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DIGITAL MEDIA LITERACY AS A PREDICTOR OF ONLINE PRIVACY CONCERNS AMONG UNIVERSITY STUDENTS

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Abstract
Rapid advances in digital technology have heightened concerns about the privacy and safety of personal information online. University students, among the heaviest users of digital platforms, are an important group for understanding how digital skills shape privacy awareness. This study examined the link between digital media literacy (DML) and online privacy concerns (OPC) among Pakistani university students. Using a quantitative survey on Google Forms, complete responses were obtained from 216 students, and both scales showed strong reliability. Digital media literacy and privacy concern were strongly and positively related ($r = .601$, $p < .001$), with digital media literacy explaining about 36% of the variance in privacy concern. The direction itself is revealing rather than making users complacent, greater digital literacy went with greater concern, supporting the awareness (knowledge-risk) side of the Privacy Paradox while leaving its behavioral side untested. No significant gender differences emerged for either variable. The findings make a practical case for building explicit privacy modules into digital-literacy education in Pakistan.

INTRODUCTION

The internet has changed the way people communicate, find information, and socialize all over the world. The integration of big data is becoming ubiquitous, shaping decision-making in various industries, such as healthcare, finance, entertainment, and marketing (Sivarajah et al., 2017). While immense benefits of this information abundance exist, privacy is of critical concern. Protecting the rights of individuals under the law is more difficult and more controversial than ever in an age when their personal information is collected, shared and exploited on a routine basis.

Digital media literacy can give people awareness about their own data being processed in the online world and empower them to make wise decisions on their online behavior (Pratama & Sari, 2023). Although there has been increased research on the topic of digital literacy, little empirical research exists to investigate the influence of digital media literacy on online privacy concerns, especially in the context of developing countries like Pakistan. This study aims to bridge this gap and research

into the predictive correlation between Digital media literacy and Privacy concerns regarding online uses in the context of big data. Theoretically, this study is related to the Privacy Paradox: the known lack of coherence between what people say about their privacy concerns and what they actually do online (Acquisti & Grossklags, 2005; Barnes, 2006). The paradox states that concern is not necessarily protective behavior, but the awareness portion of the paradox suggests that risk is knowledge that does make one more concerned. The present study examines if there is a correlation between greater digital media literacy and heightened awareness of privacy and derives implications for privacy education in Pakistan.

Study Background

Although big data can enhance user experiences and improve services, it simultaneously poses growing threats to personal privacy. Personal data is frequently collected or processed without clear informed consent and can be utilized in ways that the person wouldn't expect, such as for targeted marketing, for monitoring peoples' behavior, or when there's a data breach (Dhir et al., 2022). In the digital age information privacy issues are not just about technical risks, but they also involve questions of autonomy, information identity and trust in digital institutions.

Digital media literacy goes beyond the technical aspects to also include an awareness of the mechanisms of digital media and how digital data is being collected and potentially being exploited (Soroya et al., 2021). Studies on online privacy have been mainly concerned with trust in online platforms; perceived risk and awareness of the collection of data. The issue of digital media literacy as a factor that produces these concerns, however, has been under-researched systematically (Okela, 2023). However, while some studies indicate that one can relate an increase in digital literacy and hence in knowledge to an increase in awareness of privacy, and to a more cautious attitude on the Internet, other studies suggest that the attitude of privacy is complex, and it is questionable whether privacy attitudes are determined by the level of digital media literacy only. This study adds to this debate empirical evidence.

Problem Statement

There has been a lot of concern over online privacy due to the rapid proliferation of big data technologies. Although there has been a lot more conversation in recent years about privacy, a lot of people still don't understand how it's collected, analyzed, and stored. When this happens, it often leads to little information about the use of digital platforms, which contributes to increased vulnerabilities around privacy issues. Digital media literacy offers the promise of bridging this informational divide, so users can make more informed decisions regarding their digital behaviors.

Even though previous studies have identified factors influencing privacy concerns, such as trust and risk perception, limited empirical research has examined the associations between digital media literacy and attitudes toward privacy (Saritepeci et al., 2024). The present study seeks to fill this gap, focusing on university students in Pakistan, who are a growing population with digital engagement that is rapidly expanding, while their education regarding privacy is still relatively in its initial testing stages.

Research Questions

Following were key research questions for this study:

- What is the relationship between digital media literacy and online privacy concerns among university students in Pakistan?
- Does digital media literacy significantly predict online privacy concerns in a simple linear regression model?
- Are there significant gender differences in digital media literacy among university students in Pakistan?
- Are there significant gender differences in online privacy concerns among university students in Pakistan?

Research Hypotheses

Based on the Privacy Paradox framework and the digital literacy literature, the following formal hypotheses were proposed:

- H1: Digital media literacy will be significantly and positively correlated with online privacy concerns.
- H2: Online privacy concerns will be significantly predicted by digital media literacy in simple linear regression.
- H3: Digital media literacy and concerns about online privacy will not significantly differ by gender.

Research Objectives

The overall aim is to examine the extent to which Digital Media Literacy predicts online privacy concerns among university students in Pakistan. In particular this study set out to:

- Analyze the relationships between digital media literacy and concerns about online privacy.
- Determine whether digital media literacy significantly predicts online privacy concerns through regression analysis.
- Assess whether significant gender differences exist in digital media literacy and privacy concerns.
- Examine the findings in the context of the Privacy Paradox framework and what it means for digital literacy in Pakistan.

Significance of Study

This study joins other studies on online privacy by investigating the structural prediction of digital media literacy to privacy attitudes. Most previous research has been about trust, perceived risk, and privacy policy design, and fewer have tried to validate and test the variable of digital media literacy as a predictor variable (Akrami et al., 2024). The study revealed a good relation with a large effect size (r = .601), providing a new empirical base for the years of privacy education programs in Pakistan. In practical terms, the results have implications for curriculum designers in post-secondary education, administrators and policymakers in post-secondary education, and those who design technology platforms for creating digital citizens who are aware of privacy concerns.

Literature Review

This paper examines the theoretical concepts and measurements of Digital Media Literacy. While digital media literacy includes technical skills, it also has the potential to empower learners to critically assess, analyze, and create digital media responsibly. In light of the concept of big data, which states that the use of digital platforms in processing is done in a systematic manner with large amounts of personal data, making data protection a major issue (Pahala & Setiawan, 2026). Based on this, Masur (2020) argues that digital media literacy is necessary for comprehending one's rights, the accompanying dangers of sharing their personal information, and a critical attitude to online spaces. According to Nguyen & Pham (2025), digital media literacy does not only encompass individuals' proficiency with digital information but also their ability to analyze information in digital media, assert their rights in digital space, and take measures to protect their personal data to ensure their privacy and security. The Digital Media Literacy Scale, created by Rodríguez-de-Dios et al. (2016), which includes dimensions of technical mastery, content analysis, and content creation, is a psychometrically validated scale to assess these skills. In the current study, this scale was used.

Foundational Issues Related to Online Privacy Concerns

Online privacy concern is the extent of fear people have in terms of the collection, use, and possible misuse of information about them (Shamrokh et al., 2023). People who value privacy report higher levels of protective action, such as setting privacy options, avoiding sharing personal information, and using tools that block data collection. The Online Privacy Concern Scale that was developed by Buchanan et al. (2007) is the most widely validated multi-dimensional scale, which measures concern on a number of dimensions, such as data collection, unauthorized secondary usage, and improper access. This scale was employed in the

present study. Perceived risk of data misuse, trust in online platforms, social norms, and awareness of data collection practices are determinants of privacy concern in online interactions. Pakistani studies have shown that, although usage of digital platforms is prevalent, there is not much formal education in the field of privacy and pocketing users, especially the students, into a risk zone (Khan et al., 2022).

The Privacy Paradox and Digital Media Literacy

The Privacy Paradox (Acquisti & Grossklags, 2005; Barnes, 2006) is the fact that there are well-known gaps between what users say that they care about in terms of privacy and what they do online. Users often do so even when they express concern (Lwin & Li, 2024), and for instance, many users do not read the terms of conditions of the platforms on which they use, oversharing their personal information on social media, or keeping the default privacy settings. In this way, the distinction between the awareness dimension of information (Risk knowledge leads to an increase in concern) and the behavioral dimension (Increase in concern does not necessarily result in protective behavior) is made.

When considering the aspects of digital media literacy, some research indicates that the digital media literacy of higher levels is positively correlated with privacy concern and protective behaviors (Indasari & Kurniawati, 2025). Others put forward the notion that digitally literate users might feel paradoxically safer online and that by reducing the perceived risk, concern is minimized. This indicates that digital natives don't reflect actual privacy literacy, thus forming a gap between their actual competence and self-assessed competence (Ma & Chen, 2023). This study offers empirical evidence to this debate with reference to a Pakistani University environment.

Digital Media Literacy for Privacy in Developing Countries

Awareness raising of the risks of privacy and augmenting digital media literacy need to be prioritized in developing countries like Pakistan, where digital technologies are rapidly growing. The students of the University are one of the critical target groups as they are heavy users of digital platforms for purposes related to their academic studies, social and recreational activities, while routinely sharing personal information without a full understanding of the implications (Hussain et al., 2025). Ameer & Hukamdad (2025) point towards the increasing demand for digital citizenship Education in Pakistan, which focuses on promoting responsible, safe, and rights-centric digital behaviors. Research in other parts of the world, such as South Asia, finds evidence of co-development between privacy concern and digital literacy: the more access to digital technologies, the more explicit privacy education needs to be in curriculum designs and not assumed to come about organically as a result of technology use (Ali et al., 2024; Farooq et al., 2023).

Research Gap

Few studies have examined the relationship between digital media literacy and online privacy concern among the population of Pakistan's Universities. The literature indicates a conceptual relationship between Digital Media Literacy and Online Privacy concerns, while the literature on empirical aspects of this factor in the context of Pakistani Universities is scarce. The majority of studies have been conducted in the West or East Asian context; results are unlikely to be weakly portable to the South Asian context, which varies significantly in terms of digital infrastructure, cultural attitudes towards privacy, and educational facilities (Soroya et al., 2021). In addition, there is a lack of evidence in the context of Pakistan on a specific predictive model of DML and OPC, which has been tested, validated, and assessed using multi-item psychometric scales, with a good sample size, and rigorous statistical methods. The current study takes a look at this gap.

Research Methodology

Research Design

The study design used was a quantitative cross-sectional survey. It is well known in the social sciences field that the online survey is efficient,

cost-effective, and has the advantage of targeting dispersed audiences geographically (Butt, 2020). Undergraduate (BS-Level) students of Pakistan's universities formed the target population as they are considered to be heavy users of digital media on a daily basis in academic, social, and recreational activities, and thus relevant to the questions of the study.

Sampling Method and Data Collection

A non-probability sampling technique (snowball sampling) was used. The survey link was sent to the researcher's personal contacts (i.e., colleagues and other academics) first. The link was invited to be shared by participants among their peers through WhatsApp groups, student discussion forums, and social media platforms. This way allowed for both fast dissemination and in multiple universities within a limited time frame. After listwise deletion of subjects (N = 252, n = 216), with responses missing on one or more of the analysis variables (14.3% of subjects), responses from 216 cases were used for the analysis. Threats to representativeness were minimized by examining missing data, as this was assumed to be random and not systematic. It was a completely online survey using Google Forms. It was a voluntary participation, and informed consent was given at the beginning of the survey. The institutional guidelines did not require any ethical committee approval for anonymous online surveys, but the participants were informed of the principle of voluntary participation, anonymity, and the right to withdrawal.

Measurement Instruments

Table 1

Application of Scales

Scale Name	Author(s)	Items	Likert Scale	Purpose in Study
Digital Media Literacy Scale	Rodríguez-de-Dios et al. (2016)	29	1 (Strongly Disagree) – 5 (Strongly Agree)	Measures technical proficiency, content analysis, and content creation skills
Online Privacy Concern Scale	Buchanan et al. (2007)	16	1 (Strongly Disagree) – 5 (Strongly Agree)	Measures concern regarding data collection, misuse, identity theft, and financial fraud

Digital Media Literacy Scale (Adapted from Rodríguez-de-Dios et al., 2016): assesses the competencies to navigate, analyze, critically evaluate, and create digital media. The Online Privacy Concern Scale (Buchanan et al., 2007) is a scale assessing the level of concern about the collection, dissemination, or secondary use of personal data without their consent and whether it could be misused. Both tools have 5-point Likert response scales ranging from (1 Strongly Disagree) to (5 Strongly Agree). Higher scores correspond to higher levels of digital media competence and online privacy concern, respectively.

Data Analysis

Data was analyzed using IBM SPSS Statistics software. The following analyses were employed: (1) descriptive statistic of the demographic variables and score of each scales; (2) reliability analysis (Cronbach alpha) of both scales; (3) Pearson product-moment correlation analysis to test H1; (4) simple linear regression model analysis in order to test H2 and (5) one way ANOVA analysis in order to test H3 (gender difference). A value of $p < .05$ was used to indicate statistical significance.

Results

Participant Profile

There were *N* = 252 respondents for the study. After listwise deletion of missing data, *n* = 216 had complete data relating to the primary analysis variables. Data from the Internet and social media users in Pakistan has been gathered, predominantly from undergraduate students. Demographic information is complete and is provided in Table 2.

Table 2
Demographic Profile of Respondents (recruited sample, N = 252; analytic n = 216)

Variable	Category	n (%)
Gender	Male	147 (58.3%)
	Female	97 (38.5%)
	Other	8 (3.2%)
Age Group	18–21 years	149 (59.1%)
	22–25 years	59 (23.4%)
	26–30 years	36 (14.3%)
	31+ years	8 (3.2%)
Education	Matric	35 (13.9%)
	Intermediate	130 (51.6%)
	Bachelors	53 (21.0%)
	Masters	23 (9.1%)
	MPhil/PhD	11 (4.4%)

Reliability Analysis

Internal consistency of both measurement scales was good. The Digital Media Literacy Scale (29 items) had good reliability (Cronbach's α = .890). The Online Privacy Concern Scale (16 items) had a high reliability score of α = .921. Both values exceed the conventional .70 threshold (Nunnally, 1978), and the privacy-concern scale also surpasses the .90 benchmark recommended for higher-stakes measurement (DeVellis, 2016); both scales are therefore suitable for quantitative analysis.

Table 3
Reliability Statistics for Study Scales

Scale	Items	Cronbach's α	Interpretation
Digital Media Literacy Scale	29	.890	Good
Online Privacy Concern Scale	16	.921	Excellent

Descriptive Statistics

Table 4 shows the descriptive statistics of the two variables of the study. The results of the Digital media literacy (M = 3.420, *SD* = 0.661) in the 1-5 scale showed that respondents overall have a moderate to good level of Digital media literacy. The mean score for Online Privacy concern (M = 3.631, *SD* = 0.926) implies a moderately high level of privacy concern, which is significant because privacy education in Pakistan is in its nascent stages and development.

Table 4
Descriptive Statistics for Study Variables

Variable	*N*	*M*	*SD*	Scale Range
Digital Media Literacy (DML)	216	3.420	0.661	1–5
Online Privacy Concerns (OPC)	216	3.631	0.926	1–5

Hypothesis Testing

H1: Relationships between Digital Media Literacy (DML) and Online Privacy Concerns (OPC) Pearson's correlation coefficient of DML and OPC was calculated. There was a significant and strong positive correlation between the results: $r(214) = .601$, $p < .001$. According to Cohen's conventions (1988), this is a large effect size ($r > .50$). The positive aspects of this relationship are important not only in theory but also in terms of the actual outcomes: namely, that there is a positive correlation between digital literacy and online privacy concern. This reflects the knowledge-risk pathway: The more digitally literate people report more awareness of Internet data practices risk, and more concern about it. H1 is SUPPORTED.

Table 5
Pearson Correlation Matrix

Variable	DML	OPC
Digital Media Literacy (DML)	—	.601***
Online Privacy Concerns (OPC)	.601***	—

*** $p < .001$ (two-tailed). $N = 216$.

H2: Digital Media Literacy Predicting Online Privacy Concerns

To investigate the relationship between DML and OPC, simple linear regression analysis was conducted with the former as an independent variable/predictor and the latter as a dependent variable/outcome. The overall model was statistically significant, $F(1, 214) = 120.855$, $p < .001$. Digital media literacy significantly predicted online privacy concerns ($B = 0.842$, $\beta = .601$, $t = 10.993$, $p < .001$), accounting for 36.1% of the variance in OPC ($R^2 = .361$; adjusted $R^2 = .358$). This is a significant prediction effect: For each unit increase in DML, there was a corresponding .842 units increase in online privacy concern on the five-point scale. H2 is found to be SUPPORTED (large effect size).

Table 6
Simple Linear Regression: DML Predicting Online Privacy Concerns

Variable	*B*	*SE*	β	*t*	*p*
Constant	0.751	0.267	—	2.813	.005
Digital Media Literacy	0.842	0.077	.601	10.993	< .001

Note. $R^2 = .361$; Adjusted $R^2 = .358$; $F(1, 214) = 120.855$, $p < .001$.

H3: Gender Differences in Digital Media Literacy and Privacy Concerns

Two one-way ANOVAs compared DML and OPC across gender groups (male, female, and other). For digital media literacy, $F(2, 213) = 0.006$, $p > .05$, indicating no significant difference; male (M = 3.441) and female (M = 3.431) means were virtually identical. Online privacy concern likewise showed no significant gender difference, $F(2, 213) = 0.929$, $p > .05$. H3 (no significant gender differences) is supported, suggesting that male and female university students in this Pakistani sample report comparable levels of digital media literacy and privacy concern.

Table 7
One-Way ANOVA: Gender Differences in DML and OPC

Variable	*F*	df	*p*	Decision
Digital Media Literacy (DML)	0.006	(2, 213)	> .05	No significant difference
Online Privacy Concerns (OPC)	0.929	(2, 213)	> .05	No significant difference

Summary of Findings

Table 8
Summary of Hypotheses and Results

Hypothesis	Key Statistic	Decision
H1: DML positively correlates with OPC	$r = .601$, $p < .001$	SUPPORTED (large effect)
H2: DML significantly predicts OPC	$\beta = .601$, $R^2 = .361$, $F(1,214) = 120.855$, $p < .001$	SUPPORTED
H3: No significant gender differences in DML or OPC	DML $F = 0.006$; OPC $F = 0.929$; both $p > .05$	SUPPORTED

Discussion

The study of this interaction between digital media literacy and online privacy issues of university students in the context of Pakistan has been done using well-tested psychometric instruments and statistical procedures. Three important conclusions can be drawn: (1) that DML is highly and positively correlated with OPC ($r = .601$, and this correlation is statistically significant); (2) that DML is a significant and important predictor of OPC (and it explains 36.1% of the variance); and (3) that there are virtually no differences between male and female students for either variable. Turning to the theoretical implications of the positive DML–OPC relationship, the most notable point is that the correlation between digital media literacy and online privacy concern is .601, with a value greater than .5, indicating this to be a high positive correlation at $p < .001$. This direction is significant: it indicates that the more digitally literate, the higher (not lower!) the concerns about privacy online.

This discovery is directly related to the Privacy Paradox (Acquisti & Grossklags, 2005; Barnes, 2006). The behavioral dimension of that paradox says that, given the amount of concern, if there's an increase in understanding then there isn't an increase in protective behavior, but the awareness dimension of that paradox is the same as people found here in the study – the more people understand the digital world the more they know about the threats their data might face, the more their concern levels go up. This discovery falls along the 'knowledge-risk awareness' continuum—the more DML, the more people learn about how data may be collected to profile them and might be used in ways that are harmful to their interests. That is an escalation of the understanding and, hence, increased concern. This is in line with the results of Masur (2020), which report the impact

of digital media literacy education on the students' ability to have critical viewing of digital media platforms without being naive, and the research results of Indasari & Kurniawati (2025) that digital literacy programs can increase students' awareness of privacy in digital media. Going beyond this, the studies presented here do not measure actual privacy-protective behavior.

Therefore, it seems as if there still might be a behavioral aspect of the Privacy Paradox in this sample, since individuals might experience strong concerns (measured as OPCs) but still be driven to use behaviors that lead to the exposure of their data. Future studies do not need to conduct all three measurements; however, it is beneficial to measure DML along with OPC and privacy-protective behaviors (e.g., using a VPN or changing privacy settings) to determine if there is a continued paradoxical behavior as concern increases with literacy.

The regression equation explains 36.1% of the variance in online privacy concern (R^2 = .361), quite high for a regression equation consisting of a single predictor, and as such, the variance accounted for is significant ($F(1, 214) = 120.855$, $p < .001$), indicating that DML is a significant factor in the explanation of online privacy concern. When the unstandardized coefficient (B = 0.842) is examined, you can see that when DML goes up by 1 unit, there is an increase of 1 unit in OPC (approximately) on the 5-point scale. This is not just a statistical but also a meaningful effect. With these results, they set digital media literacy as a prerequisite for concern with privacy. On this basis, an implication for designing digital literacy education programs is that, if there is a correlation between digital skills and patterns of DML, then investing in building digital skills – in the specific case here, an understanding of the practices of digital platforms – should accordingly also be invested to achieve a higher level of worry about privacy and, ideally, to prime a protective reaction. Lastly, privacy-related digital literacy modules must be mandatory in all undergraduate course structures in all disciplines other than technology (in Pakistan Universities and HEC).

Lack of gender differences. Results from the ANOVA revealed that there was virtually no gender difference for DML (Male = 3.441, Female = 3.431; F = 0.006) or OPC (F = 0.929). The DML finding is specifically noteworthy, that with F = 0.006, there is nearly no difference between the group means. This contradicts some previous studies, which demonstrated a disparity in the level of privacy concern (women over men) or a higher level of technical digital literacy in males (in certain contexts) (Soroya et al., 2021). There are multiple reasons that can be offered. The relative homogeneity of the participants (in most cases, an academic context, mostly students from the university) presents a weaker picture of the gender differences in more diverse samples. Second, younger women in the Pakistani context in higher education institutions may be equal to their male counterparts in terms of their digital literacy. Third is that there may be a shift in the social and peer norms about digital technology use in the universities in Pakistan, which have made different genders' levels of skill and attitude towards privacy converge. Future studies could be worthwhile of examining whether this ratio of genders is also true for those not as part of a student group, for an older age group or in more rural settings where may be more inequality in terms of access to digital technologies. In the context of Pakistan, it may have an impact on privacy education. These findings have clear implications for privacy education in Pakistan.

Education in Digital Literacy should not only be limited to how to download something, how to use shortcut keys, how to send a message, or how to select a social platform, but also must be accompanied by the critical understanding of Data Governance, how social platforms handle user privacy, and the rights of the users in aggregate. A positive correlation between DML and OPC, as observed in the present study suggests that DML refers to a form of deeper and critical literacy which is related to the enhancement of concern; this can be understood as a motivational "first step" towards protection. In practice, this implies the following recommendations: Universities in Pakistan should formally be motivated to

introduce digital privacy modules as a part of the undergraduate digital literacy course across all the faculties of the university. It is recommended that Digital Literacy (as a concept which would include privacy as an inherent component) should be incorporated in the National Academic Standards, and also should be a concern of the Higher Education Commission of Pakistan. Technology platforms, or any platforms operating in Pakistan, should present privacy control and transparency features—make them easy to understand and accessible to the users, and give them the tools to act on their privacy concerns. A gap in the research has been identified, providing an opportunity to examine the effects of future privacy education interventions on OPC in the context of actual protective behaviors.

There are some limitations to note. First, the study population was selected using a snowball sampling technique, so the results may not generalize to all Pakistani University students or other demographic groups. Second, causal conclusions cannot be drawn from a cross-sectional design (the regression model shows that DML predicts OPC, but cannot establish causation). Third, the full Privacy Paradox concept (privacy concern without a corresponding level of privacy-protective behavior) was not tested, as the construct was operationalized only as online privacy concern. Fourth, the listwise deletion rate (14.3%) was acceptable, but it should be noted that there may be some bias in the sample due to this deletion. Implications for future research: The investigation should be followed up in several areas in the future. Longitudinal designs would allow for analysis of the relationship between changes in DML over time, and changes in OPC and, importantly, actual privacy-protecting behaviors. The results of the present study could be validated by a future study by widening the scope of the respondents, which can include secondary school students, working professionals, the elderly, and the intern population in rural areas. Factor analyses may be considered to explore relationships between DML and OPC, as either might be found to differentiate mediating relationships with specific aspects of DML (e.g., technical skills vs critical awareness). Lastly, an intervention study involving the testing of a set of new, specially developed digital privacy literacy interventions would help build evidence of digital privacy literacy curriculum and policy.

Conclusion

This study provides strong empirical evidence that the relationship between Digital Media Literacy and Online Privacy Concerns (OPC) exists and proves a strong positive correlation ($r = .601$; $R^2 = .361$, $p < .001$) among Pakistani university students. In contrast to some conceptions of digital literacy within the Privacy Paradox, there is a direct correlation between digital literacy and an increased sense of concern about privacy, a knowledge-risk awareness pathway. However, the gender differences were not statistically significant, and this sample does not provide evidence of a gendered digital divide in higher education in Pakistan, since the gender gap in DML and OPC was not significant. These results highlight the need to incorporate critical, privacy-aware education about digital media as a structural intervention to boost privacy concern (and potentially privacy-protective behaviors) among young Pakistanis entering a rapidly growing world dominated by data.

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