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## Article

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## Article

# Measuring the Nexus Between Information Literacy, Creativity, and Lifelong Learning in Media Professionals

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**Abstract:** Information literacy (IL) plays an essential role in digital inclusion as it enables people to make use of the information available in multiple mediums on the Internet through digital devices. This study intends to examine the effect of IL on lifelong learning (LL) through the mediating role of creativity among news reporters in Pakistan using a quantitative research approach. The survey was conducted using an online questionnaire from the registered news reporters of press clubs in the four provinces and the federal territory of Islamabad, Pakistan. A total of 758 responses were received and analyzed using PLS-SEM. The results indicated that the IL of news reporters positively influenced their lifelong learning through both direct and indirect pathways. Furthermore, the nexus between IL and LL was influenced by the mediation of creativity. These findings have practical implications for academia and the media industry, highlighting the invaluable role of IL in enhancing lifelong learning and creativity to attain a sustainable competitive advantage. These results may inform educational programs for journalism students and existing journalists to impart IL skills. This research contributes to the available literature on workplace IL, especially in the context of media professionals.

**Keywords:** information literacy; workplace; creativity; lifelong learning; news reporters; journalists; Pakistan



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## 1. Introduction

In the ever-changing digital information landscape, the role of the journalist has become more complex, multifaceted, and demanding (Naveed and Saadia 2024). The emergence and proliferation of digital media platforms has fundamentally transformed the way news is produced, consumed, and disseminated. Therefore, journalists have to navigate a landscape where the ability to critically evaluate, utilize, and disseminate digital information is paramount (Boss et al. 2022; MacMillan 2014). Information literacy (IL) refers to meta-literacy (Pelser and Swanepoel 2022), enabling reporters to recognize their information requirements and adeptly find, access, assess, and utilize necessary information in an ethical and legal way (ACRL 2000). It plays a pivotal role in empowering individuals, journalists, and communities to navigate the increasingly complex digital landscape. The CILIP (2018) extended its scope by defining it as “the ability to think critically and make balanced judgements about any information we find and use”. Furthermore, it enables reporters to engage in effective utilization of ICTs to address their information requirements, developing informed perspectives and active participation in various societal realms (e.g., the workplace, health, education, citizenship, and everyday life). In an era where access to

information is no longer a luxury but a necessity, developing IL skills in reporters becomes imperative for fostering inclusive participation in the digital realm (Naveed and Kamran 2022). IL bridges the divide between individuals who simply have access to technology and those who can effectively harness its full potential. It also serves a powerful tool to combat misinformation and disinformation, thereby promoting digital equity and inclusion. In essence, IL is not merely a technical skill; it is a fundamental right and a cornerstone for achieving true digital inclusion (Lukianova and Ovcharuk 2024).

Information literacy empowers journalists through sharpening their critical thinking skills, enhancing their investigative abilities, and opening up new avenues for creative storytelling by leveraging diverse multimedia platforms (Saadia and Naveed 2024). In addition, it empowers journalists to navigate the digital landscape with confidence, fostering a culture of lifelong learning (LL) and promoting media literacy within their communities (Naveed and Saadia 2024). Ultimately, information literacy provides foundation for digital inclusion among Pakistani journalists, enabling them to harness the full potential of digital technologies for effective storytelling, audience engagement, and professional development (MacMillan 2014; Mansoor 2024).

In the organizational context, the recognition of IL in journalists as a vital set of skills, enabling the workforce for an effective utilization of information assets to attain a sustainable competitive advantage (Naveed and Rafique 2018; Ottonicar et al. 2020; Sasikala and Kumari 2013) and generate responsible journalism value (Forster (2017)), is crucial. Existing research has demonstrated the critical role of IL in informing reporters on environmental scanning, decision-making, and innovative reporting (Ahmad et al. 2020; Naveed 2022; Zhang et al. 2010). The creation of value through IL is totally dependent on how much the workforce in the field of journalism is digitally inclusive and its performance in situation analysis, information management, research and development, and information follow-up (C. S. Bruce 1999). IL enables workers in the news industry to adopt appropriate information behavior and effectively utilize information in decision-making and making balanced judgments about market trends (Inayatillah 2018; Naveed and Shah 2023; Suorsa et al. 2021). In conclusion, the news industry needs to be information-literate to identify market needs, generate business value, and achieve competitiveness (Wu 2018).

The pursuit of the workforce in the field of journalism in learning new competencies and knowledge is a form of lifelong learning (Coşkun and Demirel 2010), which is critical for creating positive attitudes and habits in acquiring new knowledge and applying it for organizational development in the news industry (Plaza and Robotham 2021). On the other hand, creativity refers to the generation of original, novel, distinctive, and invaluable ideas to achieve sustained growth and competitiveness (Leone 2020). Hence, creative and lifelong learners are crucial to achieve organizational performance and effectiveness (Kark et al. 2018; Kirkwood 2021). Interestingly, both LL and creativity undertake specific information activities and rely heavily on the adoption of the suitable information behavior in the workplace. Some inquiries have reported the capabilities of IL to enhance LL outcomes and creativity (Chang and Hsu 2015; Feng and Jih-Lian 2016; Naveed et al. 2023; Wu 2018). From a theorization viewpoint, clear and substantial empirical evidence is needed on how IL influences LL through creativity among reporters. Therefore, understanding the interrelationships between IL, LL, and creativity warrants further enquiry.

Building on the preceding argument, the present study aimed to empirically examine the interrelationships between IL, LL, and creativity among news reporters in Pakistan. News reporters were selected as a unit of analysis due the diverse, research-intensive, and time-sensitive nature of their work, coupled with their involvement in the business of information (Anwar and Asghar 2016). Their role requires them to concurrently acquire, search for, consume, generate, and disseminate information. Consequently, news reporters must adopt suitable information behavior to craft credible news stories and prevent misinformation (Haider et al. 2022). Moreover, there is a lack of research investigating IL in the journalists' workplace globally (Haider et al. 2022; Naveed et al. 2023; Naveed and Saadia 2024). Understanding the connections between IL, LL, and creativity among news reporters

would assist media houses in recognizing IL's efficacy in the workplace. Practically, this research has the ability to inform concrete actions that can enhance the effectiveness and adaptability of Pakistani journalists in the digital age. By emphasizing the pivotal role of IL in fostering digital inclusion, the findings of this research provide media organizations with a roadmap for investing in training programs that equip journalists with essential skills for confident navigation in the digital information landscape. Moreover, educational institutions can leverage these insights to refine journalism curricula, ensuring that graduates are equipped with the knowledge and competencies necessary for success in today's media environment. Ultimately, policymakers can utilize this study's findings to advocate for policies and initiatives that promote media literacy and digital access, thereby fostering a more informed and engaged citizenry. Overall, this study serves as a practical guide for stakeholders across the journalism ecosystem to collaborate in building a more resilient and inclusive media industry in Pakistan.

The research objectives specifically addressed in this study are as follows:

Research Objectives (RQs):

1. To explore how IL affects lifelong learning among media professionals;
2. To analyze the influence of IL on creativity;
3. To assess the effect of creativity on lifelong learning;
4. To evaluate the mediation of creativity in the relationship between IL and lifelong learning.

## 2. Research Review and Hypothesis Formulation

### 2.1. Workplace Information Literacy (WIL)

There has been a phenomenal increase in WIL research since the realization of information as a driving force for generating business value in the media industry ([Ahmad et al. 2020](#); [Forster 2017](#); [Naveed and Shah 2023](#); [Naveed et al. 2023](#)). The exponential growth of information available through multiple formats called for information-literate and learned reporters to achieve a sustainable competitive advantage and innovation ([C. Bruce 2003](#); [Kirk 2004](#); [Saadia and Naveed 2022](#)). [Solmaz \(2017\)](#) considered IL as paramount for informed learning, enabling collaborative information use in the socio-technical system of the news industry. Furthermore, [Ahmad et al. \(2020\)](#) discovered that journalists in the sphere of the Internet and web development perceived IL as a way of staying informed, solving problems, developing websites, and engaging with learning communities. [Malafi et al. \(2017\)](#) reported that IL improves operational efficiency, informs decision-making, saves time, increases profit, and improves customer service, motivation, and information governance. A research study by [Ahmad et al. \(2020\)](#) reported IL as a positive predictor of organizational innovation using the responses of 184 CEOs from varied enterprises. [Haider et al. \(2022\)](#) discovered IL's positive influence on practices of personal information management among electronic media reporters. A review of WIL research published from the South-Asian region by [Saadia and Naveed \(2022\)](#) revealed a lack of related studies in the media industry.

### 2.2. Information Literacy and Lifelong Learning

IL lays the groundwork for reporters' lifelong learning as it refers to the skill set related to information capabilities, and lifelong learning is a good habit ([Horton 2006](#)). Furthermore, [Horton \(2006\)](#) argued that these constructs appeared to have a strategical and reinforcing interrelationship and are largely self-motivated, self-empowering, self-directed, and self-actuating for professional development. Although the relation between these two constructs has been under debate since the beginning of the 21st century ([Gardner 2000](#); [Isfandyari-Moghaddam and Kashi-Nahanji 2011](#)), few studies have provided empirical evidence in the media industry. IL capabilities overcome barriers and improve the lifelong learning process ([Coşkun and Demirel 2010](#); [Kozikoglu and Onur 2019](#); [Solmaz 2017](#)). Recent research by [Naveed et al. \(2023\)](#) also discovered that the IL of journalists positively influences their LL. In view of this argument, it is inferred that IL capabilities positively influence LL in varied

workplace contexts. No research is available examining the connection between these two constructs using news reporters as unit of analysis despite their primary engagement with the information business. Thus, the first hypothesis was developed as given below:

**Hypothesis 1 (H<sub>1</sub>).** *IL positively affects LL.*

### 2.3. Information Literacy and Creativity

The process of creativity undertakes certain information-related tasks and is dependent on how effectively people need, seek, and make use of credible information in the media industry (Chang and Hsu 2015; Wu 2018). Therefore, creativity requires reporters to possess competencies for efficient and effective recognition of their information requirements and seeking (Jaussi and Randel 2014). Building on the preceding discussion, it is quite logical to draw an inference that IL positively influences creativity skills. Empirical evidence from some workplace studies also supports this inference (e.g., Bagheri and Baviran 2022; Chang and Hsu 2015; Ghazizadeh et al. 2017; Naveed et al. 2023; Wu 2018). However, this empirical evidence must be further corroborated in media industry contexts for the purpose of theorization. Therefore, the interrelationship between IL and creativity among reporters justifies further discovery. Thus, the following hypothesis was proposed:

**Hypothesis 2 (H<sub>2</sub>).** *IL positively affects creativity.*

### 2.4. Creativity and Lifelong Learning

The production of new, valuable, and distinctive ideas (Kaufman 2018) is the result of creativity. The relationship between creativity and LL also appears to be strategic and reinforcing. Both creativity and LL are transversal skills that contribute to the development of each other (Lucas and Venckutė 2020; Su 2009). Media studies institutions also require the integration of creativity into the curriculum so that a creative and lifelong learner may be produced (Arp and Woodard 2004). Although the positive relationship between creativity and LL is debated in the existing literature, there is a lack of substantial empirical evidence for this inference in the media industry. Furthermore, no such research examining the interrelationship between creativity and LL skills in news reporters has been found as of yet, which also warrants further examination. Hence, the third hypothesis was posited as follows:

**Hypothesis 3 (H<sub>3</sub>).** *Creativity positively influences LL.*

### 2.5. Information Literacy and Lifelong Learning: Mediation of Creativity

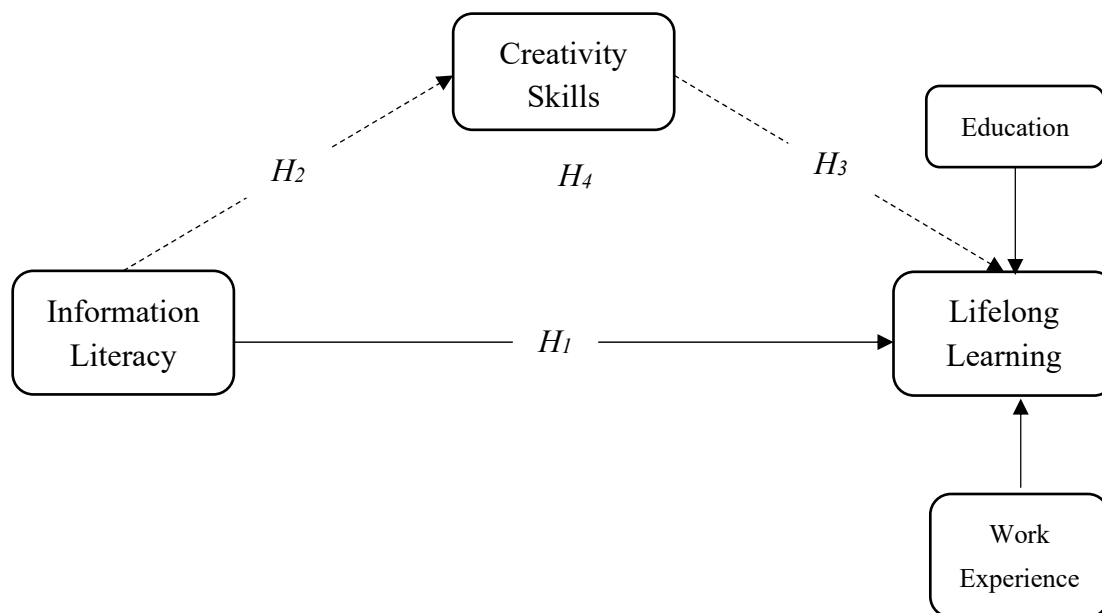
IL establishes a basis for both LL and creativity as they rely heavily on information activities and the adoption of suitable information behavior to be successful in the media industry (Naveed et al. 2023). Empirical evidence suggests that IL skills enhance LL (Feng and Jih-Lian 2016; Kozikoglu and Onur 2019) and creativity (Chang and Hsu 2015; Naveed et al. 2023; Wu 2018). On the other hand, creativity is a transversal skill contributing to the development of LL (Lucas and Venckutė 2020; Su 2009) and needs to be integrated into education and LL (Arp and Woodard 2004). The interrelationship between creativity and LL among reporters lacks empirical evidence. Given the three-way association between these constructs, it is predicted that creativity has a mediating role in the relationship between IL and LL. Moreover, no research exists so far examining the mediating role of creativity in the connection between IL and LL. Thus, the fourth hypothesis is stated as given below:

**Hypothesis 4 (H<sub>4</sub>).** *Creativity mediates the relationship between IL and LL.*

### 3. Research Design and Methods

#### 3.1. Research Model

This study aimed to explore the interrelationships of IL, LL, and creativity among news reporters as given in the research model explaining the hypothesized connections among these research constructs (Figure 1).



**Figure 1.** Hypothetical research model.

#### 3.2. Design and Method

This research employed a quantitative research design along with a survey method to conduct the proposed investigation. A structured questionnaire was deployed for data collection from news reporters. The structured questionnaire contained a total of 37 statements associated with IL (19 items), LL (8 items), and creativity (10 items). All of these statements were measured on a five-point Likert-type scale ranging from strongly agree to strongly disagree (e.g., 5 = strongly agree; 4 = agree; 3 = neither agree nor disagree; 2 = disagree; and 1 = strongly disagree). Questions on demographic variables such as age, sex, work medium, education, work experience, and region were also asked.

#### 3.3. Measurement Instruments

##### 3.3.1. Information Literacy

The perceptions of these news reporters related to IL were assessed using items generated based on standards of IL developed by ACRL for journalists in 2012. Examples of such statements include “I can identify what type of information sources can fulfill my information need”, and “I can derive main ideas and facts from information sources to create stories”. The internal reliability analysis, such as the Cronbach alpha (CA) and composite reliability (CR) for the IL measure, indicated higher values, that is, CA = 0.938 and CR = 0.944, respectively. This indicated that the measure used in this study had higher internal consistency, as the value of CA was closer to one (Mathews et al. 2019). The CR value was marginally higher than that of CA since CR is considered an alternative to CA (Naveed et al. 2023). CA has faced criticism for its lower bound value, which may underestimate true reliability, while CR provides a marginally higher value. However, this difference is generally minor and holds limited practical significance (Naveed et al. 2023; Peterson and Kim 2013).



### 3.3.2. Creativity

The items related to creativity skills were chosen from the creativity scale developed by [Muñoz-Doyague et al. \(2008\)](#) for the measurement of the creativity of these news reporters. There were 10 statements associated with creativity skills. The instances of such statements include “I suggest new and better ways to achieve goal or objectives”, and “I develop ideas, methods or processes that are both original and especially useful to the organization”. The measures also show higher internal consistency for this measure as there were high values for CA = 0.894 and CR = 0.913 based on the data set of this study.

### 3.3.3. Lifelong Learning

There were eight statement related to lifelong learning developed by [Gardiner and Kline \(2007\)](#). Instances of such statements include “I have a passion for learning”, and “I learn because to achieve my career goals”. This measure was also internally consistent and acceptable, with the values of CA = 0.868 and CR = 0.897 ([Naveed et al. 2023](#); [Peterson and Kim 2013](#)).

### 3.3.4. Population and Sampling

All the news reporters who were registered with the press clubs in each of the four provinces (e.g., Baluchistan, Khyber Pakhtunkhwa Sindh, and Punjab) and Islamabad (federal capital) were considered as the population of the proposed research. The sample size was 371, calculated based on the 95% confidence interval and 5% margin of error.

### 3.3.5. Data Collection and Analysis

The registered news reporters in each press club were approached using a link, containing the questionnaire and covering letter, created in Google Forms for data collection with written permission from their respective administration. The link was shared through the administration of each press club in their listed servers and WhatsApp groups. The news reporters were asked for their voluntary participation in the survey. These news reporters were also ensured about the privacy and anonymity of their data. Three follow-up reminders were also sent to the news reporters to increase the response rate. The researchers received a total of 758 survey responses from the news reporters in approximately two–three months. The received responses were carefully screened for data completeness and accuracy prior to data analysis.

The connections, both direct and indirect, between IL, LL, and creativity were measured through calculating PLS-SEM in SmartPLS version 3.3.3. First of all, the reliability and validity of the reflective measures used in this research were analyzed through measurement modeling. Afterwards, SEM (structural equation modeling) was performed for measurement of the direct and indirect relations between IL, LL, and creativity.

## 4. Results

### 4.1. Demographic Characteristics

Of the 758 respondents, about half of these news reporters ( $n = 387$ , 51.05%) belonged to the age group of 25–35 years, followed by those who were in the age bracket of 36–45 years ( $n = 149$ , 19.66%). There were 131 (17.28%) participants aged more than 45 years. Only 91 (12.01%) participants were aged up to 25 years. There were 441 (58.18%) males and 317 (42.82%) females. About two-thirds of these news reporters ( $n = 499$ , 65.83%) were associated with electronic media, whereas the rest of these news reporters belonged to print media ( $n = 259$ , 34.17%). Concerning their educational levels, a little more than two-thirds of these news reporters were graduates ( $n = 491$ , 64.77%). This was followed by those having postgraduate ( $n = 151$ , 19.92%) and undergraduate ( $n = 116$ , 16.31%) levels of education. Moreover, most of these news reporters had 11–15 years of work experience ( $n = 321$ , 42.34%), followed by those who had work experience between 6 and 10 years ( $n = 217$ , 28.63%) and 15+ years ( $n = 121$ , 15.96%). There were only 99 (13.06%) participants who had up to five years of work experience. More than one-third of these news reporters

belonged to Lahore (n = 271, 35.75%), Islamabad (n = 258, 34.03%), and Karachi (n = 191, 25.20%). Only 21 (2.77%) and 17 (2.24%) survey participants belonged to Peshawar and Quetta, respectively as shown in Table 1.

**Table 1.** Demographic characteristics the survey respondents (N = 758).

Characteristics	Categories	Frequency (n)	Percentage (%)
Age (Years)	Up to 25	91	12.01
	25–35	387	51.05
	36–45	149	19.66
	45+	131	17.28
Sex	Male	441	58.18
	Female	317	42.82
Medium	Electronic	499	65.83
	Print	259	34.17
Education	Undergraduate	116	16.31
	Graduate	491	64.77
	Postgraduate	151	19.92
Work Experience (Years)	Up to 5	99	13.06
	6–10	217	28.63
	11–15	321	42.34
	15+	121	15.96
Region	Lahore	271	35.75
	Karachi	191	25.20
	Peshawar	21	2.77
	Quetta	17	2.24
	Islamabad	258	34.03

#### 4.2. The Measurement Model

This study aimed to examine the interrelationships between IL, LL, and creativity among the news reporters using partial least square structural equation modeling (PLS-SEM). PLS-SEM was useful in this research due to three reasons. First, it helped us to find the complex cause–effect and mediating relations among constructs. Second, it helped us to develop theories from a small data set. Third, it provided a robust model efficiency (286) in terms of outer model testing and inner model testing. Prior to examining the connections among these constructs, the reliability and validity of measures were meticulously verified by applying measurement model analysis in SmartPLS (version 3.3.9). Table 2 indicates the reliability and validity of the measures used in this research. Factor loading, Cronbach’s alpha, rho\_A, and composite reliability were used as the reliability indicators. The loading strength of each factor was 0.62 or above, which indicated the appropriateness of these items as the threshold value for factor loading is 0.60 (Hair et al. 2019). Likewise, the values for the Cronbach’s alpha, rho\_A, and composite reliability indicators were 0.86 and above, which were also higher than the threshold value of 0.70 (Iqbal et al. 2021). These figures indicated that these measures met the reliability requirements. The convergent validity of these measures was ensured through the application of an average variance extracted (AVE). According to Sarstedt et al. (2017), the threshold value for AVE is 0.50. Table 2 indicates that the values of AVE for all these constructs were either equal to or higher than 0.50. Thus, these measures fulfilled the reliability and validity requirements for data collection (see also Figure 2).

The measurement of discriminant validity in PLS-SEM was performed through the heterotrait–monotrait (HTMT) approach as suggested by Henseler et al. (2014) because it is more appropriate than the approach recommended by Fornell and Larcker (1981) due to its unsuitability and unreliability for the measurement of discriminant validity (Henseler et al. 2014). The HTMT method is described as the correlation between items across



different constructs compared to the correlations among items within the same construct. The threshold value of HTMT for discriminant validity is less than 0.90 according to the criterion suggested by [Henseler et al. \(2014\)](#). Table 3 shows that these constructs met the criterion of discriminant validity.

**Table 2.** Reliability and validity analysis.

Scales	Factor Loading	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Information Literacy (IL)					
IL1	0.658				
IL2	0.693				
IL3	0.663				
IL4	0.715				
IL5	0.678				
IL6	0.730				
IL7	0.721				
IL8	0.668				
IL9	0.670	0.938	0.938	0.944	0.500
IL10	0.685				
IL11	0.713				
IL12	0.665				
IL13	0.670				
IL14	0.651				
IL15	0.697				
IL16	0.653				
IL17	0.726				
IL18	0.701				
IL19	0.687				
Creativity (C)					
C1	0.745				
C2	0.761				
C3	0.775				
C4	0.715				
C5	0.735	0.894	0.897	0.913	0.513
C6	0.709				
C7	0.692				
C8	0.62				
C9	0.681				
C10	0.72				
Lifelong Learning (LL)					
LL1	0.715				
LL2	0.731				
LL3	0.784				
LL4	0.676	0.868	0.869	0.897	0.521
LL5	0.684				
LL6	0.734				
LL7	0.736				
LL8	0.708				

**Table 3.** Discriminant validity.

Constructs	Creativity	Information Literacy	Lifelong Learning
Creativity (C)	0.716		
Information Literacy (IL)	0.688	0.687	
Lifelong Learning (LL)	0.68	0.691	0.722

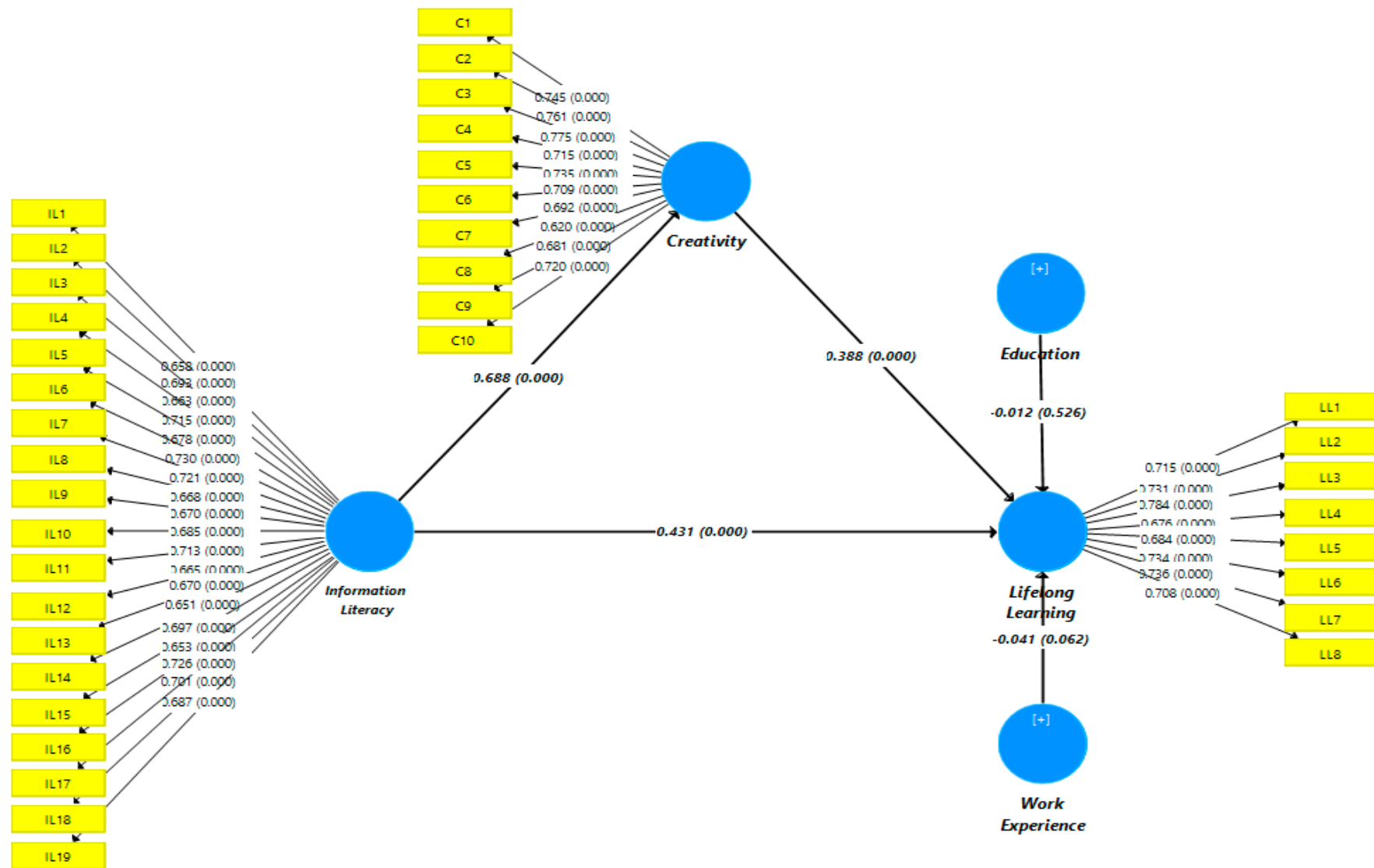


Figure 2. Research model.

The collinearity issue was resolved by applying the Variance Inflation Factor (VIF) technique during the PLS-SEM analysis. VIF threshold values less than 5 are acceptable, and VIF values less than 3 are considered ideal (Hair et al. 2013). The figures in Table 4 reveal that the range of VIF values among dimensions is 1.000 to 1.928, indicating no collinearity issues among the dimensions of IL, LL, and creativity.

**Table 4.** Collinearity and model fit.

Dimensions	C-VIF	LL-VIF	Model Fit	
Creativity (C)		1.928	SRMR	0.040
Information Literacy (IL)	1.000	1.923	NFI	0.87
			RMS_Theta	0.074

Three key model fit indices, SRMR, NFI, and RMS\_theta, are commonly employed in PLS-SEM analysis to measure the overall fitness of a model. Table 4 also presents the details of the model fit indices. The value for SRMR, that is, 0.040, indicated that the proposed model had a good fit, as the threshold value for SRMR is less than 0.08. Likewise, the value of NFI is 0.87, which is also acceptable, indicating the better fit of the model, as the ideal threshold value for NFI is one, and NFI values closer to one are considered to show a better model fit. Furthermore, the RMS\_theta index was utilized for reflective measurement modeling. The value of RMS\_theta was 0.074, which also indicated the appropriateness of the model fit, as the threshold value for RMS\_theta is less than 0.12. Thus, the figures in Table 4, in general, indicate that the proposed model appeared to have a good fit.

The model's explanatory capability was assessed using the  $R^2$  value, which falls within the range of 0 to 1. A high  $R^2$  value signifies a stronger explanatory power. Threshold values for the model, categorized as weak, moderate, and strong, are set at 0.25, 0.50, and 0.75, respectively. The latent variables creativity ( $R^2$  value: 0.473) and LL ( $R^2$  value: 0.558) demonstrate moderate levels of explanatory power (Table 5).

**Table 5.** R square and F square.

Variables	R Square	R Square Adjusted	F Square	
			Creativity	Lifelong Learning
Creativity (C)	0.473	0.471		0.177
Lifelong Learning (LL)	0.558	0.556		
Information Literacy (IL)			0.898	0.218

The influence of exogenous variables on endogenous variables can be identified using the  $f^2$  approach, having threshold values as follows: small ( $0.02 < f^2 \leq 0.15$ ), medium ( $0.15 < f^2 \leq 0.35$ ), and large ( $f^2 > 0.35$ ) effects. The explanatory effect ( $f^2$  value) of IL on creativity is 0.898, indicating a significant impact, categorized as a larger effect. Similarly, the explanatory effect ( $f^2$  value) of IL on LL is 0.218, signifying a medium effect. Additionally, the explanatory effect ( $f^2$  value) of creativity on LL is 0.177, also denoting a medium effect.

#### 4.3. Descriptive Analysis

The levels of IL, LL, and creativity were assessed by performing descriptive analysis within the surveyed sample (Table 6). All the measures were divided into five levels (1–5) from lowest to highest. The news reporters had higher levels of IL, LL, and creativity, with a mean score ranged between 4.214 and 4.414. These high mean scores reflected higher perceptions for each research variable.

Table 7 displays the relationships between the different factors studied. It shows that IL has a moderate positive correlation with LL ( $r = 0.431$ ,  $p < 0.01$ ) and strong positive correlation with creativity ( $r = 0.688$ ,  $p < 0.01$ ). Creativity also has a moderately positive

correlation with LL ( $r = 0.388, p < 0.01$ ). However, there was weak correlation of education and work experience with LL ( $r = -0.012, p = 0.526$  and  $r = -0.041, p = 0.062$ , respectively), indicating no significant relationship.

**Table 6.** Descriptive statistics.

Variables	N	Minimum	Maximum	Mean	SD
Information Literacy (IL)	758	1	5	4.414	0.572
Lifelong Learning (LL)	758	1	5	4.395	0.671
Creativity (C)	758	1	5	4.214	0.760

**Table 7.** Correlations among variables.

Variables	Correlation
IL and Lifelong Learning	0.431 **
IL and Creativity	0.688 **
Creativity and Lifelong Learning	0.388 **
Education and Lifelong Learning	−0.012
Work Experience and Lifelong Learning	−0.041

\*\*  $p < 0.01$ .

#### 4.4. Structural Model

This study employed the SmartPLS statistical software (version 3.3.3) to examine the connections between IL, LL, and creativity. SmartPLS is a variance-based structural equation modeling (SEM) approach that allows for the simultaneous evaluation of the measurement model. This method assesses the reliability, validity, and both structural and hypothesized relationships among the constructs utilized in the proposed research model. Direct and indirect effects of IL on LL are outlined in Table 8. The results indicated a positive influence of IL on LL ( $\beta = 0.431, p < 0.05$ ), supporting research hypothesis H1. Similarly, IL positively and significantly affected creativity ( $\beta = 0.688, p < 0.05$ ), confirming H2. In addition, creativity had a statistically significant positive effect on LL ( $\beta = 0.388, p < 0.05$ ). Consequently, H3 was also validated (see also Figure 2).

**Table 8.** Direct and indirect relations.

Hypotheses	Direct Relations	Coefficients	Mean	SD	T	p Values	Decision
H1	IL -> Lifelong Learning	0.431	0.43	0.045	9.498	0.000	Accepted
H2	IL -> Creativity	0.688	0.69	0.021	33.084	0.000	Accepted
H3	Creativity -> Lifelong Learning	0.388	0.389	0.042	9.137	0.000	Accepted
Hypotheses	Indirect Relations	Coefficients	Mean	SD	t	p Values	Decision
H4	IL -> Creativity -> Lifelong Learning	0.267	0.268	0.029	9.259	0.000	Accepted
Control Variables	Education -> Lifelong Learning	−0.012	−0.012	0.019	0.635	0.526	Rejected
	Work Experience -> Lifelong Learning	−0.041	−0.041	0.022	1.863	0.062	Rejected

#### 4.5. Mediating Effect

The indirect relation of IL with LL through the mediation of creativity was also examined in this research. The mediation of creativity in the relationship between IL and LL ( $\beta = 0.144, p < 0.05$ ) was also supported (Table 7). Therefore, research hypothesis H4

was also accepted. Furthermore, the direct effects of two control variables, education and work experience, on LL were also measured ( $\beta = -0.012, p < 0.05$ ,  $\beta = -0.041, p < 0.05$ ). Both the control variables did not have any statistically significant influence on LL (see also Figure 2).

## 5. Discussion

This study examined how IL affects LL, with creativity as a mediator, among news reporters in Pakistan. The proposed research model was conceptualized on the basis of prior research studies and empirically validated by analyzing primary data gathered in the survey. A detailed examination of the descriptive analysis discovered that these news reporters had a higher level of IL, LL, and creativity skills, as they agreed with the statements and scored higher means ranging from 4.214 to 4.414 (Table 6). These results were expected and appeared logical as news reporters need sufficient capabilities for IL, LL, and creativity to perform well in the media industry and require continuous engagement with formal and informal learning, unlearning, and relearning in the journalists' workplace (Elmborg 2006; Ward 2006). These findings were consistent with those of Naveed et al. (2023), who also reported journalists as information-literate, creative, and lifelong learners. Additionally, the finding with regard to higher IL levels among news reporters also corroborated the results reported by Haider et al. (2022). Similarly, Naveed and Saadia (2024), in a recent research study, also reported journalists as being information-literate.

The data analysis revealed that IL affected LL directly and positively among news reporters (H1). These outcomes appeared anticipated and logical as the existing literature argued that IL lays foundations and has a strategical and reinforcing relationship with LL (Horton 2006). This finding corroborated the results of the existing studies reporting that IL is a positive predictor of LL (Kozikoglu and Onur 2019; Seifi et al. 2020). Similarly, the study of Feng and Jih-Lian (2016) also discovered a positive and statistically significant relationship of IL with LL among university teachers in Fujian Province, China. Likewise, an inquiry of 127 sports teacher candidates by Solmaz (2017) also reported IL as a positive and significant predictor of LL. A recent research study by Naveed et al. (2023) also shared a similar result that the LL skills of journalists increase as their IL skills increase. Thus, it is plausibly concluded that the modern enterprise in general and media houses in particular need to make arrangements to impart IL instruction in working environments.

A perusal of the results also indicated a direct but positive effect of IL on the creativity of news reporters (H2). This finding was estimated as the creativity process undertakes certain information practices, requiring individuals engaged in creativity to adopt adequate information behavior (Naveed et al. 2023). This finding also aligns with the results of previous studies reporting IL as a positive influencer of creativity (Mitchell et al. 2017; Wu 2018). Similarly, the results of Chang and Hsu (2015) also discovered a positive and significant relationship between these variables. Furthermore, some other studies from the context of the workplace also determined a positive association between IL and creativity (Bagheri and Baviran 2022; Chang and Hsu 2015; Ghazizadeh et al. 2017; Zhu et al. 2019). Likewise, a recent study by Naveed et al. (2023) also reported IL as a positive predictor of creativity among journalists. Thus, it is concluded that higher IL capabilities increase creativity in the workplace. Furthermore, the results also indicated a direct but positive influence of creativity on LL (H3). This result was also expected as creativity is a transversal skill contributing to the development of LL (Lucas and Venckutė 2020). This relationship was examined for the first time in this study and so requires further substantial empirical evidence from multiple contexts before the theorization that creativity influences LL positively can be achieved. In addition, creativity also appeared to mediate the nexus between IL and LL (H4). The mediation of creativity in the relationship between IL and LL was also examined for the first time in this study and which requires further investigation from a theorizing viewpoint. Hence, it is concluded that IL not only predicted LL directly but also had an indirect effect through the mediation of creativity.

## 6. Conclusions

The empirical testing of the hypothetical research model (Figure 1) was conceptualized based on the available research on IL, creativity, and LL. The research outcomes affirmed the nexus between IL, creativity, and LL in the workplace of news reporters. The conclusions drawn include the following: First, IL can confidently be linked with LL and creativity as it has a direct and positive effect on creativity and LL. Second, creativity can also be associated with LL as it also positively predicted LL. Lastly, IL also had an indirect but positive influence on LL through the mediation of creativity. The pragmatic insights generated by these results would be helpful for enterprises in general and media houses in particular in understanding the role of IL in LL and creativity in the context of the workplace, but also as the key to digital inclusion, and the way it may positively influence institutional performance and effectiveness in generating business value and achieving a sustainable competitive advantage through entrepreneurial ventures.

## 7. Implications

These results hold significant implications for training and development within the Pakistani journalism context, as well as for information specialists, academics, researchers, and practitioners. Firstly, media organizations should devise a human resource development strategy to prioritize identifying and addressing any IL deficiencies among their workforce, providing tailored education and training programs to enhance these skills. Secondly, existing local training programs for journalists must be revamped to integrate content related to information literacy, creativity, and LL, thereby ensuring the continuous capacity building of the industry's professionals. Thirdly, academic programs in media studies institutes of universities should consider incorporating information literacy as a standalone, credit-bearing mandatory course within their curriculum, preparing future journalists with the necessary skills to thrive in the digital media landscape. Lastly, information managers in special libraries should collaborate with institutional training teams to develop need-based IL instruction programs tailored to the specific context of their workplace, ensuring that journalists have access to the resources and support necessary for their ongoing professional development. By implementing these recommendations, stakeholders across the journalism ecosystem can work together to cultivate a more skilled, adaptable, and informed workforce, ultimately contributing to the advancement of the Pakistani media industry.

## 8. Limitation and Future Directions

There were certain limitations of this research. First, this research measured IL, creativity, and LL using a self-assessment method. Therefore, there is a possibility that the survey respondents overrated their skills rather than reporting their actual skills. Second, this research may be subject to sampling bias as the survey respondents were recruited through a non-probability convenience sampling process. As a result, despite the large sample size, the sample may not accurately represent the target population. Third, the research was conducted within the specific context of news reporters' workplaces, which could restrict the generalizability of the findings to other workplace settings and contexts. Therefore, substantial empirical evidence is needed from other contexts and workplaces in different cultural and geographical locales to strengthen these research results. As far as future research directions are concerned, the replication of this study can be conducted in other contexts and workplaces. Future inquiries can also examine the influence of information anxiety, the feeling of discomfort in the absence of IL, on LL through the mediation of creativity.

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## References

- ACRL. 2000. *Information Literacy Competency Standards for Higher Education*. Chicago: Association of College and Research Libraries.
- Ahmad, Farhan, Gunilla Widén, and Isto Huvila. 2020. The impact of workplace information literacy on organizational innovation: An empirical study. *International Journal of Information Management* 51: 102041. [CrossRef]
- Anwar, Mumtaz A., and Muhammad Asghar. 2016. Information seeking behavior of Pakistani newspaper journalists. *Pakistan Journal of Information Management and Libraries* 10: 57–79. [CrossRef]
- Arp, Lori, and Beth S. Woodard. 2004. Curiosity and creativity as attributes of information literacy. *Reference & User Services Quarterly* 44: 31.
- Bagheri, Tooran, and Malihe Baviran. 2022. Investigating the Relationship between Information Literacy and Organizational Creativity: A Case Study. *Journal of Knowledge Studies* 14: 1–17.
- Boss, Katherine E., Kristina M. De Voe, Stacy R. Gilbert, Carolina Hernandez, Megan Blauvelt Heuer, April Hines, Jeffrey A. Knapp, Rayla E. Tokarz, Chiméne E. Tucker, and Kristina V. Bisbee. 2022. Uncovering the Research Behaviors of Reporters: A Conceptual Framework for Information Literacy in Journalism. *Journalism & Mass Communication Educator* 77: 393–413. [CrossRef]
- Bruce, Christine. 2003. Information Literacy as a Catalyst for Educational Change: A Background Paper. *International Information Literacy Conferences and Meetings*. Available online: <http://www.ncelis.gov/libinter/infoliteconf&meet/infolitconf&meet.html> (accessed on 3 February 2023).
- Bruce, Christine Susan. 1999. Workplace experiences of information literacy. *International Journal of Information Management* 19: 33–47. [CrossRef]
- Chang, Cheng-Ping, and Pei-Chun Hsu. 2015. The correlation between employee information literacy and employee creativity. *Quality & Quantity* 49: 221–34.
- CILIP. 2018. What Is Information Literacy? Available online: <https://www.cilip.org.uk/news/421972/What-is-information-literacy.htm> (accessed on 3 February 2023).
- Coşkun, Yelkin Diker, and Melek Demirel. 2010. Lifelong learning tendency scale: The study of validity and reliability. *Procedia-Social and Behavioral Sciences* 5: 2343–50. [CrossRef]
- Elmborg, James. 2006. Critical Information Literacy: Implications for Instructional Practice. *The Journal of Academic Librarianship* 32: 192–99. [CrossRef]
- Feng, Liu, and Ha Jih-Lian. 2016. Effects of teachers' information literacy on lifelong learning and school effectiveness. *Eurasia Journal of Mathematics, Science and Technology Education* 12: 1653–63.
- Fornell, Claes, and David F. Larcker. 1981. *Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics*. Los Angeles: Sage Publications.
- Forster, Marc. 2017. *Information Literacy in the Workplace*. London: Facet Publishing. Available online: <https://journals.sagepub.com/doi/10.1177/09610006221081895> (accessed on 3 February 2023).
- Gardiner, Helen P., and Th JB Kline. 2007. Development the Employee Lifelong Learning Scale (ELLS). *PAACE Journal of Lifelong Learning* 16: 63.
- Gardner, Diane P. 2000. *Learning At Work. Tennessee Profiles in Workplace Adult Basic Education*. Knoxville: University of Tennessee. Available online: [http://www.cls.utk.edu/pdf/learning\\_at\\_work.pdf](http://www.cls.utk.edu/pdf/learning_at_work.pdf) (accessed on 3 February 2023).
- Ghazizadeh, Hamid, Majid Tabarzadi, and Ali Akbar Khasseh. 2017. Relationship between Information Literacy Standards and Organizational Creativity among Employees of an Iranian Company (A Case of Tehran Electric Company). *Library Philosophy and Practice* 1669: 1–17. Available online: <https://core.ac.uk/download/pdf/189476928.pdf> (accessed on 3 February 2023).
- Haider, Usman, Syeda Hina Batool, Amara Malik, Khalid Mahmood, and Muhmmad Safdar. 2022. Bonding between information literacy and personal information management practices: A survey of electronic media journalists. *Information and Learning Sciences* 123: 298–316. [CrossRef]
- Hair, Joseph F., Christian M. Ringle, and Marko Sarstedt. 2013. Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long Range Planning* 46: 1–12. [CrossRef]

- Hair, Joseph F., Jeffrey J. Risher, Marko Sarstedt, and Christian M. Ringle. 2019. When to use and how to report the results of PLS-SEM. *European Business Review* 31: 2–24. [CrossRef]
- Henseler, Jörg, Theo K. Dijkstra, Marko Sarstedt, Christian M. Ringle, Adamantios Diamantopoulos, Detmar W. Straub, David J. Ketchen, Jr., Joseph F. Hair, G. Tomas M. Hult, and Roger J. Calantone. 2014. Common beliefs and reality about PLS: Comments on Rönkkö and Evermann (2013). *Organizational Research Methods* 17: 182–209. [CrossRef]
- Horton, Forest Woody. 2006. Information literacy and lifelong learning. *Guidelines on Information Literacy for Lifelong Learning* 12: 1–59.
- Inayatillah, Fafi. 2018. Media and Information Literacy (MIL) in journalistic learning: Strategies for accurately engaging with information and reporting news. *IOP Conference Series: Materials Science and Engineering* 296: 012007. [CrossRef]
- Iqbal, Javed, Naima Qureshi, Muhammad Azeem Ashraf, Samma Faiz Rasool, and Muhammad Zaheer Asghar. 2021. The effect of emotional intelligence and academic social networking sites on academic performance during the COVID-19 pandemic. *Psychology Research and Behavior Management* 14: 905. [CrossRef] [PubMed]
- Isfandiyari-Moghaddam, Alireza, and Vahideh Kashi-Nahanji. 2011. Does information technology affect the level of information literacy? A comparative case study of high school students. *Aslib Proceedings* 63: 618–31. [CrossRef]
- Jaussi, Kimberly S., and Amy E. Randel. 2014. Where to look? Creative self-efficacy, knowledge retrieval, and incremental and radical creativity. *Creativity Research Journal* 26: 400–10. [CrossRef]
- Kark, Ronit, Dina Van Dijk, and Dana Rachel Vashdi. 2018. Motivated or demotivated to be creative: The role of self-regulatory focus in transformational and transactional leadership processes. *Applied Psychology* 67: 186–224. [CrossRef]
- Kaufman, James. 2018. Creativity as a stepping stone toward a brighter future. *Journal of Intelligence* 6: 21. [CrossRef] [PubMed]
- Kirk, Joyce. 2004. Information and work: Extending the roles of information professionals. Paper presented at the ALIA 2004 Biennial Conference, Gold Coast, Queensland, Australia, September 21–24.
- Kirkwood, Amber. 2021. Learn. Work. Repeat. Available online: <https://www.candlefox.com/blog/lifelong-learning/> (accessed on 3 February 2023).
- Kozikoglu, Ishak, and Zehra Onur. 2019. Predictors of lifelong learning: Information literacy and academic self-efficacy. *Cypriot Journal of Educational Sciences* 14: 492–506. [CrossRef]
- Leone, Salvatore Anthony. 2020. *Core Processes of Creativity in Teams: Developing a Behavioral Coding Scheme*. Omaha: University of Nebraska at Omaha. Available online: <https://www.proquest.com/docview/2427334035?pq-> (accessed on 3 February 2023).
- Lucas, Bill, and Milda Venckutė. 2020. *Creativity, a Transversal Skill for Lifelong Learning: An Overview of Existing Concepts and Practices: Final Report*. Brussels: Joint Research Centre (Seville site), European Commission. [CrossRef]
- Lukianova, Larysa, and Oksana Ovcharuk. 2024. Information Literacy and Digital Inclusion: Challenges of the Modern Information Educational Environment in Ukraine. In *From Digital Divide to Digital Inclusion: Challenges, Perspectives and Trends in the Development of Digital Competences*. Singapore: Springer Nature Singapore, pp. 541–65.
- MacMillan, Margy Elizabeth. 2014. Fostering the integration of information literacy and journalism practice: A long-term study of journalism students. *Journal of Information Literacy* 8: 3. [CrossRef]
- Malafi, Elizabeth, Grace Liu, Stéphane Goldstein, Esther Grassian, and Sarah LeMire. 2017. Business and workplace information literacy: Three perspectives. *Reference and User Services Quarterly* 57: 79–85. [CrossRef]
- Mansoor, Hasan M. H. 2024. Media and information literacy as a model of societal balance: A grounded meta-synthesis. *Heliyon* 10: e25380. [CrossRef] [PubMed]
- Mathews, Therese L., Margaret R. Emerson, Tiffany A. Moore, Alissa Fial, and Kathleen M. Hanna. 2019. Systematic review: Feasibility, reliability, and validity of maternal/caregiver attachment and bonding screening tools for clinical use. *Journal of Pediatric Health Care* 33: 663–74. [CrossRef] [PubMed]
- Mitchell, Deborah Gale, Julie A. Morris, Joseph M. Meredith, and Naomi Bishop. 2017. Chemistry infographics: Experimenting with creativity and information literacy. In *Liberal Arts Strategies for the Chemistry Classroom*. Washington: ACS Publications, pp. 113–31.
- Muñoz-Doyague, María F., Nuria González-Álvarez, and Mariano Nieto. 2008. An examination of individual factors and employees' creativity: The case of Spain. *Creativity Research Journal* 20: 21–33. [CrossRef]
- Naveed, Muhammad Asif. 2022. Information literacy self-efficacy of scientists working at the Pakistan Council of Scientific and Industrial Research. *Information Research* 27. [CrossRef]
- Naveed, Muhammad Asif, and Fariha Rafique. 2018. Information literacy in the workplace: A case of scientists from Pakistan. *Libri* 68: 247–57. [CrossRef]
- Naveed, Muhammad Asif, and Haleema Saadia. 2024. Information literacy at journalists' workplace in Pakistan. *Journal of Librarianship and Information Science* 56: 453–67. [CrossRef]
- Naveed, Muhammad Asif, and Muhammad Kamran. 2022. Workplace information literacy: A case of investigation officers from Punjab Police, Pakistan. *Information Research* 27. [CrossRef]
- Naveed, Muhammad Asif, and Naveed Abbas Shah. 2023. Information literacy in the legal workplace: Current state of lawyers' skills in Pakistan. *Journal of Librarianship and Information Science* 55: 334–47. [CrossRef]
- Naveed, Muhammad Asif, Javed Iqbal, Muhammad Zaheer Asghar, Rozeen Shaukat, and Pirta Seitamaa-hakkarainen. 2023. Information Literacy as a Predictor of Work Performance: The Mediating Role of Lifelong Learning and Creativity. *Behavioral Sciences* 13: 24. [CrossRef]
- Otonicar, Selma Leticia Capinzaiki, Marta Lúcia Pomim Valentim, and Glória Georges Feres. 2020. Managers' information literacy: A case study of a cluster in Brazil. *AtoZ: Novas Práticas em Informação e Conhecimento* 7: 4–11. [CrossRef]

- Pelser, Anna-Marie, and Eben Swanepoel. 2022. Information Literacy as a Meta-Literacy Prerequisite for Teaching and Learning in an ICT Environment. In *Higher Education in the Face of a Global Pandemic*. Leiden: Brill, pp. 139–56.
- Peterson, Robert A., and Yeolib Kim. 2013. On the relationship between coefficient alpha and composite reliability. *Journal of Applied Psychology* 98: 194. [CrossRef] [PubMed]
- Plaza, Windon, and Daniel Robotham. 2021. Establishing a Culture of Lifelong Learning in the Workplace. Available online: <https://extension.psu.edu/establishing-a-culture-of-lifelong-learning-in-the-workplace> (accessed on 10 February 2023).
- Saadia, Haleema, and Muhammad Asif Naveed. 2022. Workplace Information Literacy: Current State of Research Published from South-Asia. *Library Philosophy and Practice* 6188: 1–17.
- Saadia, Haleema, and Muhammad Asif Naveed. 2024. Effect of information literacy on lifelong learning, creativity, and work performance among journalists. *Online Information Review* 48: 257–76. [CrossRef]
- Sarstedt, Marko, Christian M. Ringle, and Joseph F. Hair. 2017. Partial least squares structural equation modeling. *Handbook of Market Research* 26: 587–632.
- Sasikala, Chagari, and Chayanam Lakshmi Kumari. 2013. Information literacy at the workplace: A case study of steel industry. In *European Conference on Information Literacy (ECIL)*. Ankara: Hacettepe University.
- Seifi, Leili, Maryam Habibi, and Mohsen Ayati. 2020. The effect of information literacy instruction on lifelong learning readiness. *IFLA Journal* 46: 259–70. [CrossRef]
- Solmaz, Dilek Yaliz. 2017. Relationship between Lifelong Learning Levels and Information Literacy Skills in Teacher Candidates. *Universal Journal of Educational Research* 5: 939–46. [CrossRef]
- Su, Ya-Hui. 2009. Idea creation: The need to develop creativity in lifelong learning practices. *International Journal of Lifelong Education* 28: 705–17. [CrossRef]
- Suorsa, Anna, Jenny S. Bossaller, and John M. Budd. 2021. Information Literacy, Work, and Knowledge Creation: A Hermeneutic Phenomenological Point of View. *The Library Quarterly* 91: 457–72. [CrossRef]
- Ward, Dane. 2006. Revisioning Information Literacy for Lifelong Meaning. *The Journal of Academic Librarianship* 32: 396–402. [CrossRef]
- Wu, Ming-Shian. 2018. Information literacy, creativity and work performance. *Information Development* 35: 676–87. [CrossRef]
- Zhang, Xue, Shaheen Majid, and Schubert Foo. 2010. The Role of Information Literacy in Environmental Scanning as a Strategic Information System-A Study of Singapore SMEs. In *International Symposium on Information Management in a Changing World*. Berlin and Heidelberg: Springer.
- Zhu, Sha, Harrison Hao Yang, Jason MacLeod, Liqin Yu, and Di Wu. 2019. Investigating teenage students' information literacy in China: A social cognitive theory perspective. *The Asia-Pacific Education Researcher* 28: 251–63. [CrossRef]

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