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Identifying the Factors Affecting Virtual Media Literacy Education and Presenting a Qualitative Framework

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Abstract

The present study was conducted with the aim of identifying the factors affecting virtual media literacy education and presenting a qualitative framework. In terms of purpose, the study was applied; in terms of data, it was exploratory qualitative research; and in terms of implementation, it was based on emergent grounded theory. The participants in the qualitative section included academic experts and specialists knowledgeable and informed about virtual media literacy education, as well as experienced managers of Iran Customs Administration. Using the snowball sampling method, interviews were conducted with 22 participants until theoretical saturation was achieved. Data collection was carried out through library research (document analysis) and field research (semi-structured interviews). The validity of the qualitative instrument was established through triangulation, including data triangulation, researcher triangulation, and methodological triangulation. Data analysis was performed using the theoretical coding technique based on emergent grounded theory through the identification of open, axial, and selective codes. The findings led to the identification of 5 dimensions, 18 components, and 87 indicators as factors affecting virtual media literacy education, including cultural factors with 3 components and 15 indicators; structural factors with 4 components and 19 indicators; content-related factors with 4 components and 17 indicators; technological factors with 2 components and 7 indicators; and educational factors with 5 components and 29 indicators. A qualitative framework for virtual media literacy education for employees of Iran Customs Administration was presented. Finally, the theoretical validity of the findings was confirmed through expert validation. The findings of this study indicate that virtual media literacy education in Iran Customs Administration is influenced by a set of cultural, individual, structural, technological, content-related, and educational factors that directly affect employees' ability to analyze digital information and make informed decisions. Identifying these factors provides the basis for designing targeted educational interventions aligned with the specialized missions of customs administration, and the proposed qualitative framework can serve as a practical foundation for enhancing information security, organizational efficiency, and the professional development of employees in Iran Customs Administration.

Keywords: Virtual education, media literacy, qualitative framework, Iran Customs Administration.

1. Introduction

The rapid expansion of digital technologies and the transformation of communication ecosystems have fundamentally altered the nature of learning, organizational interaction, and information exchange in contemporary societies. In recent years, virtual education has become one of the most influential approaches in organizational and educational development, particularly



after the global acceleration of digital transformation processes. Organizations increasingly rely on virtual platforms to provide professional development, knowledge transfer, and continuous learning opportunities for employees. Alongside these transformations, the proliferation of digital media and online information environments has intensified the importance of media literacy as a critical competency for individuals and organizations operating in complex digital ecosystems (Verhoef et al., 2025; Vial et al., 2025). Media literacy is no longer limited to the ability to access or consume information; rather, it encompasses critical analysis, evaluation, interpretation, ethical participation, and informed decision-making in digital and media-rich environments (Oecd, 2025; Unesco, 2025).

The emergence of digital societies and network-based organizational structures has significantly increased exposure to media content, misinformation, algorithmic manipulation, and cognitive influence operations. Consequently, employees in governmental and organizational contexts require advanced competencies for interpreting information, evaluating media credibility, and protecting organizational knowledge assets. Scholars emphasize that media literacy has become an essential component of digital competence frameworks because employees' ability to interact critically and responsibly with media directly affects organizational resilience, information security, and decision-making quality (European, 2025; Van Laar et al., 2025). In this regard, organizations are increasingly integrating media literacy training into virtual learning systems to improve workforce adaptability and strengthen institutional capacity in the digital era (Ng, 2025; Yates & Partridge, 2024).

Virtual education environments provide unique opportunities for developing media literacy competencies due to their flexibility, accessibility, scalability, and ability to integrate multimedia technologies into learning processes. These environments facilitate continuous learning and enable employees to engage with interactive educational content regardless of temporal and geographical limitations. However, the effectiveness of virtual media literacy education depends on multiple contextual, technological, structural, and human factors that shape the quality of learning experiences and the outcomes of educational interventions (Bond et al., 2024; Kebritchi et al., 2025). Research demonstrates that successful virtual learning environments require not only technological infrastructure but also coherent instructional design, learner motivation, organizational support, and critical engagement with digital content (Hodges & Fowler, 2024; Reddy et al., 2023).

Media literacy has also gained strategic significance in response to the increasing spread of misinformation, fake news, and cognitive warfare in digital environments. The ability to distinguish reliable information from manipulated content has become essential for maintaining organizational integrity and social trust. Obasi identified media literacy as one of the most effective mechanisms for reducing the spread of false information and strengthening critical thinking skills in digital societies (Obasi, 2025). Similarly, Livingstone and colleagues emphasized that transparency, accountability, and informed participation in digital spaces are closely associated with the development of media literacy competencies among citizens and organizational actors (Livingstone et al., 2024). In organizational environments characterized by sensitive information flows and strategic decision-making processes, media literacy education can therefore play a preventive and protective role against cognitive manipulation and informational threats.

The importance of media literacy is particularly evident in governmental institutions and public organizations where employees are continuously exposed to digital communication systems, online information exchanges, and media-based interactions. Governmental organizations increasingly require employees capable of critically evaluating information, understanding media influence mechanisms, and engaging responsibly in digital communication environments. Studies conducted in governmental contexts indicate that media literacy education contributes to improved professional performance, organizational awareness, and digital participation among employees (Ghasemi & Ahmadi, 2023; Hosseini et al., 2025). Competency-based approaches to media literacy education have further highlighted the need for aligning educational content with organizational missions, institutional culture, and professional responsibilities (European, 2025; Hosseini et al., 2025).

The role of media literacy has expanded beyond educational settings and now encompasses organizational communication, digital governance, information security, and institutional development. Pangrazio and Cardozo-Gaibisso argued that media literacy should be reconceptualized as a multidimensional and context-sensitive competency rather than a purely technical skill (Pangrazio & Cardozo-Gaibisso, 2023). Likewise, Frau-Meigs and colleagues emphasized the necessity of integrating public policies and organizational strategies into media literacy initiatives to ensure sustainable implementation and broader societal



impact ([Frau-Meigs et al., 2023](#)). These perspectives indicate that media literacy education must be understood as a systemic process influenced by structural, cultural, technological, and educational variables.

Within the Iranian context, increasing digitalization and the expansion of virtual communication platforms have created new opportunities and challenges for organizations and educational systems. Iranian scholars have highlighted the growing importance of virtual media literacy education in response to cyber threats, online misinformation, and the increasing dependence on digital communication technologies ([Mohammadi, 2022](#); [Obaid & Aghaei, 2025](#)). Research conducted in educational and organizational contexts in Iran demonstrates that virtual education can improve media literacy competencies when educational programs are aligned with learners' needs and organizational conditions ([Saravani et al., 2023](#); [Saravani et al., 2025](#)). However, several studies have also pointed to the existence of structural limitations, inadequate technological infrastructure, insufficient policy support, and weaknesses in instructional content that reduce the effectiveness of virtual media literacy initiatives ([Khajeh, 2025](#); [Khosravi & Parsanejad, 2024](#)).

Educational organizations and governmental institutions in Iran have increasingly recognized the importance of media literacy for professional development and institutional effectiveness. Arezi and colleagues emphasized that media literacy education systems should be designed based on contextual and developmental needs in order to strengthen critical thinking and responsible digital participation ([Arezi et al., 2024](#)). Shahamat and colleagues similarly proposed that media literacy models must integrate educational, cultural, and organizational dimensions to achieve sustainable educational outcomes ([Shahamat et al., 2024](#)). In governmental institutions, media literacy is particularly significant because employees often interact with large-scale information systems and are expected to make informed decisions in dynamic digital environments.

Iran Customs Administration represents one of the strategic governmental institutions in which media literacy competencies are critically important. Customs organizations operate within highly sensitive informational environments involving international communication, digital transactions, border security, economic regulation, and data-intensive operations. Employees of customs administrations are exposed to extensive digital information flows, online communication systems, and media-based decision-making contexts. Therefore, deficiencies in media literacy may negatively affect information analysis, cybersecurity awareness, professional judgment, and organizational performance. Mahdavi Nasab and colleagues highlighted that media literacy competencies are essential in confronting cognitive warfare and enhancing critical awareness among personnel operating in strategic and security-oriented institutions ([Mahdavi Nasab et al., 2024](#)).

The growing complexity of digital communication systems within customs organizations further increases the necessity for virtual media literacy education. Digital transformation processes in organizations require employees not only to possess technical skills but also to critically understand digital information environments and media influences. Vial and colleagues argued that digital transformation initiatives are successful only when organizations simultaneously develop technological infrastructure and workforce digital competencies ([Vial et al., 2025](#)). Similarly, Verhoef and colleagues emphasized that organizational competitiveness and adaptability in the digital era depend heavily on workforce capabilities related to digital communication, information analysis, and media interaction ([Verhoef et al., 2025](#)). Consequently, virtual media literacy education can be considered a strategic necessity for customs organizations attempting to improve institutional resilience and digital governance.

Contemporary educational theories also stress the importance of participatory and learner-centered approaches in virtual media literacy education. Lazou and Tsinakos proposed that immersive and participatory digital learning environments enhance inclusion, engagement, and media awareness among learners ([Lazou & Tsinakos, 2025](#)). Gerigk and colleagues further demonstrated that digital training programs can significantly improve media literacy competencies when educational interventions are aligned with learners' cognitive and contextual characteristics ([Gerigk et al., 2025](#)). Such findings suggest that virtual media literacy education should not merely transfer information but should actively cultivate analytical thinking, ethical awareness, and informed participation.

Another important dimension of media literacy education concerns its relationship with social interaction and organizational culture. Bayani identified media literacy as an influential factor in improving communication and interaction within institutional and educational environments ([Bayani, 2025](#)). Organizational culture can either facilitate or inhibit the effectiveness of virtual



learning initiatives depending on the extent to which it supports collaboration, critical inquiry, and digital participation. In this context, social and cultural interactions become central to understanding how employees engage with media content and virtual educational systems. Media literacy education therefore requires an integrated approach that addresses both technical competencies and socio-cultural dimensions of digital engagement.

Despite the increasing attention devoted to media literacy and virtual education, existing studies reveal several theoretical and practical gaps. Many previous investigations have focused primarily on educational institutions, students, or teachers, while limited attention has been paid to governmental organizations and strategic institutions such as customs administrations (Motamedi Mohammadabadi et al., 2022; Raji et al., 2025). Furthermore, most studies have examined media literacy from isolated technological or educational perspectives rather than adopting a comprehensive qualitative approach that integrates cultural, structural, technological, content-related, and organizational dimensions. Existing frameworks often fail to explain how these factors interact dynamically within specialized organizational contexts. In addition, rapid developments in digital communication technologies and virtual learning environments necessitate updated conceptual frameworks capable of reflecting contemporary organizational realities (d'Haenens & Joris, 2025; Pokulyta & Sotska, 2025).

The necessity for comprehensive qualitative frameworks is further reinforced by international policy developments emphasizing media and information literacy as a strategic requirement for digital societies. UNESCO and OECD frameworks underline that media literacy should be embedded within institutional policies, workforce development strategies, and digital transformation agendas (Oecd, 2025; Unesco, 2025). However, the practical implementation of these frameworks in governmental organizations requires contextual adaptation and empirical exploration. Particularly in institutions with security-sensitive missions such as customs administrations, understanding the factors influencing virtual media literacy education becomes essential for designing effective educational interventions and sustainable digital competency programs.

Considering the increasing importance of virtual education, digital transformation, media literacy, and organizational information security, identifying the factors influencing virtual media literacy education among employees of Iran Customs Administration represents a significant theoretical and practical necessity. Such an investigation can contribute to the development of context-based educational frameworks capable of improving employees' analytical abilities, digital awareness, and professional performance within complex media environments. Therefore, the present study was conducted with the aim of identifying the factors affecting virtual media literacy education and presenting a qualitative framework for employees of Iran Customs Administration.

2. Methods and Materials

This study was applied in terms of purpose, qualitative with an exploratory approach in terms of data, and based on emergent grounded theory in terms of implementation method. The participants in the study included professors, experts, and specialists with scientific achievements in the field of virtual education and media literacy, as well as individuals with relevant professional experience (customs managers). The selection criteria for academic experts included at least 5 years of faculty membership, possession of a PhD degree in the fields of distance education planning, educational technology, educational sciences, educational management, technology management, information technology management, or human resource management, and having authored books, articles, and research studies related to virtual education, digital and distance education, and media literacy. Participant sampling was conducted purposively using the snowball sampling technique. Accordingly, experts were identified and interviewed. In this sampling method, the researcher initially identified experts and prepared a list of them, which was then approved by the academic supervisor based on their research background. Subsequently, interviews were conducted with the selected participants, resulting in a total of 22 interviews. The interviews continued until theoretical saturation was reached, after which the researcher terminated the process. Interviews with experts were conducted face-to-face and lasted between 45 and 90 minutes. After each interview, the transcripts were prepared and imported into MAXQDA software. Semi-structured interviews were used for data collection.



Table 1. Semi-Structured Interview Questions

No.	Interview Questions
1	Please explain your experience with virtual training related to media literacy (or interaction with media in the workplace environment).
2	In your opinion, what is the most important challenge or issue individuals face in virtual media literacy education?
3	When individuals encounter these issues or challenges, what actions do they usually take?
4	What conditions cause virtual media literacy education to function better or more poorly?
5	In your opinion, which macro-level or external factors have the greatest impact on the formation and quality of virtual media literacy education?
6	How do the environment and implementation platform of virtual media literacy education affect its implementation and effectiveness?
7	How does your organization or institution influence virtual media literacy education?
8	How do individuals' personal characteristics and conditions affect participation and learning in virtual media literacy education?
9	In your opinion, how do these macro-level, environmental, organizational, and individual factors interact with one another?
10	In your opinion, what have been the consequences of virtual media literacy education (or the lack thereof)?
11	If a framework were to be designed for virtual media literacy education, what factors should necessarily be included in it?

Page | 5

To validate the research findings, the triangulation method was employed. This triangulation included: data triangulation (validation of information from multiple sources), researcher triangulation (review and confirmation of findings by multiple researchers), and theoretical and methodological triangulation (alignment with theoretical foundations and research methodology).

1. **Data Triangulation:** In this stage, the data obtained from different sources were examined and compared. Specifically, the information collected through expert interviews, document analysis, and previous studies was cross-checked to ensure consistency and accuracy. When the findings derived from these sources were aligned and mutually supportive, the credibility of the data increased.
2. **Theoretical and Methodological Triangulation:** At this stage, the research findings were compared with scientific theories, established educational models, and standard research methods. This process was conducted to evaluate the extent to which the extracted data were consistent with existing theoretical and empirical frameworks. When the research data corresponded with relevant theoretical foundations, greater confidence could be established regarding the scientific validity of the findings.
3. **Researcher Triangulation (Inter-Coder Reliability):** In this section, the research findings were reviewed and analyzed by several researchers or specialists in the field of virtual education and media literacy. This procedure was conducted to reduce the individual bias of the primary researcher and increase the accuracy of data interpretation. For this purpose, a PhD student in management was invited to participate in the study as a research collaborator (coder). Subsequently, the researcher and the research collaborator jointly coded three interviews, and the percentage of agreement between coders, which served as the third indicator of analytical validation, was calculated (Table 2).

Table 2. Inter-Coder Reliability Calculation

Row	Total Number of Codes	Number of Agreements	Number of Disagreements	Inter-Coder Reliability (%)
1	30	13	17	67.86
2	35	15	20	71.85
3	40	16	24	80.00
Total	105	44	61	81.83

The results presented in Table 2 indicate that the total number of codes was 105, and the frequency of agreements was 44. The obtained reliability coefficient was 84%, which exceeded the acceptable threshold of 60%; therefore, the reliability of the coding process was confirmed, and it can be claimed that the reliability level of the present interview analysis was appropriate. Considering the implementation of these three stages, the validity of the data was confirmed, indicating that the findings possessed a high degree of credibility and adequate applicability and generalizability.

Data analysis in this study was conducted using the theoretical coding method derived from emergent grounded theory with the assistance of MAXQDA software. For analyzing the data obtained based on emergent grounded theory, theoretical coding was applied through three stages: open coding, axial coding, and selective coding.



3. Findings and Results

At this stage of the study, following extensive national and international investigations regarding virtual media literacy education, the indicators, components, and dimensions related to the research topic were identified and served as the basis for conducting expert interviews. To answer the research questions, the collected data obtained through semi-structured interviews were analyzed based on the emergent grounded theory process. Data analysis was conducted through three coding stages, including open coding, axial coding, and selective coding.

1. Open Coding: The interviews obtained by the researcher were thoroughly reviewed twice. Key sections of the interview texts were highlighted, an initial list of significant points within the data was prepared, and “phrases” were used to transform textual data into understandable and usable data. The interview texts were transferred into the software, and open codes were identified. In the first stage, 169 initial codes were extracted, which were later reduced to 87 codes through the integration of similar codes and standardization of expressions.

2. Axial Coding: At this stage, all interviews were transcribed, their key expressions were identified, and the initial code list was developed. In the second stage, the open codes obtained in MAXQDA software were categorized and placed under axial codes. The results of axial coding included 87 open codes, 18 subcategories, and 5 main categories identified as axial codes, which are presented in Tables 3 to 8.

Table 3. Dimensions, Components, and Indicators Extracted from the Interviews

Dimensions	Components	Indicators	Interview Codes
Cultural Factors	Social and Cultural Interactions	Recognition of cultural media literacy (understanding cultural differences in media messages)	P1
		Media message analysis skills (examining political and social orientations in media)	P3
		Impact of media on personal and social identity (recognizing the influence of media on lifestyle and personal beliefs)	P5, P1
		Counteracting fake news in the social environment (methods for dealing with misinformation on social networks)	P4, P8
	Critical Approach to Media	Reviewing and analyzing organizational media and information policies	P2
		Evaluating the transparency and credibility of domestic and foreign media	P13
		Critiquing advertising messages (identifying hidden messages in organizational advertisements)	P4
		Critical thinking toward news algorithms (familiarity with methods of controlling news dissemination in cyberspace)	P15
	Social Transformations	Developing critical thinking, inquiry spirit, and exchange of opinions among employees	P6, P8
		Emergence of modern media and social networks in the dissemination of news and information	P7, P11
		Increased employee and public access to the internet	P6, P7
		Formation of the information society	P16
		Facilitation of access to information and news	P2
		Elimination or reduction of physical boundaries due to technological development	P13, P1, P5
		Facilitation and simplification of communication with different individuals	P1, P2, P4
Structural Factors	Media Security and Risks	Awareness of information security and identification of cyber threats	P4, P17
		Privacy management (protection of personal information in online environments)	P9
		Observance of digital security principles (familiarity with methods of securing user accounts)	P4, P8
		Counteracting phishing attacks (ability to identify malicious links and fake emails)	P11
		Addiction and dependency on cyberspace and the internet	P3
		Identity crisis and feelings of alienation from self and others due to inappropriate use of virtual social media	P3
		Manipulation and stimulation of public opinion through media	P6, P11
		Ethical abnormalities, normalization of unethical behavior, and value transformation	P13
		Media Literacy Policymaking	P7
		Emphasis on increasing employee access to diverse media	P7



		Encouraging cooperation and participation of responsible institutions such as IRIB in media literacy education	P3, P15, P10
		Approval and communication of media literacy training programs for all employees and supervision of participation	P1, P8
		Defining supportive policies for the production of related educational content	P9
	Financial Resource Provision	Forecasting and providing the required budget for implementing media literacy education programs	P5
		Providing and allocating funds for technical equipment and software preparation	P6
		Allocating financial resources for producing appropriate and high-quality content	P7
	Motivational Factors	Financial incentives for employees to participate in media literacy training courses	P18, P9
		Evaluation and allocation of points in employee salary regulations	P4, P1
		Utilizing employees with media literacy knowledge to train other employees	P5
		Sending employees to exhibitions and festivals related to media and media productions	P3, P9, P3
Content Factors	Program Development	Having a coherent and integrated program for media literacy education	P17
		Conducting employee needs assessments in media and media literacy	P7
		Predicting and providing facilities and equipment required for media literacy education	P11, P5
		Developing laws and regulations necessary for implementing and evaluating media literacy programs	P2, P3, P8, P10
	Content	Producing educational content in different forms such as films, photos, and clips	P7, P11
		Presenting virtual media literacy content in concise and useful forms	P5
		Using multimedia tools to attract attention and create deep learning among employees	P7
		Sharing media productions	P3, P11
		Promoting and advertising the correct culture of media tool usage	P11, P3
		Integrating media literacy education with in-service employee training courses	P10
	Attitudes Toward Media	Maintaining moderation and balance regarding media opportunities and limitations	P10
		Positive attitudes toward free access to information for all individuals	P8, P15
		Respecting diverse opinions and freedom of expression in virtual media	P7, P11
	Media Studies	Training on media technology usage and cyberspace searching	P3, P21
		Attention to the selection, processing, and dissemination of news and information	P1, P2, P4, P9
		Field tours for familiarization with the media industry	P14
		Familiarizing employees with media organizations, owners, and financial sponsors	P2, P5, P11, P7
Technological Factors	Hardware Facilities and Equipment	Relative familiarity with technology-based workplace equipment	P4, P2
		Familiarity with computer and laptop components	P18
		Awareness of the hardware capabilities of personal mobile phones	P4, P6, P2
	Software Facilities and Applications	Technical ability and skills in using virtual education software	P1, P5
		Familiarity with multimedia software and languages	P11
		Ability to identify authentic applications and their download websites	P1, P10, P16
		Secure use of virtual education applications and software	P1, P2, P6
Educational Factors	Media Information Analysis and Evaluation Skills	Ability to evaluate news sources (detecting fake news and unreliable sources)	P8
		Critical thinking skills (evaluating the credibility of media information)	P14, P18
		Media data analysis skills (using digital tools for information verification)	P3
		Understanding media bias (identifying hidden advertisements and persuasion techniques)	P1, P13, P4, P7
		Holding media and cognitive gatherings for employees	P2
		Ability to identify hidden perspectives and motivations in media messages	P4
		Strengthening the analysis of media news, photos, videos, and content	P9

	Promoting a culture of constructive criticism and logical analysis of virtual news and issues	P4, P8
	Challenging non-standard messages based on the source providing the message	P3, P9, P3
Media Communication Skills	Effective communication in cyberspace (effective interaction on social networks)	P17
	Ability to publish responsible content (observing ethics in information sharing)	P7
	Ability to manage online conversations (regulating communication in digital environments)	P20
Organizational Media Literacy	Data-driven decision-making ability (using media information in organizational decisions)	P7
	Applying media analysis in work affairs (identifying the impact of news on organizational performance)	P1, P11
	Ability to train colleagues in media literacy (transferring media knowledge in the workplace)	P6, P3, P16
	Developing critical thinking in the workplace (critical evaluation of media content used by the organization)	P14
Information Classification and Inference Skills	Recognition of media persuasion techniques (understanding media influence on public opinion)	P5
	Accurate recognition of the dimensions and components of cognitive warfare through media	P12
	Recognition of reliable sources for publishing information, messages, and news	P1
	Understanding and identifying the objectives of news producers and their media organizations	P9
	Teaching principles of classification, reasoning, induction, synthesis, and inference of information	P1, P17
Media Control and Intelligence Skills	Avoiding reliance on a single news source regarding important issues and topics	P3
	Careful and detailed attention to keywords in news and messages	P6, P11
	Avoiding rapid and hasty judgments regarding news and messages	P3
	Familiarity with cognitive errors in decision-making	P7
	Control over thoughts and monitoring behavioral changes in oneself	P1, P7
	Monitoring and controlling incoming mental messages and selective use of media	P1, P9
	Possessing professional ethics in media and social networks	P3
	Increasing self-control abilities in cyberspace	P3, P5

3. Selective Coding: Finally, selective coding was conducted, and the coding process was validated through two Delphi stages and expert opinions. In the first stage, experts commented on the content of each code, and in the second stage, they were asked to express their views regarding each of the extracted codes. Based on expert opinions, all factors were ultimately confirmed.

Based on the analyses conducted through the coding approach, the answers to the research questions are presented as follows:

What are the factors affecting virtual media literacy education among employees of Iran Customs Administration?

Based on the qualitative analysis conducted in the present study, 5 dimensions, 18 components, and 87 indicators were identified as factors affecting virtual media literacy education among employees of Iran Customs Administration, including:

- Cultural factors with 3 components: social and cultural interactions (4 indicators), critical approach to media (5 indicators), and social transformations (6 indicators), totaling 15 indicators.
- Structural factors with 4 components: media security and risks (8 indicators), media literacy policymaking (4 indicators), financial resource provision (3 indicators), and motivational factors (4 indicators), totaling 20 indicators.
- Content factors with 4 components: program development (4 indicators), content (6 indicators), attitudes toward media (3 indicators), and media studies (4 indicators), totaling 25 indicators.
- Technological factors with 2 components: hardware facilities and equipment (3 indicators), and software facilities and applications (4 indicators), totaling 10 indicators.



- Educational factors with 5 components: media information analysis and evaluation skills (9 indicators), media communication skills (3 indicators), organizational media literacy (4 indicators), information classification and inference skills (5 indicators), and media control and intelligence skills (8 indicators), totaling 25 indicators.

Based on the results of data analysis, 5 dimensions, 18 components, and 87 indicators were identified as influential factors for employees of Iran Customs Administration. Accordingly, the framework for virtual media literacy education among employees of Iran Customs Administration was designed (according to Figure 1).

The results of data analysis indicate that virtual media literacy education for employees of Iran Customs Administration is a multi-level and context-based phenomenon shaped through the simultaneous interaction of cultural, structural, content-related, technological, and educational factors. The extraction of 5 dimensions, 18 components, and 87 indicators demonstrates that the development of media literacy in the customs context is not solely dependent on individual skills, but rather acquires meaning within a specific organizational, security, and social system. Within this framework, cultural factors constitute the attitudinal and interpretive foundation of employees and indicate that interaction with media messages is always influenced by social interactions, critical approaches, and cultural transformations. This dimension provides the basis for the formation of conscious media-related behavior and determines the general orientation of education. Structural factors play either facilitating or inhibiting roles in the realization of virtual media literacy education. Components such as media security and risks, policymaking, financial resource provision, and employee motivation demonstrate that media literacy education in Iran Customs Administration is directly linked to security requirements, managerial decisions, and institutional support, and that without stable structural support, it will not achieve the required effectiveness.

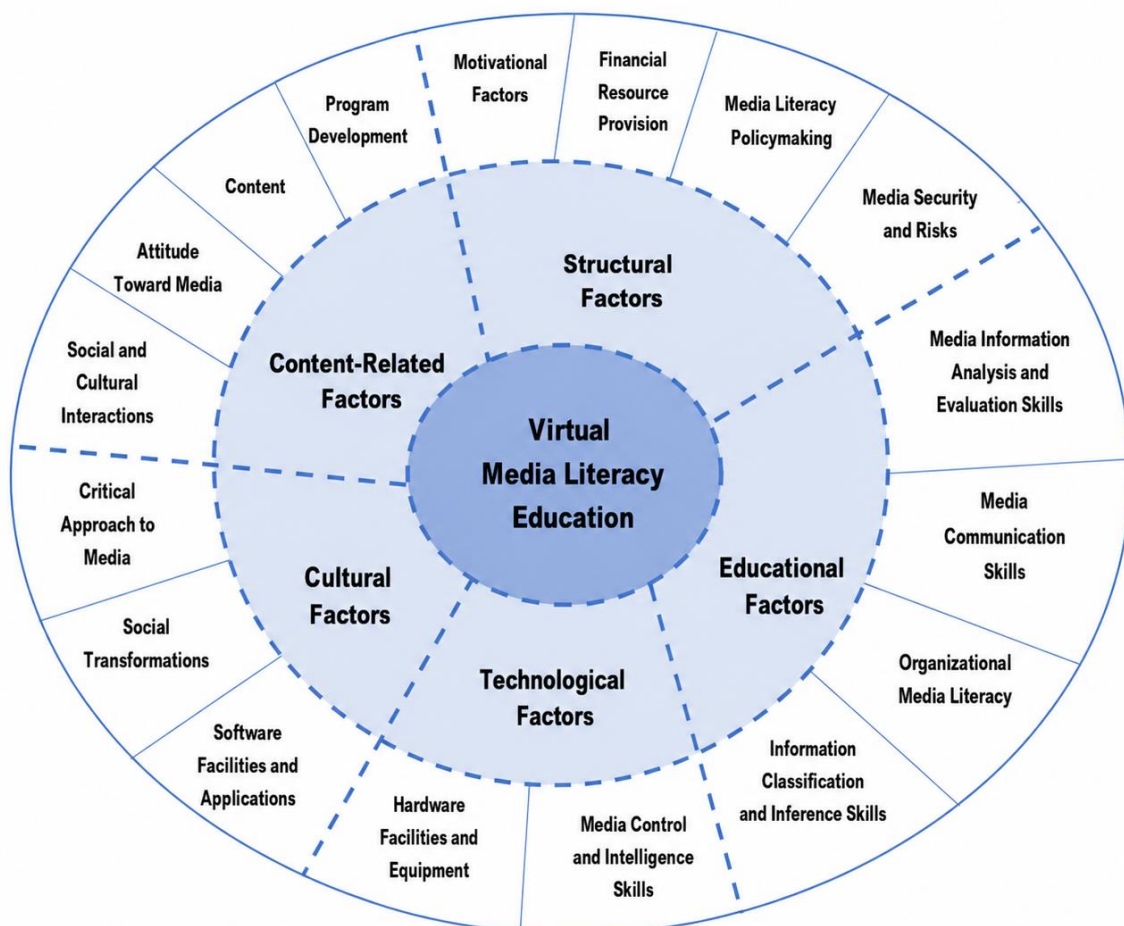


Figure 1. Qualitative Framework of Virtual Media Literacy Education for Employees of Iran Customs Administration

At the instructional design level, content-related factors indicate that the success of virtual education depends on the extent to which content aligns with customs missions. Developing targeted programs, localized content, strengthening informed attitudes toward media, and specialized media studies provide the conceptual framework necessary for transforming education into meaningful learning. Technological factors, as the operational infrastructure of the qualitative framework, enable the realization of virtual education. The existence of appropriate hardware equipment and secure, efficient software not only enhances learning quality but also has a direct relationship with organizational security due to the sensitive nature of information in Iran Customs Administration. Finally, educational factors, as the skill-oriented core of the framework, represent the ultimate outcome of virtual media literacy education. Skills in media information analysis and evaluation, media communication, organizational media literacy, information classification and inference, and intelligent media control indicate that the ultimate goal of the framework is to cultivate informed, analytical, and responsible employees when confronting complex media environments.

The theoretical validation of the qualitative framework extracted in this study was conducted not through quantitative tools or formal indicators, but through the internal logic of emergent grounded theory. This means that theoretical saturation, constant comparison of data, the natural emergence of the core category, and alignment of the model with Glaser's four criteria (fit, workability, relevance, and modifiability) constituted the basis for judging the theoretical validity of the framework. The validation conducted by the researcher based on these four criteria is described below:

1. **Fit with Data:** The fit of the qualitative framework with the data was achieved through the process of open coding, constant comparison, and repeated return to the raw data, such that all categories and conceptual relationships within the framework were directly extracted from the lived experiences of participants in the field of virtual media literacy education. During this process, no category was imposed a priori or based on existing theoretical frameworks; rather, concepts emerged within the narratives, actions, and interpretations of participants. Furthermore, throughout the analysis stages, the researcher continuously compared new data with previous codes and categories to ensure conceptual consistency. Accordingly, it became evident that the framework demonstrated a "natural fit" with the data and accurately represented the field reality of virtual media literacy education.
2. **Explanatory Workability:** The workability of the qualitative framework was confirmed when it successfully explained the processes, actions, and decisions of actors involved in virtual media literacy education in a coherent manner. The final framework demonstrates how structural, content-related, cultural, educational, and technological factors dynamically interact and influence the quality and effectiveness of virtual media literacy education. The framework is not merely descriptive of the current situation; rather, it explains "what is happening" and "why actors behave in a particular manner." The framework's ability to explain behavioral patterns, barriers, opportunities, and consequences of virtual media literacy education indicates its explanatory workability and, consequently, its theoretical validity.
3. **Relevance to the Real Problem in the Field:** The framework's relevance to the real issue of virtual media literacy education emerged because the central problem of the study was identified not by the researcher, but from the statements and concerns expressed by experts and participants. The primary focus of the framework is on the actual challenges, needs, and issues of virtual media literacy education encountered by actors in practice, rather than on abstract or purely theoretical matters. The core category of the qualitative framework represents the issue that held the greatest importance for participants, around which all other categories were organized. This characteristic has made the framework meaningful and applicable for practitioners, educational policymakers, and related organizations, including Iran Customs Administration. This direct connection with field reality strongly fulfills the criterion of "relevance."
4. **Modifiability and Expandability:** The qualitative framework of virtual media literacy education, as a grounded theory, possesses an open and dynamic structure and has not been designed as a final or unchangeable framework. It has the capacity to be revised or expanded with the introduction of new data, changes in technological conditions, or transformations in educational policies. According to the researcher, the conceptual relationships within the framework were developed in a process-oriented and interactive rather than linear and closed manner, thereby enabling theoretical expansion. This characteristic demonstrates that the framework is not only valid for the current data but

also possesses the capacity to adapt to similar contexts or future developments in virtual media literacy education. From Glaser's perspective, this modifiability is one of the primary indicators of theoretical validity.

Overall, the theoretical validity of the qualitative framework of virtual media literacy education in this study was achieved through conceptual fit with the data, explanatory power regarding field processes, direct relevance to the real problems of actors, and the capability for theoretical expansion and modification. In other words, the framework not only reflects the empirical reality within Iran Customs Administration but also possesses the capacity for explanation, development, and application in similar contexts.

4. Discussion and Conclusion

The present study was conducted with the aim of identifying the factors affecting virtual media literacy education and presenting a qualitative framework for employees of Iran Customs Administration. The findings of the study revealed that virtual media literacy education is influenced by five major dimensions, including cultural, structural, content-related, technological, and educational factors, encompassing 18 components and 87 indicators. The results indicate that media literacy education in organizational and governmental contexts is a multidimensional and context-dependent phenomenon that cannot be understood solely from a technological or instructional perspective. Rather, the effectiveness of virtual media literacy education emerges through the interaction of organizational structures, cultural environments, technological infrastructures, educational processes, and employees' cognitive and communicative competencies. These findings are consistent with studies emphasizing the multidimensional nature of media literacy and the necessity of integrating educational, organizational, and digital competencies within contemporary virtual learning systems (Oecd, 2025; Pangrazio & Cardozo-Gaibisso, 2023; Unesco, 2025).

One of the important findings of the study was the identification of cultural factors as a foundational dimension affecting virtual media literacy education. Components such as social and cultural interactions, critical approaches to media, and social transformations demonstrated that employees' interaction with media messages is significantly shaped by social norms, organizational culture, and collective patterns of communication. This finding suggests that media literacy education is not merely a technical process but also a socio-cultural phenomenon influenced by individuals' interpretations, values, and experiences within organizational environments. This result aligns with the findings of Bayani, who emphasized the role of media literacy in strengthening communication and interaction processes within educational and institutional contexts (Bayani, 2025). Likewise, d'Haenens and Joris argued that media literacy in the digital age requires empowerment-oriented approaches that address the socio-cultural dimensions of digital participation and critical engagement with media content (d'Haenens & Joris, 2025). The identification of critical approaches to media as a key component also supports the arguments of Livingstone and colleagues, who highlighted that transparency, accountability, and informed participation in digital environments depend heavily on individuals' ability to critically evaluate media content and recognize hidden influences within digital communication systems (Livingstone et al., 2024).

Another major finding of the study concerned the role of structural factors, including media security and risks, media literacy policymaking, financial resource provision, and motivational factors. The prominence of these factors indicates that the implementation of virtual media literacy education in governmental institutions requires institutional support, organizational commitment, and stable policy frameworks. Employees' media literacy competencies cannot be effectively developed without adequate technological investment, managerial support, educational policies, and financial resources. This finding is consistent with the perspectives proposed by Vial and colleagues, who argued that digital transformation processes are successful only when organizations simultaneously invest in technological infrastructure and workforce capability development (Vial et al., 2025). Similarly, Verhoef and colleagues emphasized that workforce digital competencies and organizational support systems are central to sustainable digital transformation and institutional adaptability (Verhoef et al., 2025).

The significance of media security and cyber risks identified in the present study also reflects the sensitive nature of organizational information environments within customs administrations. Employees operating in customs organizations are continuously exposed to digital communication systems, online information exchange, and cyber threats, making media literacy an essential protective mechanism. These findings support the arguments of Obasi, who emphasized that media literacy plays

a critical role in combating misinformation and strengthening critical thinking capacities in digital societies (Obasi, 2025). Furthermore, Mahdavi Nasab and colleagues demonstrated that media literacy competencies are necessary for confronting cognitive warfare and increasing strategic awareness among personnel operating in security-oriented environments (Mahdavi Nasab et al., 2024). Therefore, the present findings suggest that media literacy education within customs organizations serves not only educational purposes but also security and organizational resilience functions.

The study further revealed the importance of content-related factors, including program development, educational content, attitudes toward media, and media studies. These findings indicate that successful virtual media literacy education depends on the development of coherent, localized, and context-sensitive educational programs. The effectiveness of media literacy training increases when educational content is aligned with organizational missions, employees' professional responsibilities, and the realities of digital communication environments. This finding is consistent with the results of Shahamat and colleagues, who emphasized the importance of integrating educational, organizational, and cultural dimensions into media literacy education models (Shahamat et al., 2024). Similarly, Motamedi Mohammadabadi and colleagues argued that grounded and context-based approaches are necessary for designing effective media literacy education models within professional and institutional settings (Motamedi Mohammadabadi et al., 2022).

The emphasis on attitudes toward media and media studies also demonstrates that media literacy education should move beyond technical instruction and cultivate reflective and informed engagement with digital environments. Kadkhodaeian Arani and colleagues emphasized that critical message evaluation and critical thinking should constitute core elements of media literacy curricula (Kadkhodaeian Arani et al., 2024). Likewise, Pangrazio and Cardozo-Gaibisso proposed that media literacy must be reconceptualized as a reflective and socially embedded competence rather than a set of isolated technical skills (Pangrazio & Cardozo-Gaibisso, 2023). The present study supports these perspectives by demonstrating that employees' awareness of media ownership, information dissemination mechanisms, and digital persuasion strategies are essential for meaningful participation in organizational communication systems.

Technological factors constituted another important dimension identified in the study. Components such as hardware facilities, software applications, and secure digital platforms demonstrate that technological infrastructure is a prerequisite for effective virtual media literacy education. The findings suggest that insufficient access to technological resources or inadequate digital systems can significantly reduce the effectiveness of educational programs and employees' participation in virtual learning environments. These findings are consistent with the studies of Kebritchi and colleagues, who identified technological infrastructure and instructional design as major determinants of successful online education (Kebritchi et al., 2025). Similarly, Bond and colleagues argued that post-pandemic virtual education systems require stable digital infrastructure, interactive technologies, and learner-centered design to maintain educational effectiveness (Bond et al., 2024).

The present findings also support the arguments of Ng, who emphasized that professional learning in virtual environments depends heavily on employees' digital literacy competencies and their ability to effectively use digital technologies for communication, collaboration, and information analysis (Ng, 2025). In the context of Iran Customs Administration, the availability of secure software systems and digital communication platforms becomes particularly important because employees frequently interact with sensitive organizational information. Consequently, technological readiness should be considered a strategic component of media literacy education in governmental organizations.

Educational factors represented the most extensive dimension identified in the study and included media information analysis and evaluation skills, media communication skills, organizational media literacy, information classification and inference skills, and media control and intelligence skills. The prominence of these factors indicates that the ultimate goal of virtual media literacy education is the development of analytical, reflective, and responsible employees capable of navigating complex digital environments. This finding aligns with the OECD and UNESCO frameworks, which conceptualize media literacy as a multidimensional competency involving critical thinking, communication, ethical participation, and information evaluation (Oecd, 2025; Unesco, 2025).

The importance of media information analysis and evaluation skills identified in the present study also corresponds with the findings of Yates and Partridge, who emphasized that workplace media literacy requires employees to critically assess information sources, evaluate digital content, and engage in informed decision-making processes (Yates & Partridge, 2024).



Likewise, Van Laar and colleagues argued that complex organizational environments increasingly require advanced digital and media skills for interpreting information, managing digital communication, and solving organizational problems (Van Laar et al., 2025). The present study extends these perspectives by demonstrating that such competencies are especially significant within customs administrations where employees are exposed to strategic information systems and dynamic media environments.

Page | 13

Another important finding of the study was the identification of media communication skills and organizational media literacy as central components of virtual education. These findings indicate that media literacy education contributes not only to individual competency development but also to organizational learning and institutional communication effectiveness. Employees capable of responsible information sharing, ethical communication, and collaborative digital interaction can contribute to improved organizational culture and more effective information management systems. This finding is consistent with the results of Hosseini and colleagues, who highlighted the importance of competency-based media literacy education for strengthening professional communication and institutional effectiveness in governmental organizations (Hosseini et al., 2025). Similarly, Ghasemi and Ahmadi demonstrated that integrating media literacy into employee training systems can improve organizational awareness and professional performance (Ghasemi & Ahmadi, 2023).

The findings of the present study also demonstrate that virtual media literacy education should be viewed as a continuous and adaptive process rather than a fixed instructional intervention. The identified dimensions and components interact dynamically and are influenced by technological developments, organizational changes, and evolving media environments. This perspective aligns with the arguments proposed by Pokulyta and Sotska, who emphasized that media literacy education strategies must continuously adapt to emerging digital challenges and communication technologies (Pokulyta & Sotska, 2025). Likewise, Lazou and Tsinakos argued that future-oriented digital education frameworks should emphasize participatory learning, adaptability, and inclusion in order to remain effective in rapidly changing technological contexts (Lazou & Tsinakos, 2025).

Overall, the findings of the present study indicate that virtual media literacy education in Iran Customs Administration is a comprehensive and multidimensional process influenced by cultural, structural, technological, educational, and content-related variables. The study contributes to the theoretical literature by presenting a grounded qualitative framework capable of explaining the interaction between organizational conditions, media literacy competencies, and virtual learning processes. Furthermore, the findings provide practical implications for policymakers, educational planners, and governmental institutions seeking to strengthen employees' digital competencies, information security awareness, and critical engagement with media environments. The proposed framework therefore offers a context-sensitive and operational foundation for improving the quality and effectiveness of virtual media literacy education within strategic governmental organizations.

One of the limitations of the present study was its focus on employees and experts associated with Iran Customs Administration, which may limit the transferability of the findings to other governmental or private organizations with different structural and cultural conditions. In addition, the qualitative nature of the study and reliance on semi-structured interviews may have influenced the findings through participants' subjective interpretations and experiences. Another limitation was the rapid evolution of digital technologies and media environments, which may alter some identified components and relationships over time. Furthermore, the study concentrated primarily on organizational and educational dimensions and did not quantitatively assess the effectiveness of specific virtual media literacy interventions.

Future research is recommended to examine the proposed qualitative framework using quantitative or mixed-methods approaches in order to test the relationships among the identified dimensions and components. Comparative studies across different governmental organizations, educational institutions, and private-sector environments could also provide a broader understanding of contextual differences in virtual media literacy education. In addition, future investigations may explore the effects of emerging technologies such as artificial intelligence, immersive learning environments, and virtual reality on media literacy development. Longitudinal studies examining the sustainability of media literacy competencies among employees over time may also contribute to a deeper understanding of organizational digital transformation processes.

From a practical perspective, policymakers and organizational managers should integrate virtual media literacy education into institutional development strategies and employee training systems. Governmental organizations should design context-



sensitive educational programs aligned with employees' professional responsibilities and organizational missions. Providing secure technological infrastructure, developing high-quality multimedia educational content, and strengthening organizational support mechanisms are also essential for improving the effectiveness of virtual media literacy initiatives. Moreover, managers should encourage critical thinking, responsible digital communication, and ethical participation in online environments in order to strengthen organizational resilience and improve employees' ability to confront misinformation, cyber threats, and complex media environments.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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