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Digital Literacy as a Buffer against Perceived Risk on Online Shopping among Nepalese Generation Z: A Formative Higher-order Construct Approach

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Abstract

Purpose : This study examines the impact of Perceived Risk (PR) on Online Shopping Behavior (OSB) among Generation Z in Nepal, focusing on the mediating role of Digital Literacy (DL).

Methodology: A descriptive and explanatory research design with a quantitative research approach was employed. The population comprised Generation Z individuals in Nepal. Using purposive sampling, after data screening, 395 valid responses were retained for analysis. Data were analyzed using SmartPLS, incorporating higher-order constructs (HOC) for PR and applying reliability and validity checks based on threshold values.

Findings: The analysis revealed significant relationships between PR dimensions and online shopping intention, with DL playing a partial mediating role. Higher digital literacy levels were found to mitigate the negative impact of PR on OSB.

Implications: The findings provide insights for e-commerce platforms and policymakers to design strategies that enhance DL, thereby reducing PR and encouraging online shopping among younger consumers.

Originality/Value: This study uniquely combines a HOC Perceived Risk with the mediating role of DL within the context of Generation Z in Nepal.

Keywords: *Digital literacy, Generation Z, Higher order construct, Online shopping behavior, Perceived Risk*

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Introduction

The proliferation of the internet, smartphones, and digital payment systems has significantly changed consumer shopping behavior, especially among Generation Z. Online shopping is a convenient, fast and also time-and-cost-saving alternative to traditional counterparts; however, it is not without drawbacks. Perceived risk can be defined as uncertainty and the negative repercussions related to online transactions that consumers may perceive towards online purchases such as situations related to product quality, privacy, payment security and delivery related issues (Kamalul Ariffin et al., 2018; Forsythe & Shi, 2003). The market of online shopping in Nepal has portrayed an increase, even though it also depicts the struggle between digital opportunity and digital fear. Regardless of the penetration of smartphones and the internet, there is a conservative approach to real purchase behaviour (Acharya, 2021). Generation Z people (born roughly between 1997 and 2012) are said to be more digitally active than the older generations. They are well-known to the world of technology and are usually well versed in mobile apps, digital wallets, and e-commerce websites (Prensky, 2001). According to the empirical evidence, their shopping behavior is still greatly determined by issues of perceived risks, including fear of frauds, privacy concerns, and uncertainty about the quality of the products among others (Kucuk, 2016; Sah, 2021). Research has always revealed that online consumers tend to be less engaged in the online shopping due to higher levels of perceived risk, particularly within the context of emerging economies such as Nepal (Bhatnagar, Misra, & Rao, 2000; Forsythe & Shi, 2003).

PR on online shopping means risk-aversion with associated negativity that online consumers develop in their mind due to uncertainties and possible adverse outcomes. It is usually foreseen as a multidimensional concept that includes financial risk, performance risk, privacy risk, time risk, psychological risk and social risk (Bhatnagar et al., 2000; Forsythe & Shi, 2003; Stone & Grohnaug, 1993). Financial risk entails fear of losses in money because of fraud, invalid billing or surreptitious charges. The performance risk occurs because of the fear that the product purchased does not work as it is supposed to, does not meet the specified standards, or that it fails to meet the description. Privacy risk reflects apprehension regarding the unauthorized collection, use, or sharing of personal and payment information. Time risk relates to the potential waste of time caused by slow websites, complex transaction procedures, or complicated return processes. Psychological risk refers to feelings of anxiety, regret, or dissatisfaction after making a purchase. Social risk concerns the possibility of losing social approval or facing negative judgment from peers, family, or colleagues due to one's choice of product, brand, or online retailer. Collectively, these risks can reduce trust in online platforms and deter consumers from engaging in e-commerce, particularly in developing economy, where consumer protection mechanisms may be less effective (Chawla & Kumar, 2022). However, higher digital literacy—encompassing skills in evaluating online information, assessing seller credibility, and implementing secure payment practices—can help mitigate the perceived severity of these risks, enabling Gen Z consumers to shop online with greater confidence and informed decision-making.

Digital literacy refers to the ability to effectively locate, evaluate, and use digital information, tools, and platforms to achieve specific goals (Ng, 2012). In the context of online shopping, digital literacy encompasses skills such as verifying seller credibility, identifying secure payment gateways, detecting fraudulent websites, and navigating e-commerce platforms efficiently (Eshet-Alkalai, 2004). Higher digital literacy can influence consumer decision-making by reducing uncertainty and enhancing trust in

online transactions (Pudasaini & Dangol, 2024). Digital literacy as a mediating variable has the potential to reduce the strength of the negative effect of perceived risk (financial, performance or privacy risk) on online shopping behavior since it allows consumers to gain a level of competence in dealing with and mitigating the effects of these risks (Nguyen et al., 2024). Gen Z consumers in developing countries like Nepal are making a mediating role of digital skill more applicable that differ in the instances of perceived risks to purchase intentions and behaviors.

It has been indicated that perceived risk plays a major role in influencing online shopping behavior by making consumers too scared to make purchases online. The connection between digital literacy and such risks is postulated as the mediating relationship that allows consumers to address the risk and reduce it to effectively controlled. This dynamic is acute among generation Z consumers in Nepal because of how inconsistent digital capabilities are on one hand and how the context of e-commerce in the country has been constantly shifting. In line with this, the research questions this study aims to answer is whether or not digital literacy decreases the effect of perceived risk on online shopping behavior among Generation Z in Nepal. In this regard, the focus of the study will be on exploring the mediating role of digital literacy in the connection as well as association between perceived risk and behavior towards online shopping under given circumstances.

Review of Literature

Theoretical Review

The online shopping behavior can be examined through the theory of planned behavior (Ajzen, 1991), which states that behavior intentions and behavior are influenced by attitudes, subjective norms and perceived behavioral control. In the case of e-commerce, perceived risk has some impact on the way people feel towards online buying, usually diminishing the purchase desire (Forsythe & Shi, 2003). Consumers would judge whether a particular purchase is worthwhile considering potential losses (financial, performance, privacy, time, psychological and social risks) as explained by Perceived Risk Theory (Bauer, 1960). Digital literacy, based on the Digital Literacy Framework (Ng, 2012) and Technology Acceptance Model (Davis, 1989), increases the perceived behavioral control, by providing consumers with skills to work securely and efficiently in the digital world. Digital literacy may help lessen the impact of perceived risk on online purchase behaviour since increased digital literacy may lessen uncertainty and enhance a feeling of trust (Nguyen et al., 2024). Collectively, these theories provide a foundation for examining the mediating role of digital literacy in the relationship between perceived risk and online shopping behavior, particularly among Generation Z consumers in developing economies such as Nepal.

Perceived risk, first conceptualized as the uncertainty in consumer decision-making (Bauer, 1960), was expanded into multiple dimensions like financial, performance, social, and psychological risk by Cunningham (1967) and, Jacoby and Kaplan (1972). Later works distinguished between objective and perceived risk and adapted these dimensions to the online context (Stone & Grønhaug, 1993; Mitchell, 1999). In e-commerce, Featherman and Pavlou (2003) identified six salient facets—financial, performance, privacy, time, psychological, and social risk—highlighting that digital transactions add domain-specific concerns such as data security and delivery delays. Pavlou (2003) integrated these facets into models linking risk, trust, and adoption, showing that higher perceived risk reduces purchase intention. These six types risk are thus treated as distinct yet interrelated indicators of overall perceived risk in online shopping research.

Empirical Review and Hypotheses Development

Online Shopping Behavior

Online shopping behavior refers to the process by which consumers search for, evaluate, and purchase goods or services through internet-based platforms, and it is measured by purchase intention, frequency, and completed transactions. Empirical evidence shows that factors such as trust, perceived risk, and ease of use strongly shape this behavior. According to Kamalul Ariffin et al. (2018), privacy and security concerns play an important role in decreasing purchase intentions among the young consumers. According to Sah (2021), payment trust and delivery reliability have an impact on online shopping uptake in Kathmandu. Kesharwani and Singh Bisht (2012) came up with the findings of perceived usefulness and ease of use which increases buying intentions; however, perceived risk acts as a deterrent. According to Ali et al. (2021), online purchases are inspired by convenience and the number of products, whereas adopting online service in Bangladesh is hampered by the fear of fraud. Maisuroh et al. (2021) also found that the perception of risk has a negative influence on Generation Z, but digital literacy has an increasing role in trust. Khadka et al. (2025) revealed that an increase in the digital competency on youth in Nepal enhances sound payment practices and online purchasing decision making. The overall implications of this research study are that digital literacy can be used as a major moderating factor in diminishing the negative influence of perceived risk on the online purchase behavior.

Perceived Risk on Online Shopping Behavior

The concept of perceived risk in online shopping is understood as the anticipation of possible losses or other adverse outcomes by the consumers which can be the result of buying something online through internet platforms. Several empirical reports show high negative impact on the behavior of people in online shopping. Kamalul Ariffin et al. (2018) discovered that the issue of privacy and security significantly suppresses interest in making more online purchases by young consumers. According to Shah et al. (2025), online buying was strongly discouraged by fear of payment fraud and unreliable delivery services that was also reported to be wide spread in Kathmandu Valley. Kesharwani and Singh Bisht (2012) noted that perceived risk in finance and products significantly reduced the purchase intentions of consumers despite the presence of a high amount of product varieties, and simplicity in use of such products. In Bangladesh, Ahmed (2023) confirmed that the risk of fraud and uncertainties in online delivery lowered the possibility of consumer repeat online purchase. Maisuroh et al. (2021) disclosed that in Generation Z, the linkage between the trust and the perceived usefulness and the behavior of online buying were diminished by the influence of high-perceived risk. Khadka et al. (2025) demonstrated in Nepal that inability to perceive the payments as secure and the fear of frauds had adverse negative effects on the adoption of e-commerce. All of these studies point out to the fact that the perceived risk is one of the key known barriers to online shopping behavior in different contexts.

High perceived risk frightens people and that will not encourage them to explore digital tools and platforms, where people are not likely to obtain required skills and competencies (Aleti et al., 2025). Those who regard digital financial services as risky services will take less confident actions in terms of willingness to study advanced features and lose the confidence (Arfi et al., 2021). According to Chen and Lai (2023), risk perceptions could be seen as a psychological hurdle reducing the engagement in online/digital setups as well as the development of digital literacy ingredients.

- **H1:** Perceived Risk negatively influences Online Shopping Behavior
- **H2:** Perceived Risk negatively influences Digital Literacy

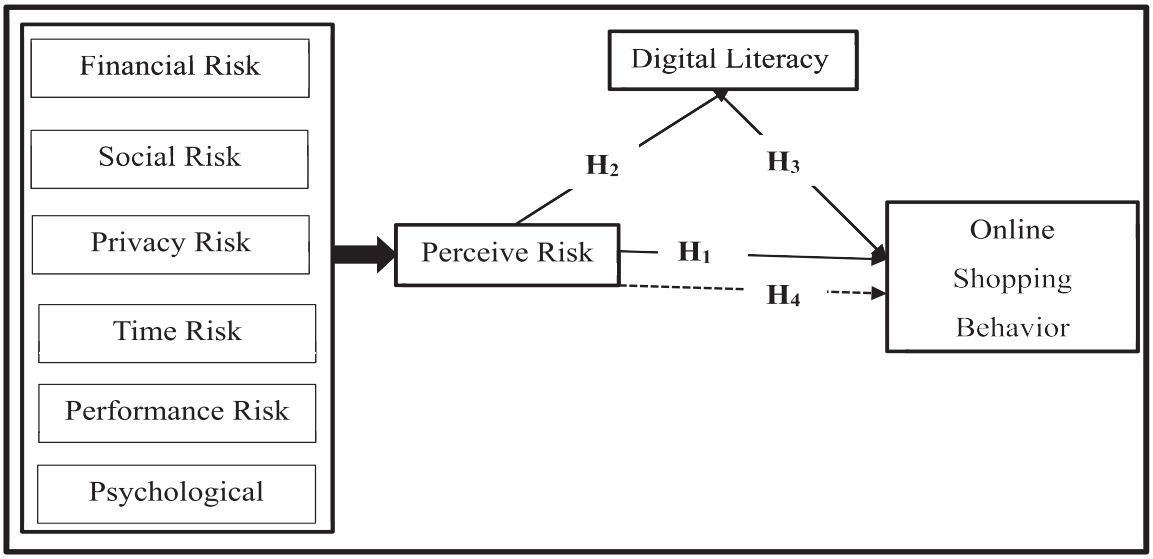
Digital Literacy on Online Shopping Behavior

Digital literacy, which refers to the efficacy of using the digital tools, platforms, and safe payment systems, has been shown to have a strong positive impact on the choice to shop online. Khadka et al. (2025) revealed that Nepalese youth with better risk management characteristics became more inclined towards e-commerce because of being digitally savvy. According to Kamalul Ariffin et al. (2018), lower digital skills reduce the trust to have online purchase intention. Maisuroh et al. (2021) reported that the digital literacy mediates and moderates the connection between perceived risk and purchase intention in the generation Z and dilutes risk perception and augmented trust. Ali et al. (2021) validated ease-of-use perceptions better due to digital knowledge, which contributed to the increased frequency of purchase. Kesharwani and Singh Bisht (2012) emphasized that digital competence provides safe transactions, reduces uncertainty, and reinforces the intention-behavior relationship.

- **H3:** Digital Literacy positively influences Online Shopping Behavior
- **H4:** Digital Literacy mediates the relationship between Perceived Risk and Online Shopping Behavior

Figure 1

Conceptual Framework



Research Methodology

The relationship between perceived risk and online shopping intention among the Generation Z in the current study was examined using descriptive and explanatory research design in a quantitative research approach. Descriptive research design was used to summarize and describe the demographic and behavioral characteristics of respondents whereas the explanatory design will allow testing of the hypothesized relationship and causality between variables (Rutter, 2007)). In this case, the participants were Generation Z in Nepal, individuals born in the time-frame period of 1997 and 2012 (Francis & Hoefel, 2018). It used a purposive sampling method whereby only respondents shopping online and with

the generational group were enrolled. The number of respondents constituting the sample was defined by Cochran formula (1977), as applied to large populations which resulted in representative dataset to be used in the statistical analysis. A structured questionnaire that consisted of both demographic and constructs with respect to the dimensions of risk perception was used to extract primary data. This research used online Google Form to reach about 500 of the targeted respondents to provide data on the study. Among these, 420 participants responded, which means the engagement rate is high. But following screening of respondents to ensure completeness and correctness, these 395 respondents were considered valid to analyze. The method assures the quality of the data and reduced the bias due to incomplete questionnaires. Statistical analysis was then carried out on the final sample consisting of direct path and indirect path content assessment. The data was analyzed with the help of SmartPLS 4, in which a higher-order construct modeling approach was used to analyze Perceived Risk. Formative higher-order construct perceived risk is checked by outputting the individual contribution of each dimension, through outer loadings, since the traditional reliability measures and the composite reliability rely on the individual loadings of 0.50 at a minimum (Hair et al., 2014). Rather, multicollinearity among indicators was checked by considering the variance inflation factor (VIF) values that guarantees that indicators are not related to each other and thus independent and valid (Diamantopoulos & Winklhofer, 2001). The six dimensions of perceived risk—financial, social, privacy, time, performance, and psychological risk—are analyzed for their significance and relevance to the overall construct based on their outer loadings. Measurement model assessment involved testing reliability and validity using threshold values—composite reliability (CR) > 0.70, average variance extracted (AVE) > 0.50, and factor loadings > 0.70 (Hair et al., 2014).The structural model was evaluated to examine both direct and indirect effects through path analysis with bootstrapping to test significance levels.

Result Analysis and Discussion

Result analysis refers to the process of systematically examining collected data, including demographic characteristics, to identify patterns, relationships, and significance among variables. It involves using statistical techniques to describe sample profiles and test hypotheses while assessing the reliability and validity of measurement instruments.

Demographic Analysis

Table 1

Frequency Analysis

		Frequency	Valid Percent	Cumulative Percent
Gender	Male	215	54.4	54.4
	Female	180	45.6	100
Education	Below Bachelor	147	37.2	37.2
	Bachelor	191	48.4	85.6
	Masters and Above	57	14.4	100
Occupation	Civil Service	70	17.7	17.7
	Teaching	42	10.6	28.4
	Private Service	120	30.4	58.7
	Self-Employment	53	13.4	72.2
	Unemployment/Student	110	27.8	100

Table 1 presents the frequency analysis of the demographic characteristics of the study sample. The gender distribution shows that 54.4% of respondents were male, while 45.6% were female, indicating a relatively balanced representation. Regarding education, nearly half of the participants (48.4%) held a bachelor's degree, 37.2% had education below the bachelor level, and 14.4% possessed a master's degree or higher. In terms of occupation, the largest group was engaged in private service (30.4%), followed by unemployment or students (27.8%), civil service (17.7%), self-employment (13.4%), and teaching (10.6%). This demographic profile provides a diverse sample across gender, education, and occupation, which enhances the generalizability of the study findings. The framework suitably fits the context of online shopping intentions because individuals with lower academic qualifications and limited financial independence often rely on affordability, convenience, and trust-related factors when shopping online. Since a notable portion of respondents are young and unemployed, their online purchasing behavior is likely influenced by social media engagement, peer influence, and perceived ease of use rather than income (Gefen et al., 2003; Pavlou, 2003). Therefore, the proposed framework effectively captures the psychological and behavioral drivers relevant to this demographic segment's online shopping intentions (Venkatesh et al., 2003).

Validity and Reliability

In the context of result analysis, reliability is defined as the extent to which a measurement instrument consistently produces stable and reproducible results across repeated applications under comparable conditions, typically assessed through metrics such as Cronbach's alpha, composite reliability, and indicator loadings; validity refers to the degree to which the instrument accurately measures the intended construct, evaluated through convergent validity (e.g., AVE ≥ 0.50), discriminant validity (Fornell–Larcker criterion, HTMT), and, for formative constructs, content and convergent validity.

Figure 2

Measurement Analysis

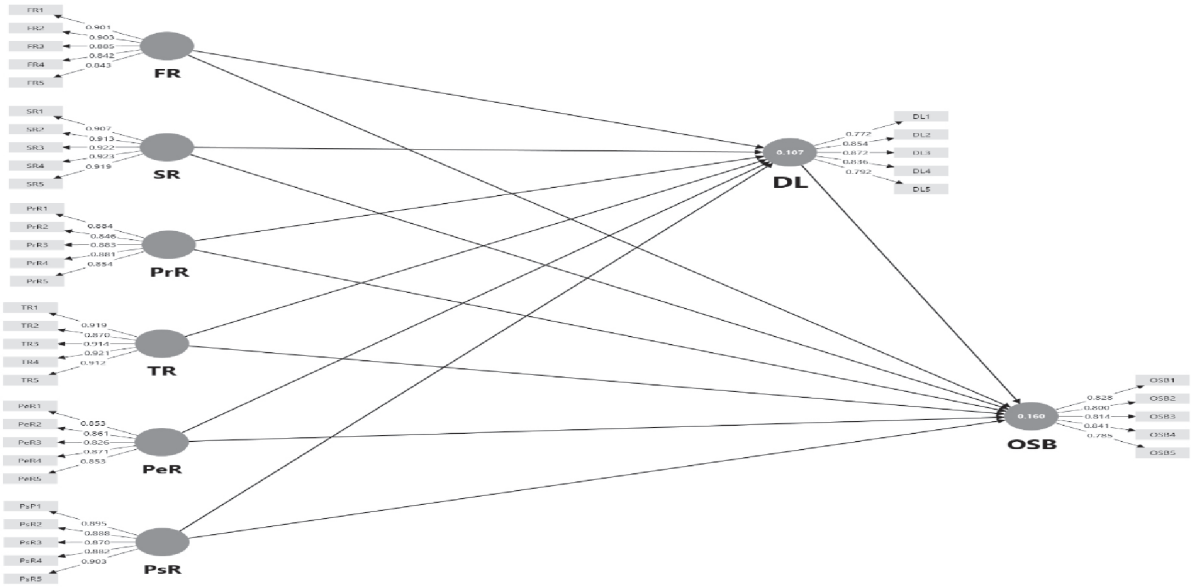


Table 1
Measurements

Construct	Items	Outer loadings	Cronbach's alpha	CR (rho_a)	CR (rho_c)	AVE	VIF
Online Shopping Behavior	OSB1	0.828	0.873	0.880	0.907	0.662	2.104
	OSB2	0.800					1.956
	OSB3	0.814					1.983
	OSB4	0.841					2.168
	OSB5	0.785					1.927
Digital Literacy	DL1	0.772	0.883	0.885	0.915	0.682	1.761
	DL2	0.854					2.618
	DL3	0.872					2.943
	DL4	0.836					2.192
	DL5	0.792					1.726
Financial Risk	FR1	0.901	0.924	0.935	0.942	0.766	3.280
	FR2	0.903					3.396
	FR3	0.885					2.879
	FR4	0.842					2.577
	FR5	0.843					2.354
Social Risk	SR1	0.907	0.953	0.958	0.963	0.840	3.984
	SR2	0.913					3.742
	SR3	0.922					4.337
	SR4	0.923					4.342
	SR5	0.919					4.322
Privacy Risk	PrR1	0.884	0.920	0.938	0.940	0.757	3.143
	PrR2	0.846					2.654
	PrR3	0.883					2.837
	PrR4	0.881					2.656
	PrR5	0.854					2.543
Time Risk	TR1	0.919	0.946	0.951	0.959	0.824	4.218
	TR2	0.87					2.847
	TR3	0.914					3.874
	TR4	0.921					4.257
	TR5	0.912					4.172
Performance Risk	PeR1	0.853	0.907	0.916	0.930	0.728	2.802
	PeR2	0.861					2.992
	PeR3	0.826					2.593
	PeR4	0.871					2.499
	PeR5	0.853					2.757
Psychological Risk	PsP1	0.895	0.933	0.937	0.949	0.788	3.369
	PsP2	0.888					2.985
	PsP3	0.87					2.690
	PsP4	0.882					3.205
	PsP5	0.903					3.334

Table 1 presents the measurement model assessment results for all study constructs, indicating that the outer loadings for all items exceeded the recommended threshold of 0.70, thereby confirming adequate indicator reliability (Hair et al., 2014). Cronbach's alpha values ranged from 0.873 to 0.953, and composite reliability (ρ_a and ρ_c) values ranged from 0.880 to 0.963, all surpassing the 0.70 benchmark (Nunnally & Bernstein, 1994), which supports internal consistency reliability. The average variance extracted (AVE) values were between 0.662 and 0.840, exceeding the 0.50 minimum criterion (Fornell & Larcker, 1981), thus demonstrating convergent validity. Variance inflation factor (VIF) values ranged from 1.726 to 4.342, which are below the conservative cut-off of 5.0, indicating the absence of multicollinearity issues. Overall, the results confirm that the measurement model meets the recommended reliability and validity standards for structural equation modeling.

Table 2

HTMT Ratio

	DL	FR	OSB	PeR	PrR	PsR	SR	TR
DL								
FR	0.218							
OSB	0.35	0.293						
PeR	0.246	0.473	0.277					
PrR	0.148	0.766	0.261	0.59				
PsR	0.327	0.369	0.276	0.794	0.398			
SR	0.167	0.729	0.209	0.433	0.732	0.318		
TR	0.24	0.42	0.214	0.622	0.478	0.621	0.401	

The values of heterotrait-monotrait ratio of correlations (HTMT) were estimated across all of the constructs as the estimation of discriminant validity and reported according to the table 2. The value of all measurements of HTMT was between 0.148 and 0.794, and is well below the conservative threshold of 0.85 proposed by Kline (2011) as well as any less-conservative threshold of up to 0.90 as suggested by Henseler et al. (2015). The findings point to the conclusion that all the constructs are empirically separated, thus validating the discriminant validity in the measurement model.

Table 3

Fornell Larcker Criterion

	DL	FR	OSB	PeR	PrR	PsR	SR	TR
DL	0.826							
FR	-0.2	0.875						
OSB	0.316	-0.27	0.814					
PeR	-0.23	0.434	-0.251	0.853				
PrR	-0.14	0.698	-0.241	0.54	0.87			
PsR	-0.3	0.344	-0.253	0.731	0.367	0.888		
SR	-0.16	0.686	-0.195	0.402	0.682	0.301	0.917	
TR	-0.22	0.391	-0.199	0.577	0.442	0.583	0.381	0.907

Table 3 presents the results of the Fornell–Larcker Criterion, which assesses discriminant validity by comparing the square root of each construct's Average Variance Extracted (AVE) with its correlations with other constructs (Fornell & Larcker, 1981). The diagonal values represent the square root of the AVE for each constructDL = 0.826; FR = 0.875; OSB = 0.814; PeR = 0.853; PrR = 0.870; PsR = 0.888; SR = 0.917; TR = 0.907). In all cases, the square root of the AVE exceeds the corresponding inter-construct correlations, satisfying the discriminant validity requirement. This pattern holds for all constructs, confirming adequate discriminant validity in the measurement model (Hair et al., 2014; Henseler et al., 2015).

Path Analysis

Figure 3

Direct and Indirect Path Analysis

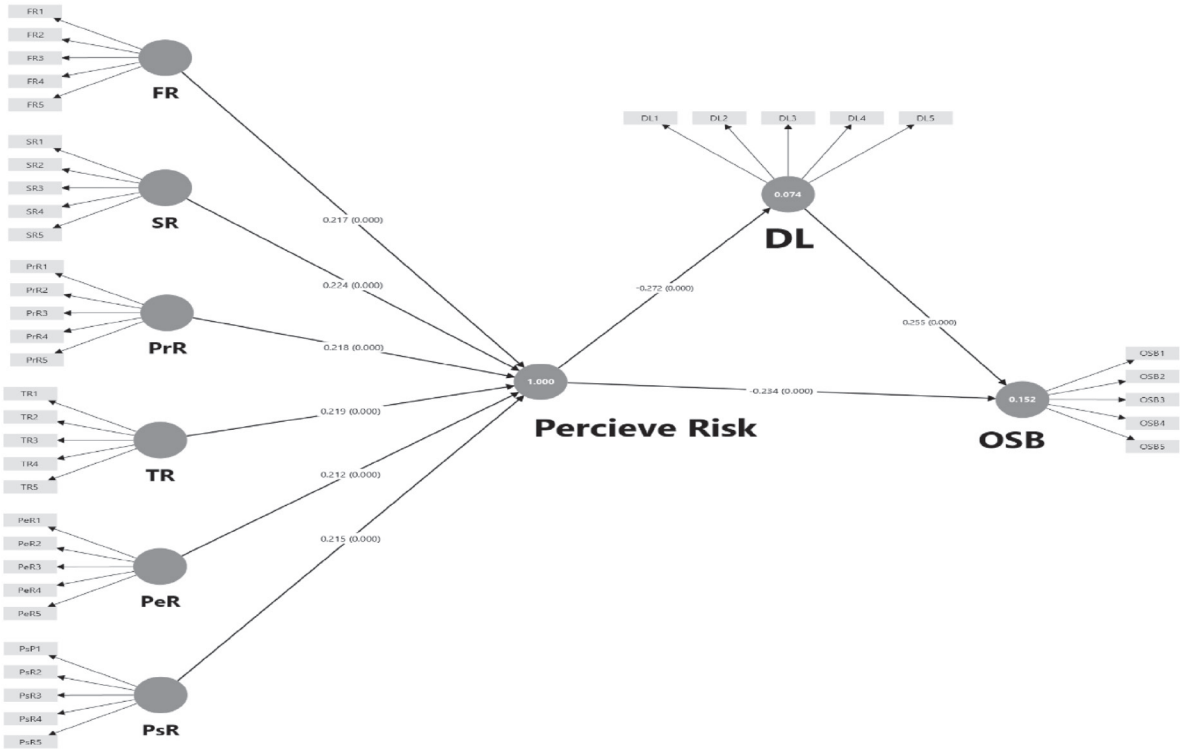


Table 4

Direct Path Coefficient

Direct Path	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P Value	Remarks
Perceived Risk -> OSB	-0.233	-0.233	0.052	4.47	.000	**H1**: Supported
Perceived Risk -> DL	-0.27	-0.271	0.065	4.129	.000	**H2**: Supported
DL -> OSB	0.256	0.26	0.063	4.065	.000	**H3**: Supported

The direct path analysis reveals significant relationships among the variables in table 4, where Perceived Risk (PR) has a negative and significant effect on Online Shopping Behavior (OSB) ($\beta = -0.233$, $t = 4.47$, $p < .001$), supporting H1, indicating that for every 1-unit increase in PR, OSB decreases by 0.233 units, meaning higher perceived risks substantially reduce consumers' likelihood of engaging in online shopping. Similarly, PR negatively influences Digital Literacy (DL) ($\beta = -0.270$, $t = 4.13$, $p < .001$), supporting H2, implying that a 1-unit increase in PR is associated with a 0.270-unit decrease in DL, suggesting heightened perceptions of risk discourage consumers from developing or utilizing digital skills effectively. Conversely, DL positively impacts OSB ($\beta = 0.256$, $t = 4.07$, $p < .001$), supporting H3, meaning that a 1-unit increase in DL results in a 0.256-unit increase in OSB, demonstrating that greater digital literacy enhances consumers' propensity to shop online. PR refers to consumers' perception of potential losses or negative outcomes associated with online shopping, DL denotes the ability to effectively use digital tools for online transactions, and OSB represents consumers' actual engagement in online purchasing activities.

Table 5

Indirect Path Coefficient

Indirect Path	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P Value	Remarks
Perceived Risk -> DL -> OSB	-0.069	-0.071	0.027	2.542	0.011	**H4**: Supported

The indirect path analysis revealed that Digital Literacy (DL) significantly mediates the relationship between Perceived Risk (PR) and Online Shopping Behavior (OSB), with an indirect effect of $\beta = -0.069$, $t(499) = 2.54$, $p = .011$, supporting H4. This means that higher PR—defined as consumers' perception of potential financial, social, source, time, performance, and psychological losses—reduces DL, which in turn diminishes OSB. The result aligns with the Theory of Planned Behavior (Ajzen, 1991), suggesting that perceived constraints reduce the perceived behavioral control (via lower DL), indirectly lowering

intention and actual shopping behavior. Critically, the negative mediation effect indicates that a one-unit increase in PR reduces OSB by 0.069 units through DL, emphasizing that even if PR does not directly stop online purchases entirely, it undermines DL, which is crucial for confident and informed decision-making. This finding underscores the need for interventions to enhance DL as a buffer against risk perceptions, enabling more active and resilient online consumer engagement.

Discussion

As indicated in the findings of this research, the relationships between the three concepts under analysis (perceived risk (PR), digital literacy (DL), and online shopping behavior (OSB)) provide valuable information about the nature of the interaction between these three concepts when it comes to the adoption of e-commerce. Operationally, PR denotes the perception of the consumers regarding the possible losses or adverse impacts of online shopping which include financial, social, source, time, performance and psychological risks. DL describes how well consumers employ the tools and platforms available in the digital sphere, whereas OSB speaks of the real behavior of making purchases online. The results show 'PR has a negative and significant impact on OSB, indicating that when PR changes by one unit, OSB will go down. This means that the perceived risks tend to have a significant effect in curtailing the chances of consumers shopping online. This attributes to the ideology of the Perceived Risk Theory (Bauer, 1960) that states that risk perception creates an impediment in attaining the participation of consumers in new technologies or services. These findings are similar to the past empirical research (Featherman & Pavlou, 2003; Kim et al., 2008), which show that higher risk perceptions are negatively associated with online purchase intentions and behaviors, particularly in emerging markets where consumer trust is lower than in developed markets. PR has a negative impact on DL which means that each unit upsurge in PR is associated with a reduction in DL. This revelation proposes that high perceptions of risk inhibit consumers to enroll or make effective use of digital skills required in making online transactions. Perceived risk can also dwindle the perceived easy use and control, thus the motivation of improved digital competencies, in the view of the Technology Acceptance Model (Davis, 1989). This is supported by research highlighting that risk apprehensions reduce engagement with digital technologies, limiting users' learning and adaptation (Rodrigues et al., 2024). DL positively influences OSB. This underscores the importance of digital skills in fostering consumer confidence and facilitating online transactions. This finding supports Ajzen's (1991) Theory of Planned Behavior, which identifies perceived behavioral control—here operationalized as digital literacy—as a critical predictor of behavioral intentions and actual behavior. Prior studies have also documented that higher digital literacy leads to greater adoption of e-commerce and financial technologies (Van Deursen & Van Dijk, 2014; Ullah et al., 2025). The mediation analysis revealed a significant indirect effect of PR on OSB via DL. This indicates that PR not only directly suppresses online shopping but also indirectly reduces OSB by impairing digital literacy. Theoretically, this supports the extension of the Theory of Planned Behavior by integrating perceived risk as a constraining factor that lowers perceived behavioral control, thus diminishing intentions and behavior (Ajzen, 1991). Critically, the mediation effect—though smaller in magnitude—highlights DL as a crucial buffer that can mitigate the negative consequences of risk perceptions. This aligns with findings from recent empirical work emphasizing the mediating role of digital competencies in overcoming barriers to digital adoption (Suryani et al., 2022).

Conclusion and Implications

Conclusion

This paper explored how perceived risk (PR) affects the behavior of online shopping (OSB) and how digital literacy (DL) mediates that process with regard to the adoption of e-commerce. The evidence shows that the influence of PR is negative and significant both on OSB and DL, which means that both the higher precautionary assessment of financial, social, psychological, and other risks impacts the intention to buy online and limit the development of digital skills in consumers. DL, on the other hand, has a positive effect on OSB highlighting that more competence and confidence to use digital technologies would increase the involvement of consumers with respect to online shopping sites. The mediation analysis also showed that DL mediates somewhat between PR and OSB with the view that PR does not only discourage online shopping directly but also does this indirectly by hindering the digital literacy of consumers. These results are consistent with established behavioral theories, particularly the Theory of Planned Behavior (Ajzen, 1991) and Perceived Risk Theory (Bauer, 1960), which collectively underscore the role of perceived behavioral control and risk perceptions in shaping consumer intentions and actions. The study highlights the critical importance of DL as a buffering mechanism that can mitigate the adverse effects of perceived risk on online consumer behavior.

Implications

Theoretically, this research extends the Technology Acceptance Model by integrating perceived risk as a significant deterrent to digital adoption and positioning digital literacy as a vital facilitator of online shopping behavior. Practically, the findings emphasize the necessity for e-commerce platforms, policymakers, and educators to focus on reducing perceived risks through enhanced security measures, transparent policies, and consumer protection frameworks. Additionally, targeted digital literacy programs should be developed to empower consumers, increasing their confidence and capability to navigate online environments safely and efficiently. By addressing both risk perception and digital competency, stakeholders can foster greater trust and participation in online shopping, particularly in emerging markets where digital ecosystems are still maturing. Future research should explore other potential mediators and moderators, such as social influence and trust, to further enrich understanding of online consumer behavior dynamics.

Future Research Opportunities

This study has several limitations that suggest directions for future research. The cross-sectional design limits the ability to infer causal relationships among perceived risk, digital literacy, and online shopping behavior; longitudinal studies could provide deeper insights into these dynamics over time. This study focused primarily on digital literacy as a mediator, while other factors such as trust, social influence, and technological self-efficacy may also play significant roles and warrant investigation. Future research could explore these additional mediators and moderators, as well as examine the impact of emerging technologies like mobile payments and AI-driven personalization on online shopping behavior in diverse cultural and economic contexts.

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References

Acharya, B. B. (2021). *The Capabilities of Family and Friends: How Nepali Immigrants to Canada Experience and Overcome Digital Inequalities* (Doctoral dissertation University of Ottawa).

Ahmed, T. (2023). E-commerce in Bangladesh: Exploring the Challenges and Prospects of Online Shopping amid the Pandemic. *Journal of Digital Commerce, 1*, 71-91.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Aleti, T., Figueiredo, B., Reid, M., Martin, D. M., Sheahan, J., & Hjorth, L. (2025). Older adults' digital competency, digital risk perceptions and frequency of everyday digital engagement. *Information Technology & People, 38*(8), 97-118. https://doi.org/10.1108/itp-05-2024-0624

Ali, A., Sherwani, M., Ali, A., Ali, Z., & Sherwani, M. (2021). Investigating the antecedents of halal brand product purchase intention: an empirical investigation. *Journal of Islamic Marketing, 12*(7), 1339-1362. https://doi.org/10.1108/jima-03-2019-0063

Arfi, W. B., Nasr, I. B., Khvatova, T., & Zaied, Y. B. (2021). Understanding acceptance of eHealthcare by IoT natives and IoT immigrants: An integrated model of UTAUT, perceived risk, and financial cost. *Technological Forecasting and Social Change, 163*, 120437. https://doi.org/10.1016/j.techfore.2020.120437

Bauer, R. A. (1960). Consumer behavior as risk taking. In *Proceedings of the 43rd National Conference of the American Marketing Association, June 15*, 16, 17, Chicago, Illinois, 1960. American Marketing Association.

Bhatnagar, A., Misra, S., & Rao, H. R. (2000). On risk, convenience, and Internet shopping behavior. *Communications of the ACM, 43*(11), 98–105. https://doi.org/10.1145/353360.353371

Chawla, N., & Kumar, B. (2022). E-commerce and consumer protection in India: the emerging trend. *Journal of Business Ethics, 180*(2), 581-604. https://doi.org/10.1007/s10551-021-04884-3

Chen, C. L., & Lai, W. H. (2023). Exploring the impact of perceived risk on user's mobile payment adoption. *Review of Integrative Business and Economics Research, 12*(1), 1-20.

Cochran, W. G. (1977). *Sampling techniques*. john wiley& sons.

Cunningham, S. M. (1967). The major dimensions of perceived risk. In D. F. Cox (Ed.), *Risk taking and information handling in consumer behavior*. Harvard University Press.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

Diamantopoulos, A., &Winklhofer, H. M. (2001). Index construction with formative indicators: An alternative to scale development. *Journal of Marketing Research, 38*(2), 269–277. https://doi.org/10.1509/jmkr.38.2.269.18845

Eshet-Alkalai, Y. (2004). Digital literacy: A conceptual framework for survival skills in the digital era. *Journal of Educational Multimedia and Hypermedia, 13*(1), 93–106.

Featherman, M. S., & Pavlou, P. A. (2003). Predicting e-services adoption: a perceived risk facets perspective. *International Journal of Human-Computer Studies, 59*(4), 451–474. https://doi.org/10.1016/S1071-5819(03)00111-3

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50. https://doi.org/10.1177/002224378101800104

Forsythe, S. M., & Shi, B. (2003). Consumer patronage and risk perceptions in Internet shopping. *Journal of Business Research, 56*(11), 867–875. https://doi.org/10.1016/S0148-2963(01)00273-9

Francis, T., & Hoefel, F. (2018). True Gen': Generation Z and its implications for companies. *McKinsey & Company, 12*(2), 1-10.

Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly, 27*(1), 51–90. https://doi.org/10.2307/30036519

Hair, J., Hult, T., Ringle, C., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Thousand Oaks, CA: Sage Publications, Inc. https://doi.org/10.54055/ejtr.v6i2.134

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Jacoby, J., & Kaplan, L. B. (1972). The components of perceived risk. In D. F. Cox (Ed.), *Proceedings of the Third Annual Conference of the Association for Consumer Research* (pp. 382–393). Association for Consumer Research.

Kamalul Ariffin, S., Mohan, T., & Goh, Y. N. (2018). Influence of consumers' perceived risk on consumers' online purchase intention. *Journal of research in Interactive Marketing, 12*(3), 309-327. https://doi.org/10.1108/jrim-11-2017-0100

Kesharwani, A., & Singh Bisht, S. (2012). The impact of trust and perceived risk on internet banking adoption in India: An extension of technology acceptance model. *International Journal of Bank Marketing, 30*(4), 303-322. https://doi.org/10.1108/02652321211236923

Khadka, N. B., Adhikari, S., & Lama, P. B. (2025). Consumer Behavior toward E-Commerce among Youth of Kathmandu. *International Journal of Atharva, 3*(1), 166-175. https://doi.org/10.3126/ija.v3i1.76726

Kim, D. J., Ferrin, D. L., & Rao, H. R. (2008). A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support Systems, 44*(2), 544–564. https://doi.org/10.1016/j.dss.2007.07.001

Kline, R. B. (2011). Principles and practice of structural equation modeling (3rd ed.). The Guilford Press. Kucuk, S. U. (2016). Consumerism in the digital age. *Journal of Consumer Affairs, 50*(3), 515-538. https://doi.org/10.1111/joca.12101

Maisuroh, S., Jamil, M., &Manshur, U. (2024). The Role of Social Media in Enhancing Digital Literacy Among Generation Z: A Social and Psychological Perspective. *Journal of Social Studies and Education, 1*(2), 113-125. https://doi.org/10.61987/jsse.v1i2.457

Mitchell, V.-W. (1999). Consumer perceived risk: Conceptualizations and models. *European Journal of Marketing, 33*(1/2), 163–195. https://doi.org/10.1108/03090569910249229

Ng, W. (2012). Can we teach digital natives' digital literacy? *Computers & Education, 59*(3), 1065–1078. https://doi.org/10.1016/j.compedu.2012.04.016

Nguyen, T. T., Tran, T. N. H., Do, T. H. M., Dinh, T. K. L., Nguyen, T. U. N., & Dang, T. M. K. (2024). Digital literacy, online security behaviors and E-payment intention. *Journal of Open Innovation: Technology, Market, and Complexity, 10*(2), 100292. https://doi.org/10.1016/j.joitmc.2024.100292

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce, 7*(3), 101–134. https://doi.org/10.1080/10864415.2003.11044275

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon, 9*(5), 1–6. https://doi.org/10.1108/10748120110424816.

Pudasaini, P., & Dangol, J. (2024). The impact of online consumer reviews on purchase intentions: A study of cosmetic product buyers on e-commerce platforms in Nepal. *Journal of Business and Social Sciences Research, 9*(2), 157-175. https://doi.org/10.3126/jbssr.v9i2.72423

Rodrigues, D. A., Roque, M., Mateos-Campos, R., Figueiras, A., Herdeiro, M. T., & Roque, F. (2024). Barriers and facilitators of health professionals in adopting digital health-related tools for medication appropriateness: a systematic review. *Digital health, 10*, 20552076231225133. https://doi.org/10.1177/20552076231225133

Rutter, M. (2007). Proceeding from observed correlation to causal inference: The use of natural experiments. *Perspectives on Psychological Science, 2*(4), 377-395 https://doi.org/10.1111/j.1745-6916.2007.00050.x.

Sah, G. K. (2021). Factors affecting online shopping behaviour of boutique products in Kathmandu Valley. *Dristikon: A Multidisciplinary Journal, 11*(1), 61-73. https://doi.org/10.3126/dristikon.v11i1.39134

Shah, B., Sah, K. K., & Jha, M. (2025). Digital transformation in Nepal: Navigating opportunities and challenges in the Digital Era. *Rajarshi Janak University Research Journal, 3*(1), 104-115. https://doi.org/10.3126/rjurj.v3i1.80720

Stone, R. N., & Grønhaug, K. (1993). Perceived risk: Further considerations for the marketing discipline. European Journal of Marketing, 27(3), 39–50. https://doi.org/10.1108/03090569310030266

Suryani, U., Arief, M., Bramantoro, S., &Hamsal, M. (2022). The impact of digital literacy and e-commerce adoption with O2O business adoption on the performance of small and medium enterprises. *International Journal of eBusiness and eGovernment Studies, 14*(2), 199-223. https://doi.org/10.33021/icfbe.v2i1.3544

Ullah, M. S., Khan, M. K., Oglu, G. R. A., & Yasmin, T. (2025). The influence of digital literacy on consumer perceptions and e-commerce engagement. *Policy Research Journal, 3*(1), 92-104.

Van Deursen, A. J. A. M., & Van Dijk, J. A. G. M. (2014). The digital divide shifts to differences in usage. *New Media & Society, 16*(3), 507–526. https://doi.org/10.1177/1461444813487959

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478. https://doi.org/10.2307/30036540