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## **ABSTRACT**

Artificial intelligence is a technology that has become prominent in our daily lives. It's an innovative technology of the digital age that has changed the pattern of many business sectors and the media sector is not apart from it. This study identifies the use of AI by both Pakistani and foreign journalists as well as the threats and benefits of AI. To achieve the objectives of this study in-depth interviews were conducted. Diffusion of Innovation is taken as theoretical support. "Use of AI enhances the working skills of journalists" and "AI plays a vital role in changing traditional journalism to modern journals" were testable statements. It was found that AI is being used by Pakistani and foreign journalists to enhance the quality of work but international media is one step ahead than Pakistani media. But every organization nationally and internationally has not adopted the technology yet and it will take more time to use this technology

### **Keywords**

Artificial intelligence, journalism, technology, modernization

## **Introduction**

The media has gone through rapid and new transformations remarkable development of information and communication technologies (ICTs) which drive innovation as well as played role in changing the patterns of journalism by modernizing and renewing them. Media organizations all over the world are facing many difficulties coming to light from the revolutionary digital transformations of the publishing industry. (Waleed, 2019)

Perhaps after the invention of printing one of the most important events that changed the journalistic process and helped in development became the technical use of computer systems which dig up the mechanism for partial modification that transform all components of the media method. (saad, 2020) Since the development of computer started in the mid-1940s machine and AI has become a significant subfield of computer science. (Akgul, 2019) AI is defined in general terms, AI refers to computational tools that can substitute for human intelligence in the performance of certain tasks. This technology is currently advancing at a breakneck pace, much like the exponential growth experienced by database technology in the late twentieth century. Databases have grown to become the core infrastructure that drives enterprise-level software. Similarly, most of the new value-added from software over the coming decades is expected to be driven, at least in part, by AI. (Fay, 2020)

For the past two decades advancement in technology has been reworking many industries in various ways. Even though the emergence of AI technology can be considered as the principal area of technological evolution during the past decade (Jamil, 2020)

Undoubtedly AI moderately spreading through multi-creative spheres including journalism that as of now has been affected, particularly considering constant economic disruption and the digital transformation. In this regard, we can say that the development of AI techniques profoundly reshaped newsrooms, especially into all parts of news production and dissemination. In the latest Reuters report “Media Trends and Technology Expectations in 2018” which incorporated a survey of a few media outlets, almost three-quarters of respondents said that they use AI in their production. (Waleed, 2019)

In this twenty-first century, AI is being used in diverse fields like health, automobiles, finance and economics, video games, military, audit, including advertising, journalism and numerous other branches of media and communication. AI has become crucial to fix the matters of computer science, software engineering, and operations research. Therefore, AI can be correlated with all kinds of areas in which the productivity of a human being can be flatter. (Santosh, 2020)

The evolution of (AI) is vigorously having an impact on every component of society; as mass media is one of the most important parts of society it is also not free from AI bugs, accordingly, they should coalition with the innovation to stay pertinent. (Jammy, 2020). We are heading towards the age where human tasks are performed by a machine (robots) which makes work easier, faster, and even better than a human being. This age would be regulated by AI which is also known as machine intelligence. It is thought that humans will be left behind and their work will be takeover by machines in almost every aspect of human enterprise. AI has a place in the newsroom which is dominated by people as it gives rise to significant efficiency and richness in content production. It demands the use of computer systems fed by journalists using data and

algorithms which can automatically bring out understandable news for the audience from the past patterns and formulas. (Maria, 2019).

### **Objectives of the Study**

Objectives of the study are:

- To find whether artificial intelligence contribute to improving the working conditions of journalists or not
- To understand the role of technology in renewing and modernizing journalism
- To compare the use of artificial intelligence by Pakistani and foreign journalists

### **Hypotheses**

H<sub>1</sub>: Use of artificial intelligence enhance the working skills of journalists

H<sub>2</sub>: Artificial Intelligence plays a vital role in changing traditional journalism to modern journalism

### **Literature Review**

Luengo (2021) stated in his article that automated journalism is a reality that has been dynamically presented by the international mainstream media. This is demonstrated by the various investigations published in recent years which help us to identify the type of coverage for which this technology is currently being used. Kim (2019) conducted a study in which it states that the Media associations have been excited about putting resources into AI and are proactively trying different things with the technology. The New York Times is recruiting more experienced individuals in AI, machine learning, data science, and mobile engineering. In November 2018, the digital business magazine Quartz declares to launch its AI studio, which will band with journalists and other media associations to create AI-based stories.

Shaojing sun (2020) states in his article that AI has become an interesting issue as of late which is relied upon to introduce the fourth digital revolution for humankind. Hailing gigantic power for social change, AI has invigorated interests and worries from different areas of the general public including researchers, organizations, legislators, media, and the overall population. Discussions and conversations on AI have been around its applications, guidelines, and results among others. Despite the mounting interests, public appreciation of AI and its effects is in the beginning phase. For the greater part of individuals, media fill in as an urgent wellspring of data on AI. As needs are how media cover AI may essentially affect the public impression of and responses to the advancements. Before research has shown that media portrayals impacted by a long shot the vast majority of individuals fit as fiddle estimations or choices about an emerging advancement.

Jamil (2020) stated in her study that as of now various worldwide organizations, for example, IBM, Microsoft, Intel, ZTE corporations, etc. are putting resources in AI projects. Developing countries or countries with low income similar to Pakistan could not take advantage of the technology which is flourishing industry of AI in the past. In these countries there was no advancement related to this technology was found. However, recently Pakistan has stepped forward in this latest technology with the aim that the nation can have an impact on the global

market. A Pakistani technology firm named BaseH has assured that they are successful in building up the country's first artificial news content writer known as "Dante". This AI news content generator utilizes the Natural Learning Process (NLP) to create news report that is almost the same as human writing. The robot called Dante is capable of doing reporting in different beats like business reporting or weather and sports reporting.

Lopez (2019) stated in his article that the utilization of algorithms permits the machine to self-sufficiently create text-based and realistic editorial items from the information. When made not just algorithms would have the option to make a large number of reports for a particular theme, they likewise do it all the more quickly, financially, and perhaps with fewer mistakes than any human columnist. Inside this unique circumstance, algorithms can create new quicker and to a greater degree. The ascent of computers in news content creation goes past the digitalization of the newsroom. The beginning of robotized age of information is connected to information news-casting and in the view of computers helped revealing (CAR) which filled in as a starting mark of what become known as precision journalism.

Jordan (2019) wrote in his article that historically the expression AI was authored in the last part of the 1950s to elude the powerful yearning of acknowledging in programming or equipment or element having human-level insight. AI was intended to zero in on something other than what's expected: the huge level or scholarly limit of individuals to reason and to think. The past twenty years have seen a huge improvement in industry and the insightful world in an equal craving to human-imitative AI that is as often as possible suggested as "intelligence augmentation" (IA). Here calculation and information are used to make benefits that extend human knowledge and creative mind.

Sage (2019) states that the ramifications of AI for journalism should be foregrounded in the more prominent setting of digitalization of media and public life and advancement to application, algorithms and social media and such in a way that has changed journalism as a foundation: subverting strategies, upsetting plans for getting work done and delivering inundate data options in contrast to news, notwithstanding different things. In that sense AI pushes, everything considered of how uncommon they yet end up too along these lines, medium or long stretch might be viewed as a segment of more extensive story journalism reshaping according to calculation.

Whittaker (2019) stated in his book that the big five technology companies have an impact on the journalism and media industries. He explores that the technology industries and automation have made changes in the past decade to the production, distribution, and consumption of news globally. Sage (2019) stated in a study that AI is a medium through which journalists can impart and rehearse their good and regulating esteems through the code they execute. For example, in 2017 the Washington Post set up a framework called Modbot, which naturally scrutinizes the remarks made on its site to choose whether they fulfill quality rules or should be coordinated away. Keeping up the nature of the online remarks area is a huge test that various online news locals fight with. Modbot can save long stretches of manual human effort sifting through remarks

Sage (2019) states in a research study that every convergence of new advancement, whether or it not to be correspondence, photography, age, or computerization, has by one way or another changes positions, tasks, and work processes in newsrooms. AI is similar it, too, is a development that is and will continue to change news work, as often as possible enhancing yet

once in a while substituting for a trained journalist. A couple of expert checks that pretty much 15% of a reporter's work and about 9% of an editor's work could be robotized using current degrees of AI innovation. Finally, AI will assist with accelerating and size of information in routine conditions, reinforcement and improved journalists and even gain additional opportunities for ground and personalization that would for no situation be possible, it actually can't achieve the greater part of the newsroom work in various circumstances, make new errand and kinds of work. The inescapable fate of AI in journalism has many individuals around.

Kim (2019) stated in his article of research that The Future Institute Today's 2019 trend report proclaimed AI that's not just a technology trend but the third era of computing. "Artificial Intelligence" is a popular expression in media, yet what it implies is more nuanced than just a machine mimicking a human. In journalism, each part of the news creation can be influenced by AI and assembled into three primary classes: story discovery, story production, and story distribution. Generally, the story discovery procedure incorporates using facts to reveal leads, points, topics for reporting, likened to data journalism as a field. Story creation uses AI to help produce a story for instance it is very much helpful in visualizing data and also in writing. Concerning, story movement AI can be better utilized as a device to assist with better arriving at persuaders and disseminating content to the organization's audience

### **Theoretical Framework**

Diffusion of Innovation is the theory that supports the argument of the current study. Robots and AI are progressive innovations at the cutting edge of technology. Promoted as the fourth industrial revolution, what's to come in searching splendid for social robotics, and for the business sectors which can profit with this innovation. The fast development of AI and deep learning, alongside movement in neural organizations which imitates the action of the human brain, are making progressed robotic machines and AI smarter than ever. The purpose behind the theory is to comprehend the reasons, methods, and paces of how new developments spread into society. It is perceived that the diffusion of innovation theory draws upon the technology acceptance model as they are similar in constructs and complement each other in analyzing the process of adoption. There is enormous potential for AI and robotics reasoning to affect the future world. In the future, the present positions will at this point don't exist and new roles will be created. Automation is anticipated to change industries, especially the media industry. (Wood, 2017)

### **Research Methodology**

To achieve the objectives of the study, to check the hypothesis researcher needs to utilize a suitable strategy and exploration approach. In this study, the researcher has employed a qualitative research method in which an in-depth interview was selected to collect data.

### **Population**

Male and female journalists who worked in organizations are the total population of the study. The population of the study is selected by keeping in view the target audience of the research. Pakistani and foreign journalists are taken as the population.

### **Sampling**

The researcher has used snowball sampling. The reason for choosing snowball sampling is that referrals make it easy to find subjects as they come from reliable sources. The total population of the study comprises 4 Pakistani and 4 foreign renowned journalists to complete the sample for data collection.

## **Discussion of Interviews**

### **Pakistani Journalists**

Interview with senior journalist Abid Tahami remained very helpful in this study. On asking him about AI he said that in my personal opinion I do know about AI it's a technology that is used in the world today even personally people are also using it to make life easy. I think humans had made machines to lessen the work of humans himself according to me that is AI.

On talking about AI, he talked about other colleagues in different organizations and stated that its usage is very little as I have said in journalism. The news which we get AI is also involved in it. Colleagues are also using as much as I am using, I don't think so I have any of my colleagues using or depending totally on AI. As you are asking about content creation so I think it's still the work of journalists, no robot is there to create content and if this technology has to come it will surely take a lot of time to arrive in Pakistan like the one who created AI, I mean west media they also don't depend total on AI. When your thoughts and technology will not synchronize until then you cannot take advantage of AI.

According to him at this stage, he can't say much about AI in Pakistan is not that much used here that he should feel threatened. Further, he stated that see every technology is made to be better than before, and every technology is useful, as you are saying that journalists feel threatened that AI would replace them so in a sense this is threatening every journalist would feel threat but as I said earlier there is a lot of time to arrive this type of robotics or technology in Pakistan and if it happens so I think there must be other opportunities which will be given to the journalists.

Interviewing the senior copy editor in geo news Asif Bajwa talked about AI that he is aware of AI. "AI is any machine doing humans-like learning and problem-solving process".

He also speaks about the use of AI in his work he mentioned that he uses AI for detecting and verifying data. Now articles are automatically tagged which made his task easier and faster than before. He also mentions that his colleagues are also using ai in their work now. He stated that "Many colleagues use event alerts, graphics, automatically produced drafts to manage huge workload"

He also stated the usefulness of AI instead of feeling threatened. As it is not possible to completely replace humans with robots, always there is a need for humans to do certain tasks. Even machines cannot do work themselves command is given by humans then do their tasks. So, he said that he doesn't feel any threat from AI.

Talking about the best use of AI in the organization he says that being a part of one of the most top media channels, so they receive lots of news, stories, articles, etc. AI is used to manage all this data and prioritize news according to its importance.

He thinks that AI has not made journalism only modern but it has changed a lot with the advancement in technology, previously they had print media and now it's electronic and more social. So he thinks AI has played a major role in modernizing journalism.

Interviewing Rooba Arooj she tells a lot about AI technology in journalism. She said she has been working in journalism for six years and almost this is the era of change in journalism when AI is much used so, luckily, we are that generation that belongs to these technologies' AI, mobile technology, computer technology, social media so all these technologies we are using as a source of news. Nowadays journalism without AI journalists is paralyzed. A journalist is relying on the gadgets or software of AI."

She also said that "international journalists are far away from us. They are not only one step ahead in journalism but also technology, for example, we are using DSNG but many other countries are using smart technology so they don't need a car or a dish for news. Somehow it is also in Pakistan but we lack technology. Cameras are advanced drones are there internationally but here as a comparison to them, there is less technology available. If we do a comparison, we'll get the ratio of thirty to seventy".

The researcher interviewed Muhammad Usama who is a reporter at Abb Tak TV. While talking to him he told the researcher about what he knows about AI.

"Yes I know about AI use in the field but in Pakistani electronic media, we don't use any modern technology due to affordability crises. But there are some Government institutions where we use AI for forecasting any events. Also, we are witnessing a huge use of AI in the digital world and especially by the government agencies."

He also mentioned that "Majorly not in field journalism, but it has a small usage. We use AI in the forecasting of events and for calculating the audience responses to various events. Also, AI has its main use as a tool of marketing". He let the researcher know how he is using AI in his work.

A very few, but multiple organizations use AI programs to collect data from a mass audience. They plan their events on that data and it helps us to calculate the sensitivity of events according to the audience response and demand. Usually, AI is used to calculate data from Social sites, and then it can be applied to other modes of communication.

### **Foreign Journalists**

Fatima Shokri who is an international journalist who worked in Iran and Germany said:

"We have two different sections of media. One of them includes Journalists who work with paper media whereas the other section deals with audiovisual media. Both of these sections are completely different from each other. Journalists who have expertise in AI can work more efficiently as compared to those who don't have any grasp of AI. Their knowledge about AI makes their agencies more successful".

In media, working speed is important. Journalists, who can work in such a fast-paced environment, present more accurate news based on facts. To be successful in the world of media, a journalist must know how to multitask in this field. They must update their knowledge and learn



this technology step by step. A journalist, who is not into the idea of multitasking, cannot be successful in the world of journalism and media. I emphasize multitasking and using AI. For example, all journalists and media perform various tasks simultaneously during international conferences. Without being fast and updating knowledge about AI, it is not possible to be successful.

AI has got some great pros. AI is highly beneficial for all persons. Although it is not possible to consider AI as a threat we must be careful about using this technology and devices. As a journalist, we must be cautious about faking news because it is really difficult to differentiate fact-based news from fake news. Being fast and expert in this technology should not affect the quality of the story. We should focus on our main subject, based on facts, by using AI.

The researcher interviewed Saurabh Duggal who is Indian journalist he started his interview by giving an introduction and experience in the field of journalism

The latest software I had worked with was News Wrap for making pages. One of its important features, linked with AI, is sending the raw photo for auto photo editing. It has replaced manual photo editing with auto photo editing. I have an idea about the latest technology AI. My exposure to AI was limited to the usage of News Wrap which is used for auto photo editing and for making graphics we use this software a lot.

Saurabh Duggal gave his opinion on who is using more AI technology in their work or organization he stated that international journalists, especially from European and North American publications use more of AI. Even in India if I say there is still not much use of AI as European countries are doing. Hope that in the coming years we use this technology as it is used in other countries.

“AI is useful, but it comes at cost of losing jobs. In the last organization I had worked, earlier there was a proper photo editing department with a team of 3-4 persons, but since the time News Wrap was introduced, the manual photo editing department was replaced by the auto photo editing and this led to lie off of three staffers. Only one person is left in the photo editing department. So, I think it is useful but at the same time there is a risk of jobless if a machine can do work of two to three persons, then the organization will replace humans with machines and there will be less manpower but obviously, they need human to command machines.

He talked about the modernization of journalism by the use of AI he said that “Yes, modern and saving time. But, I am again mentioning this transformation is also leading to many of our colleagues in different departments related to news production losing their jobs”.

Tarhub Asgar. a multimedia journalist at BBC. As BBC is such a big organization, she can tell the use of AI in her organization. The interview begins by asking about AI on which she explained;

“Yes, I do know about AI. By using this technology, we can do verification of pictures, videos, news content and we can also see in terms of copyright we can verify user-generated content other than that if you want to do some research so u get great help from it”.

She said that if you want to minimize the larger content into smaller printing content you can do that, we use a lot of software for that, and it's very useful in investigative reports. You can

even create content using different software's and after doing their verification you can identify location, geography, and almost everything, in short, we use AI a lot in our work there is no doubt in that. Of course, I do use AI in my work."

The researcher selected Saqib ul Islam for the interview. He is a multimedia producer/reporter in the voice of America.

On asking him about AI he replied "Of course, today we all use AI every day in most of our work-related or personal tasks. For me anything that enhances human intelligence is AI".

In modern newsrooms, AI is used at every level from organizing stories before going out to shoot, to shooting with technologically advanced machines to give you what a reporter and a producer want, and real-time transcribing and translating news is all AI. Automating news, extracting data, and timely verifying facts have helped newsrooms compete for tasks in minutes. And we have gone from huge live news coverage setups, OB vans to a backpack or even a cellphone, for covering live news events. It's all AI.

### **Interview Conclusion**

After analyzing the interviews conducted by Pakistani & foreign journalists the researcher came to know about certain realities related to the use of AI in journalism. Almost majority of them have said that they or their organizations are using AI but few of them responded opposite to it by saying that they don't use AI in their work or their organization. As the world is moving towards the more advanced technological era every journalist is moving with the time by adopting the latest technology so that they can survive there but at the same time some of them feel threatened by using AI as they doubt that it could lead to the job loss of journalists. Talking about the comparison of Pakistani & foreign journalists, both are using AI and at the same time. Most of the journalists also said that they find it very useful as it has made their work easier, faster and energy saver. Now they don't have to wait for hours for work to be done.

Pakistani journalists are more of the point that there is AI technology available in their organizations but as compared to western media still Pakistan lack in technology the use of it is not as much as it is in the west. Whereas if I talk about our neighboring country India the journalist from there also come up with the point that there, they also lack AI technology it's not that they are using but the use of it is in very little work. He also mentioned the European side countries use this much as compared to India. However, another journalist from Washington D.C. was of the point that they daily use AI in their work. Some of the journalists also said that they cannot even imagine their work without using AI. After analyzing interviews, it is seen that most AI is used for research or editing and mostly for newsgathering, these are the main areas where journalists are mostly using AI although there is other work too where it is used mostly mentioned these areas especially. Apart from its usage in journalism whether some journalists use it or not but they do know about AI and its emerging power in the real world. As AI is known as the 4<sup>th</sup> industrial revolution it is seen by interviewing that it is changing the patterns of journalism before it was in past, AI is playing a major role in modernizing journalism hence, one of the journalists disagrees on the modernization of journalism by AI. So, summing up all researchers find out that both Pakistani & foreign journalists are using AI somehow but international media is taking the lead using this technology. In the future, it is thought that in Pakistan also this technology will be used in a way as it is used in the west.

## **Statistical Analysis**

NVIVO method was selected to check the results on statistics grounds. The researcher coded the interviews into four points; identity, modernization, threat, usefulness, and divided into subcategories with yes or no. The results concluded that Pakistani journalists are using it on a very basic level and some don't even use this technology of AI whereas foreign journalists are concerned big media houses have started using this technology.

## **Findings & Conclusions**

Artificial intelligence is a field that has become very popular nowadays; it is known as the 4<sup>th</sup> industrial revolution. So, the future of almost every field could lie in AI. There are so many organizations that have in-built AI just like Washington Post, BBC, etc. Journalism is a vast field in which there is a need for more workforces every time from newsgathering to news distribution there are hundreds of workforces behind this so the news can reach the audience. Still, AI is not common among every organization the one that is using it and is well-established organizations is in the process. There are a lot of types of news in which journalists have to risk their lives to gather the news example of covid-19 is there reporters went out to collect the news and they suffered from the disease, another situation can be of the earthquake, bomb blast so in these type of situation AI can be very helpful as it can save the life of journalists as well that's why it is said that AI can minimize the human tasks but it will take time to arrive this technology in every organization. There is a lot of threat spread among many journalists but at the same time, there are many who don't feel threatened by AI. As AI may replace the jobs of some journalists but at the same time, it will also provide more opportunities to them and can make their work easier and faster than before.

The literature review also supported that AI has become a major concern of the organizations as well as for the general public, nothing is apart from AI its roots are spread everywhere even a mobile phone which we carry has AI technology. Literature has shown that journalists need AI to do their work efficiently, we are living in an era that is all about the time everything has to be done quickly, so AI has reduced the time of journalists and has increased the efficacy of work. The big media giants like CNN, BBC, Washington Post have their in-built setups of AI whereas as national media is concerned, they don't have much in build technology but still somehow, they are using AI technology. The growth of this technology is increasing day by day it has created a buzz in the field of journalism as it is said that in near future AI could replace journalists. Literature has shown that AI has somehow changed the working patterns of journalists. In particular, this development was seen as a target alliance to change the professional practices of journalism.

Western societies are the innovators who have innovated the AI technology and diffused this technology in the society they are still working on this technology to make it better and more advanced. According to Diffusion of Innovation, not all people adopt technology at once it takes a certain time and opportunity as well. As every latest technology fell from west to east same is with AI. Pakistanis are now getting aware of this technology and its usefulness but some are still reluctant to adopt this technology as they feel the threat of losing their job. But with the emergence of every new technology, brings different opportunities and so is the case of journalists AI has lessened their work and at the same time they are more towards multitasking.

Findings revealed that most of the journalists agreed that AI is really helpful in the field of journalism. It has contributed to improving the working pattern of journalists. Before this innovation, all the work by journalists was to be done manually and it takes a lot of time as well as energy. Through findings, it was clear that foreign and even Pakistani journalists are using AI to improve the quality and efficacy of their work.

No doubt every technology modernizes society likewise AI technology has modernized journalism according to some of the journalists but some were of the point that they don't feel any difference with AI technology. Firstly, it was tough for the journalists to gather news from different areas and it took a lot of energy and time but now it's easy to gather. Likewise, there are many other tasks which now with the use of technology have become much easier for journalists and they can take out multi-task within less time.

In comparison, western media is a step ahead in all terms so in technology. It transfers from top to down so AI is made by the western countries and now spreading all over the world. According to Pakistani journalists AI is being used in media organizations but it's more used in international media houses. Internationally also use of AI is not in everyone's organization some big media grants are using it and it's still in the processing stage.

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