

The Implications of Artificial Intelligence (AI) Adoption in the Retail Industry from a Human Capital Perspective

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Abstract

Specifically, the purpose of this study is to investigate the impact that artificial intelligence has had on human capital in the retail sector. In order to accomplish this, the research makes use of a quantitative methodology and collects responses from 88 human resources employees and team leads working for various retail organisations by means of a questionnaire. A good trend towards the utilisation of artificial intelligence (AI) in business is observed, according to the report. It also discovers a significant beneficial connection between artificial intelligence and the function of human capital. It's possible that researchers may investigate other domains and aspects that might be influenced by the application of AI in the future.

Keywords: *Artificial Intelligence, Retail Industry, Human Capital, Quantitative, Developing Countries.*

Introduction

Undoubtedly, we find ourselves in an unprecedented era. The primary factor contributing to this phenomenon is the transformative impact of technology, which has significantly altered several aspects of human activities. The impact of technology on individuals is particularly pronounced within the context of workplaces. Significant transformations have occurred in contemporary work environments. It can be argued that the concept of workplaces has become obsolete. During periods of pandemics, it has been seen that individuals in the workforce increasingly depend on their computer devices as opposed to physically visiting physical locations. In the realm of technological use, artificial intelligence (AI) stands as the sole entity capable of comparison. The research conducted by Bryndin (2020) also addresses the topic of artificial intelligence (AI). According to the authors, artificial intelligence (AI) entails the transformation of machines into entities capable of cognitive processes and executing tasks as instructed. The organisation and its employees have undergone a significant transformation. Nevertheless, the impact of this transformation on individuals remains ambiguous, as it is yet to be determined if it has yielded positive or negative outcomes. From one perspective, it might be regarded as advantageous due to its ability to discover more efficient methods that reduce time consumption and minimise errors. Computers has a distinct advantage over human beings due to their inherent ability to avoid errors and refrain from making excuses, hence rendering them superior in comparison.

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On the contrary, AI has been a better substitute for humans, creating a large reservoir of unemployed personnel. Increasing unemployment is a concern for states and companies. This debate opens up the space for a study that meticulously evaluates the impact of AI on human capital. This is the need for time, and such a study must benefit practitioners as well as academicians. For practitioners, they can use the study in improvising business performance and finding the right balance between AI and human capital. Similarly, the study can give a new direction for those studying organisational management and human resource, which has dramatically transformed with the rise in AI. It is also important to mention the selected industry, which is retail. Retail is among the most important industry for humans and is approximately estimated at billions of dollars (Haque, Aydin & Usyal, 2017).

Further to this whopping size, the retail industry has become very optimal and efficient since AI was introduced. Several aspects of the retail industry have been taken over by humans by AI machines and have solved the problem for the customers and owners. However, human capital is a very extensive field, and it is important to outline what is implied through human capital in the introduction. Human capital is human resources. Performance of human resources can be quantified and categorised into many different metrics such as employee productivity, compensation, experience, etc. All these metrics are very important for an organisation as well as for individuals. It has also gone changed with the integration of AI at the workplace. The study adopts an investigative approach in understanding the implications of AI on these measures of human capital management.

Theoretical and Empirical Evidence

The purpose of the literature review is to bring forth the theoretical and empirical evidence found against the implications of AI on the human capital of an organisation. In this regard, the study of Petropoulos (2018) discusses the technological unemployment theory, which has been coined by one of the greatest economics. As per the economist, the greater the integration of technology in a workforce, the lesser will be the workforce. It is because computers can do the job more efficiently and with lesser time than humans. This is evident in modern manufacturing factories where AI and automation have taken over the tedious human mechanical operations (Wamba-Taguimdje et al., 2020). Therefore, with regards to the variables chosen for this study, such as employee satisfaction and productivity, it can be argued that increased utilisation of AI will induce anxiety among employees and consequently add to their discontentment.

Contingency and decision theory is also among the most discussed concepts in the field of organisational management (Abedin, 2021). The authors state that the decision and organisation of a corporation is a fluid concept and depends on internal and external events. When AI is integrated into an organisation, it can predict future happenings with great accuracy based on historical trends (Ali, Hamdan & Alareeni, 2020). Data like employee's performance can be fed into the machine, which can then estimate the target achievement of a particular individual. It is important to understand as such a concept can improve employee productivity. Before the use of AI technology, the performances were not tracked with this accuracy, and as a result, organisations did not have a systematic application for managing organisational performance (Pandl et al., 2021). However, this has an uneven impact on the employees as the ones who were achieving the results would be in a better situation than the free riders.

Similarly, another important concept pertaining to AI and human behaviour is the modern system theory (Xiaonan, 2018). As per the proponents of this theory, a modern system rejects the traditional takes on organisational sciences and rather encourages the integration of AI and related technologies to optimise human capital. This theory also intersects human behaviour and AI and suggests ways on how both the concepts can work in perfect harmony.

Research Methodology

The current research study adopts a quantitative methodology to examine the links between AI adoption and human capital management. It is pursued to gain statistical evidence of the research problem. It is highly objective and avoids any personal opinion and bias on the research topic. Quantitative is different from qualitative as the former is based on scientific analysis, i.e. data collection, and then, based on it, formulate a theory that can be tested (Rutberg & Bouikidis, 2018). It also leads to the question of how data will be gathered and evaluated.

Moreover, based on the theme of this study, the design of the research is descriptive. Atmowardoyo (2018) discussed a descriptive research design, who regards it as a better option when the researcher wants to express their opinion based on the empirical calculations. It means that under descriptive research design, the researcher can afford to be a bit subjective and describe the results based on his or her understanding. It seems a justified option for this study as it explores the impact of AI on an organisation's human capital. Because descriptive design must be preceded by empirical evidence hence, the research also pursues a correlation design, where a relationship between AI usage and human capital management is established.

The study depends on primary data sources. It means that the researcher does not rely on secondary or published data sources but would rather conduct a questionnaire-based survey. Secondary data may be high in volume as compared to the primary source. Still, primary data collection helps the researcher experience the research objectives by contacting the respondents directly. The respondents or sample size consist of professionals working in organisations that integrate AI into their operations. It consists of human resource professionals and team leads working in the retail sector as they are the relevant profiles who can state the importance or disadvantage they have witnessed after using AI in the context of human capital. The potential participants of the study were recruited online using LinkedIn and other online platforms. The researcher was able to collect data from 88 respondents.

Furthermore, once the data is collected, the researcher performs correlation analysis. It is because correlation helps in establishing a relationship between two variables. Here the variables are AI and human capital management practices such as employee productivity, experience, commitment, appraisal and other functions. It clearly emphasises the impact of using AI on the human capital management. Lastly, the research exercises every precaution to ensure the results are without any bias. It follows an ethical guideline whereby respondents are ensured of their confidentiality.

Research Findings

The scope of this research was to evaluate the impact of AI on the human capital management in the retail sector. To this end, several respondents were interviewed and their responses were recorded. To have a better and credible understanding of the topic, most of the respondents from the retail sector had the first-hand experience in integrating AI with the traditional retail operations including inventory management, vendor management, etc. The demographics was also selected in this way. That is, more than 45% of those who answered were middle-level or senior-level workers who had worked in the field for more than 11 years.

Extent of AI Use

		Frequency	Percent	Valid Percent	Cumulative Percent
The HR Department uses Virtual Assistance technology in its operations	Strongly Disagree	4	4.5	4.5	4.5
	Disagree	13	14.8	14.8	19.3
	Neutral	13	14.8	14.8	34.1
	Agree	36	40.9	40.9	75.0
	Strongly Agree	22	25.0	25.0	100.0
	Total	88	100.0	100.0	
The firm and HR employ Predictive Analysis	Strongly Disagree	9	10.2	10.2	10.2
	Disagree	11	12.5	12.5	22.7
	Neutral	27	30.7	30.7	53.4
	Agree	32	36.4	36.4	89.8
	Strongly Agree	9	10.2	10.2	100.0
	Total	88	100.0	100.0	
The organisation has employed AI-enabled expert systems	Strongly Disagree	4	4.5	4.5	4.5
	Disagree	13	14.8	14.8	19.3
	Neutral	21	23.9	23.9	43.2
	Agree	28	31.8	31.8	75.0
	Strongly Agree	22	25.0	25.0	100.0
	Total	88	100.0	100.0	
The HR employs Data mining, speech and voice recognition	Strongly Disagree	2	2.3	2.3	2.3
	Disagree	15	17.0	17.0	19.3
	Neutral	26	29.5	29.5	48.9
	Agree	34	38.6	38.6	87.5
	Strongly Agree	11	12.5	12.5	100.0
	Total	88	100.0	100.0	
The firm, for better analysis, machine learning processes	Strongly Disagree	5	5.7	5.7	5.7
	Disagree	14	15.9	15.9	21.6
	Neutral	15	17.0	17.0	38.6
	Agree	41	46.6	46.6	85.2
	Strongly Agree	13	14.8	14.8	100.0
	Total	88	100.0	100.0	

The first set of questions pertained to the use of AI in the operations concerning HR department of the retail sectors. Broadly speaking, the majority of the respondents answered positively as they acknowledged the use of AI in their respective retail companies. For instance, almost 41% of the respondents agreed to the query whether the respective HR departments are using virtual assistance in its operations. Only 19.3% of

the respondents recorded a negative response which showed that there are only a negligible number of retail companies that do not rely on virtual assistance.

Furthermore, similar frequency was recorded when they were asked about predictive analysis to forecast the performance of the employees. This is an important point to understand because one of the most efficient use of AI is in predicting the performance based on historical data. Since a large percentage of the organizations employ this type of technology, it states that human capital is positively impacted through the AI otherwise, there would not have been such a broad use of the technology. AI-enabled expert system is also another important part of the technology. Almost 57% of the respondents agreed or strongly agreed to the use of such an expert system. There were only 19.3% of the respondents that disagreed with this showing once again that expert systems or AI in generally have been employed on a large scale in the retail segment.

The use of AI as voice or speech recognition in the HR departments. This is quite common in the organization and this statement was also supported by the respondents. To quantify, more than half of the respondents admitted that their respective HR department does employ such a use of AI. However, even bigger was the percentage of respondents when they were asked about the positivity of machine learning for the overall retail sector. This was only negated by 20% of the respondents which shows that although they are less number, there is certain aspects of machine learning which does not produce positive results for the organization.

Human Capital Management

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Employee Productivity	88	1	5	3.72	1.093
Employee Commitment	88	2	5	3.67	0.979
Optimising Employee Experience	88	1	5	3.58	1.003
Talent Management	88	2	5	3.59	0.918
Training and Development	88	2	5	3.72	0.843
Employee Appraisal	88	2	5	3.67	1.090
Administrative Support	88	1	5	3.80	1.019
Workforce Analytics	88	1	5	3.65	1.051
Valid N (listwise)	88				

The next set of questions directly addresses the human capital functions and practices. In this regard, a mean score of 3.72 was recorded for enhanced employee productivity under AI and HR integration. Such a score is above the average which shows that the overall impact of merging AI with HR is positive. Almost same results were obtained when the variable of employee commitment was scrutinized. However, there was a slight decline in employee commitment as compared to employee productivity. It shows that commitment is still a challenge with or without AI. In fact, installing AI technology to measure and predict the employee performance can have a counterproductive impact on the commitment levels of the employees. This is because AI is an accurate technology which would predict the score of each employee with minimum error as compared to human calculations.

Factors like team management and employee experience were asked as well. The score of both the factors was same. The score was 3.59 which again shows that the use of AI does

not impact the management and experience of employees significantly but nevertheless, it still has a positive impact. With respect to employee appraisal and workforce analysis, the score was again the same. However, this time it was slightly greater than 3.59 i.e., 3.67. This shows that appraisal and analysis have a deeper impact in the retail sector with AI than the factors like employee experience or team management. This makes sense because AI provides dashboards for the performance of each and every member in the team. On the other hand, the factor that received the greatest score was administrative support. This is also very understandable because AI has replaced the tedious and error prone human administrative tasks. AI machines are more efficient and precise and this is shown by the responses gathered from the respondents. It also points out to the fact that AI machines are still in the phase of evolution that they can perform the simple calculation but when it comes to complicated factors like increasing productivity or commitment, the technology has far less impact. Training and development were also another human capital measure that received a positive review showing that AI can also impact capacity of the team.

Correlation Analysis

Correlations			
		AI Usage	HCM
AI Usage	Pearson Correlation	1	.410**
	Sig. (2-tailed)		0.000
	N	88	88
HCM	Pearson Correlation	.410**	1
	Sig. (2-tailed)	0.000	
	N	88	88

** . Correlation is significant at the 0.01 level (2-tailed).

Finally, after running the correlation test, it was found that there is a significant relationship between AI adoption and the management of human capital at 0.01 level. The correlation coefficient is positive, which suggests that increasing AI usage is associated with better human capital management in the retail sector. The strength of association between the two variables is moderate.

Conclusion

These days, artificial intelligence (AI) is very important, especially in the shopping business. The efficiency, productivity, skills, and knowledge of the human workforce have also been changed by the growing use of technology. This research study looks at the relationship between AI use and human capital roles and practises in the retail industry. It uses information from 88 people who work in the relevant fields for different companies. As expected, the findings show that there is a strong link between using AI and managing human capital. So, it is suggested that AI be used more and more in retail, which could have a good effect on both management and employees.

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