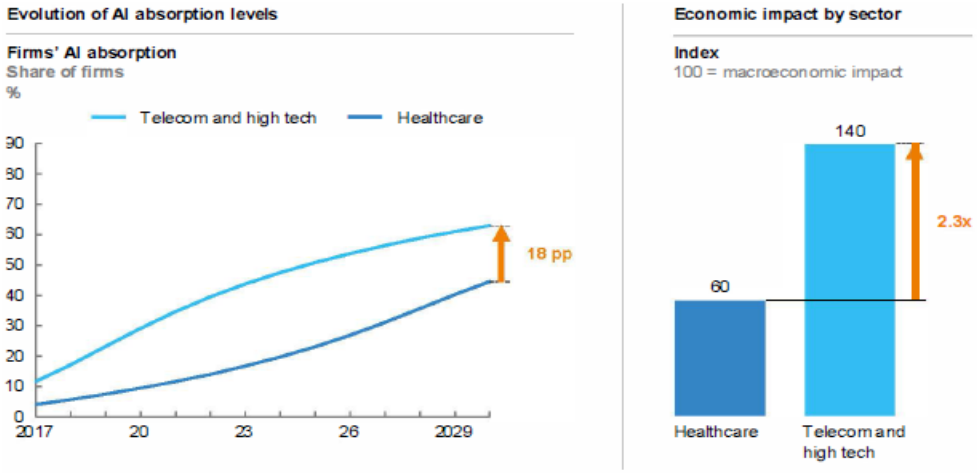
Note: Numbers are simulated numbers to give directional perspectives rather than forecasts.

Source: McKinsey Global Institute analysis

However, such forecast has been faulted by many analysts. The argument has been that general unemployment levels occasioned by the adoption of automation may be modest. Two argument drives this notion. First, Arntz et al. (2016) reported that all financial tasks are made of heterogeneous jobs, while some jobs have now been automated, more complex and non-routine jobs may not. Arntz et al. (2016) dis an analysis of OECD economies, it was reported that about 9% of financial tasks were likely automatable. Secondly, based on history, Autor (2015) argues that the level to which automation replaces human is countered by the surging augmentation of its efficiency which has generated labour and surge the need for it as well. Badke (2015) and Fourie (2016) all share similar perspectives. Conclusively, the extent of impact, consequence, implementation, use of robotics, AI, and automation technologies is uncertain. Research is inconclusive.

The varying nature of human–IT/technology association and need for IT competence

Figure 3: Evaluation of AI and Sector wise Economic Impact



Note: AI absorption curves will vary by sector, leading to various levels of economic impact

Source: McKinsey Digital Survey; McKinsey Global Institute Analysis

A social effect consequence on the surging work-related application of AI, cognitive task and the application of robots for administrative assignments and service task require more people, as both consumers and employees, to interact with these automations. For instance; there are many diverse ways that people can associate with systems using voice recognition (Reeves, 2016), workers interacts with advanced robots (Schwartz et al., 2016), the application of robot assistants in delivery of heath product/ care consumption (Khosla et al., 2013; Goeldner et al., 2015), assisting people virtually and the adoption of these technologies as smart homes devices (Du et al., 2013; Del Pino et al., 2012),).

Current and potential impact on Professions

First, there is the likelihood that automation can impact a range of primary and contemporary jobs such as education and medicine (Pinkwart, 2016; Drigas and Ioannidou,2012). air traffic management (van de Merwe et al 2012), accounting (Sutton et al., 2016). Information science (Badke, 2015). In the medical field, automation can be applied in a range of areas, such as surgery (Bocci et al., 2013), mental health care (Huijnen et al., 2016), use to care for the elderly ones (Calo et al., 2011; Metzler et al., 2016), drugs dispencing in pharmacy (James et al., 2013), applied in pathology (Ye 2015), and in forensics investigation (Fahdi 2013; Baggili and Breitinger,2015). Empirical studies suggest that the major way in which the application of these automation is changing professional work is, first, through automation and in the use of computer for routine and regular financial tasks. Secondly, by instituting a greater interaction with robots and Artificial Intelligence systems, which can have enhanced different areas of people's work engagements. In a qualitative study by James et al. (2013) an inclination how automation may impact the role of Pharmacist were documented.

Robots and automation were reported to enhance drugs dispensing in Uk hospital. The implementation recorded positive effects as it allowed the pharmacists in reducing their level of stress levels and make the working

environment generally conducive. It reduced time spent in dispensing and made them more efficient. However, the negatively, working with automated dispensing system seemed like associating with production staffs. Malfunctioning could be a source of stress because the staffs were basically not capable of fixing them. ADS had no effect on staff levels. Are there implications for the skills and knowledge needed by staffs? Professionals need to understand how these applications work and the technical skills and knowledge particularly of Artificial intelligence they are to acquired. In the field of forensics, Baggili and Breitinger (2015) and Fahdi (2013) opines that AI systems could alter and improve cyber or digital forensic investigations. While Fahdi (2013) opines the use of social media as an essential tool for cyber forensics, Baggili and Breitinger (2015) verified the potential use of AI and robotics as assistants to sort and manage electronic evidence. In all of these instances, professionals need to build the necessary AI competencies and skills for their work type. This imply that the use of this application is likely going to broaden and enhance the skill base of employees in firms.

Research Methodology

Sources of Data

This study uses primary and secondary sources of data. The various literature as regards the use AI, robotics and automation in relation to effect is collected from the secondary data sources while the questionnaire which is the primary source of information were distributed electronically to participants. The survey questionnaire was structured in three sections. Section A contains questions bordering on the social class of the respondent. In section B, information on variations to work are asked while effects of I, automation and robotics is done in section C. The responses are scheduled with a five point Likert scale. The statements are asked in ways that to fit current study.

Sample and data collection

Data have been collected by following convenient sampling technique. The current research seeks to examine impact of Artificial Intelligence, Robotics and automation Technologies on work. A properly design survey questionnaire were distributed through various online platforms because of covid-19 environment such as WhatsApp, Twitter, and Instagram. In a little time, frame, a significant number of people were contracted. Over 300 questionnaires were dispatched to about 300 respondents. However, upon coalition, a total of 120 questionnaires were properly and adequately completed. Therefore, this study made use of about 120 participants. This study had 24 questionnaire items. As mentioned by Hair et al. (2016) every item has to be five respondents. So, the minimum sample size 120 adequate for the analysis of this study.

Data Analysis

This study consisting of the quantitative approach of estimation were used to meet the research objectives. Frequency, mean, and proportions are the descriptive statistics that were used in the research. More so, the inferential

statistic which was used in this study is the T test. All data were analyzed using SPSS software as follows; For Objective one: to investigate the variations that artificial intelligence, robotics and automation has on Financial Management is based on a desktop review as well as descriptive statistics. Objective two "examine the impact of artificial intelligence, robotics and automation on work was analyzed using T-test statistics. In this technique, the significant difference or variations in the adoption of automation in financial task will be known.

Table 1: Profile of the respondents

Variables	Frequency	Percentage (%)
Gender		
Male	49	40.8
Female	71	59.2
Total	**100**	**100.0**
Age		
Less than 24 years	20	16.7
Between 24 and 39 years	16	13.3
Between 40 and 55 years	72	60.0
Over 55 years	12	10.0
Total	**120**	**100.0**
Education level		
Primary	12	10.0
High school	21	17.5
College	51	42.5
Others	36	30.0
Total	**120**	**100.0**
Private firms	73	60.8
Public firms	47	39.2
Total	120	100.0
Origin of Respondents		
Asian	34	28.3
American	28	23.3
European	14	11.7
Others	44	36.7
Total	120	100.0

Result of Analysis

Source; Authors computation using SPSS, 2020

The table above shows the distribution of the respondents by ***Sex***, age and Origin of respondents, firm type, and Origin of respondents. Over 120 respondents took part in the survey. About 59.2% of the respondent which counted about 71 was females while about 49 respondents representing 40.8% were males. For the distribution by Age, the result showed that out of 120 respondents, the age distribution was: 20 of the respondents

representing 16.7% were less than 24 years. About 16 of them representing 13.3% had their ages between 24 and 39. The number of respondents who are between 40 and 55 years is 72 representing 60% of the respondent while 12(10%) were above 55 years old. In terms of educational background, 12(10%) of the respondent have acquired basic education. 21(17.5%) acquired the high school certificate and the majority 51(42.5%)have acquired a college degree.

More so. About 60.8% of the respondent which counted about 73 are from private establishments while about 47 respondents representing 39.2% are from the public establishments. According to origin of the respondents, the distribution is as follows; 34 (28.3%) are from Asia. Americans are 28(23.3%), Europeans are 14(11.7%), while those from other region are 44(36.7%). 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.

Changing Impacts of Artificial intelligence, Robotics and Automation on Financial Management.

Empirical review suggests that the major way in which the application of automation is changing professional work is, first, in the use of automation and use of computer for routine and regular financial tasks. Secondly, interactions/communications between humans and robots and machines rather than fellow humans. Some studies that shows the roles which variations in automation and interaction will be used to include; in journalism (Broussard, 2015), air traffic management (van de Merwe et al., 2012), accounting (Sutton et al., 2016) and information science (Badke, 2015). In the medical field, automation is used for surgery (Klumpp,2018 ; Bocci et al., 2013), mental health care (Huijnen et al., 2016; Luxton, 2014), and in elderly care homes. Drugs dispensing in pharmacy (James et al 2013), applied in pathology (Ye, 2015), and in forensics investigation (Fahdi 2013; Baggili and Breitinger,2015). However, in all of these instances, professionals need to build the necessary AI, robotics and automation competencies and skills for these work types. This imply that the use of machine is likely going to broaden and enhance the skill base of employees in firms.

Examine the impact of artificial intelligence, robotics and automation on work

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BEFORE	7.7938	120	1.25677	.11473

	AFTER	16.7000	120	1.60671	.14667

Source: Field Survey, 2020

		Paired Differences					df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Pair 1	BEFORE - AFTER	-8.906	1.9152	.17484	-9.2524	-8.5600	119	.000

A Paired Sample T-test was conducted to compare the impact of artificial intelligence, robotics and automation on work. It sought to answer the question; is there a significant increase in work output of AI, robotics and automation based financial task*"*. The evaluation was done with the scores of work output compared at two periods; "before automation" and "after automation". There was a significant increase in the work output scores. It increased from (*Mean* = 7.793, *Standard deviation* = 1.2567) before automation to (*Mean* = 16.7, Standard *deviation* = 1.60) after automation; t (120) = -50.940, $p < 0.05$ (two –tailed). Conclusively, AI, robotics and automation has a positive impact on work. This result confirms previous findings by (Pinkwart, 2016; Drigas and Ioannidou; Kim et al., 2015; Broussard, 2015; Van de Merwe et al., 2012; Sutton et al 2016; Badke 2015; Bocci et al., 2013; Huijnen et al., 2016; Calo et al., 2011.

Conclusion and Recommendation

This study has elucidated key themes and emerging discuss in literature on some vital emerging knowledge in the context of automation, robotics' considering the impacts on society and professions to provide a complete review on the subject. This study gives a foundation for accessing broader discourses around the subject. The basic kinds of emerging technology that is known to research include robots, artificial intelligence (AI), and automation. New knowledge on these innovation outlines the need for current developments. A few studies that is reported in this study provides outcomes of emerging technologies but for healthcare, and transport sectors. Information of these new technologies for the transportation context shows that these technologies will complement rather than substitute and expand human abilities. The current study adopted quantitative and qualitative approach to make conclusion. One vital theme outlined by result of the study is on the relationships between machines and

humans. There are potentially beneficial social impacts associated with the work-related application of Artificial intelligence, robotics and automation. Empirical finding also showed that there was significant increase in the mean output of work consequent on the use of automation. Therefore, as recommendation, there is the need for professionals in society to gain some form of information technology skills to maximize the benefits from the use of AI, robotics and automation.

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