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RESEARCH PAPER

Journalist Perceptions and Views towards the Integration of AI-based Applications in the Journalism Industry in Pakistan: Expansion of the UTAUT Model

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ABSTRACT

The study aims to identify the factors influencing the integration of AI-based applications in the journalism industry and understand the journalists' concerns. Related work revealed many journalists may fail to utilize AI-based tools effectively in their media routine tasks. Conversely, AI algorithms may give rise to privacy issues being incorporated into news coverage may decline credibility amongst audiences. In this context, UTAUT model was applied to determine the influential factors. For the quantitative approach, a survey questionnaire was devised to validate the research model and achieve research objectives. Thirty-nine participants recorded initial responses for the reliability analysis. The reliability test (Cronbach's Alpha) was applied and all constructs exhibited significant results higher than 0.7 deemed reliable, ranging from 0.782 to 0.902. The integration of AI applications in journalism industry research offers valuable contributions by enhancing efficiency, accuracy, and collaboration, ultimately advancing the quality and impact of research outcomes in the field.

| **Keywords:** | AI-Based Applications, Journalism Industry, Journalist Perception, Pakistan, UTAUT Model |

Introduction

A journalist's role in collecting, evaluating, and disseminating news information to the public is crucial for aiding individuals in making informed decisions and participating in democratic processes. Through research and investigation across various content and topics, journalists uncover facts, gather evidence, and deliver stories with context (Tandoc Jr, 2019). They hold the responsibility of ensuring the accuracy of information presented in their stories to build trust among audiences, thus preventing the spread of misinformation (Ward, 2019). A study revealed by Zahay et al., (2021), journalists create stories for the public interest and address issues affecting societies at large. Upholding a code of ethics guides their behaviour, ensuring integrity and honesty in reporting, which can significantly impact the public and communities.

In the modern workspace, rapid technological advancements have transformed the landscape of journalism industries by providing new entrants with powerful tools to gather, produce, and spread news content instantly (Broussard, et al., 2019). According to the researchers (Perreault & Ferrucci, 2020; Biswal & Gouda, 2020), Journalists increasingly integrate AI-based applications into their workspace to enhance the overall quality and efficiency of news reporting and narrative in the digital age worldwide. In addition, AI tools assist in collecting routine news stories or reports, creating automated content through AI algorithms, and freeing up journalists for investigative work (Pavlik, 2023). The researchers (Abdulmajeed & Fahmy, 2022), urged that AI tools be linked with social media platforms for breaking news, the latest trends, and public sentiment, enabling journalists to stay informed

about emerging stories in real-time. The adaptation of AI-based applications in journalism enhances human skills towards technology and underscores the value of technology in their work activities to enhance professional skills in the digital age (Biswal & Gouda, 2020; Zahay et al., 2021).

Despite the technological advantages in modern workspace, several challenges are faced by journalists when adopting AI applications, including many journalists may lack the technical expertise required to effectively use AI-based tools and understand how to interpret AI algorithms as well as integrate them into existing workflows, can be daunting for those without a background in data science or technological skills (French & Poole, 2020; Abdulmajeed & Fahmy, 2022; Jamil, 2023). On the other hand (Flores Vivar, 2019; Stray, 2021; Monti, 2019), AI algorithms can introduce ethical dilemmas, including biases in data sets, privacy concerns, and the potential for misinformation by adding in news reports. In light of these challenges, this research aims to examine the impacts influencing AI-based applications in the journalism industry and understand the journalist's perceptions and views regarding the effective integration of AI-based applications in the journalism workspace. This research will support unlocking a new and innovative way of the news industry and lead to sustainability in a rapidly evolving electronic media landscape.

Literature Review

This study's literature is built around two major pillars that serve as the research's framework. These are the following: "Significant factors" as well as the "Unified Theory of Acceptance and Use of Technology" UTAUT model. This section of the study explored the amended UTAUT model including additional factors that are determined as influential predictors towards AI-based applications in the field of journalism in Pakistan.

Technical Expertise (TE)

Technical expertise refers to the specialized skills and understanding required to effectively utilize and manipulate technologies within a particular field or industry. Additionally, journalists must possess data literacy skills to collect, clean, analyze, and interpret data effectively, this may include understanding data formats, data sources, and basic statistical concepts (Jamil, 2023). According to the recommendation by researchers (Abdulmajeed & Fahmy, 2022), Without technical expertise, journalists may find it challenging to integrate AI-based tools and software applications designed for journalism routine tasks. A study by Flores Vivar, (2019), also stated that without technical expertise, journalists may have difficulty assessing the quality and accuracy of AI-generated media content which has potentially led to the dissemination of false or misleading information. Journalists lacking technical expertise may become overly reliant on technical support or IT professionals to assist them with using AI-based media generation tools. This dependency can lead to delays in content production and reduce journalists' autonomy and agility in their work (Jamil et al., 2022).

Journalistic Ethics (JE)

Journalistic ethics refers to the principles, values, and standards that guide the conduct and practices of journalists in their work. Consequently, these ethics are rooted in the fundamental principles of truthfulness, accuracy, fairness, impartiality, and accountability (Biswal & Gouda, 2020). Therefore, Journalistic ethics play a crucial role in maintaining credibility in media content. Researchers emphasized (Moran & Shaikh, 2022), that many journalists fail to disclose the use of AI technology or provide adequate context about how it was used to generate content, it can erode trust with audiences and raise questions about the integrity of the reporting process. According to a study by (Abdulmajeed & Fahmy, 2022; Jamil, 2023), while AI can automate certain aspects of content creation, journalists must maintain editorial oversight to ensure that the content

aligns with ethical standards and journalistic principles. Ethical considerations help journalists identify and mitigate potential harms associated with the use of AI technology in journalism, such as the spread of misinformation, discrimination, or infringement of individuals' rights. Journalists must prioritize the public interest and minimize harm when using AI applications (French & Poole, 2020).

Unified Theory of Acceptance and Use of Technology (UTAUT) Model

The UTAUT model has gained significant recognition and is widely employed in technology acceptance research (Venkatesh et al., 2003). As suggested by researchers (Kim & Kim, 2021), UTAUT has demonstrated strong predictive power in explaining and predicting individuals' acceptance and usage of technology across different contexts and settings. In a study by (Wang et al., 2023), UTAUT provides insights into the key determinants of technology acceptance, enabling organizations and policymakers to identify and address barriers to adoption by understanding Individuals' perceptions and concerns, stakeholders can develop targeted interventions to promote technology adoption and usage. Notably, the UTAUT acceptance model introduces additional predictors that recognize the importance of moderators (factors influencing the strength of relationships between predictors) and mediators (factors defining the process through which predictors influence behavioral intention) in determining the actual usage of a specific technology (Wang et al., 2021). In this context, the UTAUT model is applied, integrated with external significant factors, to understand journalist perceptions and concerns regarding the integration and acceptance of AI-based applications in in journalism industry. The subsequent explanations explore each original predictor of the UTAUT model as depicted in Figure 2. UTAUT focuses on four original constructs (independent variables): performance expectations (PE), effort expectations (EE), social influence (SI), and facilitating conditions (FC). Additionally, it examines whether behavioral intentions (Intentions) impact technology usage (Venkatesh et al., 2003). Consequently, PE, EE, SI, and FC are considered original independent constructs of the UTAUT model. Whereas BI is the dependent construct in the UTAUT model, which explains the factors influencing individuals' acceptance and use of technology. On the other hand, Gender, age, experience, and voluntariness are considered as (Moderator) demographic variables related to the personal profile information of the respondents. Figure 1, illustrates the UTAUT model diagram.

Performance Expectancy: PE refers to the degree to which an individual believes that using a technology will help them perform their job tasks more effectively or improve their performance outcomes (Venkatesh et al., 2003). In the context of journalists and AI applications, PE may influence acceptance if journalists perceive that AI tools can enhance their ability to gather, analyse, or disseminate news content more efficiently, leading to higher-quality reporting or increased productivity (Chen et al., 2023; Al Jwaniat 2023; Pham & Nguyet, 2023).

Effort Expectancy: EE refers to the degree of ease associated with using a technology. It reflects individuals' perceptions of the effort required to learn and use the technology (Venkatesh et al., 2003). For journalists, EE may influence acceptance if they perceive AI applications as intuitive, user-friendly, and easy to integrate into their existing workflows (Al Jwaniat 2023). Conversely, if journalists perceive AI tools as complex or cumbersome to use, it may hinder acceptance (Kim & Kim, 2021).

Social Influence: SI refers to the degree to which an individual perceives that important other (e.g., colleagues, supervisors, or peers) believe they should use the technology. Social influence can exert pressure on individuals to adopt or reject a technology based on the opinions or expectations of others in their social network (Venkatesh et al., 2003). In the journalism industry, SI may influence acceptance if journalists perceive that

their colleagues or industry peers endorse the use of AI applications and view them as valuable tools for enhancing journalistic practices (Pham & Nguyet, 2023; Al Jwaniat 2023).

Facilitating Conditions: FC is the degree to which a person believes that the organizational and technological infrastructure facilitate the application of technology. FC encompasses factors such as the availability of resources, technical support, training opportunities, and compatibility with existing systems (Venkatesh et al., 2003).. In the context of journalists and AI applications, FC may influence acceptance if journalists perceive that their organizations provide adequate support, training, and resources to facilitate the integration and use of AI tools in their work (Liu & Phongsatha, 2023; Kim & Kim, 2021).

Behavioural Intention: BI refers to an individual's readiness and intention to perform a specific behaviour, such as using technology. BI is considered a direct precursor to actual technology usage. In the context of journalists and AI applications, BI may be influenced by PE, EE, SI, and FC (Venkatesh et al., 2003). If journalists perceive that AI applications offer performance benefits, are easy to use, are endorsed by their peers, and are supported by their organizations, they are more likely to develop positive intentions to use AI tools in their journalistic work (Chen et al., 2023; Al Jwaniat 2023; Pham & Nguyet, 2023).
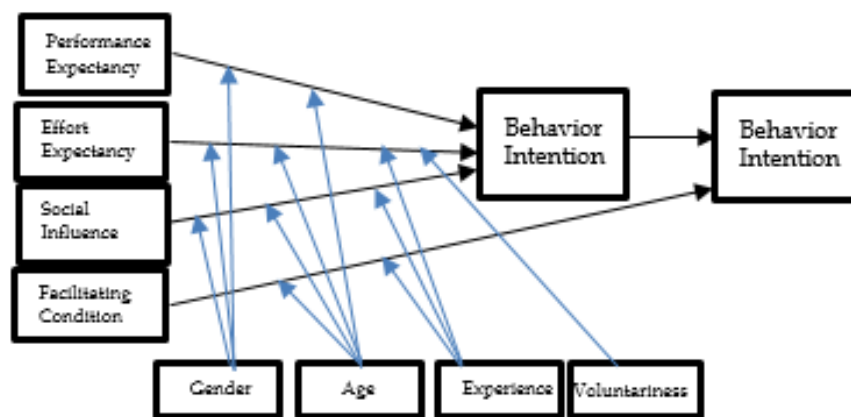

Figure 1. UTAUT Model

Proposed Research Model

The proposed model examines the journalist's perceptions and views regarding the integration of AI-based applications in the journalism industry. The research model incorporates additional variables to assess the level of significant factors by developing the hypotheses relationships to achieve research objectives. The researchers outline the proposed research model, which integrates external factors with the core constructs to form a cohesive framework. The research model implies the Behaviour (BI) as the dependent variable, along with newly integrated significant factors such as technical expertise (TE), and journalistic ethics (JE), deemed to be influential factors for understanding the journalist's concerns and views toward the adoption and integrations of AI-based applications in the journalism industry. The subsequent section outlines the relationships and hypotheses posited within the proposed research model.
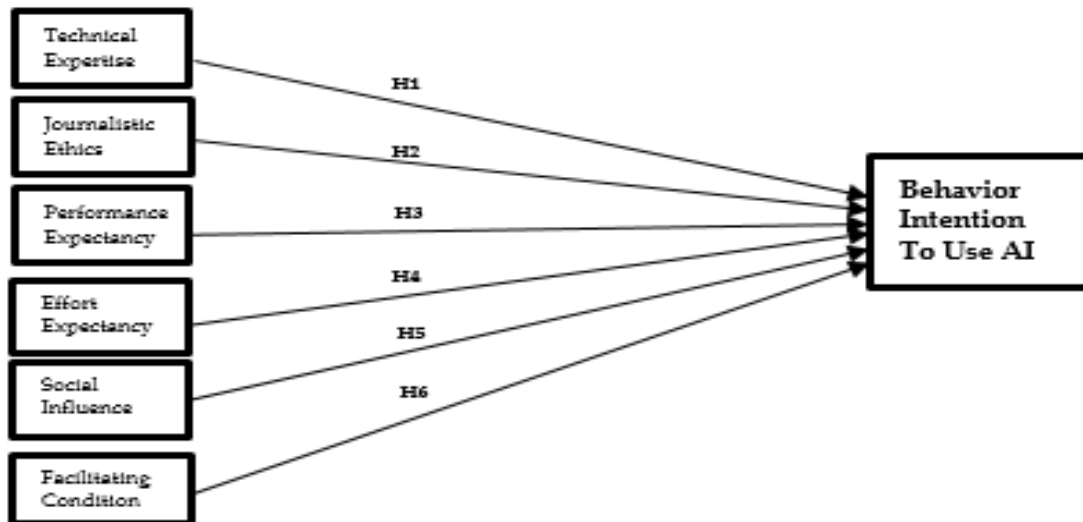
Figure 2. Proposed Research Model

H_1: Technical Expertise has positive impacts on Behavior Intention to use AI.
H_2: Journalistic ethics has positive impacts on Behavior Intention to use AI.
H_3: Performance Expectancy has positive impacts on Behavior Intention to use AI.
H_4: Effort Expectancy has positive impacts on Behavior Intention to use AI.
H_5: Social Influence has positive impacts on Behavior Intention to use AI.
H_6: Social Influence has positive impacts on Behavior Intention to use AI.

Material and Methods

Procedure and Measurement Instrument

The targeted responses were gathered from journalists especially those who are engaged in media workspace and journalism industry in Pakistan. To facilitate quantitative data collection (Rahman, 2020), a survey questionnaire was devised to validate hypotheses, achieve study objectives, and ascertain the primary influences of the examined constructs. This data collection tool was comprised of two sections totaling 39 items. The first section of the data collection tool pertained to demographic information concerning respondents, encompassing gender, age, journalistic experience location of the journalism industry in Pakistan, and others. The second section encompasses survey questions aimed at assessing Journalist comprehension and perspectives regarding AI-based applications in the field of journalism. In this context, the key indicators in this section focus on the significance of independent constructs, including Technical Expertise (TE, with six items), Journalistic ethics (TM, with six items, Performance Expectancy (PE, with four items), Effort Expectancy (EE, with four items), Social Influence (SI, with four items), and Facilitating Conditions (FC, with four items), all influenced by pivotal factors. Meanwhile, Behavioural Intention (BI, with four items), serves as the dependent variable.

To gather data and explore the relationships among independent and dependent variables, a cross-sectional survey methodology was adopted. A survey instrument scale was developed, employing a five-point Likert scale ranging from strongly disagree to strongly agree, to capture opinions and insights from the target population (Chen et al., 2023). The data collection tool was designed using Google Forms and distributed to participants via email and WhatsApp. The reliability of each independent and dependent construct was assessed using SPSS software to ensure the consistency and stability of measurements in the data collection tool, thus establishing their trustworthiness. In a study by researchers (Sadriddinovich, 2023), SPSS serves as a versatile tool for conducting a wide range of statistical analyses, encompassing both descriptive and inferential statistics.

Additionally, it aids in administering reliability and validity tests to enhance the robustness and consistency of the survey instrument.

Results and Discussion

Descriptive Statistics (Participants)

A total of 39 responses were gathered from journalists who were working in the journalism industry located in highly populated and big cities such as Karachi, Lahore, Multan, Islamabad, etc. in Pakistan. The collected responses were utilized to ascertain the preliminary findings concerning the validity of the data instruments through reliability test analysis.

According to our demographic study, the bulk of the targeted individuals were males (30%) and females (21.6%). The 15 participants were aged between 25 and 35 years (38.8%), 15 between 36 and 45 years (38.8%), and 9 between 46 and 55 years (24.4%), with the balance of the age group not participating. The bulk of journalists (20%) documented their initial comments in Karachi, (10%) in Lahore, and (9%) in Multan, while the remainder of the cities did not do so. The bulk of experienced journalists' 35 percent (90.8%) and 4% (9.2%) participated in the experience 11-20, respectively, while the rest did not. The demographic information is represented in Table 1.

Table 1
Descriptive Statistics

Demographic Information	Frequency	Percentage of frequency (%)
Gender		
Male	30	77.8
Female	09	21.6
Age		
25-35	15	38.8
36-45	15	38.8
46-55	09	24.4
56+	--	--
Journalism industry in Pakistan		
Karachi	20	49.8
Lahore	10	26.8
Peshawar	--	--
Multan	09	24.4
Quetta	--	--
Others	--	--
Journalist Experience		
1-10	35	90.8
11-20	04	9.2
21-30	--	--
31+	--	--

Reliability Test (Pilot Study)

Pilot studies allow for the validation and assessment of the reliability of data collection tools such as survey questions and measurement tools before conducting the actual research study. Initial responses from Thirty-nine journalists were gathered for reliability analysis measurements. The Cronbach's Alpha test was employed to assess the

consistency of the items within each construct using the SPSS statistical tool (Sadriddinovich, 2023).

Cronbach's Alpha is deemed reliable when its coefficient value exceeds or equals 0.7 (Hair et al., 2013). The reliability coefficients obtained for each construct were as follows: BI (α = 0.902), TE (α = 0.818), JE (α = 0.782), PE (α = 0.882), EE (α = 0.834), SI (α = 0.859), and FC (α = 0.792). All constructs exhibited significant values higher than 0.7, ranging from 0.782 to 0.902 respectively, as presented in Table 2.

Table 2
Reliability test Results

Constructs	No. of Items	Cronbach's Alpha ($\alpha \geq 0.7$)
Behavior Intention (BI)	04	0.902
Technical Expertise (TE)	06	0.818
Journalistic Ethics (PU)	06	0.782
Performance Expectancy (PE)	04	0.882
Effort Expectancy (EE)	04	0.834
Social Influence (SI)	04	0.859
Facilitating Condition (FC)	04	0.792

Conclusion

In the modern media workspace, rapid technological advancements have transformed the landscape of journalism industries by providing new entrants with powerful tools to gather, produce, and spread news content instantly. Journalists increasingly integrate AI-based applications into their tasks to enhance the overall quality and efficiency of news reporting and narrative in the digital age worldwide.

In light of past studies, research societies contributed to their investigations by giving the statement, that many journalists may fail to utilize AI-based tools effectively in automating repetitive tasks such as data analysis, fact-checking, and content generation, allowing journalists to focus on more creative and high-value tasks. Conversely, AI algorithms may give rise to ethical challenges, such as biases within datasets, privacy issues, and the risk of misinformation being incorporated into news coverage may decline credibility and trust with their audiences.

In this context, the UTAUT model is applied, integrated with external significant factors, to understand journalist perceptions and concerns regarding the integration and acceptance of AI-based applications in in journalism industry in Pakistan. To facilitate quantitative data collection, a survey questionnaire was devised to validate hypotheses, achieve study objectives, and ascertain the primary influences of the examined constructs.

The Cronbach's Alpha test was employed to assess the consistency of the items within each construct using the SPSS statistical tool. Cronbach's Alpha is deemed reliable when its coefficient value exceeds or equals 0.7. The reliability coefficients obtained for each construct were as follows: BI (α = 0.902), TE (α = 0.818), JE (α = 0.782), PE (α = 0.882), EE (α = 0.834), SI (α = 0.859), and FC (α = 0.792). All constructs exhibited significant values above 0.7, ranging from 0.782 to 0.902 respectively. Consequently, the researchers can proceed with the final investigation as the obtained reliability values for all constructs were satisfactory.

Influential factors such as Technical Expertise (TE), Journalistic Ethics (JE), Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Condition (FC) are deemed crucial factors that impact journalist intention and understanding the journalist perception towards the acceptance of AI-based application in

the journalism workspace. This research aims to provide a comprehensive understanding of journalists' attitudes, perceptions, and intentions toward AI-based applications and how journalists can harness the potential of AI technology while upholding the core values and principles of journalism in the future.

Recommendations

It is necessary to enhance training programs and support systems to use AI in journalism processes in Pakistan. Thorough educational seminars by the media and AI experts should be held at college and university levels. Furthermore, it is also necessary to educate journalists with clear ethical norms regarding the proper utilization of AI maintaining the credibility of media organizations and journalists. This practice discourages the tumultuous spread of false information. It is also imperative that the media organizations encourage journalists to use technology backed by training on utilizing AI. Implementation of this process will increase the content quality.

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