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Improving Information Literacy on the Development of the Younger Generation's Civic Engagement

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Abstract

Currently, the public, educators and politicians should work more actively to prevent extremist and aggressive sentiments and deviant behavior among modern youth. This can be achieved, among other things, by improving information literacy on the formation and development of positive civic engagement among the younger generation. The purpose of this manuscript is to examine the phenomenon of civic engagement of the younger generation by improving information literacy on the phenomenon under consideration. Information literacy on the development of civic engagement is enhanced by historical and pedagogical understanding of the experience of civic and patriotic education of schoolchildren and the fundamental content of the program for the development of positive civic engagement. The program is presented fully and comprehensively and consists of the following sections: program passport, goals and objectives, results of activities, scientific and methodological justification of the program, roadmap for organizing the process of formation and development of a positive image of civic engagement of the younger generation. This article may be useful to specialists in the field of educational work, methodologists, educators and researchers in the educational field of pedagogical science in terms of social and civic education in the fragile and changing conditions of modern times.

Keywords: information literacy, development of younger generation's civic engagement, education, program.

1. Introduction

Currently, the United Nations pays great attention to the formation and development of the citizenship of the younger generation. A new definition has appeared in the scientific world – global citizenship (Global Citizenship). This term refers to the social, political, environmental and economic actions of individuals and communities in the global understanding of world and social problems. It is based on the statement about the participation of individuals in the activities of various associations. Promoting global citizenship for sustainable development presupposes that all citizens assume social responsibility for actions in the interests of the whole society (Gálik et al., 2024; Gáliková Tolnaiová, Gálik, 2020).

The concept of global citizenship is included in the United Nations document *Sustainable Development Goals* in paragraph 4: "Providing education for all and building a civic position for young people". Universities are responsible for promoting the idea of global citizenship, they prepare students to become members of a large community and use their knowledge, skills and craftsmen to contribute to its development (Global Citizenship).

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The development of a positive civic engagement program is the final stage in the authors' work to consider the modern phenomenon of “positive civic engagement” in accordance with its previously presented structure, functional model and pedagogical technology.

The essence of this scientific definition boils down to defining the diversity or focus of civic engagement of the younger generation. In this case, we are talking about the creative and constructive component of its manifestation. Positive civic engagement is extremely important in an ever-changing world, and is also relevant in connection with the need to reduce the risks of deviant delinquent behavior of young people and its accumulation in society.

Programming the development of creative civic engagement of the younger generation includes the consistent development of a set of goals, objectives, scientific and methodological foundations, and a roadmap for the systematic, consistent formation of socio-civic and patriotic qualities of students at the stage of growing up. We're celebrating. The importance of algorithmization and programming of activities in this area is considered by the authors as the most important component of this aspect of educational work with young people.

Currently, a number of works are being published on the study of civic and patriotic activity of modern youth. Thus, O. Teryaeva and O. Lomova in their work *A study of the positive value attitude of university students to patriotism* developed various components of the positive value attitude of university students to patriotism and identified the main levels and criteria for the formation of civic and patriotic values (Teryaeva, Lomova, 2024). They're confident. The research results allow us to better understand the evolution of patriotic values and their role in the upbringing of the younger generation in the modern world.

M. Rybakova and N. Ivanova in their work *Patriotism as a basis for identifying trends among young people* explore different approaches to defining the concept of "patriotism" and the components of a patriotic citizen. The authors draw attention to the strengthening of students' patriotic sentiments after the start of a special military operation (Rybakova, Ivanova, 2023).

V. Krainik and M. Prishchepa in their work *On the issue of patriotic education of students in a modern university* note the dominant role of the organization of higher education in the formation of civic and patriotic qualities of students. They talk about the need to create and develop special conditions at the university to maintain civic and patriotic feelings and qualities, creative citizenship, and the need to protect their native country (Krainik, Prishchepa, 2019). Currently, the role and importance of the university is changing towards the development of civic qualities of the individual and the development of his creative and constructive civic position.

The object of the research is the positive civic activity of the youth.

The purpose of the article is to consider the issues of developing civic engagement of the younger generation by improving information literacy of the phenomenon under consideration.

The authors presented the following objectives of the manuscript:

– To characterize the historical and pedagogical foundations of the civic and patriotic education of youth;

– To develop a program for the formation and development of positive civic engagement among young people;

– To identify the dynamics and factors of the development of positive civic engagement among students in countering the manifestations of radicalism among young people.

Stages of research:

Stage 1 – definition of the essence of civic engagement of the younger generation; development of historical and pedagogical foundations of civic and patriotic education of youth as a necessary component of the process of improving information literacy on the issue under consideration.

Stage 2 – presentation of positive civic engagement›s socio-pedagogical program of.

Stage 3 – presentation of the conditions for the positive development of adolescent civic engagement.

Therefore, the scientific task of this manuscript is to partially clarify the problem of improving information literacy on the formation and development of positive civic engagement among students of the position, programming socio-civic behavior of students.

Programming the development of civic activity of the younger generation in connection with its historical experience is the logical conclusion of the work of a group of authors to consider the present phenomenon of “civic activity” in accordance with its previously developed structural and functional model and pedagogical technology (Belentsov, 2023).

The essence of this scientific definition is reduced to determining the diversity or direction of civic activity of the younger generation. In this case, we are talking about the creative-constructive component of its manifestation. Positive civic engagement is extremely important in an ever-changing world, and it is also relevant in connection with the need to reduce the risks of deviant delinquent behavior of youth and its accumulation in society (Belentsov, 2019).

Programming the development of a positive civic engagement includes the consistent development of a set of goals, objectives, scientific and methodological foundations, a roadmap for the systematic, consistent formation of socio-civic and patriotic qualities of students at the stage of growing up, namely, in the process of studying at 1,2,3 courses of higher education. We are celebrating. The importance of algorithmization and programming of activities in this area is considered by the authors to be the most important component of this aspect of educational work with young people.

2. Materials and methods

The general basis of the manuscript is represented by the works of modern research scientists (Fakhrutdinova, 2012; Isenko, 2017) and public figures, teachers, researchers of the second half of the nineteenth and early twentieth centuries (Kershensteiner, 1910; Natorp, 1899; Dewey, 1923; Bourgeois, 1903).

The theory of socio-civic education and the formation of constructive civic engagement in the modern changing world formed the theoretical basis of the study.

The methods of carrying out research work were used in the work: a systematic analysis of historical, pedagogical, psychological and philosophical literature and sources; scientific forecasting of socio-civic education of students; generalization of modern pedagogical experience on the issues of civil and patriotic activities of students in educational organizations.

3. Discussion

R. Baird in his work *Youth and Social Media: Opportunities and Challenges of Online Graffiti* draws attention about the importance of social media for youth subcultures (for example, graphic editors). The author claims about various difficulties for the youthful consciousness. This leads to significant, including problematic, changes in the young man's personality. The author also characterizes the importance of the Internet and social networks of youth groups in terms of forming their civic position (Baird, 2022).

In their article *Democratising media policymaking: a stakeholder-centric, systemic approach to copyright consultation* L. Edwards, G. Moss talk about the British joint project of civic participation of young people of the litter-a discussion of a systematic understanding of copyright consultations Based on the results obtained, the authors propose a system of goals and principles to ensure a critical assessment of copyright consultations, as well as guidelines for their reform. The authors conclude that it is necessary to use constructive ways of carrying out the activities of government agencies. Attention is also drawn to the need to promote debate as the main means of resolving problematic situations in intractable policy areas (Edwards et al., 2022).

This article Activists' Communication Design on social media: an example of online solidarity against a forced Islamic lifestyle explores the issue of shared and collective group identity using the example of You Won't Walk Alone, a solidarity social media platform for women suffering from the theft of the Islamic dress code in Turkey. This is an important component of the development of civic engagement of the younger generation, especially girls. The social media platform You Won't Walk Alone illustrates a woman's self-reflection. Thus, this article examines the issue of an active method of communication and its impact on the formation of an active civic position (Arda et al., 2021).

The authors Y.G. Ballo, M.A. Heglum, W. Nielsen, H. Bernst found that early work experience is an influential factor in civic development for young people. This work experience protects vulnerable young people from various kinds of youth socialization problems. Therefore, it is important to study the influence of early work experience in adolescence on the formation of creative civic engagement (Ballo et al., 2022).

C. Kelly, in his work *Fostering Compassion and Empathy: The Role of Humane Education in Early Childhood*, examines the problems of interaction between bullying and cyberbullying. They manifest themselves in the form of complex social, psychological and pedagogical problems. In this work, the main focus is on improving the skills of teachers in the development of creative civic engagement of the younger generation and countering such negative problems as bullying.

The training program used modern educational technologies. The training was interactive in nature, reflective practices and collaborative work on the development of socially oriented projects. The main focus was on the development of caring, kindness and respect in human relationships among adolescents. This activity highlights the effectiveness of teacher training in promoting the creation of a creative and constructive educational environment (Kelly, 2024).

This *study Critical thinking at the moment? The link between mindfulness and critical thinking among future teachers* highlights the need to form critical thinking among future teachers as an essential quality of citizenship for the younger generation. It is a combination of engagement, cognitive maturity, and innovation. Psychological and pedagogical analysis has shown a significant relationship between mindfulness and critical thinking. Conscious presence was positively associated with engagement in critical thinking. As an important conclusion, it should be brought to the attention of public figures, educators, and youth professionals about the importance of strengthening the awareness of future teachers so that they can be more inclined to take a critical approach to teaching when they enter the workforce (Chen et al., 2024).

We agree with Z. Moody's opinion that the study of human rights education has emerged in recent years. Some of the papers examined student learning processes in relation to children's human rights education. This work highlights the specifics of these processes in schools. The author identifies significant areas of analysis (the child himself, the interaction of participants in educational relations, the role of the educational environment) (Moody, 2024).

We agree with N.A. Ansari that the holistic and harmonious development of schoolchildren is gaining momentum at the present time. In developing countries, it is necessary to develop students' active citizenship skills in order to succeed in the modern world. Such studies are limited in Pakistan. Therefore, this work examines the features of the formation of social opportunities and life skills of the younger generation (Ansari, 2024).

Humanistic education develops empathy and ethical thinking in children, equips them with emotional intelligence and the moral foundations necessary to make compassionate decisions and make a positive impact on their community. The article by C. Kelly draws attention to the civic education of children and youth by means of developing humanism and tolerance as integral components of a future citizen and patriot of his homeland (Kelly, 2024).

B. Us draws attention to volunteer work as an integral part of the civic and patriotic education of students. The Youth Corps of the Pacific Asian Society of the Korea International Cooperation Agency (KOICA-PYC) is a global volunteer organization that has been sending college students to the Asia-Pacific region for more than two decades. The youth perceives a positive influence in promoting global citizenship and multiculturalism. This study discusses the relationship between global citizenship and cultural dominance, as well as the prospects for multicultural education in Korea (Us, 2023).

4. Results

The beginning of consideration of the issue of “programming civic engagement of the younger generation” took place in the second half of the XIX – early XX centuries. At that time, Russian pedagogical thought was actively enriched by the ideas of the so-called “new” foreign pedagogy. This period of time was characterized by rapid socio-economic development of European states, a “surge” in the development of the book business, and the prosperity of cultural and social activities.

Progressive-minded teachers understood the moods and changes of modernity. The traditional school refused to form practical skills and abilities, the willingness of students to participate in public life. She only focused the students on obtaining a limited list of knowledge. There was a contradiction between the state of the educational process and the new socio-economic and socio-cultural conditions. It created a socio-pedagogical movement to change and reform schools.

Fundamental importance was attached to the construction of the theoretical and practical foundations of a new social education at various congresses and meetings of teachers, public figures, and researchers that were actively held in the late nineteenth and early twentieth centuries.

In particular, the International Congress on Social Education was held in 1900 in Paris. The Society for Social Education initiated the holding of this large meeting. The speeches vividly announced the emergence of a systemically developed, scientifically based program of socio-civic education of young people.

We will present the main points of the speakers' speeches at the congress in the Table 1.

Table 1. Development of a program of social and civic education at the International Congress on Social Education in 1900

Theoretical foundations of social education of the younger generation.	We quote from E. Lozinsky	1. You must remember about membership in a single universal family and society. You have to be an active builder of social life. You shouldn't be lazy. 2. The most important goal is universal solidarity, the formation of social feeling. 3. Modern teachers should think about the application of new active methods of educational work. They should be extended to all schools. Teachers will become more responsible and socially oriented (Lozinsky, 1903).
The favorable social environment of L. Bourgeois	L. Bourgeois	Children's associations should become a widespread phenomenon in society. They should instill in children social skills and abilities about the importance of public duty, social order and responsibility, duty to the Motherland. The state saw its task in creating various social school communities: public order, alumni associations, self-educational circles (Bourgeois, 1903).
Socio-psychological and pedagogical support of the civic and patriotic education	L. Bourgeois	"Patronages" as a form of educational work appeared. School graduates, active parents, concerned public representatives, participants of various cultural organizations became its main participants. Various educational activities were carried out within the framework of the "patronages" (conversations between teachers and schoolchildren, musical drawing rooms, literary and aesthetic compositions) (Bourgeois, 1903).
Forms and methods of social education of youth	L. Bourgeois	School-wide children's associations have become increasingly important in instilling civic qualities and personality characteristics. Agricultural work, mutual assistance in education, and creativity are the most positive forms of civic and patriotic education and civic engagement of the younger generation (Bourgeois, 1903).

Thus, the International Congress on Social Education in 1900 was of great strategic importance in the education of the younger generation. Theoretical (concepts, methods, methodological approaches) and practical (forms, directions, methods) civic education have been identified.

Georg Kershensteiner is rightfully an apologist for civic education of the younger generation. The German educator, thinker, and public figure holds a special place in the minds of Russian researchers with his systematic and program-oriented approaches to its implementation (Kershentsteiner, 1913).

Table 2. G. Kershensteiner on programming civic education (Kershentsteiner, 1917)

Goals and objectives of civic education	The purpose of civic education is to create a moral community. We must voluntarily participate in our community, respect all its members, we must be aware of our duty to the community, we must become morally better every day. The tasks of social and civic education were formulated in this way.
The main stages of the formation of a future citizen	1. We must be conscientious and careful on the way to becoming a future citizen. We shouldn't be lazy. Therefore, the state will prosper. Therefore, we must be conscious and active.
	2. We must understand the needs of our fatherland. We must also be aware of our responsibilities and duty towards him.
	3. We must form and develop the legal orientation of the personality of schoolchildren: a sense of legality and law and order, an accurate attitude to their rights and duties.

Goals and objectives of civic education	The purpose of civic education is to create a moral community. We must voluntarily participate in our community, respect all its members, we must be aware of our duty to the community, we must become morally better every day. The tasks of social and civic education were formulated in this way.
	The most important task for us is prevention, hygiene and prevention. In this regard, the fatherland creates favorable conditions for education, in every possible way increases the spiritual level of young people, encourages their self-organization, self-activity, creativity.

Thus, we are talking about deep and powerful theoretical foundations, goal-setting and methodology of civic education, as well as forms and methods of filling it with specific pedagogical content according to G. Kershensteiner.

The program-oriented approach is widely used in order to build a full-fledged model for the development of a creative-constructive modus of civic activity of the younger generation both at the Russian.

The program for the development of a creative-constructive modus of civic engagement is the basis of an integrated approach as a tool for the university faculty to carry out a purposeful educational policy, the formation and development of an active civic position of students.

The program for the development of civic engagement of the younger generation is a set of educational activities for the development of civic ideals, the formation of patriotic values and civic qualities of modern youth.

The leading principles of the youth positive civic engagement development (Figure 1):

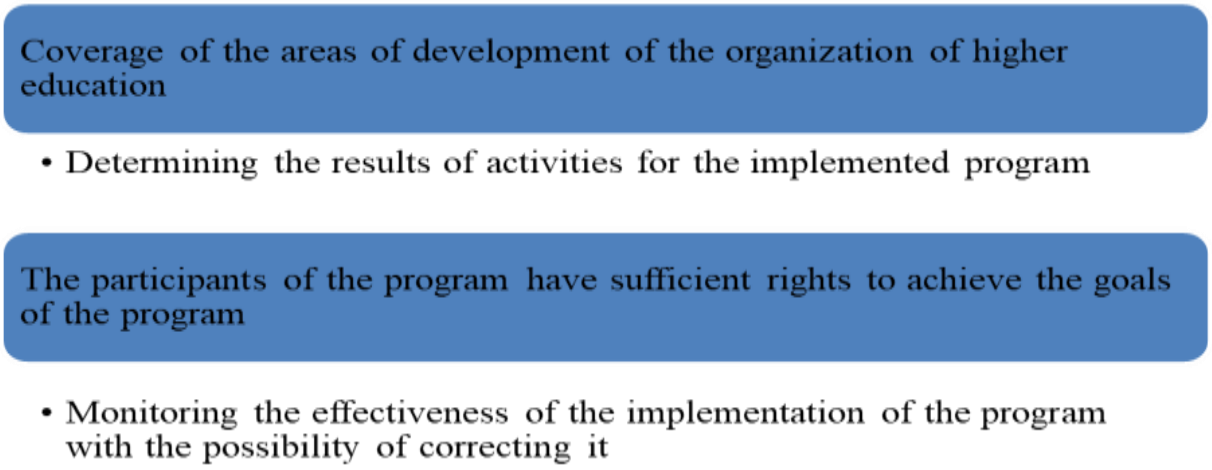

Fig. 1. The leading principles of the program for the formation and development of positive civic engagement among young people

We proceeded from taking into account the specifics of socio-civic education, the development of a creative-constructive modus of civic engagement in the development of the program based on:

– Firstly, regulatory legal documents and their importance in the development of a creative-constructive modus of civic engagement of the younger generation;

– Secondly, the conceptual and scientific and methodological features of the problem under consideration;

– Thirdly, the program focuses on the development of a creative-constructive modus of civic activity of young people.

The program development procedure is also of genuine interest and is based on a proven and generally accepted scheme. It provides for the following sequence of actions (Figure 2):

Fig. 2. Scheme of designing a program for the development of a creative-constructive modus of civic engagement

We highlight the main stages of creating a program (Lipatnikova, 2013).

1. Creation of the program concept.

The Strategy for the Development of Education in the Russian Federation draws the most significant attention to the process of raising children as an integral part of the entire field of education. The strategy actualizes the issues of uniting the forces of participants in educational relations for the civic and patriotic education of future citizens (Strategiya..., 2015).

A systematic analysis of the state of educational work in Russia and the university, in particular, the manifestations of aggressive and deviant delinquent attitudes of young people, the active dissemination of positive social and educational practices allow us to develop and formulate a concept (forecast) of socio-civic education, taking into account trends in the development of modern society and modern educational challenges.

2. Important parts of the program.

1. Passport (detailed information about the program: the timing of implementation, who manages the program, the progress of implementation).
2. Goals and objectives of the program.
3. The planned results of the program.
4. Methodological presentation of the program.
5. A strategic plan.

The program has the following tasks:

– Analysis of the problems of the history of social and civic education and the development of civic activity of youth in Russia and abroad;

– Methodological assistance to educational organizations of general, professional and higher education in Kursk and the Kursk region on the implementation of social-civic education of the younger generation;

– Carrying out activities of civil and patriotic issues for the development of civic activity, the formation of love for one's Fatherland and small Homeland;

– The unification of educational organizations and movements in Kursk into a single cluster of subjects with an active civic-patriotic position.

The program's target indicators determine its main results:

– The positive dynamics of the development civic activity of the younger generation;

– Further interdepartmental cooperation (authorities, educational, cultural, social assistance, non-profit public organizations) on issues of social and civic education of students;

– Development of scientific and methodological foundations for the development of civic activity.

The scientific foundations of the program for the development of civic activity of the younger generation include consideration of the main scientific definitions and diagnostic tools under consideration. The definition of the central term “civic activity of the younger generation” is given, the essential and meaningful characteristic of the conditions. Information is also provided on the methodological approaches taken as a basis.

The strategic plan of the program contains the main measures for the formation and development of citizenship of the younger generation:

– Cooperation with various educational, cultural and social organizations;

– Active development of volunteerism;

– Civic-oriented actions *(I love my Fatherland, Help a veteran, Timurites are nearby)*

– Student scientific and practical events (All-Russian student Christmas teleconference, scientific and practical conference *Social service in the modern world*);

– Events for people with disabilities.

5. Conclusion

Improving information literacy on the development of civic engagement of the younger generation involves solving the tasks of educating and developing young people. Using historical experience in the construction and design of events allows us to take into account the “lessons of history” for the restoration of historical and pedagogical knowledge and their application in modern theory and practice of educational activities. We pay tribute to him for the consistency of the knowledge presented, the definition of goals, objectives, mechanisms and content of the process of developing a creative and constructive mode of youth civic engagement and its significance and prospects for use in modern conditions.

A program for the formation and development of civic engagement of the younger generation:

– Designed according to current regulatory documents in the context of improving educational activities;

– Involves the following elements: justification of the program, goals, objectives, strategic plan; volunteer (volunteer) activities; pedagogical studios; student teleconferences; educational activities for people with disabilities);

– It is aimed at fulfilling the social order of Russian society - the education of Russian patriots, creatively and constructively thinking citizens of the state. The prospects for further research are related to a deeper study of the processes of socio-civic education of the younger generation in terms of aggression and deviant delinquent behavior of young people, the formation of social control, as well as optimal and competent psychological and pedagogical support for the younger generation. the civil formation of personality in modern conditions.

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Indicators of Media Literacy of Uzbek Media Representatives Related to the Use of Artificial Intelligence

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Abstract

The article demonstrates that the use of artificial intelligence in Uzbek journalism, while facilitating journalists' work, has also become a factor in amplifying disinformation. Based on a survey conducted among 124 journalists and media representatives, the study examines the potential changes artificial intelligence has brought to the professional activities of Uzbek journalists today, as well as the media literacy levels of industry professionals related to the use of artificial intelligence. The data obtained from the survey analyzes the professional integrity of Uzbek journalists in their creative process during the era of artificial intelligence, their level of awareness regarding the risk of disinformation when working with AI, and the impact of neural networks on the activities of media representatives. The findings can be utilized in developing legal and ethical standards for the use of artificial intelligence in journalistic practices, as well as in enriching the content of journalism education and professional development courses.

Keywords: artificial intelligence, artificial journalism, disinformation, dipfake, synthetic content, artificial intelligence literacy, post-digital critical media literacy.

1. Introduction

M.G. Shilina, I.I. Volkova, A.Y. Bombin and A.A. Smirnova, reconsidering the phenomenon of artificial intelligence as artificial communication, propose the term "artificial journalism" (Shilina et al., 2023). For the first time, their research attempts to illuminate various conceptual nuances of artificial intelligence-based journalism, examining how it influences social dynamics and alters the main technological and communicative attributes of this field. In the era of artificial intelligence, knowing how to use it rationally and combating the disinformation it generates and its consequences are becoming essential skills that journalists must possess in today's climate of uncertainty and information chaos. While artificial intelligence facilitates journalists' work, it also leads to a decrease in their creative abilities, the emergence of intellectual laziness, an increase in the share of unreliable information in the information sphere, and a proliferation of content that lacks human emotional intelligence, resulting in less impactful and effective communication.

The Uzbek media, as an integral part of global journalism, is not isolated from these processes. The active use of artificial intelligence has begun in journalistic practice in Uzbekistan. Today, the number of journalistic materials where artificial intelligence serves as an information source has increased. The process is straightforward. A journalist poses questions to artificial intelligence such as "How do you envision Uzbekistan's future?," "Which professions are developing rapidly in Uzbekistan?," and "Which sectors would yield returns on investment?" Then, the journalist prepares an article based on the responses generated by neural networks.

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In particular, the rapid growth of electronic media has transformed journalistic work into a technical process, necessitating reliance on artificial intelligence for the production of large amounts of information. In recent years, the number of mass media outlets in Uzbekistan has been increasing sharply.

Table 1. The total number of registered local mass media outlets in Uzbekistan

The total number of registered local mass media outlets in Uzbekistan			
Type of media	2016 year	2024 year	The growth rate is in %
	1514	1349	-15
News paper	309	866	+180
Magazine	15	21	+40
Bulletin	6	6	0
News Agency	65	89	+36
TV channel	35	29	-25
Radio	395	738	+86
Internet site	1514	2349	+55

Table 2. The total number of foreign mass media outlets registered in Uzbekistan

The total number of foreign mass media outlets registered in Uzbekistan		
2016 year	2024 year	The growth rate is in %
30	65	+116.67

Another indicator not reflected in the tables is the number of bloggers, who play a significant role in disseminating information on social media. While there were 50 active bloggers in 2016, their number exceeded 1,200 in 2024, showing an increase of almost 2,400 percent. As the number of mass media outlets grows, there is an increasing need to simplify and technologize their work and creative processes. The use of AI-based tools for content creation to populate media platforms is on the rise. On one hand, this appears to be a natural and normal progression, and the path of technological development cannot be blocked, making its influence on the creative process difficult to manage. However, another issue emerges: the question of reliability of information generated by artificial intelligence. In the research conducted by A. Fernandez, artificial intelligence is shown as the main cause of the emergence of deep fakes, and the issue of its control is raised (Fernandez, 2021).

In particular, J. Washington's scientific analyses on the potential of integrating artificial intelligence with educational practices and media literacy as a possible solution to mitigate the impact of false information on society further underscore the relevance and significance of our research (Washington, 2023). P. Tiernan, E. Costello, E. Donlon, M. Parysz, M. Scriney analyze the definitions of information and media literacy as well as the potential impact of artificial intelligence on them (Tiernanye et al., 2023). J. Walker, G. Thuermer, J. Vicens, E. Simperl examine how well artificial intelligence aligns with existing approaches to combat disinformation and how it addresses the key challenges in a context where disinformation, in its various forms, is becoming an increasingly serious and growing problem for society (Walker et al., 2023).

These analyses also demonstrate the necessity of studying the media literacy, critical thinking, and information verification competencies of journalists and other media professionals in working with artificial intelligence for each country, including Uzbekistan. In other words, are information producers prepared to work with artificial intelligence? Are they aware of the potential problems that neural networks may cause? Are there any gaps in their knowledge? These questions need to be addressed. It is particularly crucial for journalists to disseminate reliable information and engage in proper communication with artificial intelligence, especially in the context of Uzbekistan, where media and information literacy is not actively taught in general secondary education schools.

2. Materials and methods

One of the main trends in the modern media landscape is the application of artificial intelligence in journalistic activities. To study its current state, materials from Uzbekistan's mass media were

analyzed using the content analysis method. The findings revealed that journalists are increasingly turning to artificial intelligence for information gathering. This process intensified and became a trend after November 2023, when OpenAI, the company that developed ChatGPT, one of the most actively used neural networks, included Uzbekistan in the list of countries where its service operates.During the content analysis process, it became apparent that materials related to artificial intelligence could be divided into two categories. The first category involves an increase in news content related to artificial intelligence topics, while the second comprises information where artificial intelligence itself is the source. Among these materials, those of a predictive nature constitute a significant portion.

In 2024, one of Uzbekistan's official media outlets, the National News Agency of Uzbekistan, developed a special AI-powered robot reporter named Sobira Kholdorova. This correspondent delivers official information and breaking news in nine languages (Uzbek, English, Russian, French, Arabic, Chinese, German, Spanish, and Kazakh). The artificial intelligence system, initially launched as a pilot project, will gradually expand its capabilities in producing video reports. This marks a significant step in the application of artificial intelligence in journalism. The National News Agency of Uzbekistan will also provide a means to verify the authenticity of videos in case of potential fake video circulation. To achieve this, each video will be assigned a special QR code. By activating the link embedded in this QR code, users will be able to access the corresponding video text on the official UzA website.It was announced that if a video created using artificial intelligence does not contain a QR code or if the link in it does not lead to the UzA website, then this video is considered fake. This also serves as an example of the constant threat of disinformation in the context of artificial intelligence and the necessity to verify information.

Based on the study of the topic, preliminary observations, and initial data obtained, a questionnaire consisting of 28 questions was developed. The survey aims to examine media representatives' relationship with artificial intelligence, analyze the impact of neural networks on the creative process, and assess their advantages and disadvantages. Five of the questions are introductory, control, and concluding questions, while 23 are main questions. The questions were designed in two directions: the first aims to determine media representatives' attitudes towards artificial intelligence, and the second focuses on evaluating their ability to use artificial intelligence. The second direction is particularly significant and can be described using concepts such as artificial intelligence literacy or post-digital critical media literacy.

124 participants from all regions of the republic took part in the survey. Of these, 50 respondents (40.3 %) were aged 18–25, 38 respondents (30.6 %) were aged 25–35, 27 respondents (21.5 %) were aged 35–45, 8 respondents (6.5 %) were aged 45–60, and 1 respondent (0.8 %) was over 60 years old. Among the participants, 51 (41.1 %) were men and 73 (58.9 %) were women.

The breakdown by regions is shown in Table 3. The city of Tashkent, the Republic of Karakalpakstan, and Tashkent region had higher participation compared to other regions.

Table 3. Distribution of survey participants by regions

Region	Number of participants	%
Tashkent city	55	44,4
Andijan region	5	4,0
Bukhara region	7	5,6
Fergana region	5	4,0
Jizzakh region	7	5,6
Khorezm region	1	0,8
Namangan region	3	2,4
Navoi region	-	-
Kashkadarya region	4	3,2
Republic of Karakalpakstan	15	12,1
Samarkand region	6	4,8
Syrdarya region	2	1,6
Surkhandarya region	5	4,0
Tashkent region	9	7,3

The survey results were converted into percentages, and the journalists' experience with artificial intelligence, their areas of focus, and their media literacy indicators when working with neural networks were determined.

3. Discussion

The central issue of the discussion is the emergence of concerns regarding the proliferation of disinformation and undesirable forms of information in society through the automation of information creation. It is worth noting that neural networks have significantly impacted the process of information generation in the field of journalism. The lack of regulation concerning legal and ethical issues related to journalists' use of artificial intelligence in their professional activities has once again highlighted the necessity for a more in-depth study and analysis of this topic. The social responsibility of journalists for the truthfulness and objectivity of the information they disseminate is being extensively discussed in numerous scientific researches. For example, C. Porlezza's research indicates that there is an insufficient legal framework for the application of artificial intelligence in mass media (Porlezza, 2023). The study by A. Iqbal and colleagues examines the negative impact of fake news on society and explores fact-checking issues within the context of artificial intelligence (Iqbal et al., 2023). As shown in the study by J. Stewart, N. Lyubashenko, G. Stefanek, detecting fake news created by artificial intelligence is a complex task. The research indicates that using modern tools such as pre-trained transformers for large language models like BERT can effectively classify articles generated by GPT. However, these tools are less effective in classifying fake news articles that were not created by GPT (Stewart et al., 2023).

P. Jandrić's research presents the concepts of post-digital critical media literacy and artificial intelligence bias, which underscores the relevance of the topic (Jandrić, 2019). J. Washington has studied the prospects of using artificial intelligence and media literacy education in combating disinformation and fake news. The study emphasizes that integrating artificial intelligence with educational practices and media literacy training offers a potential solution to mitigate the effects of false information on society (Washington, 2023).

In A. McCosker's research, the socialization of artificial intelligence is studied, and the media formed using visual data and machine learning methods are called synthetic (McCosker, 2024). Regulatory measures, technical oversight, and enhancing digital or media literacy are cited as protective measures. This article raises the question of which level of literacy can mitigate the harm caused by deepfakes, and proposes data literacy as a solution. According to the analysis in this study, GitHub and YouTube are facilitating the socialization of artificial intelligence and the formation of culture.Additionally, a significant portion of research is dedicated to identifying deepfakes, which are the most harmful form of videos generated by neural networks (Bansal et al., 2023; El-Gayar et al., 2024; Mary, Edison, 2023; Pant et al., 2024; Ram et al., 2023; Suratkar et al., 2023 and others). These analyses also address new forms of disinformation brought about by artificial intelligence.

As evident, the application of artificial intelligence in journalistic activities is not only a practical phenomenon and a problem that requires solutions, but also a highly relevant scientific topic. Furthermore, various concepts and interpretations in scientific research have demonstrated that we can consider literacy in the field of artificial intelligence as a distinct type of media literacy.

In the context of active artificial intelligence usage worldwide and in Uzbekistan, its objectivity and reliability are being called into question. Texts generated by neural networks often contain factual errors and misinterpretations of context.These shortcomings are particularly prevalent in data-driven artificial intelligence models developed before 2021. To minimize errors, human oversight is essential. Humans approach the evaluation of AI-generated media products through media literacy and critical thinking. In this sense, artificial intelligence literacy is an integral component of general media literacy.

4. Results

One of the control and filtering questions in the survey aimed at determining the use of artificial intelligence and AI-related media literacy indicators among Uzbek media professionals was "In which type of media do you work?" The responses revealed that the majority of respondents work in newspapers, magazines, and Internet websites. The next most common areas of employment for media representatives were social media, TV, and PR services (see Figure 1).

To the question "Do you use artificial intelligence in your journalistic activities?," 64.5 % answered "Yes," while 35.5 % responded "No." Nearly a quarter of young people aged 18-25 actively use artificial intelligence for text generation, photo/video production, translation, and creating social media content. 70 percent of journalists aged 25-35 use it for purposes such as information analysis and creating infographics. As respondents' age increases, the rate of neural network usage decreases. Half of those aged 35-45 turn to it for translation purposes, while 60 % of those aged 45-60 use artificial intelligence for information searches. Those over 60 generally do not use it.Consequently, young people (18-35) more frequently use artificial intelligence to enhance speed in the creative process. Older adults (45+) pay more attention to traditional methods of obtaining information and issues of reliability.

Nearly 80 % of those working in the fields of Internet websites and SMM actively use artificial intelligence, while its utilization in newspapers, magazines, TV channels, PR, and educational processes is gradually decreasing. Employees working in newspapers and magazines view artificial intelligence as an "assistant," whereas in television and radio channels, human involvement remains necessary for many processes.

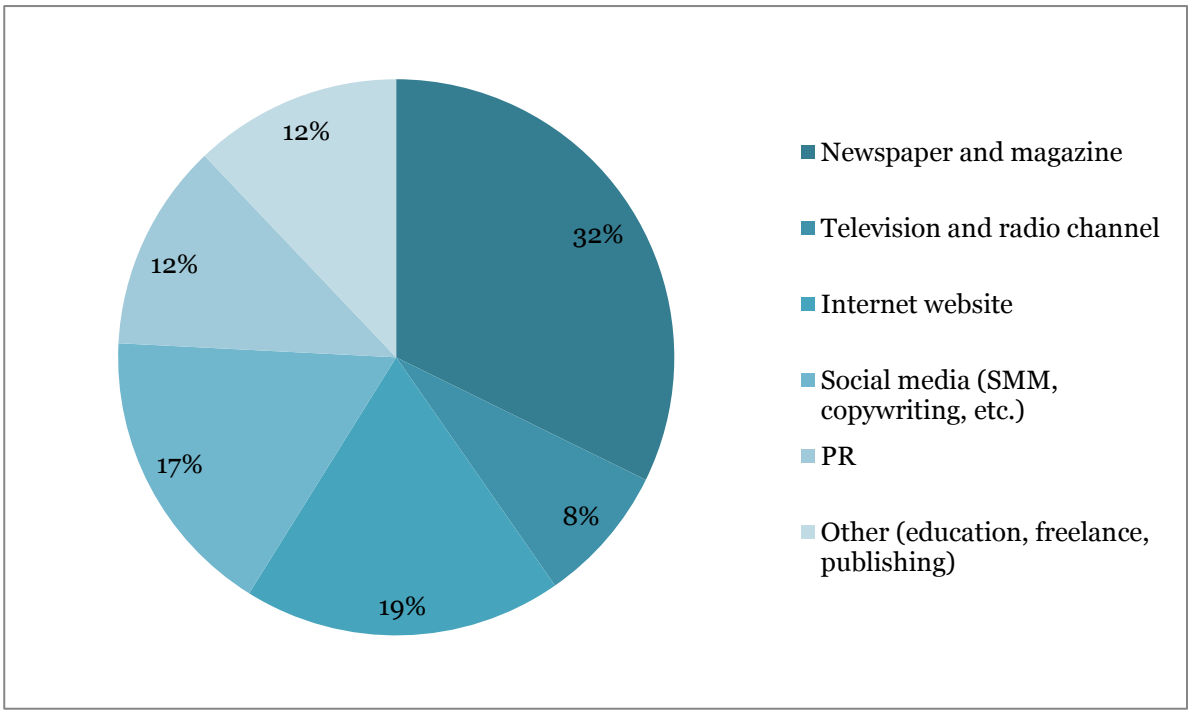

Fig. 1. Distribution of survey participants by media types

As evident from the results of the question "Are you familiar with artificial intelligence tools such as ChatGPT or Midjourney?," nearly half of the study participants actively use AI tools like ChatGPT or Midjourney in their work activities. One-third are familiar with these tools but use them infrequently. Those who use them less often express skepticism, citing reasons such as data inaccuracy, ethical concerns, or technical issues. The fact that most respondents are familiar with and have begun using AI tools indicates that the integration of artificial intelligence in the field of journalism is steadily increasing.

To the question "Using neural networks is for you...," 61.3 % of respondents answered "easy," 38.7 % answered "difficult." Most young people (aged 18–35) rated the use of artificial intelligence as "easy." This is related to their adaptability to technologies, and moreover, knowledge of specialized programming languages is not required to use neural networks. Women considered the use of artificial intelligence more difficult compared to men. Among SMM/Internet journalism representatives, the "easy" response also predominates.

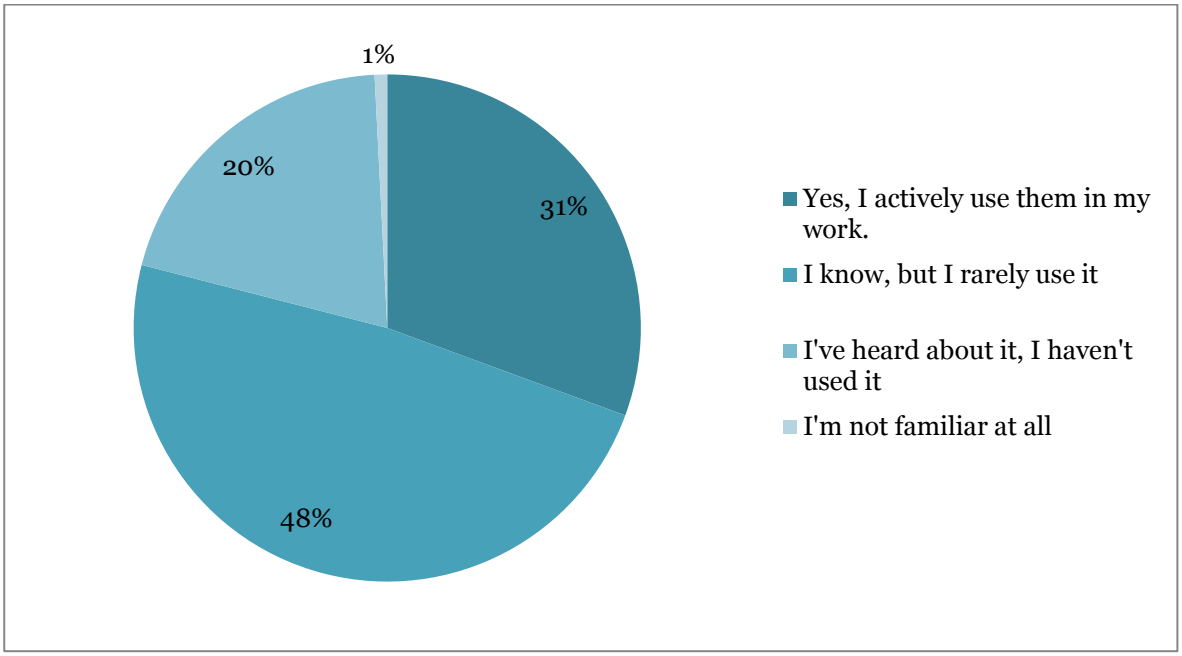

Fig. 2. Are you familiar with artificial intelligence tools such as ChatGPT or Midjourney?

When asked "What do you think artificial intelligence is?," 79.8 % of respondents answered "The internet of the future, a door to new opportunities," while 20.2 % responded "A source of danger, threat, and unemployment."

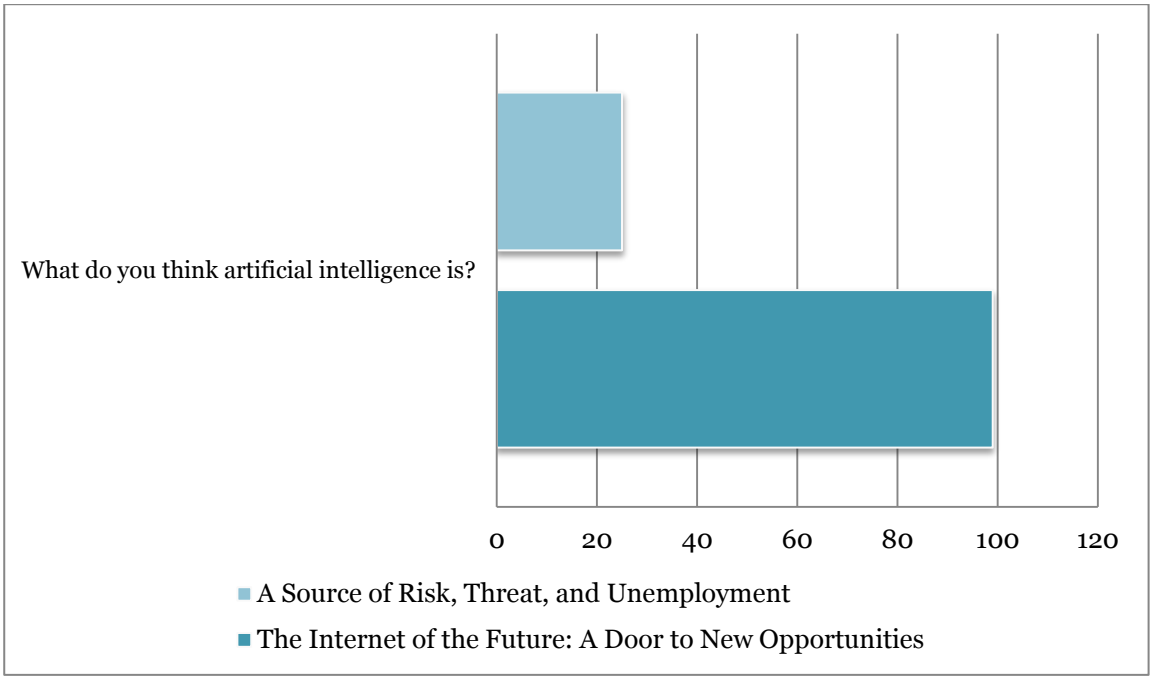

Fig. 3. What do you think artificial intelligence is?

Indeed, the development of artificial intelligence technologies is progressing regardless of positive or negative attitudes towards it, or the benefits or harm it may bring. However, it is crucial to study people's evaluations and attitudes towards it. The next question was aimed at examining this issue. The analysis revealed that the majority of respondents view it as a manifestation of progress. Undoubtedly, artificial intelligence presents opportunities and prospects for journalism, but its impact must be properly managed.

One of the main questions of the study, "What kind of content are you creating using artificial intelligence?," is reflected in the following Figure 4. Notably, the creation of social media content occupies the leading position. In second place, it appears that translation work, which does not require creativity, is becoming automated. Those who do not use artificial intelligence in the creative process also constitute a significant portion. It was found that work requiring creativity (creating news and analytical materials) remains primarily in human hands.

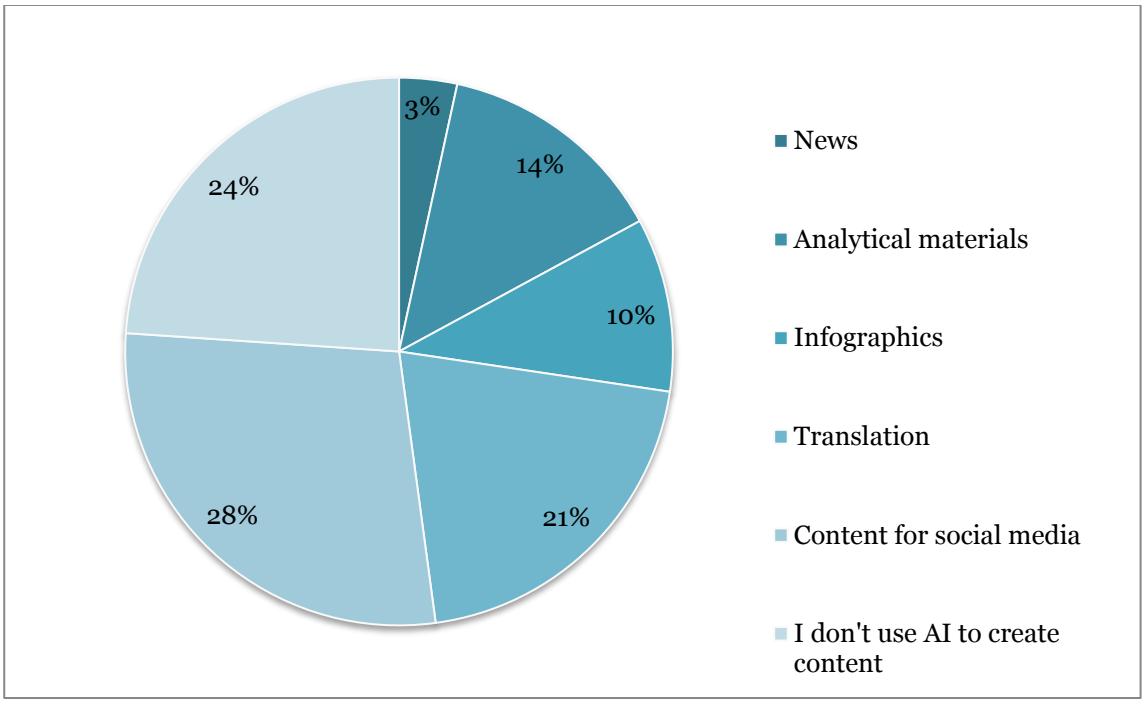

Fig. 4. What kind of content are you creating using artificial intelligence?

The question "What percentage of your creative work is attributed to artificial intelligence?" aimed to measure the involvement of AI in the journalistic creative process and determine the proportion of neural networks in produced media content. The working hypothesis of the sociological research program predicted this indicator would be high. However, in practice, the results did not confirm this prediction. Very few respondents claimed that 50 percent or more of their creative work was attributable to artificial intelligence. In fact, 45.2 % of participants selected the "not applicable" response.This suggests that, for now, artificial intelligence remains merely a supplementary tool, with humans still making the primary creative decisions.

When asked, "What problems have you encountered when working with artificial intelligence?," experienced specialists pointed to issues related to information reliability, while younger professionals cited technical problems. The option "Insufficient information about usage rules" encompassed difficulties in correctly writing prompts (commands), obtaining results that don't match the intended goal, and inability to find necessary functions. This option was selected by 37.9 % of respondents.

The question "Are you familiar with the Paris Charter on Artificial Intelligence and Journalism adopted in 2023?" aims to determine whether respondents are aware of the ethical standards adopted for the use of artificial intelligence in journalistic activities. 89.5 % of respondents say they are not familiar with it, while 10.5 % are acquainted with this document.

In 2023, the international human rights organization Reporters Without Borders (RSF), along with 16 partner organizations, published the Paris Charter on Artificial Intelligence and Journalism. It helps define principles for media outlets when working with artificial intelligence. The Paris Charter is the first international ethical guideline on artificial intelligence and journalism. Facts and evidence, a clear distinction between original and synthetic content, editorial independence, and human responsibility will serve as fundamental guarantees of the right to reliable news and information in the media in the era of artificial intelligence. This charter also highlights the relevance of ethical issues surrounding the use of artificial intelligence in journalism.

In journalism education and, more broadly, in the professional development of journalists, it is crucial to introduce such documents and explain their significance.

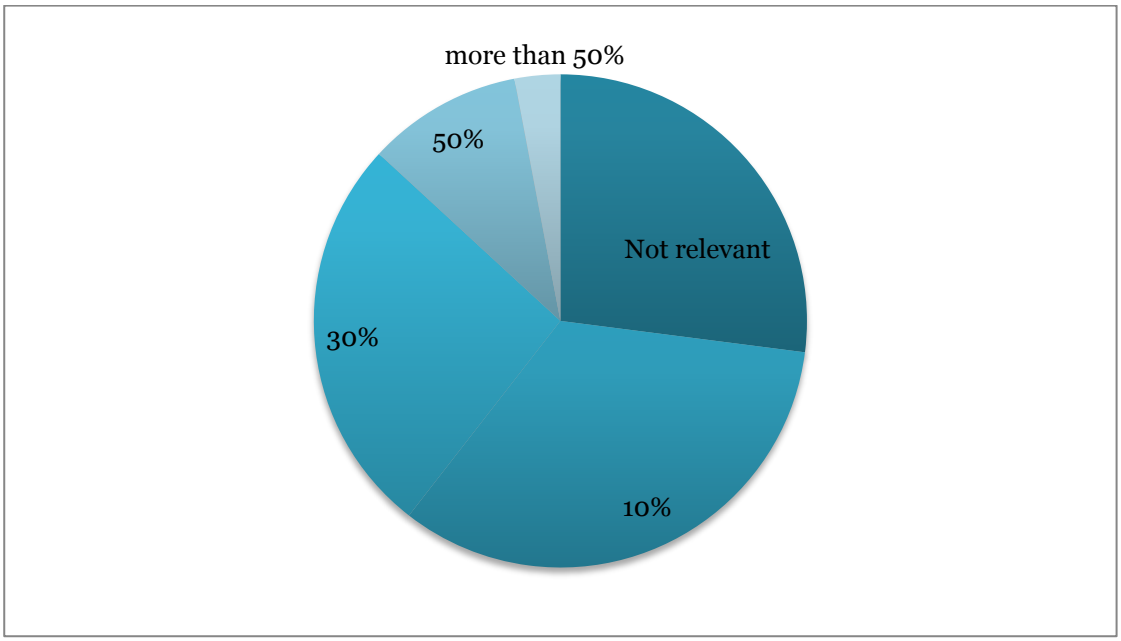

Fig. 5. Share of artificial intelligence in creativity

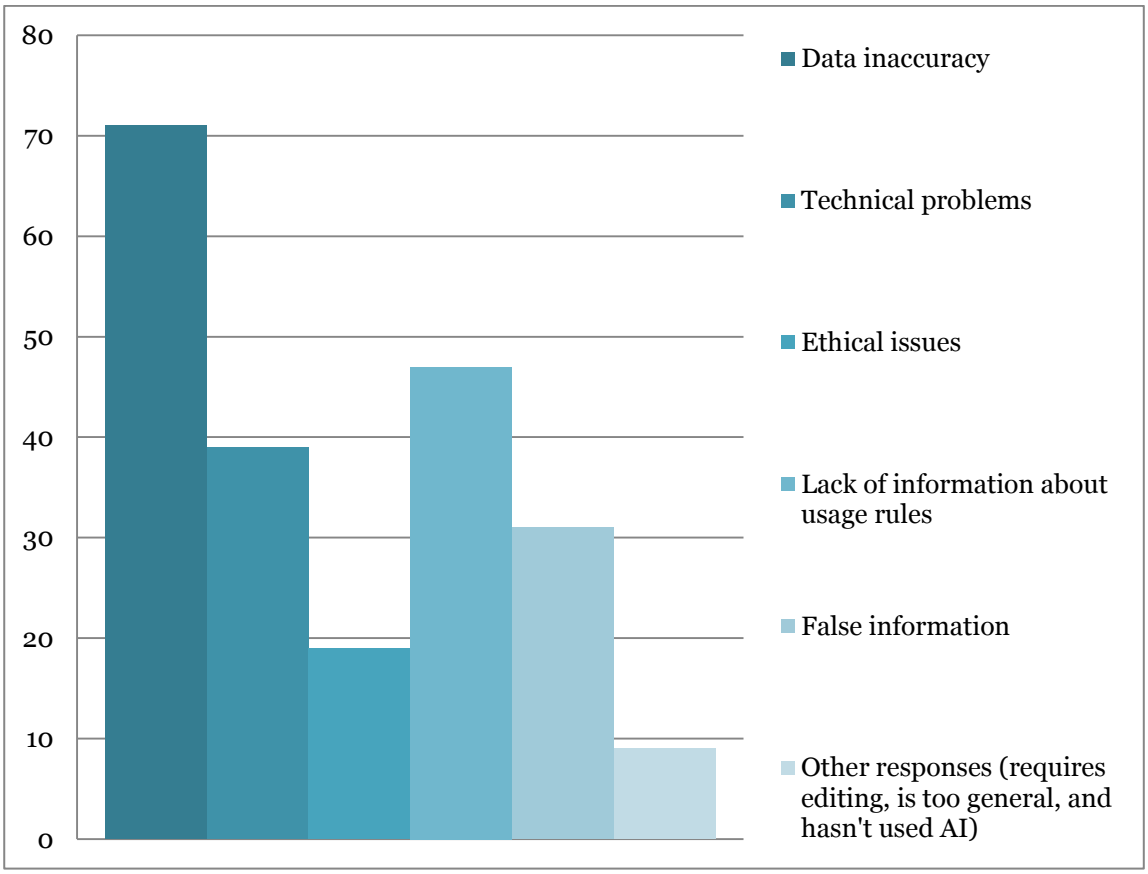

Fig. 6. Problems with artificial intelligence

To the question "Can you distinguish between original (human-created) and synthetic (AI-generated) content?" only 8.9 % of respondents indicated that they can identify it professionally. 53.2 % said they determine it through intuition. 37.9 % of respondents stated that

they had never thought about it. It is known that synthetic content is content created using artificial intelligence algorithms. It can exist not only as text but also in other formats. For example, in the research of U.A. Ciftci, the issue of identifying synthetic video content based on biological signals was raised (Ciftci et al., 2023). Naturally, media products created with the help of artificial intelligence contain unnatural elements, which can be noticed in images. Even in texts, it is understood that the warmth of a human soul is not felt. However, if neural networks have provided incorrect facts, it is difficult to detect. Intuition alone may not be sufficient for this task.

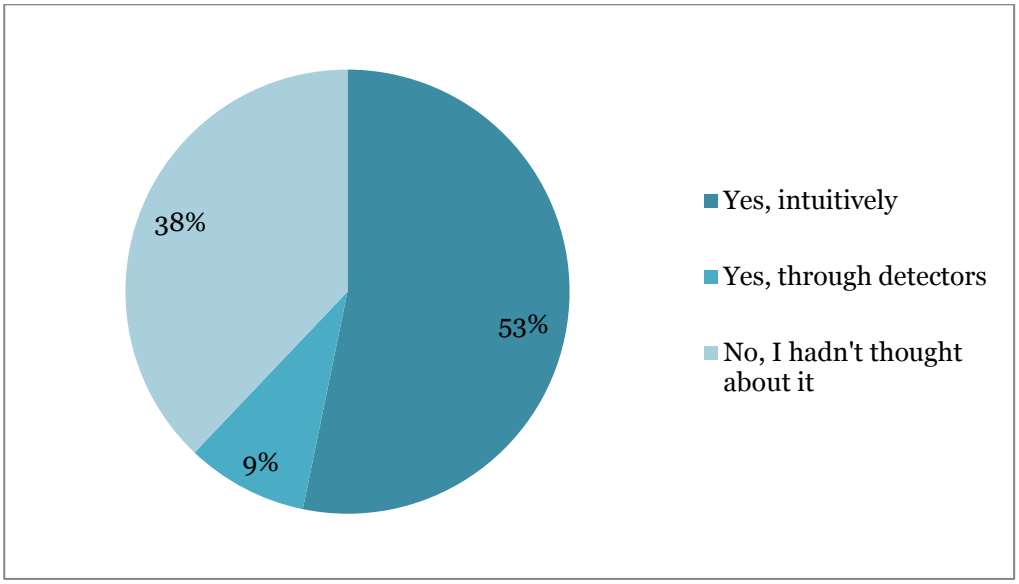

Fig. 7. Can you distinguish between original (human-created) and synthetic (AI-generated) content?

9.7 % of respondents answered "Yes" to the question "Have you ever spread false information based on neural networks?," while 90.3 % answered "No."

The fact that many people answered "yes" to the question "Can you identify fake videos created with the help of neural networks – deepfakes?" is likely based on intuition, as with the previous question.The reason is that today deepfakes use deep learning techniques to synthesize and alter human appearances, particularly in fraudulent and disinformation campaigns. It's difficult to distinguish whether a person is fake. S.T.Suganthi et al. also note in their research that deepfakes created with the help of generative adversarial networks can pose a threat to society, and they propose solutions for their detection (Suganthi et al., 2022). M. Boháček and H. Farid identify and document specific features of facial expressions, gestures, and speech that distinguish a false personality (Boháček, Farid, 2022).

The question "What opportunities created by artificial intelligence have you used in your journalistic activities?" allows us to determine which areas of the media sphere have been penetrated by artificial intelligence, and to more clearly envision the collaborative work of journalists and neural networks. As shown in Figure 8, information search occupies a leading place among the answers. This is followed by translation, text generation (writing articles, creating clickbait headlines), and photo generation.

The question "Which neural networks do you use?" revealed that ChatGPT is the most popular among neural networks, with 87.9 % of respondents using it. However, the tools and resources employed in the media sphere are highly dynamic, and the reach of other new neural networks, such as DeepSeek, is also expanding.

To the question "How reliable is the data provided by artificial intelligence?," the majority of respondents, that is, 81.5 %, answered that it is average. This also represents a cautious approach to artificial intelligence. 2.4 % – high, 16.1 % – low.

To the question "Can neural networks transmit biased information?," 58.9 % of respondents answered "yes," 5.6 % said "no," and 35.5 % chose the answer "I don't know." It should be noted that neural networks have indeed become a means of transmitting biased information. To reduce this risk, it is crucial to develop professional media literacy alongside technical and legal solutions.

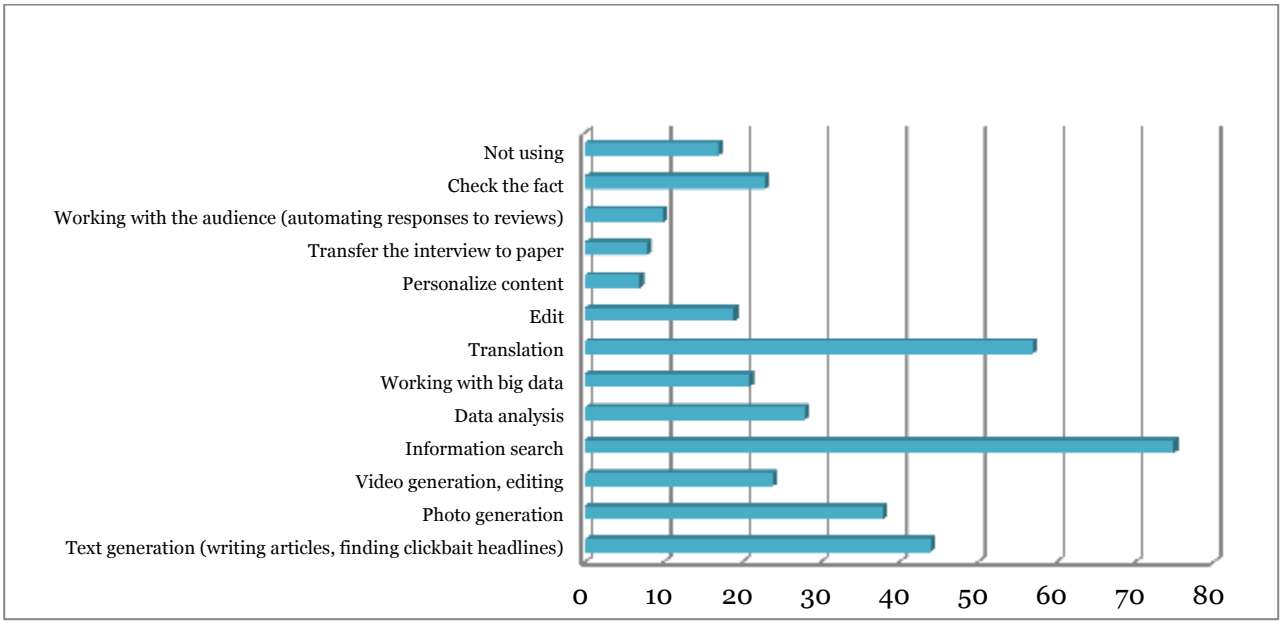

Fig. 8. What opportunities created by artificial intelligence have you used in your journalistic activities?

The analysis of responses to the question "Which of the following is convenient and reliable for gathering information?" is presented in Firure 9, showing the number of votes. It was revealed that the majority of respondents use traditional formats for collecting information.

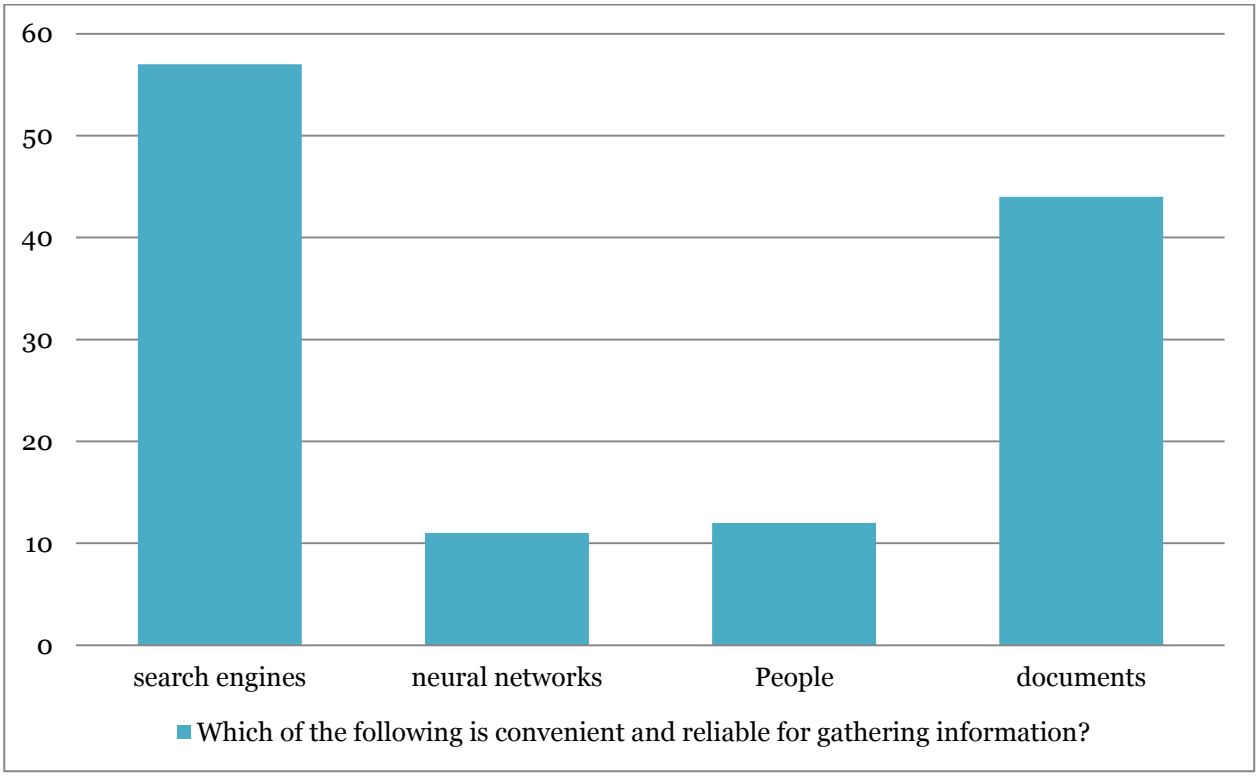

Fig. 9. Easy and reliable information sources

The responses to the question "What is the main problem artificial intelligence is causing in the media landscape?" are provided below. Interestingly, the option suggesting an increase in fake news as one of the main problems did not receive enough votes. A large portion of the respondents approached the issue from an aesthetic and artistic perspective.

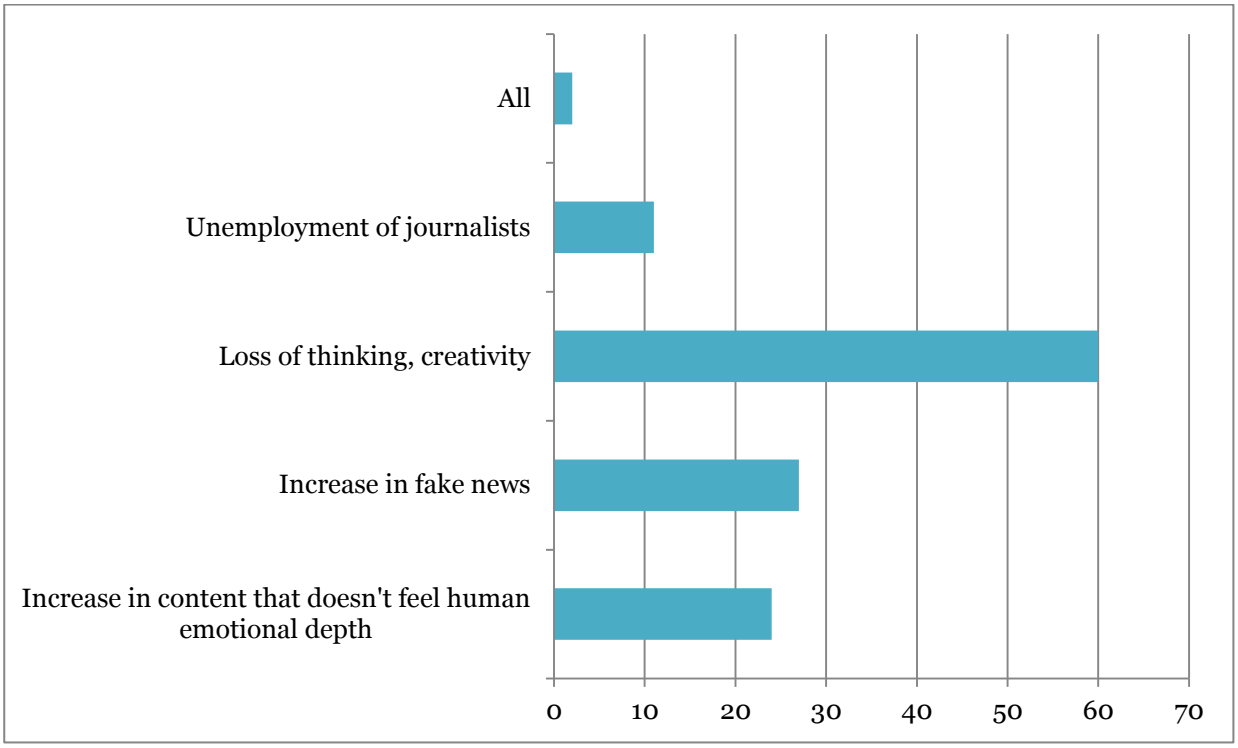

Fig. 10. The main problems posed by artificial intelligence in the media space

The aim of the question "How should we combat the disinformation intensified by artificial intelligence?" was to examine opinions on solutions to the main problem identified in the previous question. The responses are illustrated in Figure 11.

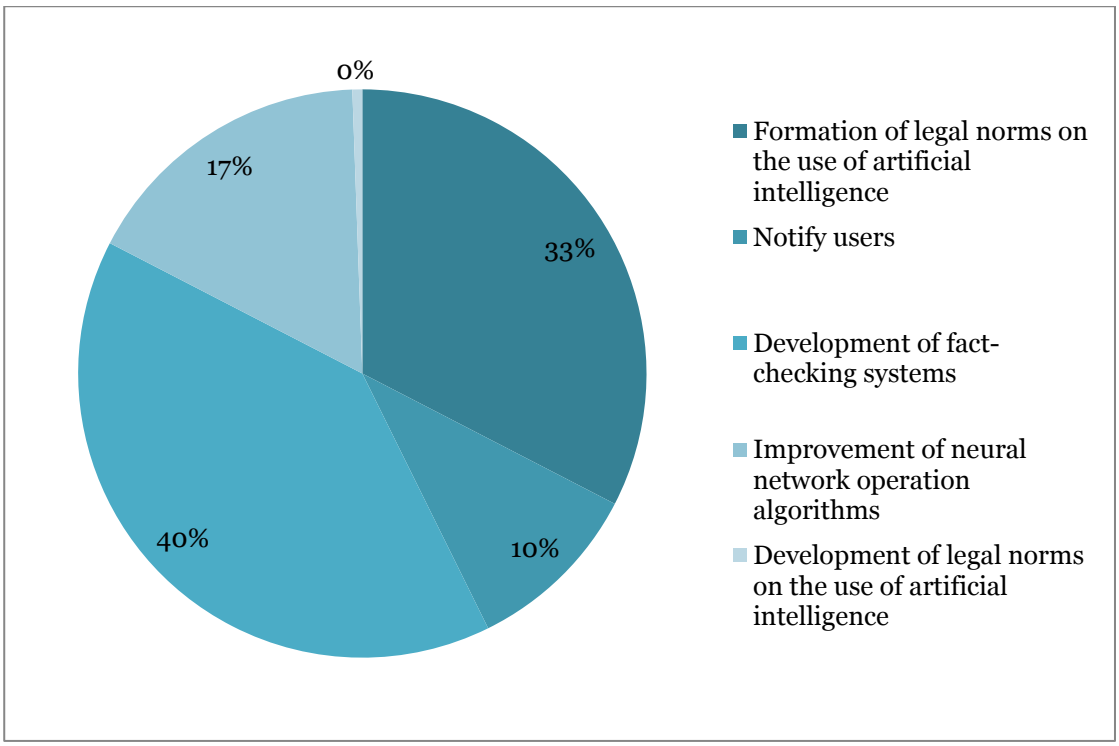

Fig. 11. Solutions

The question "What do you focus on when verifying content created using neural networks?" aims to assess journalists' skills in addressing potential disinformation issues that

artificial intelligence may generate. It has been determined that the majority of media representatives understand the necessity of fact-checking information.

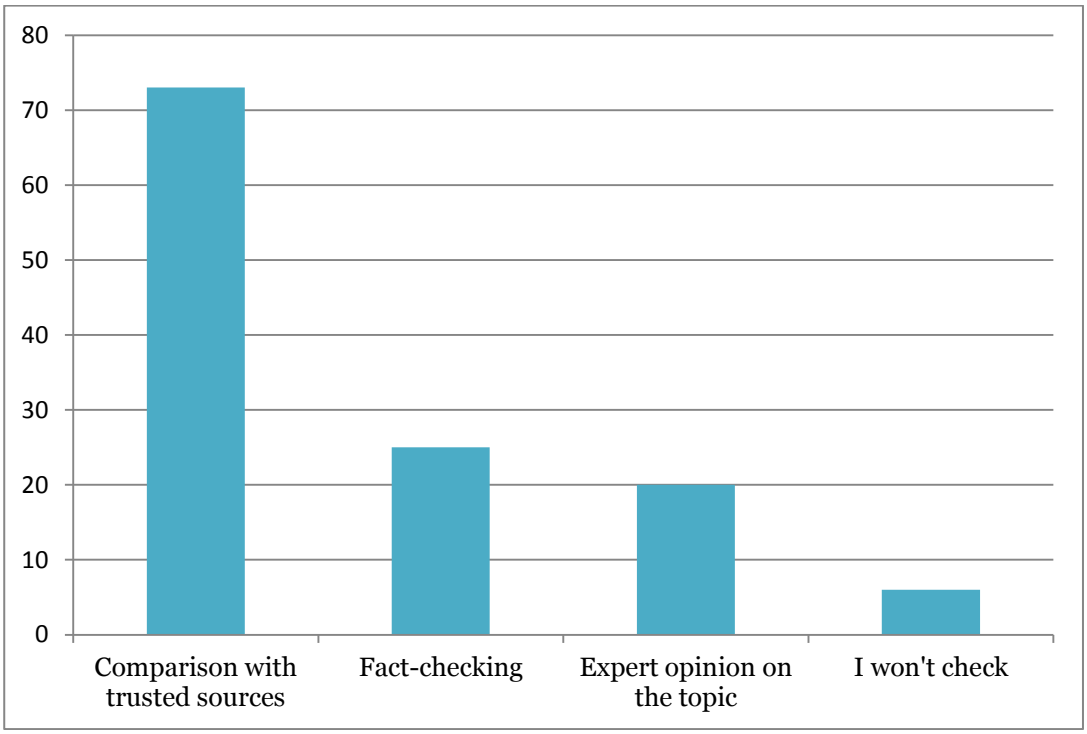

Fig. 12. What do you focus on when verifying content created using neural networks?

To the question "Can neural networks be a source of information?," 28.2 % of respondents answered "yes," while 71.8 % answered "no." According to our research hypothesis, neural networks can indeed serve as a source of information, and this phenomenon is currently being observed in media practice.

The changes that the use of artificial intelligence has brought to journalistic activities are illustrated in Figure 13.

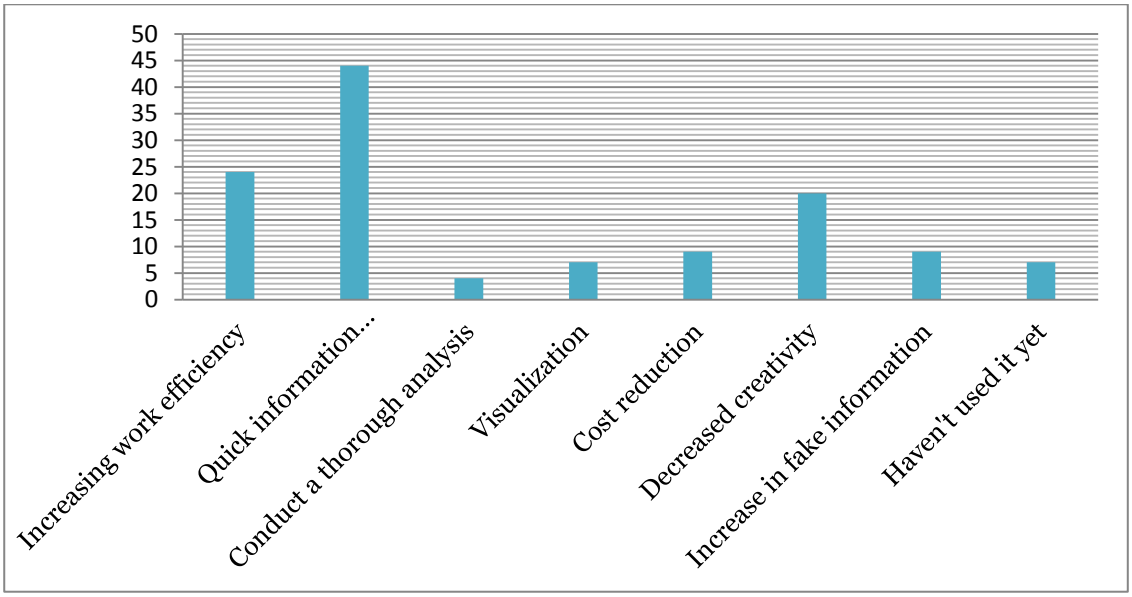

Fig. 13. The changes that the use of artificial intelligence has brought to journalistic activities

To the question "In your opinion, can artificial intelligence replace a human journalist?," 5.6 % of respondents answered "Yes," 46 % "No," and 48.4 % "Partially." As additional thoughts

and comments on the topic, respondents expressed views on the need for a deeper study of artificial intelligence applications in journalism, noting that neural networks can facilitate journalists' work but should be used in moderation. They also mentioned that synthetic content should not evoke wonder in people, and some even suggested the necessity of eliminating artificial intelligence altogether.

5. Conclusion

Through a small study, an attempt was made to address the topical issues of integrating artificial intelligence into the field of journalism. The results of the study show that artificial intelligence is not only a tool that facilitates the work of journalists but also raises problems related to disinformation and journalistic ethics. Artificial intelligence creates significant opportunities in the field of journalism; however, it is necessary to develop professional training, standards, and control mechanisms for its correct and reliable use.

In conclusion, it should be noted that Uzbek journalists are increasingly turning to neural networks, actively using them for information search, content creation, and translation. They understand that neural networks can provide false, biased, or incomplete information. However, they are not familiar with professional methods for verifying content generated by neural networks. In the process of technological changes, media representatives aged 35 and older are experiencing difficulties in adaptation. That is, the older the journalists, the lower their rate of using artificial intelligence. Young journalists are adopting artificial intelligence tools more quickly and applying them in their creative process. The lack of skills related to detecting synthetic content and deepfakes indicates the need to improve journalists' media literacy in working with artificial intelligence. Indeed, artificial intelligence is a technology that must be adopted in the field of journalism. In this process, it is necessary to enhance journalists' skills in working rationally with artificial intelligence, as well as develop and improve legal and ethical standards.

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Financial Knowledge and Its Relationship with Sociodemographic Variables: A Study in Adolescent Students in a Public Institution

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Abstract

The purpose of the study focuses on analyzing the savings decision by basic school students and its relationship with gender, age, number of siblings, as well as financial education variables from their personal and family environment. For this, the working hypotheses are H1. The decision to save is related to the sociodemographic characteristics of the respondent (sex, age, number of siblings). H2. The decision to save is related to financial education variables of the personal and family environment of the student surveyed. The participants are first grade students at the secondary level, between 10 and 17 years of age. Using non-probabilistic self-determination sampling, an instrument designed by Barba (2018) was applied to collect data, obtaining 313 cases. Considering that they are under age, they had the approval of their parents at all times, being notified through the teachers in charge of the school groups.The scale was applied over 2 months in person in the educational institution, with the support of the teaching staff. First, the frequencies of each of the items are obtained and then to test the hypotheses, we use a dichotomous Logit econometric model. The main findings demonstrate a relationship between the savings decision and the number of siblings the student has. Likewise, the decision to save is related to financial education variables of the personal and family environment of the student surveyed. The results emphasize the role that the family environment has in young people's savings decisions. Therefore, we suggest promote financial education from home to encourage learning about financial education at an early age.

Keywords: financial knowledge, interests, loans, savings.

1. Introduction

Financial knowledge is important in people's lives and relevant especially at an early age. Financial knowledge in young people provides the opportunity to manage their finances. In fact, McCormick (2009) refers to the need for a plan to incorporate financial education into academic programs from an early age, in the specific case of primary, secondary and even university levels. Having minimal financial knowledge helps to make better decisions regarding financial management, avoid excessive expenses and avoid the lack of financial resources in their lives (Rodríguez, López, 2022). Global economic conditions have caused financial education to gain popularity. According to Ndou (2023), financial education has an influence on the way people manage their finances, as well as

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decision-making. The importance of financial education has helped several countries in the world to develop more and better strategies in favor of the general population, to strengthen knowledge, expand skills in financial matters and with this learning, the national economy is favored (Ferrera et al., 2020).

Currently in Mexico, the interest of financial institutions has emerged in carrying out financial education weeks, this as a result of studies that have demonstrated the low level of financial knowledge in young Mexicans and in general in the population, as mentioned Diez-Martínez (2016). The study evaluates the understanding that Mexican young people between 12 and 16 years old have towards various economic and financial concepts, such as income or remuneration, interest on loan payments, among others. The findings indicate a deficient or little understanding of these economic variables, which means that there is a low level of financial culture, which affects the development of financial culture in our country.

Therefore, it is essential to promote the care of finances at an early age as suggested by McCormick (2009), which is why it is necessary to generate an action plan to incorporate financial education in academic programs, mainly from primary and secondary levels. Furthermore, it is necessary to incorporate basic financial concepts from childhood, since the infant faces financial concepts and terms such as money, work, objects and values from childhood, for this reason Belinova et al. (2021) highlight the importance of children's relationship with financial issues even from preschool age. The information that a person has regarding financial issues directly influences the decision-making they make throughout their life.

Bad financial decisions at a young age can cause various serious consequences for a person and their family now and in the future, as Amagir et al. (2021) point out. Furthermore, if they are better prepared in financial education topics, they will be better prepared for adulthood, as Mousseau, Oztanriseven, Kilinc (2023) refer.

To have the necessary skill to be able to manage and invest money efficiently, Mandell (2008) points out that it is important to know financial concepts, to aspire to have financial well-being, based on the management of personal finances. In the same idea, Bernheim, Garret and Maki (2001) report that financial knowledge favors financial attitudes and skills, which undoubtedly favors the proper administration of their finances, in addition to generating considerable savings of their total income for forecasts in the future.

Financial education provides the necessary knowledge so that individuals can have good practices in the development and management of their personal finances (Núñez, 2013), this includes the skills, as well as the attitudes to master all those terms that are involved in the financial field. In addition to this argument, Gómez (2018), points out that, according to the Financial Networks in 2008, the term financial education needs to be raised through a comprehensive approach where essential elements are unified such as: expenses, savings, investment, credit and insurance. In relation to this, Kuzma et al. (2022) refer that financial education, can be defined as a set of knowledge and skills to manage individual funds profitably, ensure financial independence and participate in charitable events.

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Throughout their lives, human beings are forced to make financial decisions for the administration of their resources, whether with prior financial knowledge or without it. In this sense, we can highlight what Bodie and Merton (2003) refer to, who define finance as the study of the allocation of limited resources over time. Based on the previous definition, the theory of limited rationality emerges, on which Simón Herber suggested that, according to the limitations in the information processing skills and knowledge that each individual has, people tend to seek a level of conformity instead of maximizing its utility (Estrada, 2009).

Within the family environment, it is important to highlight the link between family financial difficulties and poor financial skills, since these two variables contribute directly to the well-being of people and their families. For this reason, Norvilitis, Szablicki and Wilson (2003) refer that financial difficulties in the family are a consequence of the low level of financial knowledge.

To achieve the correct functioning of finances within the home, it is necessary to take into consideration the primary needs, as well as the available resources, all of this, as part of a resource management process where knowledge, attitudes and personal characteristics of individuals, are involved. This argument, according to the family resource management theory, developed by Deacon and Firebaugh (1981).

The family environment is an essential determinant in learning resource management. Moschis (1985) points out that parents who teach their children about financial education serve as figures responsible for the skills acquired in them. However, the majority of parents have not developed the necessary skills to promote a good financial development of their children, which has an impact on decisions based on trial and error, as Lachance and Choquette-Berneir (2004) point out. The financial knowledge transferred at home from parents to children has become the basis of financial education in various contexts (Susilowati et al., 2020).

Parents are unconsciously responsible for transmitting financial knowledge to their children, based mainly on their own self-determination, which can often generate bad habits and practices regarding money management and savings. Hence, the importance of promoting the development of financial skills and everything related to financial education from an early age (Kaiser, Menkhoff, 2017). The knowledge acquired is greater than the impact on behavior, which confirms the effectiveness of financial education instruction in children and young people, unlike financial instruction in adulthood, have little impact on their behaviors.

Fernandes (2014) demonstrated that despite the positive relationship between financial education and behavior in adulthood, financial education in adults does not have a greater impact on their financial skills. Therefore, it is important to prioritize financial teaching at appropriate learning moments in people's lives, considering the personalization of teaching, according to the needs of the individual, as mentioned by Carpena et al. (2017), taking into account the age range in which people are.Some social, family and behavioral factors converge in financial literacy that are important to consider (Frisancho, 2019; Alvarado,Duana, 2018; Mohammed et al., 2018), among the most relevant we find: accessibility, that is, the ways through which information is obtained, age differences, as well as gender, and the educational level that an individual has.

Based on the above, taking into account that financial information can be acquired through various communication channels such as parents, school, the media, as well as friends and colleagues, the need arises for an improvement in the educational system with respect to financial literacy.

Beverly and Burkhalter (2005) suggest the importance of providing better educational tools to generate greater financial knowledge from educational institutions over that acquired through other means. When knowledge is acquired in another way, it can be inefficient, since some factors influence it, such as the educational level in the case of parents. Studies have shown that minors with parents who are poorly educated in financial matters have a low educational level in financial matters (lusardi, 2009). Financial education must be developed within schools, to develop the skills necessary to successfully manage finances now and in the future. Educational institutions are fundamental factors to integrate individuals into the financial world through correct financial literacy (Ferrera et al., 2020).

It should be noted that financial attitudes and interests would depend on the age and gender of the people, as pointed out by Newcomb and Rabow (1999), who determined that it is men who show a greater interest in financial learning, thanks to their desire for independence and future economic solvency. On the contrary, Lusardi (2009) demonstrated that, during the financial learning of children and young people, the parents play a primary role. Parents are those who efficiently or inefficiently transmit their own knowledge and skills acquired through their experiences. In this way, they unconsciously develop financial rules and regulations, which become financial habits developed by children who, lacking knowledge, do not carry out a deep analysis when making their decisions regarding money.

In this sense, when parents control economic resources, they directly influence the financial behavior of future generations according to Grusec and Davidov (2007). Therefore, to have adequate financial learning, it is necessary obtain it from schools. Becchetti and Coviello (2013) demonstrated that financial courses taught in schools are more effective and provide better instruction than those who acquired knowledge directly from their parents. Evidence shows that school-based financial education programs are highly effective policy tools to improve the financial education and behavior of children and young people (Amagiret al., 2021).The acquisition of financial knowledge derives from money management practices and direct experience with its

management. Schürkmann's (2017) showed that the use of major financial services contributes to the experiences that people develop throughout their lives.

It is important to recognize the importance of all activities that provide learning, whether informal or learning that does not come from an educational institution or a learning center. In this way, informal learning is also defined as non-institutional learning according to Harring et al. (2016). Another important factor to consider within informal education is the access that young people have today to digital media. According to Fleischer and Hajock (2019), young people develop research skills to acquire information through the Internet thanks to their own needs, even before obtaining formal instruction in these topics.

Historically, initiatives on financial education have been frequently towards the adult population sector, as Martin (2007) refers, this has encouraged the studies towards this population segment. However, since the 1990s, economic circumstances and changes in the development of world economies have given rise to the emergence of new research (Braunstein, Welch 2002). Although this research focuses mostly on the management of personal finances of adults, McCormick (2009) points out that research aimed at financial learning in young people has grown considerably in recent years.

Currently, having financial education is important and necessary for the management of personal finances, especially in adolescents and young adults, as Aprea (2016) points out, who states that they are the ones who experience greater exposure to making financial decisions, compared to with their parents. This exposure is related to observation, financial education, experience, capacity and self-sufficiency they have to apply knowledge in decision making as mentioned by Houston (2010). In addition, it has been shown that many young people learn and develop the skills necessary for financial independence at an early age, as referred to by Shim et al. (2009). Therefore, the importance of promoting financial skills from an early age is due to the learning capacity that one has in childhood, therefore, the younger the person is, the greater the capacity and disposition they have towards learning (Dare et al., 2020).

There are studies about the knowledge and behavior of Millennials on financial issues. According to Schawbel (2012), this generation will constitute 75 % of the global workforce by 2025. However, despite the relevant role they play within the global economy, studies have shown that millennials have negative attitudes regarding the management of their finances (Mottola, 2014). Millennials spend more than they earn and do not have savings for the future.

The excess confidence they demonstrate towards financial knowledge causes their perceived knowledge to exceed their objective financial knowledge, as Chu et al. (2017) point out, which could also be explained with what Robb et al. (2015) refers to, who reported that higher levels of overconfidence about financial education are associated with higher rates of use of alternative and expensive financial services. Therefore we can add that financial knowledge should be considered as Alba and Hutchinson (2020) suggest, a division of two components: subjective knowledge and subjective evaluation.

Based on the issues affecting millennials, Generation Z is expected to face several challenges. These challenges are related to the way they use money for their daily lives in aspects such as: financial education, training in financial administration and financial attitudes. Therefore, financial education acquired at home will play a role in contributing to their financial behavior (Bado et al., 2023).

Finally, derived from concern regarding financial education issues, the complexity of financial products and the problems related to bad sales practices, Agarwalla et al. (2015) consider that it has been possible to direct attention to the behavior that young people have in relation to managing their finances, which is important to take into account. However, the financial situation of young people derived from high debt, which, according to Lusardi et al. (2010), requires an improvement in cash management to make their financial decisions.

The above and given the dependence on money, it is necessary to have good financial control, as well as adequate management of personal finances, as Novitasari, Juliana, Asbari and Purwanto (2021) refers to.

Maintaining sustainable economic behavior can be achieved not only by teaching young people about financial issues, but also by implementing better educational mechanisms so that the knowledge acquired is directly reflected in their economic attitudes, according to Coskun and Dalziel (2020), in this way the probability of obtaining better financial behavior increases, thus improving individual well-being.

Question Research: Is there a relationship between the decision to save and the sociodemographic characteristics of the student? Is there a relationship between the decision to save and financial education variables of the student's personal and family environment? Therefore, the following objectives and hypotheses are set: Analyze the savings decision of the basic school level student and its relationship with gender, age, brothers, as well as financial education variables of their personal and family environment.

Hypothesis: HO1. The decision to save is not related to the sociodemographic characteristics of the student (sex, age, siblings). H1. The decision to save is related to the sociodemographic characteristics of the student (sex, age, siblings). HO2. The decision to save is not related to financial education variables of the student's personal and family environment. H2. The decision to save is related to financial education variables of the student's personal and family environment.

2. Materials and methods

Non-experimental design study of quantitative, descriptive, exploratory and mean difference type. The population under study was 313 first-grade secondary school students located in the city of Veracruz, Mexico. The age ranges are between 12 and 13 years old, all belonging to the state of Veracruz, Mexico. Using non-probabilistic self-determination sampling, the instrument was applied face to face to obtain information, with the support of teachers from the institution to which the study population belongs. At all times, there was the approval of the parents, who were notified at the time through the teachers in charge of the school groups.

To get data, a test designed by Barba (2018), which includes 28 items related to financial topics, with multiple response options, is used. The test was applied during 2 months in the previously mentioned educational institution.

In relation to the statistical procedure, first the frequencies of each of the items of the instrument are analyzed. The information analysis procedure is carried out using a dichotomous Logit econometric model. This procedure is used, considering that the objective of this research is to analyze the savings decision by basic school students and its relationship with gender, age, siblings, as well as financial education variables from their personal environment and familiar. To develop the dichotomous Logit econometric model, the GRETL software is used, which is a software package for econometric analysis written in the C programming language[1] (Baiocchi, Distaso, 2003).

The main variable of this research is the individual savings decision, following the methodology of Nguyen et al. (2017). The participants in this research were asked: do you have the habit of saving? The response options are Yes and No. For the statistical procedure, the variable is coded as a dichotomous variable, which takes the value of 1 if the respondent answers “Yes” and 0 if the respondent answers “No”. For the statistical strategy, the methodology used by Alvarado and Duana (2018) is followed. Table 1 show the operationalization of the research variables. Demographic characteristics of the respondent are included: gender, age, and siblings.

Table 1. Variables research and its code

Variable	*Question*	*Code*
Y: Saving decision	Do you have a saving habit?	Dichotomous variable: 1 if yes, 0 otherwise.
X1: gender	Gender	Dichotomous variable: 1 if it is a man and 0 if it is a woman.
X2: age	How old are you?	Dichotomous variable: 1 if the student is between 14-17 years old and 0 if they are between 10 and 13 years old.
X3: siblings	How many brothers do you have?	Quantitative variable that takes values = 0,1,2,3,4
X4: Decision	With the money they give	Dichotomous variable: 1 if yes, 0 otherwise.

[1] It is free and open source software, which is used under the terms of the General Public License (GPL), which is specified in the Free Software Foundation. The Free Software Foundation (FSF) is a nonprofit with a worldwide mission to promote computer user freedom. Copyright © 2007 Free Software Foundation, Inc. [Electronic resource]. URL: https://fsf.org/

Variable	*Question*	*Code*
about money	you to spend, do you decide what to buy?	
X5: Spend everything	Do you spend all your money?	Dichotomous variable: 1 if yes, 0 otherwise.
X6: Parents-save	Do you know if your parents save?	Dichotomous variable: 1 if yes, 0 otherwise.
X7: knowledge about money	Do you know how the money is obtained?	Dichotomous variable: 1 if yes, 0 otherwise.
X8: Goodness of savings	Is it good to save?	Dichotomous variable: 1 if save, 0 otherwise.

Source: own

To analyze the decision to save and its relationship with the sociodemographic characteristics and financial education variables of the personal and family environment, the dichotomous Logit model is used (Wooldridge, 2015). The model is denoted as:

$$P(y = 1 / X) = F(\beta_0 + \beta_1 X_1 + \cdots \beta_{k-1} X_{k-1} + \beta_k) = F(\beta_0 + X\beta)$$

Where: F is the logit distribution function and X denotes the characteristics of the respondents. From the estimation, the significant variables related to the decision to save are identified.

To do this, the z contrast statistic is used. Under the null hypothesis, $H_0: \beta_i = 0$,

$$z = \frac{\beta_i^{'} - \beta_i}{\sqrt{var(\beta_i^{'})}} = \frac{\beta_i^{'}}{\sqrt{var(\beta_i^{'})}} = \sim N(0,1)$$

z is the test statistic, which is distributed as a standard Normal. The testing mechanism that rejects the null hypothesis is given by $P[|Z| > Z_{tablas}] = \alpha$. Where $\alpha$is the significance level of the test, and Z_{tablas} is the critical value. In our model, the independent variables are characteristics of the respondent (gender, age, siblings) and financial education variables from the personal and family environment of the surveyed student.

Analysis and discussion data

Initially, the instrument was validated with Cronbach's alpha, which is slightly low (α: <0.6), which is attributed to the type of items with dichotomous and multiple response options in some cases. Subsequently, the frequencies obtained for each item of the instrument are analyzed, and the results are shown. About gender 50.3 % (n=158) correspond to the female and 49.4 % (n=155) to the male. The age ranges, the highest percentage with 71.7 % (n=225) is between 10 and 13 years old, followed by 27.1 % (n=85) who is between 14 and 17 years old. The frequencies obtained from each item provide interesting information.

Table 2 shows the results of items 1 to 8, where it is observed that 82.8 % (n=260) are curious to know the price of things, apparently they do this when they accompany their parents to buy a product (90.1 %, n=283). The most important attribute for them is price (41.1 %, n=129), followed by taste 39.2 % (n=123); 94.6 % (n=297) decide what they are going to buy when they are given money and try not to spend all the money (64 %, n=201). In specific knowledge there are important results, 88.9 % (n =279) consider that a bank is useful for saving, they know this, thanks to the advice of parents (77.1 %, n=242). This coincides with this data, 67.2 % of parents have the habit of saving (n=211).

In relation to items 9 to 17 of the test used, Table 2b shows the frequencies obtained, where it is observed that 51 % (n=160) like to sometimes accompany their parents shopping, the main reason , it is because they buy things from them (40.4 %, n=127), followed by 19.1 % (n=78) because they like it. In relation to loans, 43.9 % of the students surveyed (n=138) report that their parents have sometimes requested loans, 31.8 % (n=100) mention that they do request loans frequently.

Table 2. Frequencies of the items 1 to 8

Variable		*Frequency*	*Percentage*
1. Are you curious to know the prices of some things?	no	53	16.9
	yes	260	82.8
2. When your parents go to buy something, do they look at the prices?	no	30	9.6
	yes	283	90.1
3. What is the most important thing to you when you buy something in the store?	flavor	123	39.2
	price	129	41.1
	Quality	61	19.4
4. With the money they give you to spend, do you decide what to buy?	no	15	4.8
	sometimes	1	.3
	yes	297	94.6
5. Do you spend all your money?	no	201	64.0
	yes	112	35.7
6. What is a bank for?	To save money	279	88.9
	To request loans	31	9.9
	To pay taxes	3	1.0
7. Who explained it to you?	teachers	45	14.3
	friends	26	8.3
	parents	242	77.1
8. Do you know if your parents save?	Don't save	23	7.3
	They don't know	79	25.2
	Yes, they save	211	67.2

Source: own

52.2 % (n=164) believe that the best option to borrow is with family members, due to trust (60.8 %, n=191), 38.2 % (n=120) on the contrary, believe it is with banks, and on the other hand, 38.9 % (n=122) think that it is more formal and legal to ask the banks. The highest percentage of participants know how money is obtained, 93.3 % (n=293), 86.3 % (n=271) think it is by working. Particularly, they were asked if they give them the same money to spend, the answers were very similar, 50.6 % (n=159) said yes, while 49 % (n=154) said no. For 76.1 % (n=239) the money they are given is enough, the rest mentioned that it is not enough.

Table 2b. Frequencies of the items 9 to 17

Variable		*Frequency*	*Percent*
9. Do you like to accompany your parents shopping?	no	16	5.1
	Sometimes	160	51.0
	yes	137	43.6
10. Why?	They buy me something / I buy things	127	40.4
	I learn economic issues	25	8.0
	To help them	23	7.3
	I like	78	24.8
	I don't like	60	19.1
11. Have your parents borrowed money to make a purchase?	no	75	23.9
	Sometimes	138	43.9
	yes	100	31.8
12. What do you think about the best option for your parents to request a loan?	request a loan from friends	29	9.2
	request a loan from family members	164	52.2
	apply for a loan from the bank	120	38.2
13. Why?	Trust / family relationship	191	60.8

	It is more formal and legal	122	38.9
14. Do you know how money is obtained?	no	20	6.4
	yes	293	93.3
How?	Working	271	86.3
	Request a loan	7	2.2
	From the bank	16	5.1
	I don't know how	19	6.1
16. Do they always give you the same money to spend?	no	154	49.0
	yes	159	50.6
17. Is the money they give you enough for you?	no	74	23.6
	yes	239	76.1

Source: own

Table 3 describes the frequencies of items 18 to 25. The descriptive analysis provides important information: 74.2 % (n=233) of the participants indicate that, if they save, they do so in piggy banks (80.6 %, n=253) and if they need more money, they ask their parents for it (71.7 %, n=225). On the other hand, 50.6 % (n=159) stated that the benefit they obtain when they accompany their parents shopping is because they buy things from them. In terms of savings, 95.2 % (n=299) consider that it is good to save, to earn more money (54.8 %, n = 172) and for emergencies or unforeseen events (33.4 %, n=105). This knowledge was acquired from home; their parents instilled in them this knowledge about savings and its purpose (62.1 %, n=195). Finally, 88.5 % (n=278) say they feel satisfied with what they do with their money, because they can buy things they like (51 %, n=160), likewise 21.3 % (n= 67) consider that it is, because they are responsible people

Table 3. Frequencies of the items 18 to 25

Variable		*Frequency*	*Percent*
18. Do you save?	no	80	25.5
	yes	233	74.2
19. Where do you save?	Piggybank	253	80.6
	Bank	16	5.1
	I don't save	44	14.0
20. If you need more money, what do you do?	I request money to my parents	225	71.7
	I request money from another family member	8	2.5
	I request money from my friends	20	6.4
	I sell things	60	19.1
21. Do your parents reprimand you when you spend all your money?	no	142	45.2
	sometimes	135	43.0
	yes	36	11.5
22. What do you get when you accompany your parents shopping?	Go out for a walk	124	39.5
	They buy me things	159	50.6
	other	30	9.6
23. Is it good to save?	no	14	4.5
	yes	299	95.2
Why?	For emergencies/unforeseen events	105	33.4
	Invest and generate more money	172	54.8
	To prepare for the future	36	11.5
24. Who told you?	Parents	195	62.1
	brothers	4	1.3
	Family members (Grandpa, uncles, among others).	21	6.7
	teachers	6	1.9
	friends	4	1.3

Variable		*Frequency*	*Percent*
	My self / for experience	76	24.2
	Internet	7	2.2
25. Do you feel satisfied with what you do with your money?	no	35	11.1
	yes	278	88.5
Why?	I buy things I like / what I want	160	51.0
	I like having my own money	60	19.1
	I spend a lot / I don't invest well	25	8.0
	Because, I'm responsible	67	21.3
	Others		.6

Source: own

Hypothesis test

Table 4 shows the Logit regression model of the decision to save and its relationship with the independent variables. From the results, both variable X1: gender and variable X2: age are statistically non-significant variables. Which means that between male and female students there is no difference regarding the decision to save. Likewise, the result on the age variable indicates that among students in the age range between 10 to 13 years and 14 to 17 years there is no difference regarding the savings decision. The variable X3: number of siblings is a significant variable in the decision to save. The negative sign (-0.854) indicates that having more siblings decreases the probability of saving by the student. The above supports hypothesis 1 on the relationship between the student's savings decision and the number of siblings they have, so there is evidence to reject HO1.

The decision to save is positively related to the decision that the student surveyed has about the use of money. Variable X4 decision about the use of money is statistically significant. The positive coefficient indicates that those students who said they have the decision to use the money, they receive are more likely to save.

The decision to save is negatively related to the decision to spend all the money. The variable X5 spend everything, is statistically significant. The negative sign of the coefficient indicates that those students who said they spent all the money are less likely to save. The decision to save is positively related to the knowledge they have regarding their parents' savings. The variable X6: parents save, has a positive and statistically significant sign. The result indicates that the decision to save is positively related to the fact that children are aware that their parents save. For those children who indicated that they are aware that their parents save, it is more likely that they also save.

The decision to save is negatively related to the decision to spend all the money. The variable X5 spend everything, is statistically significant. The negative sign of the coefficient indicates that those students who said they spent all the money are less likely to save. The decision to save is positively related to the knowledge they have regarding their parents' savings. The variable X6: parents save, has a positive and statistically significant sign. The result indicates that the decision to save is positively related to the fact that children are aware that their parents save. For those children who indicated that they are aware that their parents save, it is more likely that they also save.

Therefore, there is no evidence that allows us to reject HO2, which suggests rejecting working hypothesis 2.

Table 4. Logit estimates. Dependent variable: decision to save

Constant	*Coefficient*	*Std. Dev.*	*z*	*Value – p*
	−0.0500799	1.18347	−0.04232	0.9662
X1: gender	0.193355	0.307982	0.6278	0.5301
X2: age	0.0503885	0.347202	0.1451	0.8846
X3: siblings	−0.855464	0.394324	−2.169	0.0300 **
X4: decision about money	1.82792	0.629698	2.903	0.0037 ***
X5: spend everything	−1.69084	0.311122	−5.435	<0.0001 ***
X6: parents save	1.44139	0.316095	4.560	<0.0001 ***

Constant	*Coefficient*	*Std. Dev.*	*z*	*Value – p*
X7: Knowledge of money	0.0843006	0.579658	0.1454	0.8844
X8: goodness of savings	0.0625160	0.731407	0.08547	0.9319
Mean of the dependent variable		0.751613		
McFadden R-squared		0.201287		
Log-likelihood		−138.7942		
Number of cases 'correctly predicted'		243 (78.4 %)		
Likelihood ratio test: Chi-square(8)		69.9564 [0.0000]		

Source: own

3. Discussion

This research aims to analyze the relationship between the decision to save and financial education variables of the personal and family environment of adolescent students in the state of Veracruz, Mexico. The descriptive results shows, 74.2 % of the adolescent students indicated that they have the habit of saving. This percentage differs from that reported by Alvarado and Duana (2018), who identify that the majority of adolescents save (92.3 %), without making a distinction between men or women. It also differs from the reported by Frisancho (2019) in Peruvian students, who identifies that only 13.7 % have a savings account. The results obtained from the model provide evidence that there is no gender difference regarding the decision to save. This result coincides with Alvarado and Duana (2018). In our results of the econometric model, it is identified that the respondent's savings decision depends positively on the number of siblings that the respondent has. This result is according with reported by Mohammed et al. (2018) who identify that the personal environment and family, has a significant influence on financial education and financial behavior.

Likewise, in our results the decision to save is related to the decision on the use of money and the knowledge that the respondents have regarding their parents' savings. This result coincides with the argument of Mohammed et al. (2018), who identify that children learn from their parents' consumption about how to spend money, which can strongly influence their spending behavior.

4. Conclusion

This research aims to analyze the savings decision in students at the basic school level and its relationship with gender, age, number of siblings, as well as financial education variables in their personal and family environment. The results of the correlational analysis show evidence to reject HO1. This result shows the relationship between the savings decision of the student surveyed and the number of siblings they have. Likewise, the model results provide evidence to reject HO2. The results support the hypothesis in which the decision to save is related to financial education variables of the personal and family environment of the student surveyed. The results of this research emphasize the role that the family environment has in the savings decisions of young students. In conclusion, it is important to promote financial education from home, with the purpose of promoting the learning of financial education in early-age members, to undertake healthy financial responsibilities in the immediate future.

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Media Literacy in the Age of Misinformation: A Mixed-Methods Analysis of Adult Media Literacy across Urban and Rural Areas of Pakistan

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Abstract

This study investigates the state of media literacy among adults in Pakistan in the context of rising misinformation, political polarization, and digital inequality. Employing a mixed-methods sequential explanatory design, the research combines survey data from 500 participants across four provinces with 30 in-depth interviews to explore how socio-demographic factors, such as education, age, gender, and digital access, influence media literacy. Quantitative results reveal that only 41 % of respondents can identify biased news, 18 % have engaged in content creation, and 33 % understand privacy settings on social media. Urban respondents performed significantly better than rural ones, with education level positively correlating with media literacy ($r = 0.62$, $p < 0.01$) and age negatively associated with digital skills ($r = -0.54$, $p < 0.05$). Thematic analysis of qualitative data highlights distrust in mainstream media, generational gaps in media use, and socio-cultural barriers, particularly affecting women in rural areas. These findings underscore the urgent need for inclusive and context-sensitive media literacy initiatives in Pakistan. The study contributes to global discourses on digital inclusion and supports Sustainable Development Goal 4 on equitable access to quality education.

Keywords: media literacy, digital divide, misinformation, adult education, Pakistan, mixed-methods research, urban-rural disparities, gender and media, critical digital skills.

1. Introduction

Pakistan's media landscape has experienced a dramatic transformation since the early 2000s, marked by the liberalization of television and radio and the explosive growth of digital platforms. With over 100 private TV channels, 200 FM radio stations, and more than 87 million social media users as of 2023, access to information has never been broader (DataReporta, 2023). However, this expansion has also brought significant challenges, including rampant misinformation, political polarization, and a persistent digital divide — only about 35 % of adults in Pakistan use the internet, and rural areas remain particularly underserved (Pakistan Bureau of Statistics, 2022; Strafasia, 2023).

Media literacy – the ability to access, analyze, evaluate, and create media messages – is increasingly recognized as a crucial skill for informed citizenship and societal resilience against digital threats (Ikram, Rahman, 2023; Hobbs, 2023). Academic research underscores that media literacy is essential not only for countering misinformation but also for promoting critical thinking, autonomy, and democratic participation (Ikram, Rahman, 2023; Strafasia, 2023). For instance, researchers found that media students in Pakistan, especially those exposed to analytical

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coursework, demonstrated higher news media literacy and critical thinking skills compared to their peers. However, most research and educational initiatives in Pakistan have focused on youth and students, leaving the adult population, who make up 65 % of the country, largely unexamined in terms of their media literacy competencies (Ikram, Rahman, 2023).

The challenges in improving media literacy are compounded by socio-demographic disparities. Rural populations, women, and older adults face significant barriers to both basic and media literacy, stemming from limited educational opportunities, infrastructural deficiencies, and socio-cultural norms (Pakistan Bureau of Statistics, 2022; Strafasia, 2023). Studies highlight that media literacy initiatives are often ineffective unless they are accompanied by broader educational reforms and efforts to bridge the digital divide (LinkedIn Pulse, 2024). Furthermore, research suggests that while basic media usage is widespread, the ability to critically evaluate and verify information remains limited among the general population, making them vulnerable to digital manipulation and propaganda (Eurasia Review, 2023; Strafasia, 2023).

This study addresses these gaps by systematically assessing media literacy levels among Pakistani adults, with particular attention to the influence of education, age, gender, and access to technology. By employing a mixed-methods approach—combining quantitative surveys and qualitative interviews across urban and rural regions—this research aims to provide a nuanced understanding of the current state of media literacy in Pakistan. The findings are intended to inform targeted educational programs and policy interventions, contributing to the global discourse on media literacy in low- and middle-income countries (LMICs) and supporting UNESCO's Sustainable Development Goal 4, i.e. Quality Education.

2. Materials and methods

This study employed a mixed-methods sequential explanatory design, integrating quantitative and qualitative approaches in two distinct phases (Creswell, Plano Clark, 2017). The quantitative component involved a cross-sectional survey aimed at measuring media literacy levels and identifying socio-demographic predictors. Subsequently, the qualitative phase utilized semi-structured interviews to contextualize the statistical findings and explore participants' lived experiences with media engagement.

This design prioritized quantitative data collection, followed by a qualitative exploration, allowing quantitative results to inform the selection of interview participants and guide thematic analysis (Ivankova et al., 2006). This sequential integration facilitated a deeper understanding of the patterns and anomalies observed in the survey data.

The target population comprised adults aged 18 years and above residing across Pakistan's four provinces. A stratified random sampling technique was adopted, ensuring proportional representation based on provincial demographics. A total of 500 respondents participated, distributed as follows:

– Punjab: 40 % (n = 200)
– Sindh: 25 % (n = 125)
– Khyber Pakhtunkhwa: 20 % (n = 100)
– Balochistan: 15 % (n = 75)

Inclusion criteria were:

– Minimum five years of residency in the selected province
– Regular media consumption of at least one hour per day via television, radio, or digital platforms

Participants for the qualitative phase (n = 30) were selected through purposive sampling from the pool of survey respondents. Selection was stratified to ensure diversity across two key dimensions:

– Geography: Urban (n = 15) and rural (n = 15)
– Media literacy levels: High (top 25 %), medium (middle 50 %), and low (bottom 25 %) quartiles.

Recruitment was facilitated via phone calls and community liaisons. The qualitative phase achieved a 92 % response rate. A 35-item questionnaire, adapted from the European Media Literacy Index (EMLI), was used to assess four core domains of media literacy (Lessenski, 2022).

1. Access – Frequency and diversity of media use (e.g., "How often do you verify news via multiple sources?")

2. Analysis – Critical evaluation skills (e.g., "Can you identify sponsored content in news articles?")

3. Evaluation – Awareness of bias and misinformation (e.g., "How confident are you in detecting deepfake videos?")

4. Creation – Participation in content generation (e.g., "Have you ever shared original media commentary?")

The instrument was pilot-tested with 50 adult participants and demonstrated acceptable internal consistency (Cronbach's α = 0.82). For Qualitative Interviews, a semi-structured interview guide was developed to explore:

– Trust in media institutions

– Challenges in navigating digital platforms

– Cultural and gender-based barriers to media literacy

Data Collection Procedure was done in two phases, i.e

Quantitative Phase: Face-to-face surveys were conducted by trained enumerators between March and April 2025. Each interview lasted approximately 25 minutes. To ensure data quality, 10 % of the responses were randomly checked for validation and consistency.

Qualitative Phase: In-depth interviews were held from May to June 2025 in the respondents' preferred languages, including Urdu, Sindhi, and Pashto. Interviews lasted between 45 and 60 minutes, were audio-recorded, and transcribed verbatim for analysis.

Quantitative Analysis: Data were analyzed using SPSS v28. The following procedures were employed:

– Descriptive statistics: Frequencies, means, and standard deviations to describe media literacy scores

– Inferential statistics:

Multiple linear regression to identify predictors such as age, education, and device access

ANOVA to examine differences across provinces and urban-rural settings

Qualitative Analysis: Interview transcripts were analyzed using thematic analysis in NVivo. The process involved:

– Open coding to generate initial categories

– Axial coding to identify thematic relationships and recurring patterns (Braun, Clarke, 2006)

– Integration of findings from the quantitative phase to inform and interpret qualitative insights, particularly focusing on outliers (e.g., individuals with high media literacy despite limited formal education)

All participants received bilingual consent forms (Urdu/English) detailing the purpose, procedures, and their rights as participants. Survey data were anonymized using unique IDs; interviewees were assigned pseudonyms. Female enumerators conducted interviews with rural women to respect cultural norms. In conflict-prone areas, collaboration with local NGOs ensured safe and respectful data collection.

3. Discussion

Media literacy has evolved as a foundational skill for navigating today's complex digital landscape. It is defined as the ability to access, analyze, evaluate, and create messages across a variety of contexts (Buckingham, 2003). This competency has gained significance with the proliferation of digital content and the increasing challenge of misinformation. The integration of digital and media literacy into formal curricula has been recommended as a crucial 21st-century educational goal, emphasizing the need for critical thinking about media (Hobbs, 2010).

The challenges posed by new communication technologies have been highlighted, with concerns that although access to digital tools is increasing, users' critical engagement remains uneven (Livingstone, 2004). Media literacy has also been linked to digital and information literacies, with arguments for an integrated approach to helping users manage the overload of online content (Koltay, 2011).

Literature from the Global South highlights significant inequalities in digital literacy. The Western-centric discourse on digital participation has been critiqued, with calls to recognize how the next billion users — largely from the Global South — engage with technology in distinct and context-specific ways (Arora, 2019). Community media practices in countries like Kenya and

South Africa have been shown to foster localized participatory engagement, emphasizing the role of culture and infrastructure in shaping media literacy (Tully, Ekdale, 2014).

In Pakistan, similar disparities are evident. Limited digital access, particularly among women, continues to hinder health communication and digital inclusion, shaped by cultural, gender, and socioeconomic factors (Zakar et al., 2014). The rise of mobile journalism in Pakistan has reshaped news production and consumption but has also facilitated the spread of fake news, especially among populations lacking media literacy training (Jamil, 2021).

Young people, despite being active digital users, often engage with media in uncritical ways. Media literacy has been identified as a core civic competency necessary for supporting participatory democracy (Mihailidis, Thevenin, 2013). The concept of "digital agency" – defined as the ability to make informed and ethical decisions in digital spaces – has been introduced as a framework for empowering youth (Passey et al., 2018). Structured media literacy interventions have been shown to reduce susceptibility to fake news among adolescents, strengthening the case for educational programs that build critical evaluation skills (Lemaire et al., 2025).

Access to digital tools and platforms remains deeply gendered and geographically uneven. In Pakistan, traditional gender norms continue to limit women's digital participation, especially in rural settings (Zakar et al., 2014). These findings are echoed in studies showing that women in developing countries face unique barriers in digital environments due to safety concerns, family expectations, and limited device access (Arora, 2019).

Generational divides also widen the digital literacy gap. Older adults, who often rely on traditional media, tend to lack the skills needed to critically engage with online content. This contributes to their vulnerability to misinformation and highlights the importance of inclusive media literacy strategies that consider all age groups (Livingstone, 2004; Hobbs, 2010).

4. Results

The study surveyed 500 individuals across Pakistan's four provinces using a stratified random sampling approach. Table 1 presents the demographic characteristics of the sample. The gender distribution included 58 % males and 42 % females, with participants almost evenly split between rural (52 %) and urban (48 %) settings. In terms of education, 62 % had attained at least secondary-level education, while 28 % reported daily internet use, indicating moderate digital engagement in the sample.

Table 1. Demographic Profile of Respondents (N = 500)

Variable	*Category*	*Frequency (n)*	*Percentage (%)*
Gender	Male	290	58
	Female	210	42
Residential Location	Urban	240	48
	Rural	260	52
Education Level	≥ Secondary	310	62
	< Secondary	190	38
Daily Internet Usage	Yes	140	28
	No	360	72

Media literacy was assessed across three domains: critical understanding, content creation, and ethical awareness. Table 2 outlines the findings.

Critical Understanding: Only 41 % of participants could accurately identify biased or misleading news content. Urban respondents demonstrated significantly higher proficiency, scoring 22 % higher than their rural counterparts.

Content Creation: A mere 18 % of the sample reported having created or shared original digital media, suggesting low engagement with participatory online practices.

Ethical Awareness: Just 33 % of respondents reported an understanding of privacy settings on social media platforms, pointing to significant gaps in digital safety awareness.

Table 2. Media Literacy Performance Across Domains

Domain	*Indicator*	*Result*
Critical Understanding	% identifying biased or misleading news	41 %
	Urban vs. Rural score difference	Urban scores
Content Creation	% who have created or shared original content	18 %
Ethical Awareness	% understanding social media privacy settings	33 %

Statistical tests were performed to examine the relationships between demographic factors and media literacy performance:

Table 3. Correlational Analysis of Media Literacy Predictors

Predictor	Correlation Coefficient (r)	Significance (p-	Interpretation
Education	0.62	$p < 0.01$	Strong positive correlation
Age	-0.54	$p < 0.05$	Moderate negative correlation

A positive correlation was found between education level and media literacy ($r = 0.62$, $p < 0.01$), confirming that individuals with higher educational attainment had better skills in evaluating, interpreting, and ethically using media. Age exhibited a negative correlation with digital proficiency ($r = -0.54$, $p < 0.05$), suggesting that younger respondents had better digital skills, although they often lacked critical discernment.

The qualitative phase, comprising 30 semi-structured interviews, added depth to the quantitative findings. Thematic analysis revealed the following prominent themes:

Distrust in News Media: Participants across regions expressed growing skepticism toward mainstream television channels, citing political bias, sensationalism, and lack of neutrality. Many questioned the credibility of evening news and expressed preference for alternative sources, including YouTube commentators and WhatsApp groups.

“TV channels just repeat what politicians say. I don’t trust them anymore.” — Male, 34, Sindh (Urban)

Generational Gaps in Media Use: The interviews revealed stark intergenerational differences in media consumption patterns. Older adults predominantly accessed television and radio, often without critical engagement, while younger users gravitated toward social media platforms but lacked skills to assess content validity.

“My son uses Facebook all day, but he believes everything he reads there.” — Female, 52, Khyber Pakhtunkhwa (Rural)

Cultural and Gender-Based Barriers: In rural areas, traditional gender norms restricted women’s access to digital technologies. Many female respondents indicated limited access to smartphones or internet, often mediated by male relatives.

“I need to ask my brother even to use his phone. He decides what I can watch.” — Female, 28, Balochistan (Rural)

These findings underscore the socio-cultural constraints on digital inclusion and media literacy, particularly among rural women.

5. Conclusion

This study provides a comprehensive, mixed-methods analysis of media literacy among adults in Pakistan, revealing critical gaps in digital comprehension, critical evaluation, and content creation. Despite widespread media consumption, only a minority of participants demonstrated the capacity to critically assess or ethically engage with digital content. These deficits were particularly pronounced among older adults, rural populations, and women, groups disproportionately affected by systemic educational, infrastructural, and cultural barriers.

Education emerged as the strongest predictor of media literacy, suggesting that targeted interventions in adult education could significantly improve digital competence. Meanwhile, age and rural location were negatively associated with media literacy, reinforcing the importance of contextualized and inclusive strategies. The study also highlighted how distrust in mainstream

media and the growing influence of social media platforms complicate information discernment, particularly for younger and less formally educated users.

Qualitative insights further revealed that gendered access to digital technology and the persistence of patriarchal norms hinder women's full participation in digital spaces. These findings echo global calls for culturally sensitive and equity-driven media literacy programs, particularly in low- and middle-income countries (LMICs).

In addressing these challenges, policymakers and educators must adopt a multidimensional approach that integrates formal education, digital infrastructure development, community engagement, and localized content design. Media literacy should not be limited to the youth or formal institutions; it must be extended to the adult population through non-formal channels, workplace learning, and grassroots community programs. By doing so, Pakistan can empower its citizens to navigate the digital age with discernment, agency, and resilience, paving the way toward a more informed, inclusive, and democratic society.

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Information Literacy in the Context of Electronic Learning in India: a Phenomenographic Study

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Abstract

This study explores the concept of information literacy within e-learning environments through a phenomenographic lens, aiming to understand how LIS professionals and educators' experience and use information effectively in virtual learning contexts either as a learner or an instructor. The method seeks to uncover the different ways IL practitioners perceive and approach information literacy tasks in online settings. Data were collected through semi-structured interviews for 12 LIS professionals – PhD students of LIS, LIS faculty, senior and junior librarians of higher institutions in India who have had electronic learning experience. The resulting analysis of outcome space identifies six dimensions of variation and seven categories in Table 3 with foci of intersection. The evolving relationship of the categories was also revealed in a basic target diagram with critical thinking skills as the nucleus. These categories show diverse understanding of IL practitioners in terms of skills and other requirements of IL in the context of VLE such as critical thinking, computer technology facility, independent learning, ethical use, IL instruction, learning outcome and expert's opinions. The findings highlight the complexity of information literacy in e-learning environments and emphasize the importance of designing instructional practices and resources that address these diverse experiences.

Keywords: information literacy (IL), electronic learning environment, phenomenography, LIS professionals, categories, India.

1. Introduction

An informed society requires its citizens to be information literate as "The key characteristic of the postindustrial 21st century is that it is information abundant and intensive. Information literacy is thus required because of the ongoing proliferation of information resources and the variable methods of access". There is a significant connection between information literacy and online learning. Electronic learning, also known as e-learning, is the use of electronic technology to facilitate learning and teaching. In the context of higher education, the use of digital technology forms an integral part of the contemporary student experience (Al Abdullatif, Gameil, 2020, Selwyn, 2014). On the other hand, information literacy is the capacity to locate, assess, and use information effectively. Konnur and Rao (Konnur, Rao, 2010) in their study on "Information literacy and electronic learning in India: An exploratory study" examined the information literacy abilities of Indian students as well as the contribution of electronic learning to the growth of these abilities. In a separate research, Sarode (Sarode, 2017) focused on the effects of digital technology on the information literacy abilities of library and information science workers in India.

Given the Covid 19 pandemic, the demand for e-learning environment has been excercabated. And due to the development of information and communication technologies,

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libraries must adapt to the needs of their users and provide IL activities also in e-environments (Nazari, Webber, 2012).

The overall aim of this research work is to investigate the LIS professional's information literacy experience within the domain electronic learning environment

2. Materials and methods

Phenomenography has been frequently utilized in the sphere of education, to examine the spectrum of intricacy of experiences of various phenomena. As a result, information literacy has frequently been perceived as a vehicle for knowledge acquisition (Bruce, 2008; Forster, 2015a). It is pertinent to know that information literacy now extends beyond acknowledging its role in education to include its use as a tool for leadership, teamwork, creativity, communication, and compassion (Forster, 2017a; Donaldson, Inskip, 2017).

Phenomenographic studies have been used as a basis of evidence-based information literacy educational interventions (Andretta, 2007). The main task of a phenomenographic study is the interpreting cases of encounters with a phenomenon.

Participants: India is currently the most populous country in the world with plausible highest number of library schools. By implication, it trains more librarians and academics in information literacy profession. However, the participant selection has been confined to information literacy professionals in Western India comprises three large states (Maharashtra, Rajasthan and Gujarat), one small state (Goa) and one small union territory (Dadra and Nagar Haveli and Daman and Diu — a group of enclaves, former Portuguese territories, within Gujarat). It is bounded by Pakistan and the Arabian Sea to its west and the gangetic plains to its east. This is the most heterogeneous of India's regions, with the states differing dramatically from one another in language, culture and levels of economic development. Maharashtra and Gujarat are among the most industrialized states of India, while Rajasthan and Goa are magnets for tourists, though for different reasons. It's important to remember that India is an incredibly diverse country with a rich tapestry of cultures, languages, and traditions.

Western India is no exception, encompassing states such as Maharashtra, Gujarat, Rajasthan, and Goa. There are some general cultural traits and practices that are commonly associated with the region and representative of the entire country. All this informed the choice of information literacy professionals from western India. Besides the "phenomenon" experience of the participants, other factors such as ease of access to states, face-to-face access to participants, language barrier were all considered when determining the region (Western) so as to ensure that all perceived barriers are mitigated. Once physical access has been granted and permission obtained (Gummesson, 2000), whilst occasionally it may be possible to collect data from the total population, for example, an organization's employees; for most research projects this will be impossible.

Data Collection and Analysis: Interview questions were subjected to revision by experts to make them more concrete with the aim of focusing the participants' towards the phenomena under investigation. In a phenomenographic interview, the questions are semi-structured, i.e. they are open-ended to provide the respondents the flexibility to select the dimensions or features of the phenomena that they want to elaborate on. Additionally, this makes room for more surprising responses, which aids the researcher in comprehending the larger picture. This method permits the asking of follow-up questions or reformulated inquiries because it is assumed that the researcher cannot tell how the question was received until the respondent provides an answer.

A number of follow up questions will be employed to encourage participants to elaborate on or clarify the responses they had provided. The interviewer will also be cautious while asking follow-up questions careful to avoid leading the practitioners' responses. The following details of the interview will be included: the length of interviews; format: Audio recordings and paper (verbatim transcripts).

Conclusively, phenomenography focuses on collective perspectives and difference in how a phenomenon is experienced, even when data may be obtained at the individual level. In this sense, the first step towards creating a communal knowledge of the various ways in which specific phenomena may be perceived is the collection of data at the individual level. Open-ended interview questions are specifically crafted to guide the interviewee toward the topic of interest.

Interview: Semi-structured interviews were used for data collection and this is the most common technique utilized in phenomenographic research (Limberg, 2000). Yates et al. (Yates et al., 2012) asserts that "Interview questions are designed in such a way so as to reveal different

aspects of the particular phenomenon of interest. The questions posed are typically open-ended and divergent in nature in order to allow participants to describe their own experience of the phenomenon under investigation".

Table 1. Phenomenography Interview Details

Interviewee	*Recording Length (minutes)*	*Transcript (pages)*
1 – University Librarian	23:39	8
2 – University Librarian	11:23	4
3 – University Librarian (online)	16:35	5
4 – LIS Faculty member	27:38	7
5 – LIS Faculty member	22:11	7
6 – LIS PhD Candidate	14:09	6
7 – LIS PhD Candidate	14:39	6
8 – Assistant Librarian	17:29	4
9 – Assistant Librarian	08:37	4
10 – Assistant Librarian	12:29	3
11 – Assistant Librarian	09:34	3
12 – Assistant Librarian	11:44	4

Over twenty-nine (29) email requests for the oral interview were sent to the LIS professionals, only fourteen (14) consented to the interview and twelve (12) eventually granted the interviews. The interviews were recorded with the consent of the interviewees and transcribed using an artificial intelligence (AI) – TurboScribe. The details of the interviews (professional status of the interviewees, recording length and number of pages of the verbatim transcripts) are as shown in the Table 1. Time New Romans theme font, 12 font size and 1.5-line spacing were applied on the verbatim transcripts in word document to arrive at the number of pages for each transcript.

3. Discussion

The data analysis of a phenomenographic study is used to understandhow the phenomenon being investigated varies in individual's experience (Bruce, 2000,Limberg, 2005). Instead of viewing the data as distinct sets by transcript, a phenomenographic analysis views all of the data as a single set. As a result, different contexts was used to interpret each transcript. This process was strictly followed in the analysis. In practice, the steps are constantly iterated, though. Using a phenomenographic approach, there is the assumption that the categories are not "discovered" within the data, but rather are created by the researcher(s) in connection to the data. For the set of data in this research, counter examples in the data are considered and talked about with colleagues to prevent the results from reiterating or presenting preconceived opinions. The analysis started with a smaller set of data — five of the transcripts by the senior librarians and LIS faculty members. In view of the complete collection of data, the similarities and differences are later reexamined. The complete transcripts are reviewed numerous times during the analysis process since every new question formulated and every new viewpoint is examined in light of the entire body of material. This implies that with every reading, the focus is on a different query or concept. The data analysis has shown seven different categories which depicted the different ways the library and information (LIS) professionals experienced information literacy in the context of virtual learning environment either as LIS postgraduate students, librarians or as faculty members in the electronic learning space.

Category 1: Information literacy in electronic learning environment requires critical thinking skills.

Category 2: Electronic learning creates the need for some computer technological facility

Category 3: Electronic learning environment helps to foster independent learning skills in the learners.

Category 4: Information literacy in the virtual learning environment poses ethical issues.

Category 5: The integration of information literacy instruction into the e-learning curriculum constitute a concern in the digital age.

Category 6: Learning outcomes is a way to evaluate electronic resources for academic purposes.

Category 7: Expert's opinion is another way to assess electronic resources for academic purposes.

The analysis of data in a phenomenographic study typically involves several stages, beginning with data collection, which often consists of in-depth interviews designed to elicit rich descriptions of participants' experiences (Grossoehme, 2014). This approach was postulated and advanced by Ference Marton and his colleagues, in an attempt to uncover the range of variation in human experience, rather than focusing on individual accounts in isolation (Orgill, 2012).

According to Sutton and Austin (Sutton, Austin, 2015), illustrative quotes play a crucial role in phenomenographic analysis by providing direct evidence of participants' perspectives and grounding the researcher's interpretations in the lived experiences of those being studied. By Linard and Watling's (Linard, Watling, 2021) principle of authenticity , researchers can select quotes that are not only representative but also seamlessly integrated into their narrative, thereby supporting their claims and illuminating participants' experiences. On the other hand is the possible misinterpretation of the participants' intended meanings when adequate context is not provided. The outcome space and categories of description are key methodological features (Raza et al., 2024).

4. Results

Descriptions of the Categories

Category 1: Information literacy in the context of virtual learning environment requires *critical thinking skills.*

Meaning: In this category, LIS professionals perceive information literacy in the virtual learning environment as such that tasks your thought process.

Focus: In this category, the main focus is on the *analysis of the process.*

Illustrative quotes

Interviewee 1 (p. 1)

"Okay. Now, your question is information literacy in the context of virtual learning environment. It can be described through various dimensions.First one is the critical thinking skill, which is emphasizing the ability to evaluate sources for credibility, relevance and bias, especially in an online context where misinformation can easily proliferate. The second one is the digital navigation, teaching students how to effectively use research in databases, various learning resources to find reliable information…"

Interviewee 7 (p. 2)

"First of all, in a virtual learning environment, you have to think critically. You have to think critically. So students must learn how to think critically to evaluate the information."

In this category, professionals in information literacy believe that e-learning dimension being brought into information literacy calls for a critical thinking ability on the part of the searcher. IL practitioners assert that the critical thinking skills enable learners to explore and make sense of the massive volumes of information available online; they are crucial for digital literacy. Simply being able to access information and use digital tools is insufficient in the digital age. Additionally, people must be able to assess the reliability, and applicability of the information they come across. This include asking the necessary questions: who created this content? What are their credentials? Are there biases or hidden agendas behind the information? Can the claims be verified through other reliable sources? Does it decipher facts from opinions?

Category 2: Electronic learning environment creates *the need for some computer technological facility,*

Meaning: In this category, LIS professionals see the requirement of computer hardware and software and internet access as creating a socio-economic problem.

Focus: In this category, the primary focus is on *digital divide.*

Illustrative quotes

Interviewee 7 (p. 4)

"Digital divide, this is unusual access to technology and the internet can limit opportunities for information literacy development. And then the last one, which is the fourth one, as I said, there are four challenges."

Interviewee 10 (p. 2)

"So, but it also I think it also creates some challenges like it has like people who don't have access to technology or internet or like basic needs also. So, they can't just access the information from anywhere. But I guess it makes it easier to access the study material or information they want to access."

In this category, information literacy educators identified the requirement of some form of computer technology facility as a negative effect on learners from rural communities who do not have the resources to purchase the computer device or have internet access, thereby creating a digital divide. A number of variables, including infrastructure, education, location, and income, may contribute to this gap. IL educators further stressed that digital literacy, smartphones, computers, and dependable internet access are common among individuals who are "privileged" whereas those on the other side of the divide may have trouble obtaining these resources, which restricts their capacity to fully engage in the digital world.

Category 3: Electronic learning environment helps to foster *independent learning* in the learners.

Meaning: In this category, LIS professionals perceive that virtual learning environment promotes self-directed learning.

Focus: In this category, the primary focus is on *life-long learning skills*.

Illustrative quotes

Interviewee 8 (p. 1)

"The impact of virtual learning environment is that the students, or whomever the person accessing the information, they have the self-directed learning, self-paced learning also is there. That whenever, sometimes self-paced learning is also there, and like discussion forums, or the virtual courses are also there, so that they can access from anywhere, like we two are here (sic)"

Interviewee 12 (p. 3)

"The impact of information literacy on the virtual learning environment. It enhances independent learning, like research skills and decision making in online education."

In this category. IL educators opine that independent learning provides a number of important advantages that can greatly improve the educational process. It gives students more authority, encourages more active participation, and develops life applicable experience that are useful in the classroom and in the workplace. Independent learning provides flexibility, self-discipline, and allows the learner to take ownership over their learning process

Category 4: Information literacy in the virtual learning environment poses *ethical issues*.

Meaning: In this category, LIS professionals consider the legal use of intellectual property pivotal to information literacy in the electronic learning.

Focus: In this category, the primary focus is on the *copyright laws*.

Illustrative quotes

Interviewee 1 (p. 5)

"Another is ethical issue in information use. The ease of accessing and sharing information may lead to the issue like plagiarism and copyright infringement. So the students may lack understanding of ethical practices related to information use, affecting academic integrity"

Interviewee 4 (p. 4)

"So, these issues are very much related to the information available in the virtual learning environment. So, how the users should access those information … ethical issues are also going to be there, okay, some information are in there, in open domain… but sometimes you require filters over there, then some mechanism of checking should be there, so that the users cannot use it blatantly without any accountability."

In this category, these LIS professionals raised concerns of respect for intellectual property such as plagiarism, copyright violations and proper citation. Fair use and licensing which includes downloading or sharing or e-resources as the license allows (e.g. creative common) is another concern. In addition, academic integrity which sometime could mean the use of e-resources for unhealthy purposes (e.g. cheating), thereby breeching the academic code of conduct.

Category 5: The *integration of information literacy instruction* into the e-learning curriculum constitute a concern in information literacy in the digital age.

Meaning: In this category, LIS practitioners see the incorporation of information literacy teaching as a challenge due to lack of motivation in electronic learning curriculum.

Focus: In this category, the primary focus is on *demotivation.*

Illustrative quotes

Interviewee 1 (p. 6).

"And integration of information literacy into curricula, this is also another challenge. Many e-learning programs may not systematically integrate information literacy instruction into their curricula. And the students may not receive comprehensive training in the skills, leaving gaps in their education."

In this category, the LIS professionals identify lack of awareness of the critical life-long skill information literacy is by the students, many educators and stakeholders. Limited synergy between the librarians and faculty and of course, lack of assessment design skills as a result of the complexity in measuring IL skills.

Category 6: Learning outcome is a way to evaluate electronic resources.

Meaning: In this category, it appears to LIS practitioners perceive that the search purpose is helpful in judging the usefulness of electronic resources.

Focus: In this category, the primary focus is on the *purpose of search*.

Illustrative quotes

Interviewee 4 (p. 6)

"Secondly, the learning outcome, whatever information is available to them, so the documents or the information, how far these documents or these are actually used, first of all, or sourced, or first of all, or downloaded, or viewed, so that is, you can say the reading rate, the viewing rate, the downloading rate, okay, that you have to first of all, understand that. So, first of all, you have to find out that to understand that this information is actually required by the user, so that they are actually reading it or they are viewing it or downloading it. So, you have to see the outcome of those information that is actually perceived, or rather, you can say, means perceived mostly by the users."

In this category, LIS professionals believe that the purpose of search for information, which in the context of teaching and learning is referred to as learning outcome determines the how the e-resource will be assessed. Accessibility, pedagogical alignment, and the development of critical skills are some of the aspects of the dynamic interaction between e-resources and learning outcomes (Prasetya et al., 2020). A crucial part of e-learning strategies, e-assessment requires teachers to use a variety of assessment modalities and carefully consider their effects using student feedback (Marimuthu, Ramraj, 2019). A framework for assessing how well e-resources support student learning is provided by learning outcomes, which are statements that outline what students should know, comprehend, and be able to perform as a result of a learning experience (Phan et al., 2019).

Category 7: Expert's opinion is another way of evaluating electronic resources.

Meaning: In this category, it appears to LIS educators that professional expertise is helpful in assessing the usefulness/appropriateness of electronic resources.

Focus: In this category, the primary focus is on *academic advising*.

Illustrative quotes

Interviewee 4 (p. 7)

"Then again, also, the experts' opinions should also be gathered. For example, the educational institutions, the teachers, they should also be involved to understand how far the available information (sic), okay... experts' expertise should also be incorporated, so that the stock of knowledge available to the users will be always valid one. Then, the statistics also you have to collect, okay, statistics regarding the usage of the information."

In this category, LIS professionals perceive expert opinion as gatekeeping in nature in ensuring quality and validating the accuracy of the e-resources. They assert their specialty at some capacity as librarians to recommend the most relevant databases, journals and digital tools to students and faculty. The LIS professionals seem to see themselves as experts in information literacy. For those in the capacity of a faculty in LIS departments ensure that the electronic resources align with the learning outcomes and course objectives.

Outcome Space

The categories of description were delimited from each other and organized hierarchically through dimensions of variation that emerged from the data. Due to the structural hierarchy of inclusiveness, some conceptions can be regarded as more complete and more complex than others (Akerlind, 2005).

The approach in Table 2 is complemented by contrasting methods of data analysis, such as those proposed by Marton and Akerlind, which categorize experiences into distinct structures, allowing for a nuanced understanding of the phenomenon (Forster, 2013).

Table 2. Categories of the description

Dimensions of Variation	Categories						
	Critical thinking Skills	Computer technology facility	Independent learning skills	Ethical use	IL instruction	Learning outcome	Expert's opinion
Meaning	Analyzing the process						
Positive Impact			Promoting life-long learning				
Negative Impact		Computer software and hardware requirement					
Legal Issue				Copyright			
Socio-economic Issue		Digital divide			Demotivation		
Assessment						Purpose of search	Academic advising

There are six dimensions of variation that emerged from the analysis of the transcripts as shown in the Table 2 and the intersections of the arrows show the foci between the dimensions of variation and categories. The respondents provided definitions through which their difference in experiences – critical thinking skill was derived. In the opinions of two respondents, they agreed that the effect of e-learning environment on information literacy can be positive and negative which is at variance with the other ten who only identified the positive impact. Only one of the respondents differs on the positive impact of information literacy in e-learning environment, which is that it promotes the ease of independent learning. While only two of them concurred on the fact that the requirement of a computer device and internet access of e-learning can cause digital divide for learners from rural communities who do not have the resources and access to these technological facilities.

In respondents' opinions on emerging issues of information literacy in the context of e-learning environment, only three of the respondents identified ethical issue; and one spoke on the integration of information literacy instruction, which is opposed to many other emerging issues commonly stated by other nine and eleven respondents respectively.

Regarding the evaluation of e-learning resources, only one respondent each identified learning outcome and experts' opinion (i.e. two respondents) contrary to the traditional CRAAP (currency, relevance, authority, accuracy and purpose) method.

Relationship between the Categories in the Electronic Learning

The shown relationship in the figure 1 depicts the evolving relatedness of the categories. At the center of information literacy in e-learning environment is the requirement of *computer technology facility,* which is the nucleus of the basic target diagram. The e-learning environment created by the computer device and internet access increases the accessibility to a plethora of information, which is being referred to information overload. As a result, the IL practitioners and educators opine that they will have to engage in *critical thinking* to filter through the gamut of

information to locate and select what meet their information need. The availability of computer technology facility and critical thinking skill promotes *independent learning*. The challenge, however, is that in the selection and use of the information needed (critical thinking), there are guiding rules called the copyright laws, which they stated are necessary to observe in order to avoid the breach of *ethical use* of the e-resource. IL practitioners and educators believe that the information has to be assessed properly in line with the *learning outcome* and ensure it meets up.

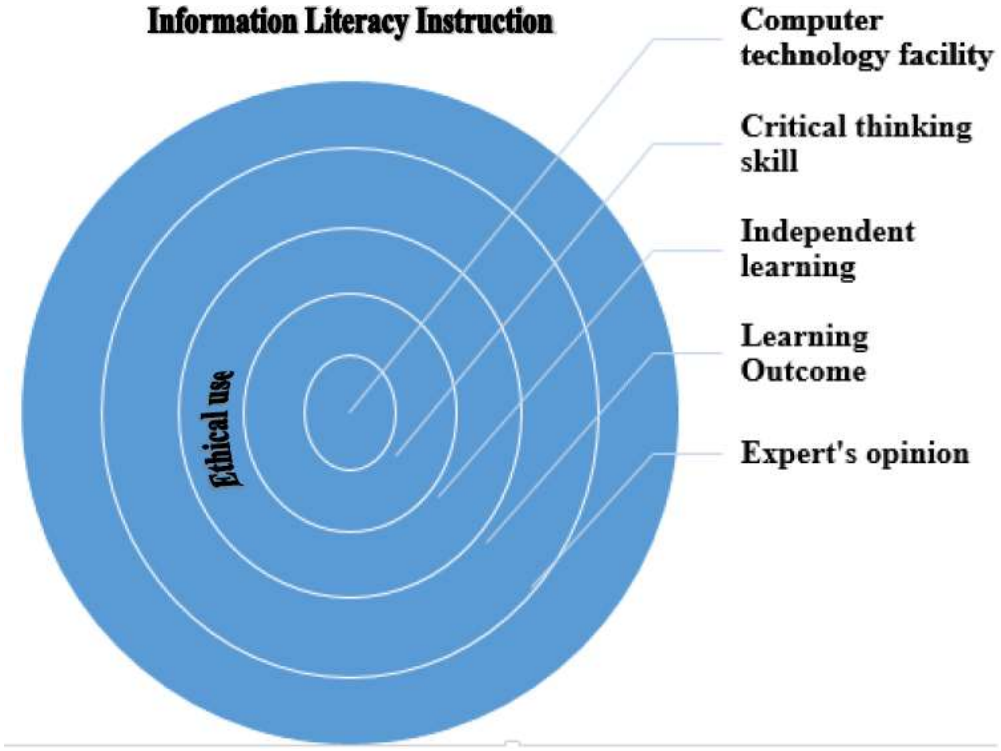

Fig. 1. Relationship between the Categories in the Electronic Learning

The IL educators asserted the need to cross-check with other *experts for their opinions*. The evolving relationship in the categories can then be used to *integrate IL instruction* in the e-learning environment.

5. Conclusion

In conclusion, this phenomenographic study has unraveled the qualitatively different ways in which LIS professionals and faculty in Western India understand and experience information literacy within the context of e-learning, showing a range of conceptions involves the relationship of the categories that identified in a basic target diagram with critical thinking skills as the nucleus. These categories show diverse understanding of IL practitioners in terms of skills and other requirements of IL in the context of VLE such as critical thinking, computer technology facility, independent learning, ethical use, IL instruction, learning outcome and expert's opinions. The resulting analysis of outcome space identifies six dimensions of variation and seven categories in Table 3 with foci of intersection. The results highlight the need for a more thorough approach to teaching information literacy that extends beyond the basic principles of information retrieval and incorporates the contextual awareness, ethical considerations, and critical thinking needed to successfully negotiate the complicated information environment of the digital age.

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Student Innovation Adoption in Digital Media Literacy-Based Educational Communication

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Abstract

Education is not only a process of transforming knowledge and skills but also developing characteristics of mindset, mental, and behaviour that are creative, productive, and innovative, humanistic with a social spirit, adhering to ethics and legal norms, thus becoming a soul with idealism to be truly beneficial to the public..Education is a knowledge transmission process that shapes and develops students' interests, abilities, and skills through constructive educational communication in the digital age, which is fascinating to research. This study included qualitative approaches, including participatory learning and action, as well as data collection by questionnaire distribution to 30 students from 10 favorite high schools, with the results refined through focus group discussions, interviews, observation, and documentation. Quota sampling was used to choose three informants as organizational administrators of those favorite high schools. Data analysis involved descriptive analysis and constructive engagement. The findings revealed that educational communication via digital technology media creates four categories: followers, learners, creators, and innovators. Research implications recommend the utilization of digital technology media in learning; it is necessary to implement educational communication theory to support the development of creative and productive digital literacy to minimize phubbing and conduct disorder as a negative impact of digital media usage.

Keywords: digital literacy, educational communication, media technology, innovation adoption, student learning.

1. Introduction

Education is an important and strategic aspect in preparing, shaping, and developing human resources as communicators, actors, and catalysts of development. Education is planned, implemented, and evaluated in stages, starting from early childhood education to higher education. It is hoped that from the stages and targets of tiered education until the age of 23, human resources as the next generation will have quality competencies in knowledge, experience, and skills to be ready to work, accept, and answer the challenges of the times for the advancement of development.

The Indonesian government supports the education process and targets with a policy of requiring every citizen to be educated for 9 years by waiving education fees from primary to secondary school levels. As stated in the mandate of the 1945 Constitution of the Republic of Indonesia in Article 31 Paragraph 1 that e*very citizen has the right to education*, then government policy in Government Regulation No. 47 of 2008 Article 12 paragraph 3 that *District/city governments are obliged to strive so that every Indonesian citizen of compulsory education age follows the 9-year compulsory education program*. Even in the Draft Law on the National Education

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System, it is proposed to be revised to 13 years of compulsory education consisting of 10 years of basic education from pre-school to primary school graduation, then continuing junior high school.

The large number of people is a burden on development because the number of unemployed is quite large based on the Central Statistics Agency (BPS) report in August 2022, it has reached 8.4 million people or 5.86 % of the total national labor force, the most unemployed in the age group 20-24 years as many as 2.54 million people or 30.12 % of the total national unemployment.

Several studies show that development requires human resources both in quantity and quality to determine the progress of development in terms of economic, socio-cultural, and welfare. However, a large population is also a problem of development and population such as poverty, unemployment, overcrowding in urban areas, inequality, and socio-economic conflict (Handoko et al., 2024; Meadows et al., 2023; Prastyanti et al., 2024).

The adoption of communication technology innovation is a decisive factor in building and developing digital learning media literacy through several applications that need to be mastered starting from being understood to appearing to use it. The adoption of technological innovation requires processes and actors as facilitators, instructors, and assistants to provide digital technology literacy (Gledson, 2022).

Shock in digital media makes the public or internet citizens fall into several categories according to Everett Rogers, namely innovators as pioneers who initiate mastery and transfer of technology, then adapters who are fast and interested in technological change, are also adapters who are slow to accept or master technology, and there are even those who are very slow and reject technological change (Dutta, Sarma, 2023; Zasa et al., 2023).

The learning process with digital online media is a form of mass communication where the communication process uses electronic or print media that is uploaded and can be downloaded by all parties as long as access and media are owned. The era of new media and the era of disruption has emphasized that electronic media expands perception (thinking) in the context of a global village. Internet media is called cyberspace society and virtual world which is deliberately created as Netizen-Computerization-Internet-Digital. The era of disruption occurs from technology, namely fundamental changes from the old system to a new system (innovation) in various aspects of socio-economic life (McMullan, 2020; Nurlatifah, Mutmainnah, 2021; Pamuji et al., 2022).

Based on the phenomenon, the author is interested in researching the phenomenon of the educational process among students during the COVID-19 period, especially starting in 2020 and ahead of the new normal era in 2022 and 2023. The results of the research are expected to construct a student learning model in the adaptation of digital technology media. The research question is how student innovation adoption in digital media literacy-based educational communication?

2. Materials and methods

The research was conducted from May 2023 to June 2024 as the end and post-COVID-19 pandemic period or entering the new normal era. The research target is students in grade 11 high schools with the consideration that grade 11 students have the adoption of digital learning media and are sufficiently literate in digital media.

The 30 informants were determined based on a quota sample that selected 3 high school students from 5 favorite high schools in Purwokerto City, Central Java Province, Indonesia with a composition of 5 schools from Senior High Schools, Vocational High Schools in the city center and 5 schools in rural areas so that there is diversity represented from different location characteristics.

Research used the Participatory Learning and Action (PLA) method is a way of conducting a research process through indicators (1) The learning process is carried out based on participatory practices. (2) Methods of empowering the community to be able to explore sharing knowledge and experience. (3) Making and making decisions, planning to implementing change actions. (4) Identifying needs, planning, and evaluating development program activities. (5) Counseling media and providing opportunities to encourage active community participation in problems and interventions in all aspects of community life. (6) Improving the quality of life of individuals and communities (Windiasih et al., 2022).

PLA was carried out in three stages, as follows: (1) The orientation stage, preliminary study activities at the research location to obtain a clear and complete description of the problem under study; (2) The exploration stage, carrying out data collection on research subjects oriented to the objectives and focus of the research. (3) The member check stage, on research subjects and

documents as findings based on procedures, data validity, and appropriate data revision according to systematics to obtain the final report (Sulaiman, Ahmadi 2020).

The research data was collected by distributing questionnaires to research informants. The results of the questionnaire were then questioned and deepened by dialog and discussion, followed by direct observation, and important documentation. Data were analyzed using descriptive analysis for the distribution of questionnaires, then data from interviews and discussions with constructive participatory data analysis, namely processing and reducing data to identify, describe, triangulate, and verify data to categorize and build models (Hart, 2008).

3. Discussion

Indicators of evaluation of the adoption of innovations in the use of technological media that assist in learning, then indicators of experiments on technological media that can be practiced are categorized as Moderately High. Students need adaptation both time, learning, practice, and assistance regarding the use, utilization, and assignment of learning from teachers, instructors, and families (Dou, 2024; Fernández-Batanero et al., 2020; Mingot, Marin, 2024; Šušterič et al., 2025).

Meanwhile, the adoption indicator in the form of technological media that can find new things in learning is categorized as very high. Students get various new applications and platforms such as Google Classroom, Google Meeting, Zoom Meeting, Microsoft Teams, and WhatsApp video calls. Including several websites and YouTube addresses for learning and creative learning. Students' computational thinking self-efficacy is influenced indirectly by their digital literacy skills and also contributes to social cognitive growth (Gümüş et al., 2024; Kilic, 2023; Slakmon, 2024; Yen et al., 2025). Further, more effective outcomes for teaching, learning, and motivating learners, it is necessary to integrate digital and social skills with media literacy across flexible routes.Teachers also prioritize investing in digital technologies to create a successful learning environment (Almaki et al., 2025; Hernández, 2025; Johnson, 2021).

It requires digital media literacy to utilize and optimize the interests and technological capabilities of the younger generation to be more directed, healthy, productive, creative, and innovative (Ahmadi et al., 2023; Lestari, Fitri., 2021; Lestari et al., 2024; Prasetiyo et al., 2022; Prastyanti et al., 2022; Suswanto et al., 2021).

However, there is a negative impact if it is not managed, supervised, and channeled properly, namely dependence on the use of digital media such as online games and other entertainment shows, so that they forget time, do not want to study, and do not want to interact normally or tend to enjoy themselves as a characteristic of Phubbing. Another negative impact is a conduct disorder, where digital media users have violated norms and ethics and even violated the law due to the desire to fulfill their needs due to the negative influence of digital media, such as lying, disrespectful and violent behavior, or acts of violence, immorality, stealing and other (Bergmark, 2020;Bowman et al., 2020; Cents-Boonstra et al., 2020; Erwinda, 2023; Solecki, 2022; Sulaiman et al., 2024; Wang et al., 2023).

This research uses the Participatory Learning and Action (PLA) method as part of the constructivist paradigm which is a process of building and composing new knowledge in the cognitive structure of students based on student experience. The constructivism paradigm approach with the PLA method is very relevant in analyzing the phenomenon of the educational communication process in digital literacy from students' knowledge, skills, and experiences. Based on the results of observations, interviews, and Focus Group Discussions (FGD) with 30 students as informants, it was found that there are 3 categories of research results, namely (1) Followers Category, namely students who do not have the initiative and courage to try new things in the digital media literacy process in learning. Students are waiting to be instructed, need to get attention, be motivated, and be accompanied to carry out learning activities. It has a low level of innovation adoption indicators in terms of awareness, interest, evaluation, trial, and adoption.

(2) Learner category, this type of student has an interest and desire to know by wanting to learn something new such as several applications in digital media. Students prefer to be directed, given tasks, and still accompanied for the digital media literacy process in learning. Learner-type students are generally the stage after the Followers type which needs to adapt to be introduced, tried, and directed in the digital learning process. Learner types need to get digital media facilities in the learning process so that they are more interested and motivated to utilize them in learning. It has a fairly high level of innovation adoption indicators in terms of awareness, interest, evaluation, trial, and adoption.

(3) The Creators category, this type of student is very enthusiastic and interested in trying something new and can develop learning from digital media that is introduced or taught. Students can

do and make more creative, interesting, and unique results of their learning tasks by only being given examples. The Creators type is the phase after the Learner type who already has the attraction, and courage to try and learn digital media. The Creator type will maximize digital media to make something that wants to be different and interesting from what is exemplified. So that it has a high level of innovation adoption indicators in terms of awareness, interest, evaluation, trial, and adoption.

This type of student will look for various application facilities in digital media on their own and can even find new things that have not been taught, assigned, and exemplified. Student type

Innovators will be given the space to become motivators and facilitators for their peers in utilizing digital media in learning. Innovator students love challenges and are given media to compete to produce something new. It has a very high level of innovation adoption indicators in terms of awareness, interest, evaluation, experimentation, and adoption.

The four types of students follow the innovation adoption process (Rogers, 2003), which has several aspects, namely (1) Awareness, which is the existence of new knowledge and innovation for policy action, (2) Interest, gathering information to foster desire, (3) Evaluation, reflecting on advantages and disadvantages, so that there is a decision to accept or reject, (4) Experimentation, the process of testing innovation changes through implementation and practice, (5) Adoption, is the acceptance and application of innovation by confirming. Matrix of constructive educational communication models in digital media literacy shows in Figure 1.

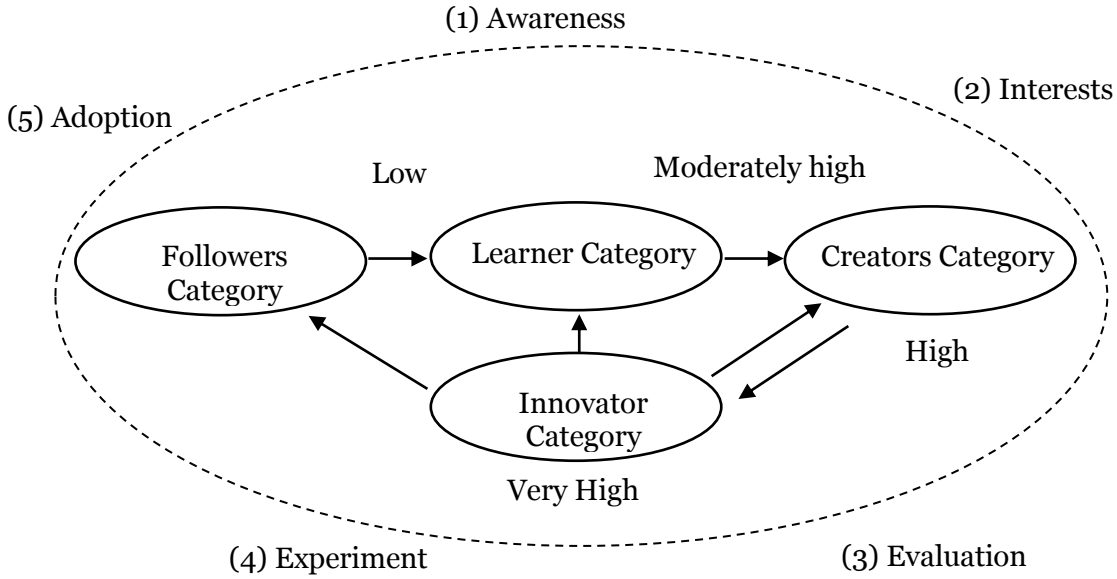

Fig. 1. Student Categories in the Adoption of Digital Media Literacy Innovations

The constructivist learning theory is a learning theory rooted in cognitive learning theory and is a new theory in educational psychology (Firmansyah, Saepuloh, 2022; Leijon et al., 2022; Selwyn, 2023; Ye et al., 2025).

For students to effectively process and apply knowledge, they must concentrate on problem solving, self-discovery, and idea development. According to this theory, teachers cannot simply provide knowledge to students; instead, teachers must be able to design learning that allows students to build their knowledge, provide opportunities, and provide students with steps that can lead to a higher understanding, with a note that the students do the work and the teacher only assists. Applying a creative problem-solving technique helps to develop students higher-order thinking abilities (Børte et al., 2020; Qureshi et al., 2021; Williamson, 2020; Yen et al., 2025; Yu, Couldry, 2020; Zakharova, Jarke, 2022).

The study of educational communication (Rina, 2021) is extended to the effects of media on children, the process of child development, and the use of pedagogical methods and new technologies to facilitate classroom or distance education. Educational communication theories that can be used for research approaches and indicators are (1) The communication process of what programs are taught in the classroom. (2) How topics are selected. (3) Teaching methods to

students. (4) Methods of evaluating and assessing student learning either in class or through out-of-class assignments. (5) Feedback after teaching and assignments.

4. Results

The process of adopting technological innovations is a process of accepting new things, which can be seen from the behavior of individuals or groups, while technological innovations are the process of creativity to produce new products or modify products to provide more utility, and meet market tastes.

The results of the answers were analyzed by calculating and determining the average score of the research object based on the assessment of the variables studied by determining the category through the calculation of the highest answer score minus the lowest answer score and then divided by the number of criteria's scale 4 (Table 1). The range of criteria can be determined, namely 1 to 1.75 low categories, 1.76 to 2.50 moderately high categories, 2.51 to 3.25 high categories, and 3.26 to 4.00 very high categories.

Table 1. Adoption of Digital Media Innovation in Learning

Indicators of Innovation Adoption	*Total*	*Criteria Range*	*Categories*
It's important to know about digital media technology in learning	21		
There is no need to become proficient in digital media technology to learn	9		
Awareness	30	3	Height
Interested in mastering digital media technology in learning	21		
Uninterested in mastering digital media technology in learning	9		
Interests	30	3	Height
Digital media technology helps in learning	19		
Digital media technology complicates learning	11		
Evaluation	30	2	Moderately High
Digital technology media is easy to practice in learning	19		
Digital technology media is difficult to practice in learning	11		
Experiment	30	2	Moderately High
Digital technology media can discover new things in learning	22		
Digital technology media can't reinvent learning	8		
Adoption	30	3,5	Very High

Based on Table 1, this is because students are categorized as Generation Z, which has an age range between 11 and 26 years old, is a digital generation that is familiar with the world of smartphones, the internet, and gadgets.

5. Conclusion

Learning media and services based on digital technology innovation can continue to be used as a complement to the learning process and media in the new normal or post-COVID-19 pandemic era which is very effective, creative, productive, and innovative. So the need for the availability of internet media access and facilities at school and home is a demand and need for a variety of learning media in the digital era which is not only because there is a COVID-19 Pandemic.

The use of innovative and interesting internet media still cannot replace students' desire to interact directly in the learning process such as meeting and chatting directly with teachers and friends, playing and joking. The students generally still want face-to-face in the learning process at school.

Adoption of innovations in the use of digital technology media in learning has a high category on indicators of student awareness and interest in knowing and mastering digital technology media

in learning. Indicators of evaluation and experimentation of digital technology media have a moderately high category to help students and are easily practiced by students in learning. Then the innovative indicator, students enter a very high category to find new and interesting things in learning bynamely followers with low adoption of innovation, learner categories with high adoption of innovation, creator category with high innovation adoption and innovator criteria with very high innovation adoption.The such as Phubbing, namely dependence or addiction to online games and entertainment so that they forget time, forget to study and are asocial, then Conduct Disorder, which is uncontrolled behavior that violates ethics, norms, and laws.

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Information Support of State Assistance to Youth Development

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Abstract

In the modern world, the development and education of youth is considered as the basis for the future development of national states. As part of their youth policy, governments are implementing measures of state support for youth and developing mechanisms to stimulate their formation and education in the national interests. Government authorities develop and implement various mechanisms to stimulate the development of youth: grants, educational programs, festivals, competitions, social benefits and etc. To ensure the effectiveness of government support measures for youth development, it is important to ensure that young people and their teachers and mentors are informed about them. At the same time, young people represent a specific audience, and therefore it is worth taking into account their characteristics and preferences in communications. The authors conducted a sociological study to establish the level of awareness of young people aged 14 to 35 years from different regions about the mechanisms of state stimulation of youth development. The study involved 537 people (65.5 % female and 33.5 % male) from 55 constituent entities of the Russian Federation. It was found that the youth surveyed poorly informed about existing measures and mechanisms of government support aimed at supporting youth initiatives and their development. In this regard, it is necessary to further improve the mechanisms of interaction between government bodies and young people in the media space, taking into account the characteristics of this target audience, to develop social networks and publics with the involvement of media people well known to young people, to increase the media literacy of teachers and civil servants implementing the country's youth policy.

Keywords: public authorities, youth, social networks, media, youth policy, media literacy.

1. Introduction

At the moment, in the theory and practice of public administration, the basic concepts of state participation in youth development have been formed. The choice of a specific approach in a particular state depends on the level of its economic development, historical and cultural heritage. The education system, including higher education, directly depends on the government structure and political course of the country, which in turn affects the financing of education and the quality of graduates (Chin, Shi, 2025). Work with youth should be built on a long-term basis, taking into account the strategic priorities of the country's development (Junussova et al., 2025). As presented in studies, one-time actions and random grants provide only a short-term positive effect, which is leveled out over time (Blattman et al., 2022).

Public administration of education is the direct activity of public authorities in the field of education, starting from the federal level, represented by the Ministry of Education and the Ministry of Higher Education and Science (in the Russian Federation), and ending with structures for managing education in municipalities. State regulation, in turn, implies economic, social, legal,

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political and organizational ways of influencing the subjects of educational activities and educational relations. In this case, the aspect of interaction between the state and civil society in matters of training and education of youth is clearly visible. This is how the concept of state-public management of the education system is implemented (Kosheleva, 2021).

As N.S. Petrova et al. note, when forming the state's youth policy, it is important to take into account the fact that young people are a special target audience, usually committed to actively transforming their environment (Petrova et al., 2023). The characteristics of youth as a social category also entail the characteristics of working with this target audience. It is important to ensure respect for the rights and freedoms of youth and youth associations, as well as to ensure a constructive dialogue between authorities and youth. Such a dialogue can be effectively established in the media space by increasing the media literacy of the public in general and government officials responsible for youth policy in particular (Gálik et al., 2024; Gáliková Tolnaiová, Gálik, 2020).

In the Russian Federation, mechanisms for state stimulation of the development and education of youth in priority areas have been formed. These mechanisms are designed to create holistic people, worthy citizens of their country, as well as people who are capable of strengthening national socio-economic position.

However, this study should pay attention to those aspects of mechanisms for state stimulation of the development and education of youth, that require recommendations for further improvement. According to the authors of this study, the target audience of state mechanisms for stimulating the education and development of youth is, first of all, the youth themselves, secondly, teachers and management staff of educational organizations, and thirdly, the remaining participants in this process (all interested parties in the educational process).

The purpose of this study is to identify the level of awareness of the main target audience – youth, about measures of state support for the development and education of youth.

2. Materials and methods

In April 2024, the authors of this study conducted an online survey of young people aged 14-35 from various regions of Russia. 537 people from the following regions took part in the survey: Altai Territory, Arkhangelsk Region, Bryansk Region, Vladimir Region, Volgograd Region, Vologda Region, Voronezh Region, Transbaikal Region, Ivanovo Region, Irkutsk Region, Kabardino-Balkarian Republic, Kamchatka Region, Krasnodar Region, Krasnoyarsk Region, Kaliningrad Region, Kaluga Region, Kemerovo Region, Leningrad Region, Lipetsk Region, Moscow, Moscow Region, Nizhny Novgorod Region, Novosibirsk Region, Omsk Region, Orenburg Region, Primorsky Territory, Republic of Bashkortostan, Republic of Dagestan, Republic of Kalmykia, Republic of Crimea, Republic of Mari El, Republic of Mordovia, Republic of Sakha (Yakutia), Republic of North Ossetia – Alania, Republic of Tatarstan, Republic of Tyva, Republic of South Ossetia, Rostov Region, Ryazan Region, St. Petersburg, Saratov Region, Sverdlovsk Region, Sevastopol, Stavropol Territory, Tver Region, Tomsk Region, Tula Region, Tyumen Region, Udmurt Republic, Ulyanovsk Region, Khanty-Mansiysk Autonomous Region: Ugra, Chelyabinsk Region, Chuvash Republic, Yamalo-Nenets Autonomous Region, Yaroslavl Region.

In total, respondents from 55 constituent entities of the Russian Federation took part in the survey, and in total there are 85 regions in Russia, excluding new territories. The territories of the Russian Federation annexed during the Special Military Operation were not considered by the authors, since previously they were part of another state, where a different policy was implemented in the field of education and upbringing. The study of the mechanisms of state influence on the educational process in new constituent entities of the Russian Federation may be the subject of a separate scientific study. Thus, the territorial coverage of respondents is more than half of the territory of Russia, namely 65 %.

The questionnaire was presented in the form of closed and open questions using the Google-forms service. Respondents were recruited to participate in the survey on a voluntary basis. The authors used a method for selecting respondents such as simple random sampling, which is considered the most reliable way to form a representative sample (Seneta, 1985; Vitter, 1984). All respondents meet the first selection criterion – age, that is, the sample is representative of this criterion. According to the second criterion – coverage of all subjects of the Russian Federation, compliance is ensured by only 65 %, which does not exceed the sampling error of 4 %. This is the maximum permissible value of sampling error, which means that the sample of 537 respondents is

representative. In addition, as the latest study has shown, this sample size corresponds to the results presented in highly rated international authoritative journals (White, 2023).

3. Discussion

As the study (conducted in 2023) showed, most young people prefer the Internet to television (Young People..., 2023). Almost 40 % of young Russians do not watch television, and those who do watch prefer TV series (54 %), comedy shows (40 %), sports matches (31 %) and movies (29 %). Although 7-10 years ago, television was the main source of information for young people. For example, in 2016, 77 % of surveyed young people watched television (Youth Survey..., 2016). That is, over the past 10 years, the main source of information for young people has changed – it has become the Internet. The Internet is also actively used by young people for interaction, communication and friendship (Cheung et al, 2011; McMillan et al, 2022). According to a number of studies, for young people the quantity of online messages can even exceed the number of face-to-face interactions per day (Cheung et al., 2011; Lewis, 2024). Researchers from the UK and Hong Kong have shown that social networks have a significant impact on the positive development of activity and citizenship among young people (Lee, Horsle, 2017). Researchers from the USA have identified a preference for short videos among modern social media users (Herring, Dainas, 2025), as well as the use of multimodal communications in live broadcasts (Dutt, Graham, 2023).

It is obvious that information about the mechanisms of state stimulation of the development and education of youth is published, first of all, on the official websites of the relevant government bodies. Back in 2017, a study was conducted by the Expert Council for the Development of the Information Society and Mass Media of the Youth Parliament under the State Duma, which showed that 60.2 % of Russians under the age of 35 negatively assess the quality of government websites and note that they cannot find the necessary information on these resources (Parliamentary Newspaper, 2017).

According to the international report Global Digital 2024, social networks and messengers occupy first place for Internet users (Digital, 2024). In this regard, social networks currently seem to be the most popular source of information, especially for young people. Thus, the information obtained by the authors of this fundamental study about the main sources of information for young people does not contradict previously identified trends.

Since 2022, it has become mandatory for Russian government bodies to maintain pages on social networks. In September 2023, researchers from Yekaterinburg conducted a study on the effectiveness of government bodies' social networks in terms of youth engagement. They found that the effectiveness of the collision (the share of subscriber from the number of government bodies who saw the social networks) does not exceed 42.1 %, and on average is 35.85 %. The authors concluded that, in general, government agencies and departments' social media accounts are used primarily to file complaints by the population rather than for effective communication, and young people in the Sverdlovsk region, for the most part, do not even notice the presence of government bodies on social media (Abramova et al., 2024).

At the same time, at the current stage of development of a democratic society, no government body can carry out its activities without high-quality feedback from the population, especially from young people, taking into account their specificity (Belokrylova, 2015). Recent research shows that European youth are actively involved in the management and transformation of the Internet space taking into account their interests (Tjahja, Potjomkina, 2024). For example, young people use social media to facilitate climate change activism (Jasny, Fisher, 2023). Earlier studies show that social media tools are becoming useful communication methods for public relations specialists in the non-profit and public sector (Curtis et al, 2010). Researchers from the UK recommend that government agencies use humor to convey important information in the media space (Chernobrov, 2021). Researchers from the United States note the effectiveness of engaging influencers to promote information in social media (Eslami et al, 2024; Kim, 2021), including in the field of healthcare (Chang et al, 2023; Jones, 2021), which is in line with the recommendations we received from our respondents - to engage relevant for youth media people to deliver information about government support measures.

In order to build a constructive dialogue between government officials and young people, it is recommended to organize courses to improve media literacy. Such courses can be developed both for young people and those who dealing with young people – teachers and parents (Cho et al, 2022), as well as for state civil servants implementing the country's youth policy. New knowledge

in the field of media literacy will help all parties involved to increase awareness of official channels and sources that provide information support to state mechanisms for promoting youth development.

Thus, the results of the sociological online survey of youth obtained by the authors of this scientific study correlate with the results of other studies and indicate the need to improve information support on the mechanisms of state stimulation of the development and education of youth. In the future, the authors will develop recommendations for improving the mechanisms of state stimulation of youth development, among which the first place is occupied by informing the target audience, that is, youth, about all activities of the state youth policy and related areas.

4. Results

The respondents were distributed by age as follows: under 18 years old – 15.5 %, 18–24 years old – 68 %, 25-30 years old – 10 %, 31–35 years old – 6.5 %. Thus, most of those who took part in the survey belong to the group of young people who are targeted by educational practices in educational organizations of higher education, that is, the target group of young people for this fundamental research. This thesis was also confirmed by statistics on the level of education received by respondents: general education (school grades 8-11) – 10.4 %, secondary vocational education – 16.9 %, first-level higher education – 43.2 %, second-level higher education – 13.6 %, third-level higher education – 4.3 %, and 11.5 % of respondents completed their education.

65.5 % of women and 33.5 % of men took part in the survey.

The full questionnaire for this study is presented in Appendix A, and the summary answers of the respondents are presented in Appendix B. Next, we will consider the answers of the survey participants in more detail.

The survey found that 79.3 % of respondents are aware that various measures of state support for youth development are being implemented in Russia. At the same time, respondents assess their awareness as average and below average: 71 % of respondents gave their awareness a score of 6 or lower on a 10-point scale. The main sources of information were the Internet and social networks (79.5 %), educational organizations (47.9 %) and the media (41.3 %).

Respondents are generally familiar with the economic and social mechanisms of state stimulation of the education and development of youth, as evidenced by the distribution of respondents' answers to this question (Figure 1).

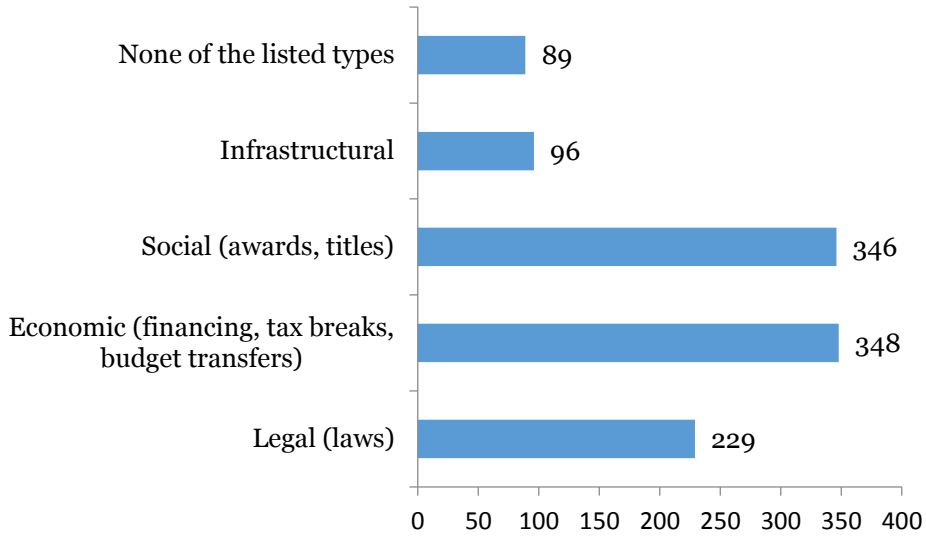

Fig. 1. Distribution of respondents' answers to the question "What types of state stimulation of educational practices are you familiar with?"
Source: compiled by the authors

Based on the results, it is clear that from the list of various measures of state support for youth, respondents were most familiar with state awards, scholarships and grants – 67.8 %, projects of the Federal Agency for Youth Affairs (Rosmolodezh) – 48.2 % and the National Project "Education" – 45.3 %. At the same time, half of the respondents are familiar with such events as

forums, festivals and competitions for young people, while 23.5 % of respondents have never heard of such project. Only 13.8 % of respondents applied for state support. A third of respondents do not believe that information about state support for youth development is accessible and understandable (Figure 2).

In response to the free question "Do you have any suggestions for measures of state support for the education and development of young people?" 433 respondents (80 %) out of 537 refrained from answering or gave a negative answer. Of the remaining 20 % of respondents who considered it necessary and possible to suggest something, half recommended increasing the information provided to young people.

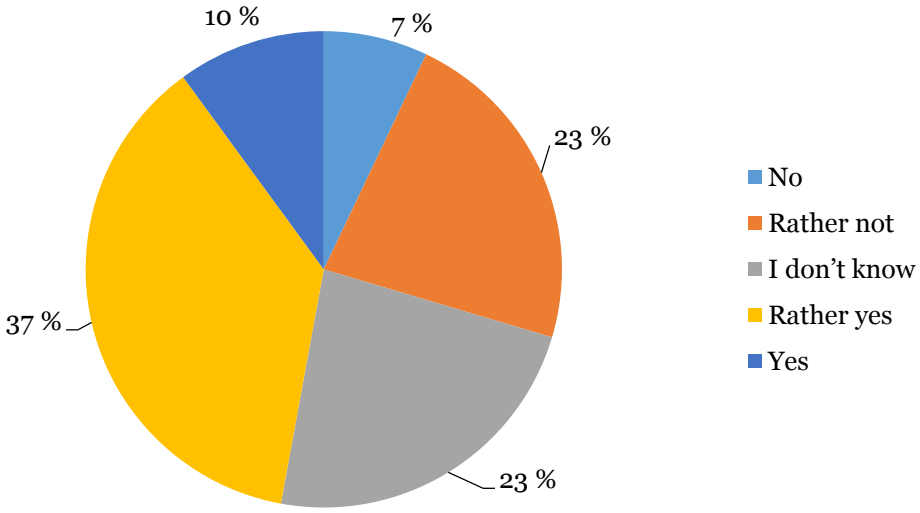

Fig. 2. Distribution of respondents' answers to the question "Do you think that information about state support for youth is accessible and understandable?"
Source: compiled by the authors

In general, the conducted sociological study revealed that not all young people are well informed about state mechanisms for stimulating the education and development of young people. The results obtained can be explained by the fact that information about measures of state stimulation of development and education of young people does not reach the target audience.

5. Conclusion

As the results of the conducted study showed, the relevant public relations services are not coping with their main task – ensuring complete information about the activities of government authorities. In this regard, it is recommended to expand information provision to the target audience – young people and their teachers – through the communication channels that they use most often. It is important to ensure accessible and understandable dissemination of information about government measures to support the education and development of young people in social networks and those information channels that are most in demand among young people, with the involvement of popular figures (bloggers).

All government bodies responsible for the implementation of youth policy in the Russian Federation are recommended to develop technologies for working with young people through social networks and messengers. All this requires additional research and the development of a strategy for promoting information on measures of state stimulation of the education and development of young people. In addition, it is recommended to introduce media literacy courses for young people, teachers, and the general public.

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Appendix A

Questionnaire for a sociological survey of young people*

Youth awareness of government support measures in the field of education

*Informed consent was received from each participant prior to enrollment.

Dear respondents!

Within the framework of the Fundamental Research Project "Methodology for improving educational practices in youth development", we ask you to participate a short survey. Filling out the questionnaire will take you no more than 5-7 minutes.

1. Indicate your gender (choose one answer): Male | Female

2. Indicate your age (choose one answer): Younger than 18; 18–24; 25–30; 31–35; 36–40; 41–50; 51– older

3. Indicate your region of residence (choose one answer from 89 regions of the Russian Federation)

4. What education are you currently receiving (choose one answer)

General education – grades 8-11

Secondary vocational education

Higher 1st degree – bachelor's degree

Higher 2nd degree – specialist, master's degree

Higher 3rd degree – training of highly qualified personnel

Completed training

The main block of questions

5. Do you know that various projects to support young people are being implemented in Russia? (choose one answer): Yes; No (move to question 13); Other.

6. From what sources did you learn about existing government support measures for young people? (multiple choice): Media, television; Internet, social networks; Relatives, friends; Educational organization; Other

7. How do you rate your level of awareness of government support in the area of youth development? (choose one option on a scale from 1 “not at all aware” to 10 “fully aware”)

8. What types of mechanisms of state stimulation of educational practices are you familiar with? (multiple choice answer): Legal (laws); Economic (financing, tax breaks, budget transfers); Social (awards, titles); Infrastructural; None of the listed types.

9. What government support measures are you aware of? (multiple choice)

National project "Education" (Ministry of Education of Russia)

Projects of the Federal Agency for Youth Affairs (Rosmolodezh)

State program of the Russian Federation "Employment Assistance"

Federal portal of small and medium entrepreneurship (platform "Business Environment")

State awards, scholarships and grants

None of the measures

Other

10. What events of the National Project "Education" and the Federal Agency for Youth Affairs (Rosmolodezh) have you heard about? (multiple choice): Festivals; Forums; Educational events; Competitions for young people; Haven't heard about any of the above; Other.

11. Have you applied for state support in the area of youth development? (choose one answer)

Yes; No; Other

12. Do you think that information about state support for youth is accessible and understandable? (choose one answer): No; Rather not; I don’t know; Rather yes; Yes.

13. Do you have any suggestions for measures of state support for the education and development of youth? (free answer).

Appendix B

Table 1. Results of the sociological survey of young people

Question	*Answer options*	*Respondents who chose an answer option (people)*
Do you know that various projects to support young people are being implemented in Russia? (choose one answer)	Yes	426
	No (move to question 13)	111
	Other	183
From what sources did you learn about existing government support measures for young people? (multiple choice)	Media, television	183
	Internet, social networks	352
	Relatives, friends	124
	Educational organization	212
	Other	14
How do you rate your level of awareness of government support in the area of youth development? (choose one option on a scale from 1 “not at all	1	40
	2	30
	3	71
	4	74
	5	105
	6	61
	7	77

aware" to 10 "fully aware")	8	31
	9	15
	10	31
What types of mechanisms of state stimulation of educational practices are you familiar with? (multiple choice answer)	Legal (laws)	229
	Economic (financing, tax breaks, budget transfers)	348
	Social (awards, titles)	346
	Infrastructural	96
	None of the listed types	69
What government support measures are you aware of? (multiple choice)	National project "Education" (Ministry of Education of Russia)	243
	Projects of the Federal Agency for Youth Affairs (Rosmolodezh)	259
	Federal portal of small and medium entrepreneurship (platform "Business Environment")	128
	State awards, scholarships and grants	364
	State program of the Russian Federation "Employment Assistance"	114
	None of the measures	61
	Other	2
What events of the National Project "Education" and the Federal Agency for Youth Affairs (Rosmolodezh) have you heard about? (multiple choice)	Festivals	270
	Forums	319
	Educational events	130
	Competitions for young people	254
	Haven't heard about any of the above	126
	Other	3
Have you applied for state support in the area of youth development? (choose one answer)	Yes	74
	No	462
	Other	1
Do you think that information about state support for youth is accessible and understandable? (choose one answer)	No	38
	Rather not	121
	I don't know	125
	Rather yes	199
	Yes	54
Do you have any suggestions for measures of state support for the education and development of youth? (free answer)	It is necessary to interest school children more in extracurricular activities. As part of the school program introduce them to forums, etc.	
	Publish and promote them in schools and universities. Also create groups and platforms for communication	
	Good and correct Psychological support in schools, universities	
	Broadcasting information to the masses. Possibly through educational institutions	
	Build a process for informing young people about the projects	
	More information: Media, public, social advertising	
	I learn everything at home from my grandmother and from the Internet, at school they didn't tell me anything about it, there everyone talks about tests	
	More competitions from Rosmolodezh	
	I would like to spread information about this	
	Inform us more	
	More social advertising	
	Not every event is always interesting, but it seems like young people are	

	forced to go there
	In the personal account of the State Services place a personalized list of support programs available to a specific person (the owner of the personal account). Perhaps, in order to ensure completeness of information about a young person, it is necessary to implement the initiative "digital profile of a citizen". This measure will allow consolidating information about a person and, on its basis, generating and updating a personalized list of programs.
	More news in information publics, because that is where young people get the most information
	Programs and training courses for young entrepreneurs starting from 14-16 years old
	Apparently we need to declare this
	More awareness
	It is necessary to convey the full scope of the usefulness of such events for the personal growth and social component of children and youth.
	Place more emphasis on what is relevant and interesting to young people
	I suggest to make more events together with potential employers for young people. This will help develop a sense of collectivism and civic duty.
	Yes, of course! For example: 1. Creating special programs and projects for young people aimed at developing their skills, interests and potential. 2. Increasing the availability of education and vocational training for young people, including through the provision of scholarships. 3. Supporting youth initiatives and start-ups, including through financial assistance and advisory support. 4. Creating youth support centers where they can receive information, advice and assistance on various issues. 5. Organizing cultural and sports events for young people with the aim of developing their creative potential and healthy lifestyle
	Really effective and efficient programs to implement in the education in universities. Simple explanation of how it works, the opportunity to show your individuality, talent not through competition
	It is necessary to advertise state support in cooperation with popular personalities that young people look up to. This will help to raise awareness among young people about the options for receiving state assistance.
	More information in schools, universities
	Use those communication channels through which young people specifically learn about state support: TV, radio, newspapers are out of the question, but Telegram channels, for example, will do
	Increase online presence, as this is the main channel for obtaining information among young people
	Use more understandable and accessible resources to inform the target audience
	To convey to a larger circle of people, and not only to those who are independently interested and motivated. Through social advertising, media (social networks) high-level festivals. Now all the information must be found independently
	Make information about government support more accessible
	Development of social networks and video advertising
	Make an analogue of the “Pushkin Card” for young people under 35, not under 22
	Nobody knows anything about it, it is hard to apply, very few scholarships and awards are given, the system and selection criteria are not transparent – all this greatly reduces the motivation to apply for these scholarships. All this needs to be fixed
	Expand the reach of those involved in projects, increase the amount of social advertising
	More detailed and accessible information is needed, as well as ways to

	convey it
	Inform the population more
	It is necessary to make the mechanisms of participation more understandable and accessible to the broad masses who need this support.
	make this information more open, advertise on TV
	Review the promotion policy, now few people know about it
	more accessible and broader sources of information about existing ones
	Structure information, convey it through universities
	More promotion of information to the masses, as well as increasing the level of transparency and accessibility of complete information

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The Influence of Social Media Literacy and Challenges on Youth Small Medium Entrepreneurs in Sindh, Pakistan

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Abstract

In today's digital landscape, social media literacy faces multiple challenges that impact Youth businesses, and society. The study focuses on comprehensively understanding the influence of social media literacy and the challenges on the young entrepreneurs' performance in Sindh, Pakistan. Also, how social media literacy and challenges impact on their business growth and customer engagement. 357 purposive samples were collected from January 1st, 2024, to February 28th, 2024. A survey technique was employed on young entrepreneurs, who manage online businesses sale various products in Sindh, Pakistan. Data was analyzed using partial least squares, and structure equation modeling (PLS-SEM). The findings revealed a significant positive impact ($p<0.05$) of social media challenges; such as lack of management, cyber-security, lack of policies and regulations, culture and language barriers, and digital infrastructure on young entrepreneur's performance. It has been concluded that most young entrepreneurs encounter social media challenges because they have social media literacy about the uses of social media in their domain. Hence, this paper assesses the importance of social media literacy to overcome business challenges. The study offers the implementation of policies and regulations to policymakers, decision-makers, government programs, social media users, and online entrepreneurs. The study recommends employing qualitative research methods to uncover realities and challenges in the country and other states.

Keywords: Social Media's challenges, Entrepreneur's social media Literacy, Entrepreneur's Performance, Small Medium Entrepreneur's (SMEs).

1. Introduction

In today's digital age, social media literacy is referring to the ability to critically access, evaluate, and create content on social media platforms (Kaur et al., 2022). Particularly, social media literacy has transformed the way business operate and significantly enhances an entrepreneur's ability to implement strategic marketing campaigns, engage with customers, and improve sales performance (Tajudeen et al.,2018). Young entrepreneurs can actively develop social media skills, and increase their business success rate by over 50 % compared to those who do not leverage digital tools effectively (Kaur et al., 2022). Furthermore, social media usage has increased tremendously and plays a crucial role in business development in the developing countries (Chokpitakkul, Anantachart, 2020; Kunsman, 2018). Moreover, young entrepreneurs widely use social media platforms to keep updating business information (Muhamad et al., 2009; Schjoedt et al., 2020; Shi et al., 2024).

In a business context, social media are considered as dynamic, interconnected, egalitarian, and interactive organisms (Peters et al., 2013), with their distinctive applications on which people build networks and share information or sentiments (Kaplan, Haenlein 2010). Social media

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literacy enables firms and customers to connect in ways that were not possible in the past. Such connectedness is empowered by various platforms, such as Facebook, Twitter, YouTube, Instagram, and LinkedIn that allow entrepreneurs to build social networks, and share interests and values in the global world' (Alalwan, 2021; Shaikh, Jamilah., 2024; Song et al., 2022). Young entrepreneurs use social media for quick customer communication and easy connections (Kusumawardhany, Dwiarta, 2020; Nawi et al., 2019; Von Arnim, Mrozewski, 2020).

After COVID-19, developing countries are forcing entrepreneurs to build skills of using social media platforms at the global level. In light of the ever-changing business landscape, heightened business competition, consumer preferences, and the transforming of social media platforms suggest as key factors of entrepreneurship performance, and developing countries' economies (Alraja et al., 2020; Eze et al., 2021; Qalati et al., 2022).

Alraja et al. (Alraja et al., 2020) suggested that entrepreneurs should use social media in developing countries because of ease of use, easy demographic consumer targeting, and low expenditure. In the United Arab Emirates, social media is the most popular means of communication for entrepreneurs, as it enhances interaction between firms and customer relationships, enables interpersonal communication, positive feedback to customers, and content management (Ahmad et al., 2019). Presently, entrepreneurs have the chance to grow business and customer connections through social media platforms (Hofacker, Belanche, 2016).

Social media literacy expansion and it's foundation in information communication technology are seen as both a huge opportunity and a threat to businesses (Hofacker, Belanche, 2016). Moreover, some entrepreneurs face challenges while using social media because of a lack of management, training, resources, and engagement with them (Qalati et al., 2022). Thus, researchers assumed that the potential benefits and challenges of social media literacy among entrepreneurs have been little explored in the present review of the literature (El-Gohary et al., 2023, Qalati et al. 2022). Notably, Alraja et al., Fang et al. and Qalati et al. (Alraja et al., 2020; Fang et al., 2021; Qalati et al., 2022) have called for studies in the context of online Small and Medium enterprises operating in Saudi Arabia, Oman, and Pakistan.

Besides this, Faridi, Malik; Shaikh, Jamilah; Munawar et al.; Oppong et al. (Faridi, Malik, 2020; Munawar et al., 2023; Oppong et al., 2020; Shaikh, Jamilah, 2024) found a gap. The study focuses on comprehensively understanding the social media literacy, and obstacles on the young entrepreneur's performance in Sindh, Pakistan. Also, how these challenges influence their business growth and customer engagements.

Hence, the Technology acceptance model has been employed to understand how youngsters face social media challenges in spite of having social media literacy, which could contribute to boosting e-commerce performance in Sindh Pakistan. The remaining sections of the study consist of a theoretical framework, literature review, research methodology, and results. Last but not least discussion, conclusion, practical contribution, and limitation of research have been provided at the end of the study. The outcome of the study would be significant in ongoing Government programs, like the Small and Medium Enterprises Development Authority (SMEDA), Public Sector Development Programme (PSDP), National Vocational & Technical Training Commission (NAVTTAC) National Business Development Programmes.

Theoretical Conceptual Framework and Hypothesis: Social media literacy serve as powerful tools for businesses to reach broader audiences, enhance communication, and drive innovation. However, social media challenges; such as lack of management, lack of policy and regulations, language barrier, digital infrastructure, and cybersecurity risks could impact business performance, requiring companies to adapt their digital strategies for sustained success. Entrepreneurial Ability (EA), Management Challenge (CLM), and Entrepreneur's Performance (EP): Entrepreneurial Ability (EA) is a learning process that involves acquiring social media literacy entrepreneurial skills, attitudes, and education (Holden, Rada, 2011). It is reflected in the entrepreneur's activities to develop and facilitate skills (Ndofirepi, 2020). Some scholars (Leeflang et al., 2014; Oppong et al., 2020; El-Gohary et al., 2023) identified multiple managerial issues in using social media, such as a lack of a managerial approach, absence of strategy, poor internet speed, and time management challenges. Similarly, entrepreneurs face other management issues, including a lack of experienced technological experts, time-consuming tasks, high investment costs, and insufficient managerial approaches and strategies to handle social media problems (Cawsey, Rowley, 2016; Faudzi et al., 2024; Leeflang et al., 2014). Moreover, social media challenges, such as the lack of experienced communication experts and effective management, have an insignificant influence on business growth (Venkatesh, Davis, 2000).

Entrepreneurial abilities; like leadership, decision-making, and problem-solving are essential for managing challenges, including those related to social media. These skills help entrepreneurs navigate digital landscapes, address management issues, and improve performance (Baron, 2004; Brockhaus, 1980; McClelland, 1961). However, poor social media management, including inadequate planning and knowledge gaps, is a key challenge for entrepreneurs, leading to missed opportunities and reduced performance (Kaplan, Haenlein, 2010; Yusuf, 1995).

Better entrepreneurial performance depends on effectively managing resources and challenges. Strong entrepreneurial abilities are associated with better outcomes, and in the digital age, managing social media challenges is crucial for success (Delmar, Shane, 2003; Feng, 2014).

H1: Entrepreneurial ability (EA) reduces the lack of management (CLM) related to social media usage, which in turn positively impacts entrepreneurial performance (EP).

H1: EA → CLM →EP

Entrepreneurial ability (EA), Lack of Policy and Regulation Challenges (CP), and Entrepreneur's Performance (EP): Strong entrepreneurial abilities improve decision-making and problem-solving, enabling entrepreneurs to navigate regulatory and policy challenges effectively (Baron, 2004; McClelland, 1961). While the unclear policies are an obstacle (Stiglitz, 1993). Whereas, entrepreneurs with higher abilities can better adapt, leading to improved business outcomes and sustainability (Delmar, Shane, 2003; North, 1990; Stiglitz, 1993). However, Martin-Rojas et al. (Martin-Rojas et al. 2023) confirm that social media use positively mediates entrepreneurial proficiency and performance.

H2: Entrepreneurial ability (EA) has a significant impact on overcoming unclear policy and regulation challenges (CP), thereby enhancing entrepreneurial performance (EP).

H2: EA → CP→ EP

This hypothesis suggests that entrepreneurial ability can mitigate the impact of policy and regulation challenges on business performance, leading to better outcomes.

Entrepreneurial Ability (EA), Culture and Language Challenge (CL), and Entrepreneur Performance (EP): Entrepreneurs with strong abilities are better at overcoming cultural and language barriers, which are key to success in diverse markets. Effective communication and adaptability enhance entrepreneurial performance (Baron, 2004; Brockhaus, 1980; McClelland, 1961). Entrepreneurs with higher abilities navigate these challenges well, enabling successful cross-cultural operations and business growth (Hofstede, 2001; Shane, 2003). Overcoming such barriers improves customer engagement, market reach, and efficiency, leading to enhanced performance (Cassar, 2007; Dacin et al., 1997). Entrepreneurs often have to navigate cultural differences in international marketplaces (Hofstede, 2021). Their ability to adapt to various cultural norms, interests, and expectations allows them to effectively offer goods and services (Oppong et al., 2020). Additionally, understanding cultural differences is crucial for an entrepreneur's success in multicultural environments (Hofstede, 2021).

H3: Entrepreneurial ability (EA) positively influences the ability to overcome the social media challenge of culture and language (CL), which in turn enhances young entrepreneurs' performance (EP) in Pakistan.

H3: EA→CL→EP

This hypothesis suggests that entrepreneurial ability plays a crucial role in overcoming culture and language challenges, which can positively affect the performance of entrepreneurs in diverse environments.

Entrepreneurial Ability (EA), Digital Infrastructure (DT), and Entrepreneurs performance (EP): Entrepreneurs with strong abilities are better equipped to tackle technological and infrastructure challenges, leading to better business outcomes (Baron, 2004; McClelland, 1961). These abilities help them to adapt to and leverage resources effectively (Shane, 2003). While better-skilled entrepreneurs can overcome digital obstacles, such as; improving operational efficiency, customer reach, poor internet, and limited tools hinder performance (Amit, Zott, 2001; Bharadwaj, 2000; Dwivedi et al., 2019; Oppong et al., 2020; Porter, Heppelmann, 2014).

H4: Entrepreneurial ability (EA) positively influences the ability to overcome the lack of digital infrastructure (DT) challenge, which in turn enhances the entrepreneur's performance (EP).

H4: EA → DT → EP

This hypothesis suggests that entrepreneurial ability is crucial in overcoming the digital infrastructure challenge, which directly contributes to improved entrepreneurial performance in a technology-driven business environment.

Entrepreneurial ability (EA), Cyber Security (CBS), and Entrepreneur's Performance (EP): Entrepreneurs with strong abilities are better at managing risks, including cyber security threats, which improve business outcomes (Baron, 2004; McClelland, 1961). Cyber security risks, such as data breaches, threaten business continuity and performance, but entrepreneurs who address these threats effectively are more successful (Li et al., 2018; Simons, 2008). Proper cyber security management enhances operational efficiency, customer trust, and performance, helping entrepreneurs maintain a competitive advantage (Delmar, Shane, 2003; Kaplan, Haenlein, 2010; Soni, Verma, 2020).

Additionally, the usability of cyber security and privacy can negatively affect an entrepreneur's performance (Dwivedi et al., 2019; Venkatesh, Davis, 2000). Moreover, in the social media (digital sectors), youngsters play a critical role in creating defenses against cyber security risks (Aldairi, Tawalbeh, 2020). Youngsters can develop new technologies that improve the security of online transactions, preserve data, and protect the privacy of customers in the business sector (Aldairi, Tawalbeh, 2020). Their capacity to promptly adjust to the constantly changing characteristics of cyber threats offers enterprises strong cyber security structures (Aldairi, Tawalbeh, 2020).

H5: Entrepreneurial ability (EA) positively influences the ability to overcome cyber security (CBS) challenges, which in turn enhances the entrepreneur's performance (EP).

H5: EA →CBS→ EP

This hypothesis suggests that entrepreneurial ability plays a crucial role in mitigating cybersecurity challenges, leading to improved business performance.

2. Materials and methods

In this study, quantitative research has been chosen to measure the youth entrepreneur's ability, challenges of social media in entrepreneurs, entrepreneur's performance, and uses of social media as an online communication platform among youth entrepreneurs in Pakistan. The close-ended semi-structured questionnaires and a pen-and-paper survey were used to gather information from the Youth respondents of Hyderabad (Sindh) Pakistan. This study selected only independent youth entrepreneurs, who covered services of food cooking, like food panda, fabric sales, accessories, and academic content. Each question was constructed as impartial, unprejudiced, and unbiased to the youth entrepreneurs. The Likert scale of measurement was selected to design questionnaires on (05) five points in all items of the construct, such as strongly disagree, disagree, neutral, agree, and strongly agree. This is an impartial and empirical scientific analytical study. The snowball selection of youth entrepreneurs as sampled population comprised from the Jamshoro, Hyderabad, and Shikarpour districts of Sindh. They are running entrepreneurial projects and incubator centers. According to the Krejcie, Moran (Krejcie, Moran, 1970) sample technique, 357 samples were collected from January 1st, 2024, to February 28th, 2024. A total of 380 questionnaire forms were distributed among youth entrepreneurs in sampled areas. However, 370 forms were returned and 13 forms were discarded due to incomplete information on the survey forms. The study was based on 04 items by referring to the previous reviews of the literature.

3. Discussion

Social Media Use: Many scholars state that social media is one of the advanced parts of digital technology (Fitzgerald et al., 2014). It is a significantly useful tool (Veldeman et al., 2017) that facilitates, and encourages interaction, collaboration, and communication through discussion, comments, sharing of information, likeness, dislikes, and voting (Malita, 2011), also about user-generated content (Kaplan, Haenlein, 2010). Additionally, social media is useful from an entrepreneurship perspective (Aldahdouh et al., 2020; Qalati et al., 2022). Furthermore, social media platforms like Twitter, Instagram, Facebook, LinkedIn, WhatsApp, YouTube, and blogs are providing opportunities and challenges to online entrepreneurs (Brooks et al., 2014; Rippa, and Secundo, 2019). In addition to this, youngsters are more frequently using WhatsApp, YouTube, and Facebook in business start-ups (Barrera-Verdugo et al., 2022).

On the other hand, social media platforms have rapidly transformed the powerful new sources for entrepreneurs' credibility and growth (Chokpitakkul, Anantachart, 2020). Social media enables companies to create databases that provide them with a competitive edge, which boosts sales, and business expansion (Nawi et al., 2017). Many people use social media platforms like

Facebook and WhatsApp for marketing and rely on cashless payment options such as DuitNow QR Code, Touch 'n Go, Boost, Shopee Pay, and Sarawak Pay. While online food delivery services like Food Panda and Grab Food are popular, issues like payment delays, driver non-payment, and high commission fees limit their appeal (Faudzi et al., 2024).

In addition to this, entrepreneurs use social media for communication with customers, brand awareness, and marketing of products and services (Park et al., 2017). By utilizing social media entrepreneurs get a greater ability to showcase firm expertise, public relations, and customer feedback, increase sales, customer services, and satisfaction, reduced cost effects, have also been reported (Effendi et al., 2020). Researchers found that social media platforms correlate with business growth (AlSharji et al., 2018). Entrepreneurs have adopted social media in their business, which has the largest contribution to the business economy (Nawi et al., 2017). In addition to this online entrepreneurs may interact and share their goods and services with wide potential clients through social media applications (Mack et al., 2017).

Social media enables SMEs to build their relationships with customers, increase sales, better communicate, build brand loyalty, retain customers, and save money on marketing (Fang et al., 2021). Social media is used by entrepreneurs to boost their business performance (Nawi, 2019). The extensive utilization of social media in corporate management is influencing the processes of entrepreneurial learning, opportunity recognition, and difficulties (Secundo et al., 2021). Further, the use of social media platforms encourages SMEs to access valuable information and monitor the market quickly so that they can respond proactively to new trends (Troise et al., 2021).

A proactive firm takes the initiative despite having more risks, and fewer business opportunities (Antonci, Hisrich, 2001). Nevertheless, firms introducing products, predict future demand and services ahead of competitors (Veldeman et al., 2021).

Social Media Challenges: Scholars agree social media not only empowers women entrepreneurs (Chaker, Zouaoui, 2023). But also, sustaining younger-owned businesses, with platforms like Facebook, WhatsApp, and Instagram enabling product promotion and audience expansion. Strengthened government and helping them to overcome challenges and enhance their professional lives (Rahayu, Ellyanawati, 2023).

Undoubtedly, entrepreneurs face many challenges while using social media, such as a lack of technical skills in the implementation of social media applications in their business (Bakri, 2017), advanced knowledge regarding management, and product quality and services (El-Gohary et al., 2023, EI-Gohary, 2012), non-supportive environment are challenges of entrepreneurs (Panahi et al., 2014). As a part of this, entrepreneurs face challenges and criticisms most frequently associated with social media use (Stephens, Miller., 2024). Moreover, researchers have identified some social media challenges that could be explored directly by online entrepreneurs generating a lack of management, policy and regulations, culture and language barrier, infrastructure, and cyber-security. The cybersecurity awareness, recognizing risks like phishing scams, data breaches, and fake reviews to protect brand reputation (Kapoor et al., 2021).

Additionally, it was found that youth entrepreneurs should have, social media literacy, intention to use social media, and overcome those challenges (Hayter et al., 2017; Rahim et al., 2015). SMEs can improve their performance by using social media because it gives them a chance to develop their brand identity and obtain a brand-new social media platform that will eventually benefit them (Sahaym et al., 2021).

The current status of Pakistan's Ecosystem Entrepreneurs: At a cursory look over the Global Innovation Index (Global Innovation Index, GII, 2024) 39th India ranked, 64th Iran, 89th Shri-Lanka, 74th Oman, 47th Saudi Arabia, and Pakistan ranked 91st out of 133. It decreased in the last year ranking 88th GII 2023 (WIPO, 2024). On the other side, there are 111.0 million internet users in Pakistan (DataReportal, 2024). Out of them 71.70 million social media users in Pakistan (DataReportal, 2024), rapidly adapting digital media for business (Invest2Innovate, 2024). Notably, Pakistan's startup ecosystem is dynamic and increasingly tech-focused. With a rising number of young entrepreneurs, fostering a supportive environment is essential for sustaining startups and boosting economic growth (Khan, 2024). Beside this, Pakistan's startup funding slowed in early 2024, following a global VC downturn. Investments fell 35 % year-over-year from 2022 $347 million to $72 million in 2023, remaining flat in February 2024 (Khan, 2024). Pakistani entrepreneurs face challenges like illiteracy, limited education and healthcare, supply chain issues, and low financial inclusion. However, sectors like Healthtech, Fintech, Edtech, Retail, and B2B e-commerce hold strong growth potential.

The United Nations Development Programme's (UNDP) National Human Development Report (NHDR) stresses Pakistan must create 1.3 million jobs annually to support a rising workforce, reaching 5 million by 2035 (UNDP Report, 2019). It urges formal economic expansion, entrepreneurship, youth investment, and labor market policies for sustainable growth (UNDP Report, 2019). Moreover, Economist Jim O'Neill also predicts that Pakistan may become the world's 18th-largest economy by 2050, outpacing several major nations (The Daily Dawn).

Key challenges include infrastructure gaps, with 47 % lacking internet access and connectivity issues causing $238 million in losses in 2023. Regulatory hurdles, low R&D investment (0.16 % of GDP vs. 2.62 % global average), and limited capital access further hinder growth (Aziz et al., 2024). The Pakistan Startup Ecosystem Report 2024 seeks to fill research gaps and offer insights to unlock entrepreneurial potential. Addressing systemic challenges can drive sustainable innovation and growth (The Daily News).

4. Results

Demographic Profile of Respondents: As seen in Table 1 two-thirds were male and the remaining were female. Over two third of them were aged between 19 to 25 (73.7 %). The majority of youth entrepreneurs were undergraduates (67.8 %), mostly single (81.5 %) and one-third were married (17.9 %), and living in urban areas (67.5 %). See Table 1 for details.

Table1. Demographic Profile of Respondents (n= 357)

Items	*Frequency*	*Percentage*	*Mean*	*Std. Deviation*
Gender			1.37	.483
Male	225	63		
Female	132	37		
Age			1.38	.726
19 to 25	263	73.7		
25 to 30	66	18.5		
30 to 35 and >35	28	7.9		
Qualification			3.23	.527
Matriculation to Intermediate	14	3.9		
Undergraduates	242	67.8		
Graduated and above	101	28.3		
Area of Living			1.32	.469
Urban	241	67.5		
Rural	116	32.5		
Marital Status			1.19	.407
Single	291	81.5		
Married	64	17.9		
Divorced and above	2	0.6		

Source: author's data

Researchers have applied PLS-SEM (Partial Least Squares-Structure Equation Modeling) (Hair et al., 2016; Hair et al., 2019). The PLS-SEM is the most preferred method in the exploratory study. 'It focuses on how the latent variables are related in terms of their predictive powers, and the study does not rely on the distributional assumption of the variables' (Henseler et al., 2009; Rasoolimanesh et al., 2018; Rasoolimanesh et al., 2021). The PLS-SEM approach has been applied to test the reliability and validity by using factors loading and path coefficients in the field of entrepreneurship, e-commerce, and strategic management (Chang et al., 2016; Fornell and Robinson, 1983; Hair et al., 2016; Rasoolimanesh et al., 2021).

According to Kock (Kock, 2015), PLS-SEM employed a collinearity test to determine the impact between moderate variables and independent variables. Kock (Kock, 2015) suggested the variation inflation factors (VIF). See Table 2 for details.

Table 2. Confirmatory factor analysis and reliability (Calculation based on Smart PlS)

Constructs	*Items*	*Factor Loadings*	*Alpha*	*rho_A*	*rho-c*	*AVE*
Entrepreneur's Social Media Literacy (ESML) (Kaur et al., 2022; Oppong et al., 2000; Shaowei et al., 2022).			0.803	0.829	0.853	0.458
	ESML1	0.707				
	ESML2	0.477				
	ESML3	0.564				
	ESML4	0.766				
	ESML5	0.757				
	ESML6	0.737				
	ESML7	0.675				
Lack of Management (CLM) (Oppong et al., 2000)			0.863	0.886	0.89	0.47
	CLM1	0.65				
	CLM2	0.73				
	CLM3	0.851				
	CLM4	0.818				
	CLM5	0.834				
	CLM6	0.818				
	CLM7	0.524				
	CLM8	0.166				
	CLM9	0.58				
	CLM10	0.588				
Lack of Policy and Regulations (CP) (Oppong et al., 2000)			0.882	0.882	0.944	0.895
	CP1	0.945				
	CP2	0.946				
Culture and language (CL) (Oppong et al., 2000)			0.649	0.875	0.764	0.531
	CL1	0.929				
	CL2	0.574				
	CL3	0.632				
Cyber Security (CBS). (Oppong et al., 2000; Hawamdeh et al., 2022).			0.696	0.712	0.797	0.399
	CBS1	0.563				
	CBS2	0.75				
	CBS3	0.538				
	CBS4	0.569				
	CBS5	0.663				
	CBS6	0.679				
Entrepreneur's Performance (EP) (Oppong et al., 2000; Hasan, Almubarak, 2016).			0.765	0.775	0.835	0.46
	EP1	0.728				
	EP2	0.695				

	EP3	0.732				
	EP4	0.786				
	EP5	0.608				

Source: Authors' Data Analysis

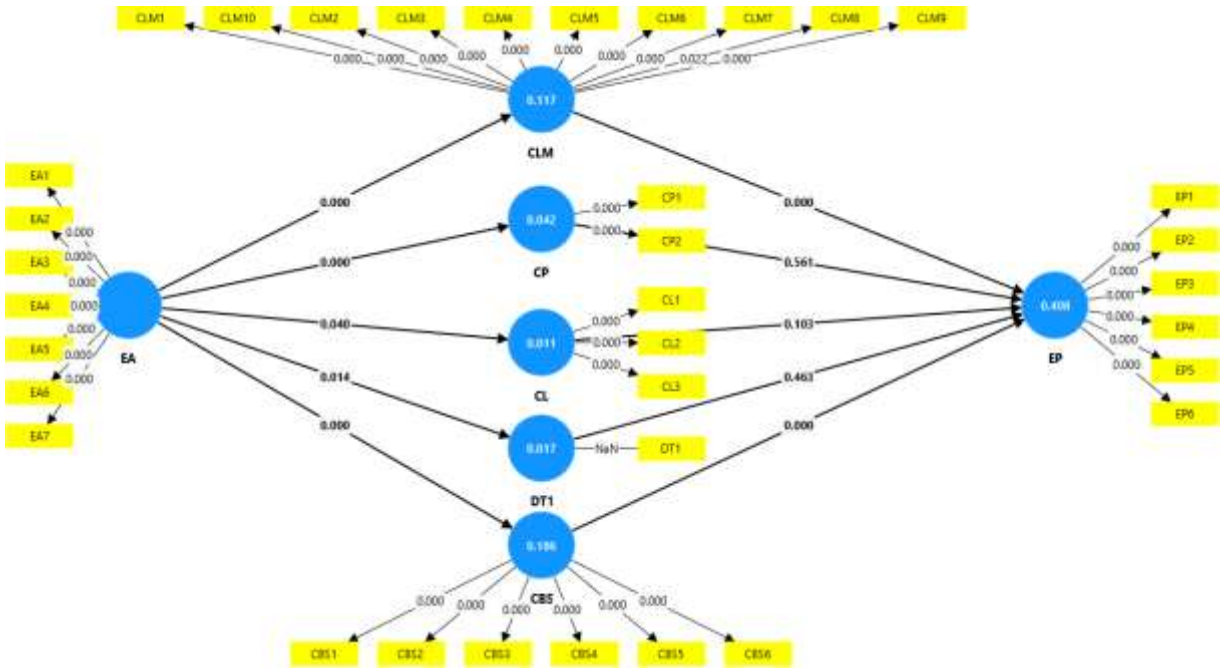

Fig. 3. Measurement Model Assessment

The measurement model was assessed and tested for reliability and validity in Table 2. The factors loading, Cronbach's Alpha, Composite reliability (rho_a, rho_c), and Average variance extracted (AVE) were used to analyze the model of measurement and convergent validity. Tables 2, 3, and 4 as well as Figure 1 show that, with some exceptional factors loading was higher than the suggested value of 0.60 (Hair et al., 2017). Likewise, the Cronbach's alpha and composite reliability (CR) values in Table 2 were frequently greater than the recommended value of 0.70 (Hair et al., 2017). Discriminant validity proposed a new criterion, the hetero-trait-monotrait (HTMT) ratio, to evaluate the validity and reliability of the data (See Table 3). This means that the ideas' discriminant validity is evaluated by the HTMT ratio. Values below 0.9 indicate discriminant validity (Hair et al., 2017).

After evaluating the measurement model, the structural model was analyzed for validity and reliability. Key indicators included standard errors, path coefficients, and t-values. Using Smart PLS's bootstrapping technique, path coefficients determined whether the hypotheses were supported (Ringle et al., 2005). The structural model assessment followed the measurement evaluation to ensure robustness and confirm variable relationships.

Table 3. Discriminate validity (HTMT ratio)

	CBS	CL	CLM	CP	DT1	EA	EP
CBS							
CL	0.515						
CLM	0.521	0.674					
DT1	0.46	0.416	0.345	0.361			
EA	0.526	0.176	0.381	0.224	0.136		
EP	0.699	0.273	0.605	0.406	0.239	0.82	

Source: authors' data analysis

Structural Model Assessment

Table 4 indicated that three relations between independent variables, dependent variables, and moderate variables are nonsupport and two relations were supported. Table 4 shows that the entrepreneur's ability (EA) has a significant indirect impact on the social media challenge of lack of management (CLM) and the entrepreneur's performance (EP). Hence, Relationship 1 supported (β=0.163, SD =0.033, t= 4.938, P <0.05). However, the entrepreneur's ability (EA) has a significant indirect impact on the challenges of cyber security (CBS) and the entrepreneur's performance (EP). Thus, Relationship5 also supported (β=0.171, SD =0.035, t= 4.85, P <0.05). Moreover, statistically, the entrepreneur's ability (EA) has revealed an insignificant impact on the media challenge of policy and regulation (CP) on the entrepreneur's performance (EP). Therefore, Relationship2 non-supported (β= -0.009, SD =0.015, t= 0.581, P <0.5). The second, the insignificant impact of the entrepreneur's abilities (EA) on the challenge of e-payment and the lack of digital infrastructure were faced by young entrepreneurs. Thus, Relationship 4 is non-supported (β= -0.005, SD =0.007, t= 0.704, P <0.481). (See Table 4 for details and Figure 1).

Table 4. Path Coefficient Indirect Effect

Relationship	Relationship	Original sample (O)	Sample mean (M)	Standard deviation (SD)	t values	P values	Decisions
Relationship 1	EA -> CLM -> EP	0.163	0.167	0.033	4.938	0	supported
Relationship 2	EA -> CP -> EP	-0.009	-0.009	0.015	0.581	0.561	Non-supported
Relationship 3	EA -> CL -> EP	-0.01	-0.009	0.008	1.244	0.213	Non-supported
Relationship 4	EA -> DT1 -> EP	-0.005	-0.004	0.007	0.704	0.481	Non-supported
Relationship 5	EA -> CBS -> EP	0.171	0.179	0.035	4.85	0	supported

Source: Authors' Data Analysis

Table 5. Path Coefficient Specific Indirect Effect

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Result
EA-> CLM	0.343	0.351	0.041	8.322	0	supported
EA -> CP	0.204	0.21	0.051	3.969	0	supported
EA -> CL	0.104	0.119	0.05	2.059	0.04	supported
EA -> DT	0.132	0.135	0.054	2.46	0.014	supported

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Result
EA -> CBS	0.431	0.442	0.047	9.218	0	supported
CLM-> EP	0.475	0.473	0.061	7.841	0	supported
CP -> EP	-0.043	-0.049	0.074	0.582	0.561	non-supported
CL -> EP	-0.1	-0.082	0.061	1.632	0.103	non-supported
DT -> EP	-0.035	-0.036	0.047	0.734	0.463	non-supported
CBS -> EP	0.397	0.402	0.049	8.065	0	supported

Source: Authors' Data Analysis

Table 5 indicates that all hypotheses significantly positively impact the mediated independent variable on the dependent variable. However, the relationships of CP->EP, CL->EP, and DT->EP show an insignificant impact of the mediated dependent variable on the independent variable. See Table 5 for details and Figure 1.

5. Conclusion

The study aims to comprehensively understanding the influence of social media literacy and the challenges on the young entrepreneurs' performance in Sindh, Pakistan. The findings of the study found that young entrepreneurs can overcome the challenges of social media-accelerating factors in business. In this study the research question: How social media literacy and challenges impact on their business growth and customer engagement? The various social media challenges are; lack of management, unclear/lack of policy and regulations, barrier of culture and language, lack of digital infrastructure, and cyber-security were explored through reviews of previous literature. Young entrepreneurs have strong knowledge and abilities to undergo these challenges at the startup of their business. The findings of each social media challenge are discussed below;

Lack of management Challenge: Under the variable of lack of management challenges, a total of ten (10) questions were asked to the young business owners while using social media. For example; lack of technical skills (CLM1), lack of brand awareness to entrepreneurs (CLM2), customer's awareness of new product (CLM3), lack of managerial approaches (CLM4), lack of strategies (CLM5), lack of marketing of goods or services (CLM6), lake of high cost of business investment (CLM7), lake of internet access (CLM9), and lake of business experience (CLM10). The results emphasized that challenges of management, technical skills, strategy, short experience, and marketing issues are no longer challenges for young entrepreneurs. It shows that they are good social media users. Furthermore, they can handle social media issues immediately. Thus, young entrepreneurs require more attention in technical training, persuasive communication, and advanced information. Oppong et al. (Oppong et al., 2020) supported the results of the study. In this regard, Goh et al. (Goh et al., 2013) 'analyze a Facebook page of clothes retailer's online community's purchase information to demonstrate that indirect communication performs better in both persuasive and informational communication'. Moreover, 'due to the unavailability of the Internet, people can not request and supply information at any time, from any location, via a variety of devices' (Belanche, Casalo, 2015).

Unclear Policy and Regulation on Social Media: Under the heading of lack of policy and regulation challenges of social media, only two questions were asked to business owners. It has been found that the majority of entrepreneurs do not have updated information regarding policies and regulations on social media platforms that would safeguard their copyrights and business. Most of them are anxious to reduce the risk of copyright ownership. Therefore, government organizations should develop or change a safety mechanism to safeguard business reputation.

Culture and Language Barrier: A total of six (03) questions were asked to the Pakistani young entrepreneurs who deal with social media. Thus, it has been found that culture and language have very little impact on the development of business. Some studies have noticed that 'local dialect and organizational culture and hierarchies create problems for companies using social media platforms' (Chatterjee, Kar, 2020; Li et al., 2018).

Lack of Digital Infrastructure (DT): Only one question was asked of young entrepreneurs related to the infrastructure issue of social media. The majority of the entrepreneurs operate various applications of social media on Android mobile devices. In the AI age, the proper infrastructure of technology is essential. It the COVID-19 pandemic, many entrepreneurs have diverted their business online. Technological infrastructure is essential for each business.

D. Khajeheian (Khajeheian, 2013) indicated that 'electronic payment and infrastructure was challenging for some developing nations'. Furthermore, the social media platforms of each firm in any country play an important role, contributing to all business stakeholders.

CyberSecurity (CBS): A total of six (06) questions were asked to the responder concern to the challenges of cyber-security on social media platforms. Such as; (CBS1) high risk of online threat of e-payment, (CBS2) suspicious e-mail, (CBS3) face bullying, (CBS4) balance time, (CBS5) face challenges, (CBS6) violation of customer's privacy. However, young entrepreneurs are good social media users, who can deal with cybersecurity-related issues. On the other hand, in other studies, violation of the business code of ethics, guidelines, customer privacy, and cyber-security challenges faced by entrepreneurs (Durkin et al., 2013; Li, et al., 2018).

Hence, the results of the study reveal that most entrepreneurs encounter the social media challenges because of better literacy regarding uses of social media. The findings of the study supported by some researchers (Bala, Verma, 2022; Durkin et al., 2013; Dwivedi et al., 2019; Dwivedi, 2022; Kaur et al., 2022; Oppong et al., 2020; Qalati et al., 2022; Shaikh, Ahmad 2024).

Thus, social media literacy is a critical competency for online entrepreneurs, enabling them to navigate social media challenges, cybersecurity threats and misinformation, which hinder their business potential. To overcome these social media challenges, literacy, strategic use, and cybersecurity measures are essential for entrepreneurs to fully harness the power of social media.

Government and private organizations, firms, and industries need to construct social media policies and regulations, digital infrastructure, e-payment process, effective communication, and sales. Additionally, this paper assesses the importance of learning technological skills to overcome social media challenges.

The study offers implementation to policymakers, decision-makers, government programs, social media users, and online entrepreneurs. The study is just conducted only in the Sindh, province of Pakistan due to a lack of resources. The study recommends employing qualitative research methods to uncover realities in the country and other states.

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Communication and Risk of Disinformation: The Importance of Studing Memes

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Abstract

Memes convey ideas in an easy-to-consume form. Social network's users use them to broadcast their thoughts, feelings, emotions, and judgments on the Internet. Local memes reflecting urban problems: traffic jams, poor public transport, isolation of the outskirts from the center, and so on, have entered the media culture of social networks. Understanding and studying the essence of memes will allow journalists, sociologists, and researchers of urban issues to better analyze the moods and discontents of city residents and look for research topics.

The authors used a self-developed meme analysis that can be used to teach the topic of memes in classes with journalists, sociologists, and media industry specialists. Not all memes can be a source of truthful information. It can support urban myths that have no connection with reality and generate fakes. Memes are a communication tool, conveying information through humor, but they can also be a tool of manipulation. Using the example of local memes in communities of large Russian cities, the researchers conducted an analysis that showed that manipulation of public opinion and disinformation are most often found in comparative memes on the topic of comparing images of residents of urban areas. Memes can carry a false meaning and misinterpret the news. Working with memes, journalists and other professionals should pay attention to comparative memes. Their authors can use not just a social myth, but misinformation to make a vivid comparison.

Keywords: memes, Internet memes, media education, media culture, disinformation, manipulation.

1. Introduction

The spread of The Internet memes, these funny pictures with inscriptions, use in describing political, social, and cultural media events raise the question of increasing attention to this phenomenon in the process of media education, professional training for journalists, media specialists, and researchers of social phenomena.

"*Essential to thoroughly examine these patterns over time, considering their consequences for political communication and journalism, education and learning, health communication, science communication, and overall societal influence*", note researchers M.V. Srikandi, H.A. Wahab, J.J.P. Latupeirissa (Skikandi et al, 2024). The Russian authors also write that "*meme is practically not studied in the media sphere, which is purposefully saturated with content by journalists*" (Schurina, Kharakhorkina, 2020).

Scientists focus on the inclusion of memes in journalistic media discourse (Gomez et al, 2023; Khan et al, 2022; Elyamany, 2023), which allows us to consider memes as an actual and effective area of activity for journalists. Memes are sources of information for journalists when they

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write materials about cities remotely (using open sources, interviewing residents by phone. Memes can misinform journalists and generate fake news.

Due to the fact that modern journalism education should reflect the latest trends in the development of the media industry (Fiialka, 2017; Shesterina et al, 2024), it is necessary to intensify scientific research aimed at studying technologies for creating and distributing memes, the results of these studies should be used in the training of media specialists.

Social networks are the context of the existence of an Internet meme, and the textual and visual content of social networks reflects the values of modern society. The study of memes by sociologists makes it possible to identify current socio-political processes, identify reference points in the socio-cultural space, and identify the values of modern society. "*Memes characterize a relatively new form of online culture that offers accessible ways of self-expression, engagement, and participation, especially suitable for bottom-up initiatives with limited financial resources*", wrote T.F. Harbo (Harbo, 2022).

There is a point of view that memes influence the world modeling of modern youth, that is, they help to form "*representational structures – objectified mental constructs of varying degrees of conceptual complexity that relate to the processes and results of representing the world and/or its fragments for communication purposes. Their main function is to orient the addressee and form public opinion in accordance with the needs of collectives or certain social groups*" (Babikova, 2021). Researchers are concerned about the development of another meme trend – hate memes. Unfortunately, memes have been used to spread hatred and attack others. Such memes are named as hateful memes. The rapid spread of memes of this kind has led to social problems, such as exacerbating ethnic tensions and disseminating disinformation (Bi et al., 2023). Memes are also used in political communication, and their deconstruction skills are important for people who participate in political discourse. Ahmed Al-Rawi in the article "Political Memes and Fake News Discourses" tells about "meme War II". He wrote that the social network Instagram "*has become weaponized by the two main online communities, and memes are used in an ongoing political online warfare to attack and demean the opponents. Meme War II is an ongoing daily reality on Instagram which requires more scholarly attention*" (Al-Rawi, 2021).

2. Materials and methods

The corpus of the study consisted of 554 memes collected from the popular in Russian social network VKontakte during the period from July 2022 to December 2024. The memes are taken from eight communities dedicated to jokes about four major Russian big cities – Novosibirsk, Omsk, Rostov-on-Don and Krasnodar. Using the screen capture feature on the researchers' notebook, this memes were collected and stored. Each meme file contains information about the date of its appearance and its membership in the community. Having collected all the memes, the researchers conducted an analysis.

The research scheme looks like this:

– Defining the topic;

– Type of meme;

– The type of humor and its purpose;

– The presence of manipulation in the meme (premeditation of implementation, hidden nature of the impact, personal benefit of the sender, distortion of information).

The author's meme research method helps to deconstruct a meme, and can be used by journalists, sociologists, marketers, and other specialists to study images created by users of social networks.

This meme analysis scheme can also be used by media education specialists in media centers of schools and universities to show students how memes influence the formation of public opinion, social myths and fakes. The authors believe that a practical lesson on meme analysis can be included in teaching the basics of media literacy, since, as the study shows, standard lectures on memes in media education classes do not teach how to recognize misinforming information in memes on the Internet – without involvement, there is no proper effect.

Methods such as a review of scientific literature, comparison, and interviews were also used in this study.

The purpose of the study is to determine which problems of cities are interpreted by residents through memes, and to find out whether memes convey real (somewhat exaggerated) information

or misinform residents. The research objectives also included identifying popular types of memes among young people and determining the type of humor.

3. Discussion

An analysis of the literature has revealed several approaches to the study of memes on the Internet. The most common approach is based on the meme theory formed in the book "The Selfish Gene" by Richard Dawkins. The author's approach is based on the concept of copying information (replication). The specificity of the meme lies in the special presentation of information that causes a desire to spread it. A meme can be expressed as a phrase, a piece of music, or an image. There is a lot of meaning in a meme, which is often clear only from the context of usage. Dawkins' approach to memes is based on the idea of them as units of information that perform the tasks of genes, only in the field of popular culture – they compete, mutate, adapt to the environment, and have the ability to reproduce. Memes are not only copied, but also evolve (Dawkins, 2006). In 1986, in the collection of articles by physicist and computer scientist Douglas Hofstadter "Metamagic Themes", a proposal was published to name the discipline studying memes "*memetics*" by analogy with genetics.

Psychologist S. Blackmore continues and complements the theory of the spreadability of memes. She calls memes the main building blocks of cultural evolution that shape human thinking (Blackmore, 2000). According to her concept, humans are meme machines that are used by memes to reproduce and copy.

Dawkins' theory predated the phenomenon of Internet memes. Memes have received unlimited distribution opportunities on the global network. In 2014 Limor Shifman described internet memes as *"(a) a collection of digital items that share common characteristics of content, form, and/or stance; (b) are created with awareness of each other; and (c) are circulated, imitated, and/or transformed via the internet by a large number of users worldwide*" (Shifman, 2014).

Memes have exceptional communication potential and are a type of Internet user language. At the same time, as Russian scientist Yulia Shchurina wrote, "*a natural outcome of adaptation is the ability of memes to transcend their primary sphere of existence and extend into the realms of media, education, art, and more*" (Shchurina, 2023).

People use memes to communicate with each other. This allows them to be emotional and express their's opinion. Internet users create memes based on the characteristics (cultural, national) of the audience. Meme always has a coded meaning that is accessible only to a certain circle of people for whom this meme is intended (Gal, 2018).

Memes can live within a community for a long time, and they can change (one picture with a certain meaning, for example, misunderstandings, may reflect views on different issues), most often the authors simply change the text. However, there are memes that invariably circulate within the community, forming public opinion about the problem. Of course, the opinion of the group members is formed not only by memes, but also by reactions to them: likes, comments, the number of broadcasts of the picture outside the community.

Thus, by studying certain memes in local communities, it is possible to determine the social and individual picture of the world of its participants.

At the same time, a meme is not just a unique, specific communication language. It is well remembered, recognizable, and effectively broadcast. It can be an effective manipulation tool. This approach was one of the first to be applied by Douglas Rashkoff, who studied memes as an element of media viruses, that is, certain hidden information messages that shape or change public opinion (Rashkoff, 1996). The author of the concept emphasized that media viruses can be created spontaneously and intentionally. Of particular interest are those that have a mixed nature of appearance: the creator can take a ready-made meme and use it to create a media virus (he can artificially place it in an environment for the emergence of a media virus). Thus, memes can accidentally or intentionally become a tool for broadcasting fake information.

Myths can be considered as a means of adapting mass culture to modern digital realities and myth-making (Polishuk, 2020). O. Strelnik posits, that "*myth-making is the constructing of a mythological message or a message system, which is one of the types ofsocial communication. Amythological message, like any other message, is a collection of characters carrying information*" (Strelnik, 2017). Myths are regarded as statements of facts that demand no explanation. Memes were analysed as "*potent vehicles for information dissemination*" which are used to "*critique actions, lampoon political leaders and public officeholders, and deconstruct myths generated over time*" (Ugah, 2022).

Internet culture can be described as hyperreality (Shifman, 2014). Meme as a phenomenon of medical culture can mask reality. Moreover, by replicating, memes lose touch with the reality from which they emerged. Baudrillard's semiotic media theory of simulacraexplains how mass media reproduction of images empties signs of their original meanings. There are five steps to Baudrillard's successive phases of the image. The first: the image as a reflection of profound reality. The second: the image as mask of the reality. Then the image masks the absence of a basic reality (the 3rd step), and (the 4st step) the image has no relation to reality. So, it has become a simulacrum (Baudrillard, 1981). For example, researchers classify memes as simulacra (Kuznetsov, Slavina, 2018; Terossi, 2023). Thus, a meme may have nothing to do with reality, misinforming people.

4. Results

The memes under study were grouped by the topics they cover: problems with public transport (135 pieces), marginalization of the outskirts and the elite center (198), traffic jams (68), weather (32), the contrast of cities to Moscow andother major centers (21), other (90 pieces). The other column includes memes dedicated to universities, inflation, the rhythm of life (slow or fast), and the problem of drug addiction in the city. All of these topics also occur, but not as often as the first four. Therefore, we will analyze the memes based on the first four thematic groups.

10 % of the memes from the presented groups were analyzed in detail (the scheme was shown in the Materials and Methods). So, 14 memes about transport problems, 20 memes about suburbs and the center, 7 memes about traffic jams, 3 memes about the weather, 44 memes in total.

The analysis showed that among these memes there are such types as informative, representative, emotional (ironic, post-ironic, sarcastic). They highlight the social and cultural situation in the city, but sometimes the visual and/or textual part of the meme contains information that shows how a city resident can react to a problem. For example, according to the meme about Musical district in Krasnodar – this meme shows a car stuck on a flooded road after a rainstorm. The text of the meme contains the inscription: "*When I decided to avoid traffic jams on the Rostov highway through the Musical district*" and the direct speech of the man: "*I have to dry the mats again*".

Citizen understand that it is necessary to drive around the Musical district, which is located in a lowland, in the rain (the meme got 260 likes, 21 people shared the message). The comments under the meme show that the residents of Krasnodar support this information, it does not contradict reality.

Memes about the marginalization of the suburbs, the different characters of the inhabitants of the city districts are shown based on caricature techniques, ridiculing the features allegedly inherent in the inhabitants of the districts. In fact, many facts have no connection with reality, which is reflected in the comments to the memes. For example, there may be a comment under the meme that such behavior by residents of the area is a thing of the past. In general, social myths about the danger of new neighborhoods with high-rise buildings are used in each of the communities studied, and fits into the concept of imaginary marginalization, which helps to outline the processes associated with the formation of the image of certain locations on the urban periphery.

For example, the memes of the city of Novosibirsk compare the cconfrontation of the right and left river's banks according to the type of white – collar workers from the outskirts. The following marginal districts are represented in Rostov memes: Chkalovsky, Oktyabrsky, Nakhalovka.

For analysis, we have taken a meme that compares two districts of Krasnodar. Meme consists of two photos. The first one shows an elegant man in a business suit. The second one shows a plump man in a tracksuit with car keys. The first man is signed as the Yubileyny city district. The second man represents the central district of Krasnodar.

We have analyzed the meme according to the chosen methodology. By subject, it belongs to the category of "contrasting typical residents of the districts". By type, it is a comparative meme (comparing several images). The comic effect of most comparative memes is the mismatch of expectation with reality or the paradox of what is happening. The authors of comparative memes can use a fictional situation that has no relation to reality to reinforce the paradox. And therefore, not just to emphasize a social myth, but to create fake content.

The analyzed meme uses generalization to reinforce the paradox – usually the city center is associated with the epithet "business", and not with men in tracksuits.

In order to find out how far the meme is from reality, we conducted an interview with two residents of Krasnodar. It was found out that the meme reflects reality only partially: *"Yubileyny is*

just a young district, there are several elite residential complexes there, businessmen are really trying to settle there, and there are many private, non–elite buildings in the center"; "Yubileyny is a young elite neighborhood. There are no large office buildings there, and I don't associate this area with solidity and a suit. I will not say that there are such men in tracksuits in the center, there are many office buildings and shopping malls in the center of Krasnodar". Thus, this meme not only does not reflect the real reality, but also does not create a myth. A meme can become a source of fake information about a city, as people associate a man in a business suit with an office worker, rather than with the prestige of the place.

Similarly, we have analyzed another meme about the myths of the city's districts from the Omsk Memes for Every Day community in VKontakte. The meme consists of two images. One shows perfume, the other shows pepper spray. The text near the Franch perfume is: "What kind of perfume is used in the center". The text near pepper spray is: "What kind of perfume is used in the Oktyabrskij district".

This is a comparative meme, the comic effect of which is based on the principle of surprise: perfumes are compared to a pepper spray. The meme was created based on the principle of hyperbolization. Here we are dealing with sarcasm – malicious mockery, which is enhanced by the characteristics of the pepper spray indicated in the meme: "powerful effect, cone spray, ejection up to 2 meters".

The meme emphasizes that expensive perfumes are used in the center, and instead of perfumes, residents of the Sovetsky district use a gas canister, emphasizing and reinforcing the social myth of the marginalization of the outskirts. An Omsk resident commented on the meme in an interview as follows: "*Yes, the Sovetsky district is the northern part of the city, there are wastelands and places where it is better not to appear without a spray can, but not because of punks, but because of stray dogs. But our marginal area is different, for example, not all taxi drivers go to Port Arthur*".

It should be noted that an analysis of 20 memes about the characteristics of urban areas, which included interviews with residents of these cities and an analysis of comments on a social network to find out if there is information manipulation in the meme, showed that 12 of them completely contain misinformation, six memes reinforce a social myth (a myth formed in society and expressing the interests of social groups), two memes show the real state of affairs through irony. One of these memes concerned a sharp increase in the cost of apartments in the center of Rostov-on-Don, due to which the cat was able to rent only a cat carrier. Thus, in memes, the facts are not just exaggerated, but significantly distorted and rarely reflect reality.

Let's analyze memes about problems with public transport. The main issues raised by memes on this topic are waiting for buses, crowded transport, dirty floors on buses, old transport, very expensive taxi prices. Memes that touch on the topic of public transport do not contain comments about misinformation, and they also receive from 10 to 20 % of the approval reactions from the number of views. In interviews, the interviewed residents of the cities also indicated that the information provided in the memes has a lot in common with reality, although it is presented ironically.

For example, we've analyze a meme whose irony is expressed through metaphorical hyphenation. The mem's picture shows bus No. 93 in Rostov-on-Don, and below is the logo of the Russian program "Wait for Me".

The metaphor is shown unobtrusively. There is a shortage of city buses in Rostov-on-Don, and people can wait a bus for 30-40 minutes. Such situation is compared with the problem of guests of the famous program "Wait for Me", where people were looking for lost friends and relatives.

To determine if there is manipulation and distortion of information in meme, we turned to the interview method. Two residents of the city interviewed by us rated the meme as "close to reality", noting that the problem of waiting for this bus is really relevant: "*The bus rarely runs and if it is a small-capacity bus, as in the mem's picture, it's often overflowing", "I agree, you'll never wait, it's easier to go to the bus stop on Krasnoarmeyskaya Street and drive from there*".

In general, memes about public transport problems are clear to urban residents and reflect the real situation in the city. This was also emphasized by the interviewed residents of the cities, the information in the memes is confirmed in the comments to them on social networks.

A separate sub–topic related to the problems of public transport is the metro problem. Krasnodar and Rostov-on-Don do not have a metro, Omsk has only one station, and the problem of the lack of a metro is being played out in memes. For example, the metro map of Rostov-on-Don and Krasnodar is shown as a blank sheet (which, in principle, corresponds to reality).

A meme related to the Novosibirsk metro informs about the problem with the opening of the new Sportivnaya station. The meme's picture shows the host of the popular Russian game "Field of Miracles", the essence of which is to guess the letters of a word – the answer to a difficult question. The first six letters of the word "bankrupt" are open on the board, which is not true – according to media reports, the first contractor did not finish the work due to the lack of an agreed design of the station. Such a meme is actually disinformation, but none of the respondents noted this, there was no hint of a fake in the comments under the meme on the social network.

The problem of traffic jams is relevant for large cities. Social media users use similar patterns and phrases to express their emotions. Basically, metaphorical transfer is used to construct a meme, and irony is a type of humor. For example, a city without traffic jams is compared to a miracle by residents of Omsk and Krasnodar, and a meme created for residents of Novosibirsk indicates that men do not dream of girls, but of a city without traffic jams. There are also memes with maps of cities that are painted completely red, which is how traffic jams are designated. In such memes, the visual is accompanied by an expressive emotional characteristic, or an ironic comment by the authors of the meme.

For example we analyze a popular meme in Novosibirsk (216 likes). It's is a meme with a map that indicates that cars in the city have become stuck in traffic jams. At the bottom of the picture is a man with a raised finger. The text of the meme is as follows: "Driving test: begins. Roads in Novosibirsk": (meaning that there are traffic jams on the roads). "Good luck getting your driver's license". So, it's a meme with a joke about a driving test during traffic jams.

This meme was positively received by community members, the irony was appreciated, however, in one of the comments, a resident of the city noted that there is no problem passing the driving test during traffic jams – the car will just stand still for half an hour. During the interview, the idea was expressed that such an image on a map is impossible in principle, but a meme cannot be attributed to misinformation, since there are severe 10 points traffic jams in the city. This meme does not have a manipulative task, it is situational, has the task of entertaining the audience, and not creating a certain image.

The weather theme is one of the brightest in the memes of the city, it always receives approving comments from the townspeople. For example, in 2024, weather changes in Rostov-on-Don were emotionally understood and expressed through hyperbolization in crealized texts.

For example we decide to analyze a comparative meme about the weather, because it needs to be analyzed especially carefully: as we found out earlier, the comic effect is based on the paradox of what is happening and may contain completely false images that do not correspond to reality.

The meme contains two pictures – a desert and icebergs, and above them: "Weather in Rostov in October", "October 5", "October 15". When creating the meme, a metaphorical transfer was used: hot weather is associated with a desert, cold – with an iceberg. There was a sharp cold snap in the city when the heat turned to cold. There is no manipulation in the meme. The Rostov residents we interviewed noted that the meme does not misinform, but highlights the myth of a rapidly changing climate.

The Table 1 shows an analysis of memes in terms of manipulation and misinformation.

Table 1. The results of the analysis of the content of local memes in relation to fakes and reality

Memes about problems	*Completely disinformation, fake*	*A social myth*	*True, but with an ironic context*
About the outskirts and the city center	12	6	2
Transport problems	1	4	9
Traffic jams	0	3	4
Weather	0	2	1

The analysis showed that memes that contain manipulation mostly belong to the category "the outskirts and the city center". Probably, this is so because such memes are created in the interests of certain social groups, showing their superiority over others. These memes more often than others contained sarcasm. Most of the memes under consideration from other thematic groups are based on irony, not sarcasm, that is, on a milder form of ridicule, without malice and indignation.

Their task is to reveal current social problems, because when you treat problems with humor, they cease to be as frightening as before (Canepari, 2020).

5. Conclusion

The functioning of memes is a consequence of the development of Internet technologies, mass media, and popular culture. Today, they are present in the media discourse at the international and regional levels, which allows us to conclude about their popularity and scale of use.

The Internet meme as a form of information dissemination has become popular in mass communication due to the following characteristics: the use of a visual component, which at the present stage can not only complement verbal communication, but also replace it; humor (irony, sarcasm), dissemination (replication) through mass communications: through social networks, forums, messengers.

These aspects determine the interest of the mass audience in information presented in the form of a meme, which allows communicators (initiators of an information action) to attract the attention of communicants, control them, transmit an information message in an attractive, easy-to-understand form, and also involve the audience in the dissemination of information, which increases the effectiveness of the communication process.

The study showed that memes are actively used in regional media communities in order to highlight and identify problematic situations in the social environment. However, the hyperbolization inherent in memes can affect the formation of a negative image of reality, form incorrect public opinion, which will then be broadcast on social networks as a media virus. When analyzing memes, it is necessary to focus on this point, on understanding the construction of a myth through a meme and the origin of fakes.

Taking into account the identified trends in the functioning of Internet memes, their characteristics and significance, we consider it advisable to increase attention to their study in the framework of professional media education, as well as conducting practical training to improve media literacy. In addition to the problem of disinformation, the following issues deserve attention: the technology of creating and replicating memes, the impact of different types of memes on the audience and their role in political, economic, and cultural processes.

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Digital Literacy and Smartphone Consumption Patterns in the Elderly Group of Indonesia and Pakistan

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Abstract

This study explores the evolving use of smartphones by the elderly in Indonesia and Pakistan, focusing on their engagement with digital technology in everyday life. The elderly are often perceived as incompatible with digital technologies, due to beliefs that these technologies are complex and not user-friendly. As a result, many older adults have been reluctant to learn and engage with digital media or access the internet. Using a qualitative approach, this research employs in-depth interviews to gather insights into the digital habits of elderly users. The Mobile Device Proficiency Questionnaire was utilized to assess digital skills and the digital culture index among participants. Findings reveal a significant shift in the way elderly individuals interact with smartphones, with many transitioning from passive to active users of digital media. They face several barriers, including a fear of making mistakes, which often leads to anxiety when encountering technical issues. Elderly users are increasingly faced with ethical dilemmas in digital spaces. Caution prevails in their use of social media, especially in relation to sharing personal information or commenting on public posts. This research underscores the need for addressing these barriers and fostering a supportive digital environment for the elderly in both Indonesia and Pakistan.

Keywords: digital culture, elderly, digital literacy, smartphone, Indonesia, Pakistan.

1. Introduction

The discovery of digital technology, although it brings significant transformational potential, does not immediately create a society that can fully adopt the technology in everyday life. Ideally, an information-rich network society should emerge, allowing individuals to be more empowered and connected (Castells, 2005). However, the reality shows a striking gap between the digital native and the digital migrant generations. Digital migrants are those who grew without close engagement with the digital technology such as smartphones, include the elderlies. Elderly group is the weakest in terms of digital technology usage and consumption.

Smartphone features tend to be confusing for the elderly, compounded by low levels of digital literacy among them. This inadequate digital literacy has the potential to hinder their ability to understand and use various applications and services that could improve their quality of life. However, with adequate understanding and support, digital technology can provide significant benefits. Elderly who use smartphones feel more engaged with their communities and supported physically and mentally (Iancu, Iancu, 2017). Engagement with communities include socialization with friends and group interaction for the spiritual and religious purposes through social media like WhatsApp and Youtube (Iancu, Iancu, 2017).

Around 18 % of seniors in Indonesia, particularly those aged 50 and above, use smartphones. This figure highlights a lack of attention to digital literacy issues and smartphone usage patterns

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among the elderly (Iancu, Iancu, 2017). It also reflects the limited in-depth research on how this group interacts with technology and how they can make the most of it.

Similar to Indonesia, smartphone usage in Pakistan is dominated by the younger age group (digital natives), while less than 10 % of the elderly population uses smartphones (Castells, 2005). Although both countries exhibit similar patterns of digital technology adoption, there are notable differences in the social and cultural contexts influencing the level of digital literacy and smartphone usage among the elderly. Data from this study can help devise better strategies to address the challenges elderly users face in using smartphones. Moreover, the study is expected to provide valuable recommendations to the government and content creators to produce more user-friendly content for the elderly to improve their quality of life and social engagement in the internet era.

The purpose of this study is to determine the level of digital literacy among the elderly in major cities in Indonesia and Pakistan, identify the factors influencing this level of literacy, and analyze patterns of smartphone usage within the elderly population in these two countries.

2. Materials and methods

This study uses a qualitative approach to explore in depth the aspects of digital literacy and patterns of smartphone use and utilization among the elderly. A qualitative approach was chosen because it provides a deeper understanding of individual perspectives, experiences, and social contexts that influence their interactions with technology (Creswell, 2013). Thus, this study aims to explore the nuances in smartphone user behavior that cannot be explained by a quantitative approach.

The in-depth interview method was applied to obtain rich and comprehensive primary data. Semi-structured interviews were conducted to provide space for informants to explain their experiences and views on digital literacy and smartphone usage. Informants were selected through the snowballing technique, where one informant recommends another informant, to obtain variation in experiences and backgrounds (Noy, 2008). To measure smartphone usage, this study used questions developed by the Mobile Device Proficiency Questionnaire (MDPQ), which was compiled using a Likert scale (Roque, Boots, 2018). This instrument is designed to evaluate the level of competence and comfort of individuals in using various smartphone features. The absence of specific data on the number of elderly people who use smartphones required this study to use the intercept technique to identify informants (Guest et al., 2013).

This study was conducted in two major cities, Karachi in Pakistan and Surabaya in Indonesia. These two locations were chosen because they have significant geographic, demographic, and psychographic diversity. The number of informants in each country was around 15 people, resulting in a total of around 30 informants. The subjects of the study were elderly individuals who used smartphones, with the definition of elderly referring to the WHO definition, namely individuals aged 60 years and over (WHO, 2020). The BPS also groups the elderly into three categories: young elderly (60– 69 years), middle elderly (70–79 years), and old elderly (80 years and over).

Primary data in this study were obtained through in-depth interviews with elderly informants who use smartphones. These interviews were designed to explore their experiences, views, and patterns of digital media use, as well as their digital literacy. Meanwhile, secondary data were obtained through a literature search that included previous studies on digital literacy and digital media use among the elderly. This search also included examining the social and cultural contexts that influence technology adoption in Indonesia and Pakistan (Iancu, Iancu, 2017; Castells, 2005). Secondary data served to map the profile of digital literacy and patterns of digital media use, enriching the research results with broader and deeper perspectives.

3. Discussion

Digital literacy is a fundamental skill that is essential in today's information age. Digital Literacy literacy includes the understanding and use of information in various formats produced by computer technology. It is not just a technical skill but also includes a deep understanding of how information is presented, accessed, and used in the context of everyday life. With the increasing amount of online sources of information, central to the success in life is the capability to use and deal with such massive information (Gilster, 1997).

Several key competencies form the basis of digital literacy. One of them is the ability to assess the accuracy and credibility of information found online. In a world filled with abundant and diverse information, the ability to distinguish between facts and hoaxes is essential. Individuals

need to be trained to question the source of information, check the background of the author, and understand the context in which the information is presented. In addition, the competence to read electronic texts is a crucial aspect. This involves understanding how digital texts work, such as navigating websites, recognizing hyperlinks, and understanding interactive elements that may be present in the text (Hague, Payton, 2020).

Digital literacy includes not only assessing information but also the ability to construct credible information. This means that a person must have the ability to process information from various sources so that they can create accurate and relevant stories. For example, to create digital content, a person must understand how to integrate various sources and data logically, as well as have evidence to support their reasoning. In order to obtain information that suits the user's needs, it is also important to use effective search strategies. Users must understand various search techniques, such as the use of appropriate keywords, and search filters, and understanding the search algorithms used by search engines (Pangrazio, Sefton-Green, 2021).

Digital literacy is divided into two main categories of understanding: functional literacy and critical literacy. Functional literacy includes practical skills in using digital technology-based media, such as using effective search strategies and reading electronic texts. Critical literacy, on the other hand, emphasizes the importance of being able to select and sort information carefully. This includes evaluating the credibility of sources, analyzing biased information, and being able to make decisions based on analyzed information (Livingstone, Helsper, 2023).

A scholar named Belshaw identified eight essential components necessary for the development of comprehensive digital literacy. These components include cultural elements that relate to the social and cultural context in which digital media is used. This is important for understanding how societal norms influence digital interactions. The cognitive element emphasizes the ability to think critically and analytically, which is necessary for making logical conclusions from information (Belshaw, 2011). The communicative aspect emphasizes the importance of understanding how social networks and communication function in the digital world, while the constructive aspect emphasizes creativity in content creation.

Digital literacy requires creativity. People must be able to adapt and create new solutions in an ever-changing and innovative environment. Social responsibility is also becoming increasingly important, especially given the influence of digital media on society. It is essential to understand our ethics and responsibilities when interacting on the internet to create a safe and respectful environment. This includes knowledge of privacy, data security, and the effects of spreading misinformation. Ultimately, mastering digital literacy is essential, especially for groups less exposed to technology, such as the elderly (Ferari, Punie, 2023).

Digital literacy has become a critical component in determining how individuals and societies use communication technologies in the modern era, especially in developing countries in Asia. With the rapid growth of internet and *mobile device users,* understanding and using these technologies effectively is increasingly urgent (Kass-Hanna et al., 2022). Digital literacy includes not only the basic ability to use devices, but also the ability to search, evaluate, and use information responsibly and critically. In such a situation, digital literacy is a multifaceted ability that includes technical, cognitive, and moral elements in using information technology.

Digital literacy levels in many developing countries, such as Indonesia, India, and the Philippines, vary widely. There are a number of variables that influence this variation; these include education level, access to technology, and community support (Kass-Hanna et al., 2022). These differences lead to significant digital inequality. Some communities are able to use technology to improve their quality of life, while others are trapped by limitations due to lack of knowledge and access. This suggests that better digital literacy is essential to creating equal opportunities and access to information.

Social and cultural factors, such as stigma against technology use by older generations, also contribute to the rate of technology adoption across different community groups (Dirgatama et al., 2024).

According to Rogers, technology adoption is the process by which people choose to use digital technology as a whole. Diffusion, "the process by which an innovation is communicated over time through certain channels among members of a social system", is an important component of this situation (Rogers, 2003). This highlights the interplay among the adoption of the technology, the innovation that comes along, the supportive social system, the media to distribute it and the time consumed. Rogers divided societies into five groups based on the speed and manner in which

technology is used.

First, the first group is innovators, who dare to take risks and have characteristics such as relatively young age, higher social background, and wealth. Only about 2.5 % of the population consists of this group. In addition, some individuals adopt technology earlier than innovators known as early adopters. They are usually about 13.5 % of the general population and usually can influence the opinions of others, also known as opinion leaders.

Then there is the initial category of the majority, which consists of people who are slower to adopt technology. About 34 % of the population contributes to them, but they do not have a significant influence on public opinion. After that, the last minority is those who are skeptical of technology and are more careful when adopting something. They consist of about 34 % of the general population and usually have lower financial capabilities. Finally, the laggards group are the people who are the slowest to adopt technology. They are usually older, from a lower social class, and have little money. About 16 % of the population consists of groups that focus on tradition and rarely interact with innovators. Through this division, Rogers shows that the adoption of technology is not a uniform phenomenon; it is influenced by many different social and individual factors, as well as the amount of time it takes for each group to complete the adoption process.

Access to social media, streaming video and music, and educational applications such as e-books are some examples of how smartphones have changed the way we interact with information. In addition, smartphones serve as control centers for various smart household devices, as well as tools for running various applications that help contemporary lifestyles, including health, travel, and shopping applications. Since their introduction, these multifunctional devices have replaced many traditional tools and integrated various functions into one device. By combining the functions of a conventional telephone and a computer into one practical device, smartphones have become one of the most innovative inventions (Ting, Chen, 2020).

The ease of use of smartphones drives interesting and complex consumption patterns, reflecting changes in communication, shopping, working, and entertainment behavior. According to data compiled by Gil Press, the number of social media users has reached more than 6.8 billion worldwide and is expected to reach 7.1 billion by the end of 2024, with an increase of around 9.5 % per year from 2016 to 2023. Interestingly, this device is most widely used by the younger generation, especially generation Z and millennials. In the United States, for example, 96 % of the 18–29 age group actively use smartphones making this group the most connected to each other (Olson et al., 2023; Pang, 2021).

The elderly exhibit different online behaviors compared to younger generations. While Gen-Z and millennials tend to be more open and less mindful of politeness ethics, older adults, in contrast, prioritize courteous interactions and steer clear of behaviors that could incite division (Missier, 2022).

However, recent studies have shown that smartphone usage among the elderly in this modern era needs to be updated. With massive technological advances, smartphones now make it easier for the elderly in various aspects of life. They can stay connected with their families through messaging and video call applications, as well as access information and entertainment through social media and online platforms. In addition, smartphones offer benefits in non-social activities, such as managing health with health applications and activity tracking, which allows the elderly to better monitor their health conditions and get the support they need (Busch et al., 2021).

Few scholars have conducted an in-depth study on the use of smartphones as a technology that can improve the quality of life of the elderly and help them. According to the study, smartphones are an excellent tool for tracking individual health conditions, allowing the elderly to stay connected to the community through the internet. Users can consult with medical personnel, schedule appointments, and access relevant health information through features such as health apps and telemedicine. In addition, interactions that can be done through smartphones can help reduce feelings of loneliness often experienced by the elderly, who are often isolated from their social environment. Their emotional health is increased along with the use of social media platforms, especially social network services and audio visual calls, that let them to mingle with their relatives and friends (Iancu, 2017).

In line with this situation, there are variables that affect the way elderly engage with smartphone found in this study. Lesser ability to listen and see plays as the significant factor to impede their ability to stay connected to the technology. Additionally, conditions such as dementia and Alzheimer's can make it more difficult for them to understand and use smartphones effectively.

Additional factors, such as the increasing need for health assistance, also play a significant role in the adoption of this technology. In this regard, Iancu and Iancu found that variables that influenced the adoption and acceptance of smartphones by older adults included demographics, perceptions of the usefulness of smartphones, perceptions of the ease of use of smartphones, and attitudes, behaviors, and motivations for using smartphones.

Another group of scholars emphasized what drives the elderly to use smartphones, which they called "self-engagement". This concept emphasizes the smartphone features that are most frequently used by the elderly, such as contact lists, cameras, alarms, and telephones. They are considered easy to use and support social interactions, as well as time and health management. However, other features such as GPS, music, and email are often considered unimportant or too complicated to use. In addition, the study found several problems faced by the elderly when using smartphones. These include the unergonomic physical size of the smartphone, small fonts, difficult-to-reach navigation buttons, overly sensitive touchscreens, and too short backlights, all of which can make interacting with the smartphone more difficult (Subramanyam et al., 2020). These researchers also divided older adults into three types of smartphone users: practical users, minimalist users, and social users. Practical users typically use smartphones for basic tasks such as calling and texting, without delving into its features. Social users, on the other hand, use smartphones in a limited way and prefer to focus on activities and activities that are familiar to them. However, social users demonstrate a better understanding of technology by using their smartphones to interact with others through communication and social media applications. This classification highlights the variety of influencing factors that affect the way older adults engage with the technology. The influencing factors are technical skill, individual motivation and social necessities. This study emphasizes the importance of understanding the needs and preferences of older adults to develop more inclusive and user-friendly technologies for them, thereby increasing smartphone adoption and use among them.

4. Results

This study explored the use of smartphones among participants aged 65 years and above in Indonesia and Pakistan. The study involved 33 individuals, with 15 participants from Indonesia and 18 from Pakistan, representing diverse professional backgrounds, including teachers, engineers, nurses, civil servants, and accountants. Participants' educational qualifications ranged from high school to university degrees. The findings revealed that smartphones are integral to their social interactions, access to information, and daily activities.

Preliminary data from the questionnaire highlighted that the elderly actively use smartphones, with most participants having used them for over two years. Specifically, 100 % of participants reported daily smartphone usage. Notably, 30.91 % had been using smartphones for more than three years, while smaller fractions had started within the last two years (1.9 %) or the current year (2.6 %). These figures underscore the integration of smartphone technology into the routines of older adults, aiding their daily lives with greater ease and convenience. Such trends align with broader studies that highlight the outstanding rate of smartphone adoption individually aged 75 plus that expand by 20 % from 2019 to 2020 (Pang, 2021).

Smartphone adoption has transcended socio-economic barriers, indicating increased inclusivity. Education levels of elderly smartphone users revealed an even distribution: 15.45 % attended college, 13.39 % completed high school, and 5.15 % completed junior high school. Economic diversity was also evident, with participants spending varying amounts on internet packages — 9.27 % spent around $5, 11.33 % spent $6-10, 3.9 % spent $11-15, and 10.30 % spent $16 or more. These findings highlight that smartphones are no longer exclusive luxury items but accessible tools utilized across varying economic and educational strata.

The intuitive design and accessibility features of smartphones, such as touchscreen navigation, adjustable screen brightness, and clear icons, contribute to their usability for seniors. Applications designed specifically for older users, with larger text and simplified interfaces, further enhance this experience. For instance, 22.66 % of participants found accessing email and social media easy, though 7.21 % reported difficulties. Similarly, activities like sending emails, uploading social media content, and managing contacts were deemed fairly easy by 23.69 % of respondents, with a small minority (5.15 %) reporting difficulties. The data suggests that while most seniors adapt well to digital technology, there remains a subset that faces usability challenges.

Social media platforms have emerged as vital tools for the elderly, enabling them to stay informed and connected. Popular activities included watching videos, seeking health-related news, and exploring local community updates. However, ethical behavior and caution characterized their digital interactions. For instance, 31.94 % strongly disagreed with capturing and sharing private chats without consent, while 30.91 % strongly opposed posting rude comments online. Additionally, a majority refrained from sharing political content or sensitive information, emphasizing a preference for maintaining social harmony and privacy.

Elderlies in Indonesia involve in online spiritual and health activities through platforms such as Youtube and Halodoc online health consultation application via their smartphones. On the other hand, Pakistani seniors prioritize family-centered interactions, often joining Facebook groups to maintain social bonds and engage in shared hobbies. This highlights how cultural contexts shape the ethical use of digital platforms. Moreover, both groups demonstrate caution in sharing personal information online, reflecting cultural values emphasizing privacy and social harmony.

Digital literacy varied significantly across respondents. While some participants demonstrated proficiency in using smartphones for essential functions, others relied heavily on family or community support. This reliance was particularly evident in resolving technical issues, as fear of making mistakes often deterred independent exploration. Regarding security, participants expressed concerns about potential fraud and privacy risks. Notably, a majority could identify fraudulent messages and take preventive measures, such as blocking suspicious contacts. However, gaps in understanding advanced security measures, like using anti-malware software or backing up personal data, persisted.

GPS usage also highlighted disparities in digital security awareness. Many participants left GPS settings perpetually enabled, citing convenience, but lacked awareness of the associated privacy risks. Similarly, password practices varied; some preferred simple passwords or opted not to use passwords due to fear of forgetting them, leaving devices vulnerable to unauthorized access.

Pakistani seniors exhibited higher dependence on family members for digital troubleshooting compared to Indonesian seniors, who appeared to rely more on community-based learning initiatives. Both groups, however, showed gaps in understanding advanced security practices such as using anti-malware software or distinguishing phishing attempts, underscoring the need for targeted educational interventions.

The study revealed notable similarities and differences in smartphone use between elderly individuals in Indonesia and Pakistan. In both countries, social applications like WhatsApp were central to communication, with WhatsApp Groups playing a significant role in sharing information. Participants emphasized maintaining group harmony, often removing disruptive members without prior notice. However, misinformation spread through WhatsApp Groups was a common concern, and seniors in both countries relied on independent verification to counter such issues.

Indonesian seniors leveraged smartphones for a broader range of activities, including health and religious engagement. The use of virtual religious platforms and health apps highlights their adaptive response to the digitalization accelerated by the COVID-19 pandemic. In contrast, Pakistani seniors used smartphones primarily to maintain family ties and participate in hobby-related communities, showcasing a preference for social interactions centered on familial and community bonds. Despite these differences, the emphasis on privacy and ethical engagement with digital platforms was consistent across both countries.

Culturally, Indonesian seniors were more inclined to share content celebrating traditional arts and community practices online, while Pakistani seniors showed caution in discussing politically sensitive topics, avoiding potential conflicts. These differences underscore how cultural norms and societal values shape digital behavior among the elderly in both regions.

5. Conclusion

The widespread adoption of smartphones among older adults in Indonesia and Pakistan highlights a significant shift in how this demographic engages with technology, social interactions, and information access. Disregard the relatively low level of digital literacy, accessibility and digital security issues faced by older adults, they have engaged with the smartphones as the media to boost their life quality. Key findings from this study show the significant role of smartphone in supporting their social networks through the use of messaging apps and video calls. The use of these features offered by the device have proven to decrease lack of social connections particularly within the COVID-19 pandemic.

Older adults in both countries demonstrate a strong awareness of digital ethics, particularly in terms of privacy and responsible data sharing. However, they remain vulnerable to misinformation and fake news due to difficulties in verifying the accuracy of information they encounter online. In addition, older adults limit their digital independency due to technical support from the relatives that they need. This need to some extents block their capability to browse and engage autonomously with the smartphones advanced technology.

Despite these challenges, the increasing use of digital platforms by older adults reflects their adaptability and willingness to integrate technology into their daily lives. They are not merely passive consumers of information but also active contributors to the preservation and promotion of cultural heritage through digital means. This transformation underscores the potential for older adults to play a meaningful role in the digital society.

To further empower older adults and ensure their inclusion in the digital world, targeted educational initiatives and inclusive policies are essential. These efforts should focus on improving digital literacy, providing accessible and affordable technology, and addressing the unique needs of older adults, particularly those with disabilities or limited economic resources. By fostering a more inclusive digital environment, older adults can continue to adapt to technological advancements, enhancing their social connections, independence, and overall quality of life.

In conclusion, the integration of smartphones into the lives of older adults in Indonesia and Pakistan represents a significant step toward bridging the digital divide. With the right support and resources, older adults can fully participate in the digital era, contributing to a more connected, informed, and culturally rich society.verall, smartphone use among elderly populations in Indonesia and Pakistan underscores a broader trend of technological adaptation among older adults. Despite facing challenges related to digital literacy and security, seniors are increasingly utilizing smartphones to enhance their quality of life. Their cautious and ethical approach to digital interactions, coupled with efforts to preserve cultural heritage, highlights the nuanced ways in which older adults navigate the digital landscape. These findings underline the need for inclusive policies and targeted education initiatives to bridge digital literacy gaps and empower seniors in the digital age.

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Lesson Learnt and Prospects of Media and Information Literacy Education in Universities: An Integrative Review

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Abstract

MIL (Media and Information Literacy) is a stand-alone course integrated by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 2011, which directly relates to an individual's daily communication and lifelong learning abilities. Nonetheless, promoting the MIL curriculum in universities worldwide is difficult since specific countries like the United States and the United Kingdom, have their frameworks, standards and models for teaching and evaluating IL or MIL. After analyzing 91 relevant articles, the researchers found that universities still need to accept the MIL curriculum worldwide. In terms of curriculum frameworks, most of the existing studies adopted the Association of College and Research Libraries (ACRL) IL curriculum framework proposed by the American Library Association (ALA). In comparison, the MIL education framework proposed by UNESCO has been not adopted fully. It will take time to synthesize ML and IL into a stand-alone course due to resistance to pedagogical reforms, overloading students, limited classroom, and faculty training gap. The promotion of student-centeredness, educational equity, gender equality, decolonization, anti-racism, rethinking Eurocentrism, white centrism and bridging the digital divide will become a universal value in the MIL curriculum in universities MIL modules will be integrated into the core curriculum of different disciplines in a flexible manner. The involvement of academic library staff in the MIL education process will become more widespread. As educational technology (EdTech) and communication technologies become widely integrated into MIL education, encouraging students' participation in the design and process of the MIL course will be more prevalent.

Keywords: media and information literacy, lessons learnt, prospects, education, higher education.

1. Introduction

In mediatized societies (Krotz, 2007), every citizen needs to access, understand, critically evaluate, use and create information efficiently. As a stand-alone course integrated by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 2011, MIL directly relates to an individual's daily communication and lifelong learning abilities (UNESCO, 2011). However, promoting the MIL curriculum in universities worldwide is difficult since countries like the United States, the United Kingdom, Australia, Canada, New Zealand, and Singapore have their frameworks, standards and models for teaching and evaluating IL or MIL. Such as the Association of College and Research Libraries (ACRL), The Society of College, National and University Libraries (SCONUL), the Australian and New Zealand University Information Literacy Joint Working Group (ANZIIL), and the Ministry of Communication and Information (MCI) in

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Singapore have developed their independent IL or MIL framework. In contrast, small countries such as Indonesia, Malaysia, the Philippines, Portugal, Romania, and Spain have been more active in developing and implementing the MIL framework by UNESCO (Association TEAM4Excellence, 2019; Costa et al., 2018; Rojas-Estrada et al., 2022; Supriyanti et al., 2020; Tibaldo et al., 2021).

Since MIL education is grounded in the particular context of politics, economics, culture, and history, each country and each university have the right to choose the type of education according to the specific demands of different disciplinary courses (Breakstone et al., 2022; Kim et al., 2023; Mateus et al., 2022; Rahimi, 2024; Schmoll, 2021). In the selected articles utilized for this study, ML, IL, MIL, digital literacy, data literacy, and visual literacy are common terminologies. For instance, some universities emphasize more on civic engagement, anti-racism, and press freedom, while other universities focus on professional development, lifelong learning, bridging the digital divide, and fighting stereotypes (Aldulaijan, 2022; Romero-Walker, 2021; Romero-Walker, 2023; Vukić, 2020). However, pedagogical philosophy and approaches regarding ML and IL can be transferred to MIL education. IL educators are familiar with student-centeredness, constructivist learning, collaborative approaches, blended learning approaches (UNESCO, 2019), scaffolding learning strategies, interdisciplinary learning, and personalized learning, which are applied in selected articles in this study (Maybee et al., 2022; Thompson, Beene, 2020).

This study framed 91 relevant articles in an attempt to answer two questions:

(1) What are the lessons learnt in MIL education?

(2) What are the prospects of MIL education?

The researchers' analysis found that scholars have many worthwhile experiences exploring ML/IL/MIL education. Firstly, IL courses for undergraduates work best when offered in the first semester after entering university to help them make the transition from high school to university (Roth et al., 2023). From the practice of one university in Australia, the provision of a self-paced interactive online module is more appropriate if it is offered to final-year undergraduates and the focus of learning is on how to use the database (Chan et al., 2020). Secondly, integrating new educational technologies and media platforms into the IL education process, embedding IL modules into different courses flexibly, advocating the integration of library staff into teaching and research sessions as a hub and pivot, and integrating emerging media content and issues and students' personal experiences into classroom activities are effective in improving students' engagement and learning effect (Saparuddin, 2021).

In the future, universities should enhance relevant faculty's ability to teach MIL. It is crucial to encourage library staff, art teachers, science teachers, MIL teachers, and journalism and communication teachers to collaborate to provide overall instructional guidance (Mercado-Sierra, Northam, 2023). This collaborative approach will not only enrich MIL course modules that meet different needs but also ensure the selection of appropriate teaching materials and a thorough arrangement of creative teaching activities (Mery et al., 2022). Strengthening course iterations will provide university students with a better experience in MIL courses (Chan et al., 2020).

2. Materials and methods

This study followed a four-stage process to select appropriate materials and ensure their coverage and validity.

The first process was the identification process. A meticulous literature search was conducted on February 9, 2024. The first stage involved the selection of terms related to MIL education in universities to create search strings in Scopus and ERIC databases. The pilot search revealed a long-standing practice of teaching ML and IL as two courses, with limited studies on MIL education. To address this, the researchers employed multiple search strategies. The search strings on Scopus and ERIC were crafted as follows: "Media literacy" OR "Information literacy" AND "Teaching modules"; "Media literacy" OR "Information literacy" AND "Learning modules"; "Media and Information literacy" AND "Higher education"; "Media literacy" OR "Information literacy" AND "Higher education". These search strings were designed to capture a wide range of literature on MIL education in universities, limiting the English language.

Even without a set timeframe, the total number of research articles, case reports, chapters, and conference materials that could be downloaded as full texts on Scopus was only 47. After searching the ERIC database with the exact string and a time period between 2020 and 2024, 171 full texts written in English could be downloaded. In the first phase, 218 studies were identified as the analytical framework.

The second step was the screening process. After comparing the titles of 218 studies, four replicated studies were excluded. After the researchers reviewed the titles for relevance, 64 studies were excluded. After reading the abstracts of the remaining studies, 59 studies were excluded. In this stage, a total of 127 studies were excluded and 91 studies were screened.

The third phase was the eligibility identification process. In the close reading of the full texts of 91 studies, 11 were excluded as they focused on topics unrelated to ML/IL/MIL education in universities, such as ML in primary schools or IL in corporate settings. Based on this, only 80 studies met the stringent requirements of this study.

The fourth process was the inclusion process. After further reading the full text and references of the 80 studies, the researchers found some high-quality and relevant studies. In order to ensure the coverage of the studies, the researchers used Google Scholar and ResearchGate to select 11 additional articles which were closely related to this study. In this stage, 91 studies were available for review (See Figure 1). It is crucial to emphasize that two articles were included in the review because they were significant, even though their studies were about MIL education for secondary school students and children (Costa et al., 2022; Supriyanti et al., 2020).

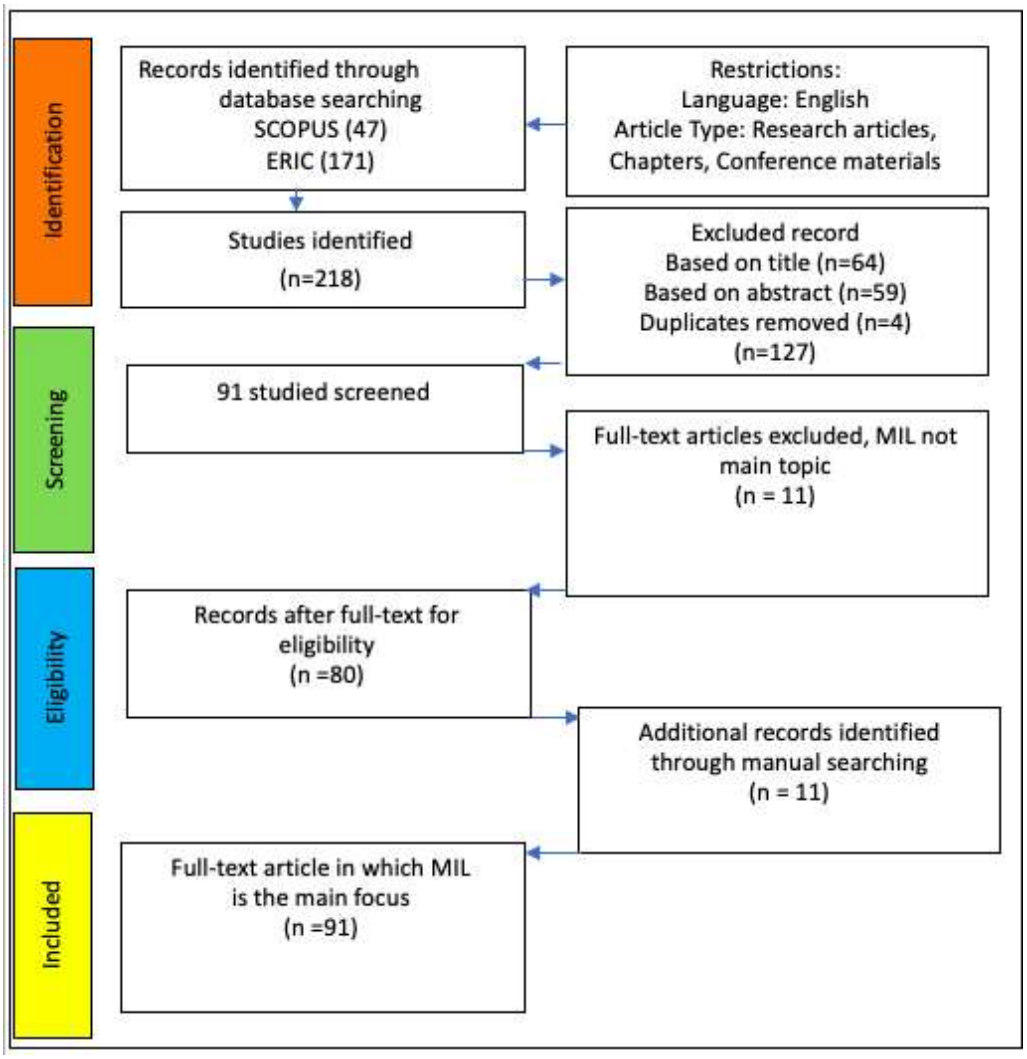

Fig. 1. Flow chart depicting records identified, excluded, and included

3. Discussion

One particular observation is that the essence of ML education lies in addressing deep-rooted problems faced by different countries. Understanding the nuances of MIL education is crucial due to the variations in national political systems, levels of economic development, cultural traditions, and history. Nicholson and Seale (Nicholson, Seale, 2022) have found that IL educators should consider more on sociopolitical contexts and values connected to teaching than instructional

strategies and classroom management techniques. They highlight that IL curricula could be redesigned by integrating activities that prompt students to reflect on their prejudices and biases. Additionally, they find there is a significant relationship between digital media literacy skills (DMLS) and students' ability to identify information disorder online (IDO)

Each country has its unique characteristics and taboos regarding MIL education. For instance, in some countries, discussing political figures, democracy, race, religion, royalty, transgender, and other topics in class is prohibited, and critical thinking is not encouraged (UNESCO, 2019). However, despite these differences, some values conveyed in MIL education are universal, such as decolonization, promoting gender equality, being cautious of Euro-centrism and White-centrism, resisting the male gaze and stereotypes in media content, bridging the digital divide, and advocating for more inclusive, equitable, and humanistic values (Marsh, 2022; Nisha, Rekha, 2021; Rahimi, 2024; Romero-Walker, 2023).

In their collaborative autoethnographic research methodology, Flynn et al. (Flynn et al., 2021) underscored the significance of considering learners' class and social capital in delivering IL education. This perspective is highly relevant to delivering MIL education as the primary factors contributing to inter-individual differences in IL are the family's economic, social class, and educational backgrounds.

The digital divide is particularly evident in ML/IL/MIL education. Tibaldo (Tibaldo, 2021) has found that while most Western countries have fully developed media education programs, Asian societies have yet to develop and mature. This study found that the United States, the United Kingdom, Germany, and Canada are countries with a more extended history of ML education, with relatively rich curriculum frameworks, educational resources, and pedagogical methods. After the field experiment of conducting an educative intervention on respondents' ability to identify misinformation, Sumitra (Sumitra, 2021) has found that the role of ML in changing people's political attitudes is negligible because strong partisans engage in strategic ignorance and push away information that contradicts their beliefs. Based on this, Sumitra has emphasized the importance of addressing misinformation in developing countries.

A particular observation is that EdTech brings creativity and accessibility to MIL education. EdTech has revolutionized ML/IL/MIL education, offering students the opportunity for self-paced, asynchronous, and personalized learning. It has also facilitated the sharing of resources, fostered teacher-student collaboration, enabled content creation, and provided a reliable means for accurate assessment of teaching and learning outcomes (Detterbeck, Sciangula, 2017).

Among the selected articles, 16 highlighted the effectiveness of EdTech in enabling students to learn asynchronously, interact with lecturers and peers, and contribute to curriculum content. In the context of IL education in UK universities, Web 2.0 tools have proven to be valuable in supporting IL pedagogy despite a few librarians expressing reservations (Shire, McKinney, 2021).

E-learning platforms like Moodle, Blackboard, SoftChalk, PebblePad, and Canvas are popular in ML/ IL/ MIL education (Aleman, Porter, 2016). For instance, the Canvas Learning Management System (LMS) is a pragmatic approach to extend IL learning beyond the "one-shot" and facilitate the embedding of IL modules that may contribute to student success (Idleman, 2022).In addition, several teaching aids such as Camtasia, Wikipedia, Google Forms, PowerPoint, Articulate 360, Kaggle, Gephi, Tableau, Panopto, PowerPoint, geo-caches, and OER Commons hub have also been used in ML/IL/ MIL education by scholars effectively (Jacobson, 2020; Mery et al.; Wernings, 2020).

EdTech has made it possible to integrate animated GIFs, infographics, vignettes, digital games, playable data, movies, and Apps into MIL teaching and learning productively (Aleman, Porter, 2016; Kertcher, Turin, 2022; Knaus, 2022; McKenzie, 2022). Instructing students in the use of online databases has also become an essential part of IL education due to the involvement of librarians, LibWizard, Library LibGuide, GitHub, OSF (Open Science Framework), EBSCOhost, and CINAHL (database for nursing) are promoted by scholars (Chan et al., 2020; Mery et al., 2022).

In order to promote student engagement, knowledge-sharing media and social media platforms such as Wikipedia, Jitterbug, Instagram, Twitter, YouTube and Facebook were used in the ML/ IL/ MIL teaching and learning process, students' various abilities of reflecting, evaluating, and producing media information were enhanced (Aldulaijan, 2022; Mery et al., 2022). The teaching module that focused on TikTok and Instagram influencers is an effective way to teach ML (Bozdağ, 2022). After Bozdağ's research in a secondary school in Bremen, he found that based on definition, ML education should not be about the transfer of knowledge about the media;

instead, it should focus on a critical dialogue around the media in order to help students develop criticality and inclusivity in their engagement with the media environments.

EdTech can improve the creative ability of students in ML and composition courses. In a pedagogical experiment, arts-based pedagogy has been recognized as a practical attempt, such as during COVID-19, to facilitate students' maintenance of mental health by promoting hand-drawing and sharing their creative works (Luetkemeyer et al., 2021).

In conclusion, the bold use of EdTech can enrich the teaching and learning resources of ML/IL/MIL materials and make the teaching and learning formats more flexible. It can also cater to students' learning online and offline, formally and informally, synchronously or asynchronously, close and long-distance learning, and even the learning of students with disabilities (Aleman, Porter, 2016).

Another suggestion is that ML/IL/MIL is more effective when embedded into the core curriculum of other disciplines, taking into account students' professional development needs. As emphasized by ACRL framework and UNESCO, integrating and embedding IL/MIL courses into other discipline's core curricula is the appropriate path to teach IL/MIL. Interdisciplinary and integrative learning is accepted by scholars who believe that a team of teachers in art, library and information science, technical education, academic librarianship, ML, rhetoric and composition to develop a MIL curriculum and integrate MIL teaching can make the program more intuitive, creative, professional, and efficient (Luetkemeyer et al., 2021).

IL module is a partner in teaching the core curriculum (Russo, 2017). For instance, embedding librarians and IL modules into online English composition courses and technology social work courses can help students process their discomfort in their first year of university. Activities and discussions should incorporate debate and other collaborative learning techniques in teaching (Luetkemeyer et al., 2020; Mercado-Sierra, Northam, 2023). At the level of teaching organization, some use the librarian and lecturer cooperation system, some use the group cooperation method, and some use the project-based teaching method (Dommermuth, Roberts, 2022). In short, the situational and cooperative teaching method is more conducive to improving students' IL.

In the selected studies, 11 have shown that integrating ML/IL modules into disciplines such as engineering, business, health sciences, political science, economic education, nursing, online English composition, technology social work, political science, biology, geography, chemistry, and language & communication had overwhelmingly positive pedagogical results, further highlighting the potential of this approach (Buljung, 2022; Chan et al., 2020; Devine et al., 2019; Lamont et al., 2020; Reecia, 2022). This should instil confidence in policymakers about the effectiveness of this strategy (Mercado-Sierra, Northam, 2023).

Research has shown that university students are more motivated and engaged in learning when they have access to flexible, portable, and reusable IL course modules that are aligned with their professional needs. This underscores the potential benefits of integrating ML/IL/MIL into educational curricula, as it enhances learning outcomes and aligns with students' professional aspirations, thereby increasing their motivation and engagement in learning (Idleman, 2022).

However, some scholars have also found that holding one-shot IL literacy lectures or research workshops within the context of a faculty-led course rather than IL as a credit-bearing course can lead to an inability to make connections between faculty and students, which can leave faculty and students feeling ineffective, exhausted, redundant, and demoralized (Dommermuth, Roberts, 2022; Kim et al., 2023).

Another suggestion is that there is a long way to go to popularize UNESCO's MIL curriculum framework. As the content of MIL education is too generalized, it is vital to select teaching and learning content relevant to the particular language, culture, and speciality.

Compared with the IL curriculum framework provided by ACRL, although UNESCO provides more comprehensive MIL teaching guidelines and teaching methods, the MIL educators must reconceptualize and reorganize their teaching content according to the MIL curriculum framework and teaching methods provided by UNESCO in order to teach MIL in different languages, cultures and specialities. What is more, MIL educators should take into account updating the curriculum, focusing on the more relevant and recent conceptualizations about MIL in this fast-changing and overwhelming media environment (Garcia, 2022).

UNESCO should exert the calling power of international organizations to strengthen the MIL education exchanges between the global regions and countries, organize the MIL Education and

Teaching Competition and set up the MIL Reform Fund to promote the impetus of MIL education reform worldwide.

Another suggestion is to improve the availability of the MIL pedagogical framework and pedagogical models. Simply referring to the teaching guidelines, online resources, and tools provided by individual organizations does not allow the IL/MIL curriculum to be applied directly to a specific university (Reecia, 2022; Robertson, 2022). Based on an analysis of the academic situation, universities must set up MIL as a course independently or flexibly embed MIL teaching modules into other core courses through their talent development programs and course structures (James, 2020). In order to ensure smooth teaching and learning, organizations such as UNESCO can solicit replicable examples of MIL teaching and provide lightweight modules with a clear flow rather than limiting themselves to providing brief principles, guidelines and toolkits.

One particular suggestion is that MIL educators should focus more on developing students' critical thinking skills. Although ML/IL/MIL education conveys modern concepts such as freedom, equality, justice and the rule of law, based on the current status quo in terms of the massive dissemination of mis/disinformation and mal-information in social media (Isam, 2022), MIL education should pay more attention to fostering the ability of students to comprehend the information critically and to be able to reasonably respond to it based on distinguishing and combating mis/disinformation (Wright, 2023). In addition, based on the proliferation of polarized thinking on the Internet, cultivating students' rational participation in public discussion and modern civic awareness is also a proper part of MIL (Breakstone et al., 2022; Fix, Fyn, 2020).

Another observation is that relevant companies should lower the threshold and cost of using educational technologies. While educational technology has facilitated MIL education, it has yet to enable the free availability and sharing of resources for some countries. The cost of building laboratories of MIL and using educational tools and databases remains high for developing and less developed countries. Artificial intelligence, big data, intelligent teaching software, and hardware will be essential elements in the future of MIL education (Garcia, 2022). However, MIL laboratories and high-quality software and hardware cost a lot of money, which is unaffordable for some countries and universities. Therefore, if the relevant companies provide some relatively favourable support for MIL education in less developed countries, it will undoubtedly be beneficial to bridging the digital divide (Eze, Aduba, 2022; Nisha, Rekha, 2021).

Another suggestion is that stakeholders should provide support for MIL education. Firstly, universities should encourage the breaking down of disciplinary barriers and advocate the formation of multi-disciplinary teachers to form MIL teaching and guidance teams to provide students with theoretical, technical and artistic support. Secondly, more practical micro-credentials should be used to recognize the results of MIL teaching so that students can obtain credits and certificates through MIL learning and motivate their participation (Chan et al., 2020). Thirdly, the training and capacity-building seminars for MIL teachers should be strengthened so that they have the critical ability to teach media knowledge, adequate ICT skills, and the use of educational technology tools (Garcia, 2022).

Potential solutions to address the challenges of IL embedding include offering IL as a credit course and embedding a research librarian to integrate IL courses into other curricula (Sohail, Haroon, 2022). This approach allows the librarian to consult with the faculty about the students' IL needs and expectations, teaching the students the details of the research process. As intermediaries between faculty and students, librarians can use appropriate methods to teach and measure the acquisition of students' IL skills, offering a hopeful and practical solution to the integration dilemma (Devine et al., 2019). In addition, the involvement of the media industry is also very important for MIL education (Hafeez, Nauman, 2020).

4. Results

The researchers analyzed the included studies using an Excel spreadsheet. They created ten categories: title, author, publication time, country, research methodology, research framework, research focus, education philosophy, education experiences, and main findings. The following results and findings are drawn from synthesizing these categories.

MIL has yet to be accepted as a universal curriculum. UNESCO suggested in 2011 that MIL curricula combine the fields of ML and IL to present a holistic approach to literacy that is essential for life and work today (UNESCO, 2011). However, in the current studies, MIL has not yet been accepted worldwide as a stand-alone university course.

Of the selected articles, 46 focused on IL education studies, 13 were on ML education studies, and only five were on MIL education studies (See Chart 1). The remaining studies were about teaching other courses and embedded ML, IL or MIL knowledge. Some studies added the prefix ML, IL or MIL with critical, digital, social, international, and inclusive, but MIL is not currently a commonly accepted curriculum (Behailu, 2021; Hicks et al., 2021). Nonetheless, from another perspective, the education experience accumulated in ML, IL, digital literacy, data literacy, and visual literacy can also be applied to MIL education.

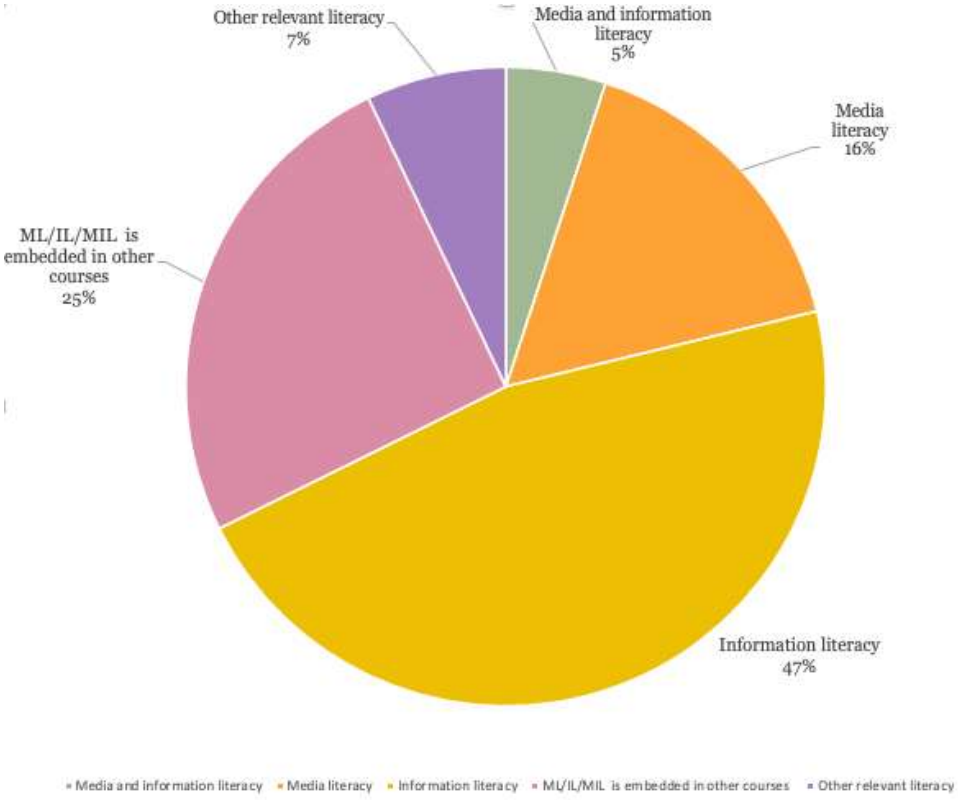

Fig.2. The distribution of research focuses of selected studies

Although UNESCO introduced the curriculum framework and resources for MIL from 2011 to 2021, only a few countries, including Indonesia, the Philippines, Portugal, Romania, and Spain, have taught MIL as a stand-alone course according to the curriculum framework provided by UNESCO in this study (Garcia, 2022; Nicoleta, 2019; Rojas-Estrada, 2023; Supriyanti et al., 2020; Tibaldo, 2021).

Of the 91 studies included, researchers from the United States were overwhelmingly outnumbered, with a relatively small number from 29 other countries (See Table 1). Since 44 of the 91 selected studies were written by American scholars, the IL curriculum framework they commonly used was the Association of College & Research Librarians (ACRL) by the American Library Association (ALA). Recently, the ACRL framework is also used by some scholars from Australia, Canada, China, New Zealand and UK (Chan et al., 2020; Denise, 2023; Feekery, 2021; Flynn et al., 2023; Zhou et al., 2023). Regarding IL education, Germany has its curriculum framework, the Digital Competence of Educators (DigCompEdu); the United Kingdom scholars use diverse frameworks to teach IL and digital literacy curriculum, for example, 6C (capitalism, citizenship, colonialism, conflict, and conscientious consumerism) framework and JISC (Joint Information Systems Committee) (Schmoll, 2021). Meanwhile, 59 % of the scholars have not articulated a specific curriculum framework in selected studies.

At the macro level, the main reasons for this phenomenon are the differences in national systems, cultural traditions, religions, and laws, etc. At the micro level, the main reasons for these are public administration policies, the resistance to pedagogical reform, the over-generalization of the content of MIL education, the heavy workload of students, limited classroom hours and

training gaps in faculty (Basili et al., 2022; Kim et al, 2023; Rojas-Estrada et al., 2023; Shire, McKinney, 2021).

Table 1. The country and region distribution of the first author in this study

Country/Region	Number	Country/Region	Number
Australia	1	Moroccan	1
Canada	3	Mexico	2
China	1	Nigeria	2
Colombia	1	New Zealand	1
Croatian	1	Peru	1
Ethiopia	1	Pakistan	2
Germany	5	Portugal	2
Holland	1	USA	50
Isreal	1	UK	7
Ireland	1	Ukraine	1
Iran	2	South Africa	1
Indonisia	3	Saudi Arabia	1
India	1	Spain	1
Italy	1	the Philippines	2
Japan	1	Taiwan	1
total	study	99	
	Country/ Region	30	

One particular observation is that the diversity of ML/IL/MIL curriculum frameworks and teaching methods has led to a diversity of teaching standards.MIL education must consider the specific educational context and level in different universities. The MIL education policy, the existing curriculum, the needs of the students, and the educational goals of the institution are all factors in deciding whether or not to choose the MIL course (UNESCO, 2013). Given the variations in social systems, economic development, demographic composition, and educational levels, MIL education is naturally diverse across different countries and regions (Mohsen, 2022).

Regarding curriculum frameworks, the ACRL Framework for IL (1. Authority Is Constructed and Contextual; 2. Information Creation as a Process; 3. Information Has Value; 4. Research as Inquiry; 5. Scholarship as Conversation; 6. Searching as Strategic Exploration) is most widely used for simplicity, clarity, operationalization and replicability. Concurrently, the IFLA (International Federation of Library Associations and Institutions) IL standards, the ISTE (International Society for Technology in Education) digital literacy standards, the UNESCO MIL curriculum framework, the ANZIIL framework, the SCONUL framework, the DIGCOMP Project (proposed by European Commission) are used by selected countries. Implementing these standards and frameworks contributes to teaching content, pedagogical approaches, and successful experience for MIL education.

Another observation is thatAsian countries embrace the UNESCO MIL framework more proactively. For instance, MIL education in Malaysia is guided by UNESCO's framework, which addresses realities facing the country, including online gaming, cyberbully, cybercrimes, digital reputation, false information, know the law, computer security, online shopping, self-regulation (MCMC, 2022). As the UNESCO MIL framework has a wide range of content, and the limited classroom time, each country and each university can only choose suitable teaching content and model to increase students' engagement and teaching effectiveness.

The researchers found that mature testing models such as The Big 6 (Eisenberg, Berkowitz, 1987), CRAAP (Kapoun, 1998), The 5W (Schrock, 2001), RADAR (Mandalios, 2013), SMELL (McManus, 2013) and SIFT (Caulfield, 2019) are widely used in MIL teaching sessions, which makes the teaching activities more operational (Elmwood, 2020).

The Big 6 model was proposed by Mike Eisenberg and Bob Berkowitzto teach inquiry, information and technology skills. The model includes six steps: 1) task definition, 2) information-seeking strategies, 3) location and access sources, 4) use of information, 5) synthesis, and 6) evaluation. Scholars have widely adopted this model as it can be better integrated into MIL classroom teaching and learning activities (Stix, Jolls, 2022).

Models for evaluating online information sources are crucial for MIL education. The CRAAP model includes five dimensions: 1) Currency, 2) Relevance, 3) Authority, 4) Accuracy, and 5) Purpose. While CRAAP as a test checklist can help students assess the authority and accuracy of the information, the ambiguity and limitations of a yes-or-no-based checklist setting may prevent students from making in-depth qualitative assessments of information (Elmwood, 2020). The 5W model is a simple journalistic method used to evaluate a website by analyzing who, what, when, where, and why, including 14 questions. The RADAR model includes five steps: 1) Rationale, 2) Authority, 3) Date, 4) Accuracy, and 5) Relevance. The SMELL model covers five dimensions: 1) Source, 2) Motive, 3) Evidence, 4) Logic, and 5) Left out. The SIFT model includes four steps: 1) Stop; 2) Investigate the source; 3) Find better coverage; 4) Trace claims, quotes and media to the original context. The above models have similarities and differences and are well-adapted and operable when applied to ML/IL/MIL education.

The above models have similarities and differences and are well-adapted and operable when applied to MIL education. However, implementing these models requires good understanding, critical thinking skills, and scientific literacy on the part of both teachers and students.

Regarding pedagogical frameworks, as UNESCO (UNESCO, 2011) suggested, constructivist learning, transformative learning, collaborative approach, integrative approach, humanistic approach to learning, and personalized/customized learning all emerged in the selected articles.

Grace Liu (Liu, 2023) has researched the dimensions of students' experiences, perceptions, and motivation in an in-depth study on improving IL of business students. She found that business students all prefer learning modules which are concise to the point and engaging. For university and IL educators, 1) promoting existing resources; 2) embedding IL into the business curriculum; 3) offering stand-alone online learning modules; 4) integrating IL into students' existing research efforts; 5) organizing workshops, events and social activities; and (6) creating real-life research and learning experience are important to improving students' business IL.

The review found that pedagogical methodologies such as project-based learning, problem-based learning, task-driven learning, evidence-based practice, web-based learning, group collaboration learning, self-learning, decision-making learning, game-based teaching, and case study are used in MIL teaching and learning broadly and have proved effective in different context. The medium of instruction preferredseminars, workshops, online lectures, self-study, and face-to-face instruction are all desirable (Click et al., 2021; Morris, Mcdermott, 2022; Roth et al., 2023).

Scholars from Brigham Young University proposed the decision-based learning (DBL) method, which is noteworthy because it exposes students to an expert's thought process. In other words, the students can learn this process by making a series of connected decisions that the expert would make. Through DBL, students can experience "authority is constructed and contextual" and "searching as strategic exploration" in ARCL standards. DBL method has been proven effective in IL education for explicitly seeking to build conceptual, procedural, and conditional knowledge and provides students with "just in time, just enough" training (Dalal et al., 2022; Pixton, 2022).

As Shin'nosuke Yamaguchi et al. (Shin'nosuke Yamaguchi et al., 2019) suggested, a more effective blended lecture style and rational organization of teaching materials and quizzes could enhance the learning effects of IL course.

In the area of teaching cases, local and global events, ads, movies and fake news have been the essential source of ML/ IL/ MIL education for some scholars, enabling engaging teaching and developing students' critical thinking skills (Romero-Walker, 2022; Schmoll, 2021). Some scholars found that integrating ML/ IL/ MIL knowledge, attitude and competencies into students' everyday life contexts, allowing students to use social media to complete the course assignments, and encouraging them to question and think critically can improve student engagement in classrooms (Aldulaijan, 2022; Luetkemeyer et al., 2021; Stix, Jolls, 2022).

5. Conclusion

This integrative literature review analyzes studies on the teaching and learning of ML/IL/MIL from a global perspective by scholars from 30 countries and regions. It discovers that although UNESCO's MIL curriculum framework is more comprehensive regarding knowledge coverage, only a few countries adopt it.

In terms of teaching methods, evidence-based research, decision-based research, task-driven methods, and MIL teaching methods based on real-life scenarios were recognized by teachers and students as inspirational for future MIL education.

Although there are variations in MIL pedagogical values in different countries and regions, the values of freedom, equality, justice, the rule of law, inclusiveness, caring, and the promotion of the enhancement of critical thinking, lifelong learning, self-protection, the ability of civic participation, and the bridging of the digital divide will be the dominant concepts in MIL education (Melda, 2021).

Technology is multifaceted in helping MIL education as it requires both suitable hardware and software environments, high-quality databases related to the teaching objects' profession, convenient image, audio and video production tools, as well as rich and varied media platforms and social platforms when teachers produce teaching content production, select teaching cases, and when students complete their coursework so that they can provide MIL with up-to-date teaching scenarios.

Due to the differences in the development of education levels in different countries and the difficulty of teaching reform, the combination of ML and IL into MIL is expected to make its presence felt in universities. With the rapid development of media technology and educational technology, MIL education must improve the training of MIL teachers, strengthen the cooperation between library staff and faculty, develop and adjust teaching modules and update teaching content promptly (Garcia, 2022).

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