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THE IMPACT OF ARTIFICIAL INTELLIGENCE ON MANAGEMENT PRODUCTIVITY AND EFFICIENCY

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Abstract

The paper seeks to investigate, while acknowledging its limits, how artificial intelligence (AI) affects employee commitment and productivity at work. The study combines a qualitative research approach with a simple random sample technique. Online surveys are created using Google Forms and are used to gather data. Sixty percent of the one hundred participants are female, forty percent are male, and ninety-nine percent of responses are between the ages of twenty and forty. The findings demonstrate that AI can positively affect employee engagement and productivity. The use of computers to simulate intelligent behavior with little to no human intervention is known as artificial intelligence (AI). Artificial intelligence (AI) is revolutionising management practices and has a big impact on output and efficiency across a range of industries. This abstract explores the ways in which artificial intelligence (AI) has impacted management, emphasizing the ways in which AI has automated data processing, decision-making, and repetitive tasks. AI technologies, such as machine learning and predictive analytics, let managers make well-informed decisions based on huge datasets, which improves strategic planning and resource allocation. Additionally, AI-driven solutions make

teamwork, communication, and project management easier, which encourages an organisational structure that is more adaptive and agile.

Keywords: *Artificial Intelligence, Management, Productivity, Efficiency, Ai Technologies, Ai-Driven,*

1. INTRODUCTION

Artificial intelligence is developing at a rapid pace, which has significant effects on both the economy and society at large. These developments could have a significant impact on competitiveness, productivity, and employment by directly influencing the features and production of a broad range of goods and services. As significant as these benefits are expected to be, artificial intelligence also has the ability to alter the process of innovation itself, potentially having equally significant effects that could eventually overshadow the direct results.

Think about Atomwise, a new company that is creating cutting-edge technology to predict the bioactivity of candidate molecules in order to identify possible drugs (and pesticides). According to the business, the performance of traditional "docking" methods is "far surpassed" by its deep convolutional neural networks. The company's AtomNet product is said to be able to "recognise" fundamental building blocks of organic chemistry and is capable of producing extremely accurate predictions of the results of actual physical experiments after proper training on massive amounts of data Such discoveries provide the possibility of significant increases in early stage drug screening productivity. Naturally, Atomwise's technology—as well as that of other businesses employing artificial intelligence to improve medical diagnostics or drug discovery—is still in its infancy; despite encouraging preliminary findings, no new medications have actually been released using these novel strategies. Regardless of whether Atomwise fulfils its full potential, its technology exemplifies the continuous endeavour to create a novel innovation "playbook" that utilises extensive datasets and machine learning algorithms to accurately predict biological phenomena and inform the creation of impactful interventions. For instance, Atomwise is now using this method to find and create novel insecticides and agents to combat agricultural diseases.

Two possible ways that artificial intelligence advancements could influence innovation are demonstrated by Atomwise's example. First off, even though computer science is largely responsible for the development of artificial intelligence and that its early commercial applications were limited to fields like robotics, the current generation of learning algorithms2 indicates that artificial intelligence may ultimately find use in a much wider range of fields.

The challenge of providing innovation incentives to develop technologies with a relatively narrow domain of application, such as robots purpose-built for narrow tasks, versus technologies with a wide—some would argue almost limitless—domain of application, as may be true of the advancements in neural networks and machine learning, often referred to as "deep learning," is seen from the perspective of the economics of innovation (Bresnahan and Trajtenberg, 1995, among others). Therefore, one of the first questions that needs to be addressed is whether or not advances in artificial intelligence are merely new technological examples; rather, they might be the kind of "general purpose technologies" (henceforth referred to as GPTs) that have historically played a significant role in advancing technology over the long term.

Second, while certain AI applications will undoubtedly result in cheaper or better inputs into many current production processes—raising concerns about the possibility of significant job losses—others, like deep learning, offer the promise of both productivity increases across a wide range of industries and modifications to the very structure of the innovation process within those domains. The "invention of a method of invention," memorably stated, has the potential to have a considerably larger economic impact than the development of any single new product because it fosters creativity across multiple applications.

Here, we contend that new developments in machine learning and neural networks, which can enhance end-user technology performance as well as the structure of the invention process, will probably have a particularly significant effect on innovation and growth. Determining the conditions under which various potential innovators are able to obtain these tools and use them in a pro-competitive manner is a key concern for policy. As a result, the incentives and barriers that may shape the development and diffusion of these technologies are an important topic for economic research.

In order to determine the role that institutions and policy may play in creating efficient incentives for innovation, diffusion, and competitiveness in this field, this essay will first examine the possible effects of artificial intelligence advancements on innovation. In Section II, we start by outlining the unique economics of research instruments, of which the application of deep learning to R&D issues is a particularly fascinating example. We concentrate on the interaction between a new research tool's degree of generalizability and its function in developing a new “playbook” for innovation itself, as well as in improving the effectiveness of research activities. Section III then shifts to a quick comparison of three major AI technical trajectories: deep learning, symbolic systems, and robotics. We suggest that in the future of innovation and technological development, these frequently confused domains will probably play very distinct roles. Research on symbolic systems seems to have reached a standstill and is probably not going to have much of an influence in the near future. Furthermore, while advancements in robotics have the potential to further replace human labour in the production of a wide range of goods and services, the nature of innovation itself may not be significantly altered by robotics innovation per se. Deep learning, on the other hand, appears to be a very broad field of study that has the ability to alter the innovation process itself.

1.3 Objectives

- To evaluate the impact of artificial intelligence on worker performance and engagement at work.
- To find out how the surveyed population's perceptions of AI are influenced by age and gender inequalities.
- To Analyze how artificial intelligence affects management practices, with an emphasis on automation and decision support tools.
- To assess the ways in which AI technologies enhance project management, cooperation, and communication within enterprises.

2. REVIEW OF LITERATURE

Technology plays a significant role in management and leadership, and this has long been acknowledged. Avolio, Kahai, and Dodge (2001, 617) define e-leadership as an IT-mediated strategy for bringing about organisational change. Avolio, Sosik, Kahai, and Baker (2014, 106),

reviewing the theory, claim that leadership science and practice have lagged behind businesses' use of cutting-edge technology. They contend that the study of leadership has reactively analysed the influence that technology has already had, as opposed to concentrating on forecasting the most desirable behaviours.

In order to foster creativity, involvement, and digital breakthroughs, leadership is changing from the scientific management of the previous century to lower hierarchy structures, according to Auvinen (2017, 37). Additionally, Auvinen et al. (2019) assert that a shift in leadership has occurred, with the leader's physical presence appearing to give way to digital platforms. Although the requirement for actual leadership has not gone away, communication channels and the leader's physical presence have become more digitalized.

The platform economy, which links workers and consumers through algorithmic management, is another sector exemplifying digitalization. According to Lee et al. (2015), algorithmic management refers to the managerial tasks carried out by software algorithms and the tools that enable them. Lee et al. note that algorithmic management is being used more and more to optimise, assign, and assess work in conventional occupations like warehouses and coffee shops, in addition to the more recent businesses in the platform economy.

This new setup creates a whole new dynamic between the employee and the digital manager. The potential independence that algorithmic management offers employees has been applauded, but it has also drawn criticism for the exploitative knowledge asymmetries that operate in the company's advantage (Rosenblat and Stark, 2015, 3758). Tammisalo (2019, 63-64) draws the conclusion in her thesis that although financial institution staff members value the immediate input that artificial intelligence (AI) can provide as part of the feedback, they also prefer the more emotionally astute feedback from human supervisors.

The implications for managers of the introduction of new technologies have been discussed. According to a study by Frey and Osborne (2013, 40–45), managers are less likely to be replaced since their jobs require social intelligence, even if people in many other sectors are very susceptible to automation. Similar to what Pulliainen (2019, 84) claims in her thesis, a lot of top level managers don't think AI will replace them because they regard it as an additional tool that will help them be more productive. This amplifying perspective is also supported by other investigations.

The potential of an AI system with enormous processing power combined with the more all-encompassing understanding of a human manager is highlighted by Jarrahi (2018, 577).

3. RESEARCH METHODOLOGY

Deductive research philosophy entails gathering empirical evidence in order to test a theory or hypothesis. Objectivism is the ontological approach; it makes the assumption that there is an actual, observable, and quantifiable outside world. The deductive research approach entails gathering empirical evidence in order to test a theory. Examining a theoretical framework that includes elements that contribute to the development of artificial intelligence is the goal of this study. Through statistical analysis, the gathered data will be utilized to test the theoretical model.

3.1 Research Strategy

This study's Secondary goal is to understand how artificial intelligence affects workers' productivity and dedication to their jobs. Surveys were distributed in order to gather Secondary data in order to gain a thorough knowledge of the impact on individuals. A component of

qualitative research is this study. This study also uses a straightforward random sampling technique as its foundation. Online surveys were created using Google Form for the purpose of gathering data, and for convenience, they were disseminated by email and various online social media platforms, including Instagram, WhatsApp, and others. Because online surveys allowed us to quickly reach a larger number of people, we decided to disassemble the questions both in person and online. Internees and professional staff who work for an organization make up the population. Out of the 100 responses, 40% were men and 60% were women. Furthermore, the majority of respondents—87 percent—have an average age between 20 and 40 years old.

3.2 Population and sampling

The general public is the study's target demographic; in particular, we chose our university classmates for this research since they are acquainted with the idea of renewable resources. Convenience sampling will be used as the sampling strategy, and participants will be found via internet forums and social media sites. Because it is so simple to reach potential participants through these means, this technique was selected.

3.3 Data Collection and Data Analysis

To gather qualitative data, the study will use an online questionnaire that participants can self-administer and includes open-ended questions. A pretest will be administered before the Secondary data collection to make sure the questions are understood and clear. Inquiries pertaining to the research topic will be combined with demographic questions to help characterize the sample. We'll employ qualitative research techniques to gain a deeper understanding of the experiences of the participants. The main analytical method will be thematic analysis, which entails the methodical coding and classification of data. Patterns, themes, and classifications will emerge through this iterative approach. For the purpose of identifying recurrent themes and connections, transcripts will be carefully examined, coded, and categorized. A thorough grasp of the participants' viewpoints and experiences in regard to the research issue will be provided by the narrative presentation of the findings, which will be enhanced by quotes from the participants.

We selected closed-ended questions since they allowed us to more easily identify the noteworthy distinctions and provided us with a better understanding of the trend analysis and correlation. The team members created the questionnaire, which looks at the following inquiries:

- In your line of work, do you see any potential applications for artificial intelligence?
- The likelihood that artificial intelligence will present this nation with new economic prospects.?
- AI could eventually take over human control.?
- Artificial intelligence is capable of surpassing human performance.?
- Do you believe that a company's ability to utilise artificial intelligence is influenced by its leadership?

3.4 Research Hypothesis

H0: Employee performance is significantly impacted by artificial intelligence in terms of technological stress, leadership, and dependability.

H2: The rise of AI could have a detrimental impact on employees' futures because of its potentially destructive capabilities and ability to disrupt employees' ability to make decisions.

H3: The introduction of AI has the potential to put workers' identities at risk and make them lose their leadership, which would be detrimental.

4. DATA ANALYSIS AND RESULT

Computer tabularizations in the form of frequency distributions and graphical representation will be used in the investigation. The requirements that follow for statistical analysis will be discussed after the underlying data has been evaluated. As a result, this questionnaire served a variety of purposes and was both affordable and practical for the respondents to utilise when surveying a sizable sample. The purpose of this study is to determine the effects of artificial intelligence on worker commitment and performance, as well as the degree to which organisational leaders can assist in integrating new technologies and inspiring staff members.

Table 1: Relationship Study of the Important

ITEMS	AIN	ENT	TR	LA
AIN	2.141	0.006	0.414	0.251
ENT	2.154	2.002	0.185	0.801
TR	2.121	2.121	2.311	0.539
LA	0.252	0.825	0.525	2.141

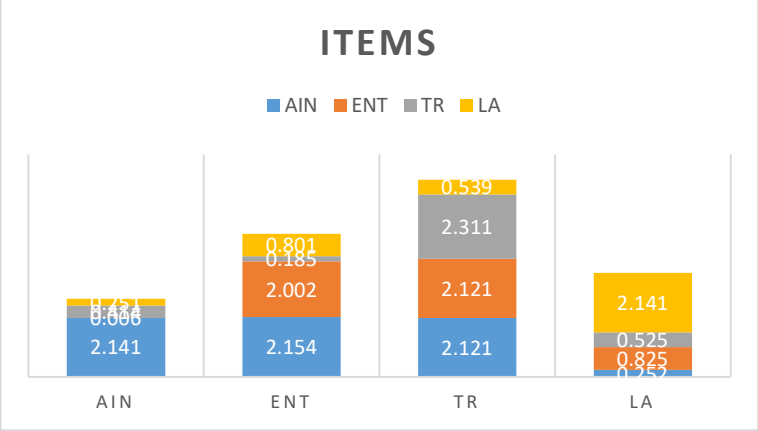

Figure 1: Relationship Study of the Important

Based on Cronbach's alpha values, the correlation matrix shows good internal consistency for all variables (AIN, ENT, TR, and LA). While TR and LA show a moderate positive association (0.539), AIN and ENT show a weak positive correlation (0.006). The correlation between AIN and TR (0.414) and LA (0.251) is moderate. All things considered, the matrix sheds light on the consistency of the measurements and the connections between the variables, setting the stage for additional research in the field.

Table 2: The Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.512	.602	.165	.314121

The independent and dependent variables have a moderately favorable connection (R = 0.512) according to the regression model. With a R Square of 0.602, the model can account for about

60.2% of the variance in the dependent variable. Considering the intricacy of the model, the Adjusted R Square, although lower at 0.165, indicates a respectable predictive power. A reasonably accurate fit of the model to the data is indicated by the Standard Error of the Estimate (0.3141121). All things considered, the model does a good job at forecasting the dependent variable; however, more research would be required to fully grasp the link.

Table 3: ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	.625	1	.625	8.251	.003
Residual	3.2361	45	.075		
Total	9.4861	46			

The regression model is statistically significant (F = 8.251, p = 0.003), according to the ANOVA table, indicating that the independent variable or variables have a substantial effect on the dependent variable. 3.2361 is the sum of squares for the residuals, which indicates variation that cannot be explained. Overall, the low p-value and significant F-statistic indicate that the model provides a meaningful fit to the data.

Table 4: Coefficients

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
(Constant)	.922	.325	5.236	<.002
AIN	.523	.201	.512	4.236

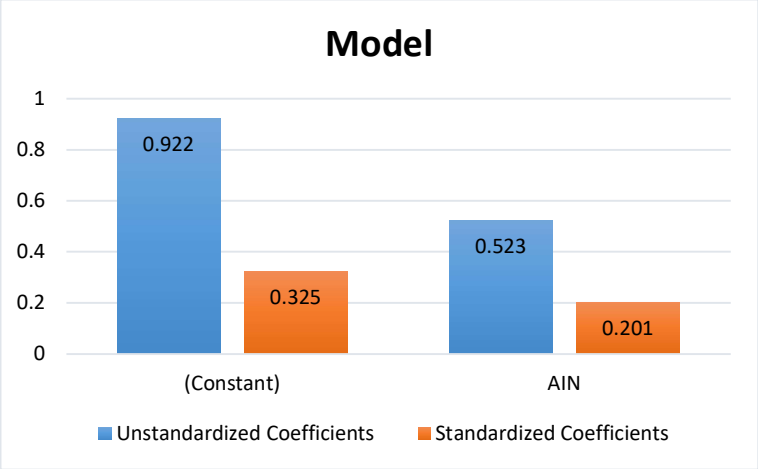

Figure 2: Coefficients

According to the regression analysis, the dependent variable is significantly predicted by the constant term as well as the variable AIN. The statistical significance of the constant term (0.922) indicates its influence when the independent variable is set to zero. The significant value of t = 4.236, p < 0.05 for AIN indicates a positive correlation with the dependent variable, underscoring its usefulness as a predictor. The coefficient for AIN is 0.523. With the standardized coefficient of 0.201 explaining 20.1% of the variance in the dependent variable, it is possible to gauge the extent of AIN's influence. All things considered; these findings support the predictive validity of the model.

4.1 Reliability

Table 5: Composition

Cases	N	%
Valid	60	6.67%
Excluded	30	3.33%
Total	90	100.0

Sixty-six people (66.67%) of the ninety-nine instances are deemed eligible for analysis based on predetermined standards. Thirty cases (33.33%) are not included, indicating that certain circumstances were not met. Transparency in case inclusion and exclusion decisions is emphasized by this information, which is essential for comprehending the dataset's makeup and possible effects on study outcomes.

Table 6: Reliability

Statistic	Value
Cronbach's Alpha	0.912
Number of Items	10

The table demonstrates a high degree of dependability for a measurement tool with ten components, with Cronbach's Alpha of 0.912. This shows a high degree of internal consistency, confirming the scale's validity for measuring the desired construct.

5. CONCLUSION

This study's main goal is to comprehend how artificial intelligence affects workers' productivity and dedication to their jobs. We selected closed-ended questions because they allowed us to more clearly see the trends, the correlations, and the disparities. In summary, artificial intelligence (AI) has a significant and revolutionary impact on managerial productivity and efficiency. In many industries, the incorporation of AI technologies has ushered in a new era of data-driven decision-making and efficient processes. The results highlight how artificial intelligence (AI) improves organisational performance by automating tedious jobs, enhancing data processing capabilities, and enabling intelligent decision support systems. It is clear that AI helps with resource allocation and strategy planning by enabling managers to make well-informed decisions based on large information. Predictive analytics and machine learning are essential for increasing forecast accuracy and maximizing resource use. This promotes an organisational structure that is more flexible and agile in addition to supporting managerial decision-making. According to the report, AI-driven solutions have a good impact on project management, cooperation, and communication in addition to simple automation. Increased efficiency, flexibility, and adaptability improve the organisational landscape and provide a more responsive framework for handling changing difficulties.

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