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When Risk Meets Trust: Understanding Online Purchase Intention in the Algerian E-Commerce Market

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Abstract: This research aims to analyse the impact of perceived risk on Algerian consumers' online purchasing intentions, examining the mediating role of trust and perceived usefulness, as well as the moderating effect of digital culture and purchasing experience. A quantitative approach was adopted using a structured questionnaire, and the data were analysed using structural equation modelling (PLS-SEM). The results show that perceived risk negatively influences purchase intention, while trust and perceived usefulness partially mitigate its effects. Digital literacy and shopping experience reinforce the positive relationship between these cognitive variables and purchase intention

Keywords: Consumer behavior, Online purchase intention, Perceived risk, Perceived unefulness.

1. Introduction

The rapid spread of digital technologies and the expansion of telecommunications infrastructure have transformed purchasing behaviour in Algeria, making e-commerce an increasingly relevant distribution channel for households and businesses. This rapid expansion of e-commerce in North Africa, and specifically in Algeria, has been accompanied by a gradual transformation of payment and logistics practices in Algeria. Within this ecosystem, several digital platforms have emerged, both in the B2C and C2C contexts. Faced with this reality, consumer purchasing habits have evolved, and their online purchase intentions are now being dampened by several barriers to purchase and uncertainty. As a result, perceived risk has emerged as one of the main barriers to online purchasing intent. Recent studies confirm that consumers assess financial, product, security and delivery risks before completing online transactions (Pham Thi, Pham, & Duong, 2024).

While international literature emphasises trust and perceived usefulness as key mediating factors in explaining the influence of risk on intention, little empirical research has been conducted in the Algerian context. (Berrached, 2022) research on the impact of perceived risk on the intention to purchase generic drugs: The case of Algerian consumers/patients showed that the dimensions of overall risk, namely performance risk and physical risk, have a positive impact on overall risk towards generic drugs. An overall risk that negatively impacts the intention to purchase generic drugs. Similarly, the study by (Hammache, Brahimi, &

Djoudi, 2022) on the factors influencing consumer purchase intention on digital platforms found that among the factors determining online purchase intention: purchase motivation, perceived risk and digital communication (marketing) strategies, which significantly influence purchase intention on digital platforms (Hammache, Brahimi , & Djoudi , 2022).

The objective of this research is to propose a new model based on previous research and to test the direct relationship between dependent and independent variables, as well as mediation and moderation mechanisms, by attempting to answer the following research question;

1.1. Problem statement

To what extent does perceived risk reduce consumers' intention to purchase online on Algerian e-commerce platforms, through which mediating mechanisms (trust, utility) is this relationship transmitted, and how do contextual moderators (digital culture, previous experience) condition its strength?

1.2. Sub-questions

This main question leads us to ask the following secondary questions:

- To what degree does perceived risk directly influence consumer confidence in online shopping?
- Can the quality of electronic services reduce the negative effect of perceived risk on purchase intention?
- Does trust play a mediating role between perceived risk and purchase intention?
- What is the impact of digital culture on the relationship between perceived risk and purchase intention?

1.3. Research methodology

In order to provide answers to the questions raised in this research, we have adopted a quantitative hypothetical-deductive approach throughout this work, which is a scientific method consisting of formulating hypotheses, collecting data, and then testing the results obtained in order to refute or confirm these hypotheses. The use of a field survey based on a questionnaire will enable us to test the relevance of the research hypotheses that were derived from the literature review and measured on the basis of different measurement scales.

In order to achieve the objective of this research, we will review the literature on the concept of perceived risk and its relationship with purchase intention on e-commerce platforms, and identify the different variables that explain the proposed model.

2. Theoretical foundations

2.1. Perceived risk theory in consumer behaviour

The concept of perceived risk, fundamental to understanding consumer uncertainty in transactions, originated in psychology and was subsequently applied to consumer behaviour by Bauer (Bauer, 1960), who suggested that purchase behaviour is inherently characterised by uncertainty regarding the potential for loss (Ma, Dong , & Lee, 2025). This notion evolved from a simple concept to a multidimensional construct, recognising that consumers face various sources of uncertainty when making decisions (Ma, Dong , & Lee, 2025) (Alrawad & and, 2023), were instrumental in this evolution (Cox & Rich, 1964), reconceptualising perceived risk as a function involving both uncertainty and the magnitude of possible negative outcomes. This multidimensional framework has since been elaborated to include distinct risk types such as financial, functional, privacy, information, physical, delivery, psychological, and social risks (Ma, Dong , & Lee, 2025). Financial risk, concerning monetary loss, and functional risk, concerning product performance failure, are frequently cited as major dimensions (Alrawad & and, 2023). Furthermore, in digital commerce, privacy risk refers to the potential loss of control over personal information, while information risk denotes uncertainty stemming from information overload or disorganization. Both have emerged as critical barriers in online contexts (Ma, Dong , & Lee, 2025) (Alrawad & and, 2023).

2.2. Technology acceptance and online consumer behaviour

The study of online purchase intention draws significantly from established behavioural theories. The Theory of Planned Behaviour (TPB) provides a classic structural foundation, positing that purchase intention is determined by the consumer's attitude, subjective norms, and perceived behavioural control (Patel & and , 2023). This framework highlights how an individual's attitude towards online shopping ultimately translates into actual purchase behaviour, often mediated by intention. In the context of information evaluation online, the Elaboration Likelihood Model (ELM) is crucial, distinguishing between central route processing (based on argument quality/diagnosticity) and peripheral route processing (based on source credibility) (Tian, Zhang, Jiang, & Yang, 2021). These processes heavily influence how consumers form perceptions of value and trust, which are vital components in the decision-making chain (Watanabe, 2020). In digital environments, where physical inspection is impossible, consumer decision-making relies heavily on cues that mitigate perceived risk, such as perceived quality and platform trustworthiness (Ma, Dong , & Lee, 2025).

2.3. Direct effects of perceived risk on purchase intention

Empirical research consistently confirms that perceived risk exerts a substantial, direct, and negative influence on consumers' intentions to purchase or recommend online services and products (Patel & and , 2023). When uncertainty and perceived potential losses are high, consumers are less likely to engage in online transactions or may choose to abstain entirely. This negative association holds true across various sectors, including cross-border e-commerce (CBEC), where perceived risk negatively affects both purchase intention and behaviour. Cross-cultural studies reveal that the magnitude of this effect is not uniform; risk perceptions that inhibit purchase intention vary based on the consumer's national context (Ma, Dong , & Lee, 2025). For example, research suggests that while Chinese consumers are significantly impacted by functional and privacy risks, U.S. consumers show greater negative impact from time risk.

2.4. Risk types and their differential effects

The influence of perceived risk on intention is not equal across all risk dimensions. Financial risk consistently emerges as the primary concern and the most influential factor regarding online purchase intention (Alrawad & and, 2023). This is linked to concerns about payment security, potential overcharging, or high return costs, especially in complex CBEC environments. Privacy and information risks are highly salient in digital contexts, involving fears of data misuse or information overload, which can inhibit adoption. Conversely, some studies on general online shopping found that certain risks, such as physical, social, or psychological risks, did not show a significant direct effect on purchase intention in their specific samples. Functional and delivery risks, pertaining to product fit and logistics performance, also negatively affect intention, although their influence may sometimes be channelled through financial risk perceptions (Ma, Dong , & Lee, 2025).

3. Mediating mechanisms and moderating factors

The negative impact of perceived risk on purchase intention is often explained through mediating cognitive and affective pathways, chiefly trust and perceived usefulness.

3.1. Trust as a mediator

Trust is established as a critical variable that connects risk perception to behavioural outcomes. A robust, negative relationship exists where increasing perceived risk leads to a decline in consumer trust. Conversely, trust functions as a powerful antidote to uncertainty, as consumers are more willing to engage in risky online relationships when trust exceeds a perceived risk threshold (Hallikainen & Laukkanen, 2018). Specifically, trust significantly and positively predicts purchase intention. Therefore, trust serves as a crucial mediator: perceived risk negatively influences purchase intention by reducing the level of consumer trust. This mechanism is generally supported across cultures, although the specific factors influencing trust formation differ (Ma, Dong , & Lee, 2025).

3.2. Perceived usefulness as a mediator

Perceived usefulness, often informed by the ELM's central route, acts as another mediator between the quality of information presented and the intention to adopt it for a purchase. High-quality information, assessed via its perceived diagnosticity, contributes to higher perceived usefulness (Yang & and al, 2023). This usefulness, in turn, positively impacts purchase intention. For instance, consumers rely on the diagnosticity of recommendation content to decide whether to adopt it, showing that usefulness is a key determinant in adoption decisions (Yang & and al, 2023).

3.3. Mediation pathways

Research supports both parallel and sequential mediation pathways. In some models, perceived usefulness (or diagnosticity) and trust operate in parallel, both explaining how platform attributes influence intention. In other contexts, a sequential model may be observed, where risk affects trust, which then influences intention (Yang & and al, 2023). Comparative studies suggest that the strength of mediation varies; for example, one mediator might show a stronger effect than another in influencing the final intention outcome (Wang & and al, 2024).

3.4. Online shopping experience as a moderator

Online shopping experience significantly moderates the impact of risk perception. Consumers with prior experience tend to perceive lower levels of risk overall (Alrawad & and, 2023). This experience acts as a risk mitigator because it provides a learning mechanism, reducing uncertainty regarding online processes and enhancing confidence in retail platforms (Lee & Lee, 2029). In the complex setting of CBEC, prior experience shapes consumer expectations regarding quality and logistics, altering how they react to different service quality dimensions (Chen & and al, 2019).

3.5. Digital literacy and capabilities

Digital literacy, encompassing technology readiness and information processing capabilities, plays a crucial role in managing risk perceptions. Consumers who are more optimistic and innovative regarding technology tend to exhibit different risk perception (Zeithaml, Parasuraman, & Malhotra, 2002). Furthermore, higher digital skills enable consumers to better evaluate the credibility of online information and platform security features, thereby strengthening their ability to assess risks accurately. This capability influences the effectiveness of information processing, where higher skills mean consumers can better utilize high-quality information to reduce uncertainty (Jiang & and al, 2021). Risk attitude, which reflects an individual's inherent propensity toward risk, also acts as a key moderator, influencing how strongly trust or risk perception translates into behavioural intentions (Tian, Zhang, Jiang, & Yang, 2021).

4. Field study methodology

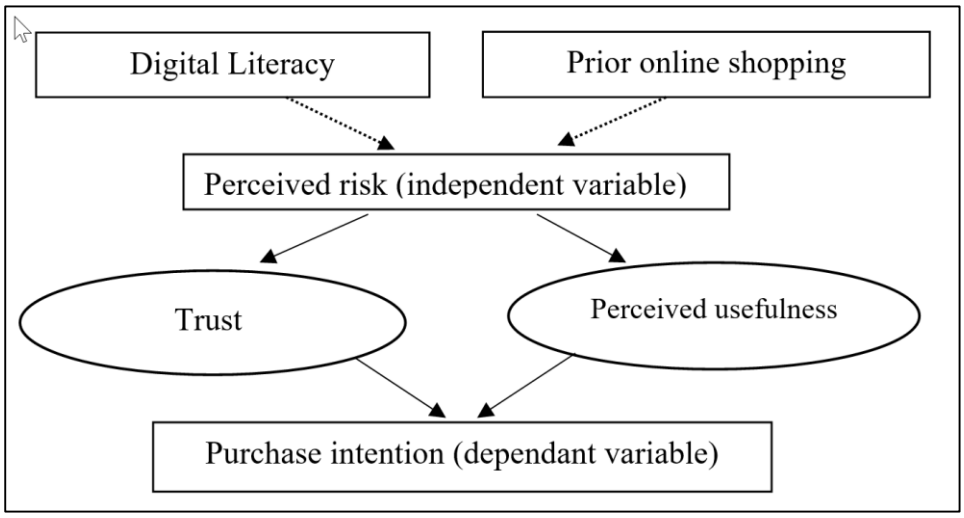
4.1. Conceptual model and hypotheses

In order to answer the problem, we have posed, as well as the secondary questions, we have chosen to follow the descriptive-analytical approach, using a sample survey to collect the necessary data, while using a questionnaire to measure the study variables and study the relationship between them.

Drawing on the Technology Acceptance Model [24], the Trust-Risk framework and the Theory of Planned Behavior, we proposed a conceptual model (Figure 1) that summarizes the hypothesized relationships among the study variables: perceived risk (PR) (independent variable), online purchase intention (OPI) (dependent variable), trust, perceived usefulness (mediators), and digital literacy, prior experience (moderators). Perceived risk exerts a direct negative influence on purchase intention (H1). This relationship is mediated by two key psychological mechanisms: Trust, Perceived Usefulness, (H2, H3). Additionally, the model proposes that Digital Literacy, Prior Online Shopping Experience moderate the effect of

perceived risk on purchase intention (H5, H6).

Fig 1. Research framework



Source : own processing

The following hypotheses were formulated to test the research variables:

Direct Effect :

- **H1:** Perceived risk negatively influences online purchase intention on digital platforms.

Mediating Effects :

- **H2:** Trust mediates the relationship between perceived risk and purchase intention.
- **H3:** Perceived usefulness mediates the relationship between perceived risk and purchase intention in online shopping.

Moderating Effects :

- **H4:** Digital literacy moderates the effect of perceived risk on purchase intention, weakening its negative impact at higher levels of literacy.
- **H5:** Prior online shopping experience moderates the perceived risk–purchase intention relationship, such that experienced consumers are less affected by risk perceptions.

4.2. Measurement scale

To measure the variables in the model, we used measurement scales that had already been validated in the literature, adapted where necessary to the Algerian context (language, culture).

To measure perceived online risk, recognised in the literature for its multidimensional nature, the scale used is a combination of the scale developed by (Pavlou P. A., 2003), and that used by (Mahmaod & al, 2023) following a study of 558 people in Jordan, Saudi Arabia and Kuwait, which identified financial risk, information risk and privacy risk as the three dimensions that strongly influence online purchasing decisions.

For online trust, the scale used consists of five items and is adapted from (Ajzen, 1991).

For the second mediating variable represented by perceived usefulness, we opted for the founding source of the TAM (Technology Acceptance Model), which clearly defines perceived usefulness and proposes a scale of validated items to measure this concept, as well as the Extension of TAM (TAM2), which examines the antecedents of perceived usefulness. This helped us to contextualize perceived usefulness in e-commerce.

The mediating variable of digital culture was measured using a scale comprising nine items related to the study of (Nguyen & Barrett, 2006) and (Muhammad , 2025). Regarding previous

experience with online shopping, eight items were adapted from the measurement scale of (Schrepp, Hinderks, & Thomaschewski, 2017). Finally, to measure the dependent variable represented by online purchase intention, a three-item online purchase intention scale was adapted from (Chen & Barnes, 2007).

Data collection

After determining the variables of the study and the different scales for measuring them, we move on to one of the most important steps in any research project, which is determining the target population. In this study, the target population is represented by users of digital platforms who have made at least one online purchase or those who had intended to make a purchase but cancelled it for one reason or another

Given the impossibility of obtaining a sampling frame, the sampling method used was the non-probability convenience method. We administered our questionnaire to online platform users and potential customers via online social networks, as well as face-to-face when the customer agreed. A total of 382 questionnaires were completed, of which 33 were invalid. The response rate was approximately 91%.

4.3. Analysis and Findings

4.3.1. Demographical statistics

We begin the presentation of the results with a descriptive analysis using the information sheet attached to the questionnaire, which includes the age, gender, level of education and frequency of online purchases of users of digital platforms in Algeria. Descriptive analysis of the sample reveals a predominance of women (56.8%) over men (43.2%). The population studied consists mainly of individuals aged 31 to 40 (40.83%), followed by those aged 18 to 30 (23.56%). In terms of educational attainment, respondents with a secondary education represent the largest category (35.07%), followed by those with a university education (28.8%). Furthermore, the results show that 52.35% of respondents shop online regularly. These data reflect significant use of e-commerce within the sample studied.

4.3.2. Validity and reliability

The first step in statistical analysis is to establish reliability and internal consistency. Reliability refers to the stability and consistency of a measurement instrument (the measurement is reproducible), and validity refers to accuracy, i.e. whether the measurement accurately captures the concept being measured. Cronbach's alpha is the criterion for assessing internal consistency. Cronbach's alpha ranges from 0 to 1, and a value ≥ 0.70 is expected. With regard to convergent validity, we tested it by calculating factor loadings and average extracted variance (AVE). An estimate of factor loadings ≥ 0.70 and AVE ≥ 0.50 indicate acceptable convergent validity.

Table 1. Construct reliability

	Cronbach's Alpha	**Composite reliability (rho_a)** (ρa)	**Composite Reliability (rho_c)** (ρc)	**Average variance extracted (AVE)**
PR	0.901	0.906	0.918	0.582
TR	0.896	0.898	0.902	0.611
PU	0.811	0.816	0.822	0.642
DL	0.833	0.840	0.864	0.661
POSE	0.851	0.856	0.870	0.681

Source : Authors' own work

The results of the measurement model evaluation (Table 1) show that all constructs have satisfactory internal reliability (Cronbach's α and ρa > 0.80; PR=0.901, TR= O.896, PU= 0.811, DL=O.833, POSE= O.851). The composite reliability (ρc) far exceeds the recommended threshold of 0.70, and no value exceeds 0.95, thus ruling out any risk of

redundancy. In addition, the AVE of each construct is greater than 0.50, confirming convergent validity (Fornell & Larcker, 1981). These results indicate that the scales used reliably and validly measure the concepts studied.

From these results, we can conclude that the constructs are reliable and valid, indicating that the model is robust in terms of measurement.

Fornell-Larcker criterion

The Fornell-Larcker matrix is a tool used to verify the discriminant validity of latent concepts in a research model. Discriminant validity means that each concept must be statistically distinct from the others, i.e. it must not 'confuse' the concepts it is supposed to measure.This assessment is calculated by taking the square root of the Average Variance Extracted (AVE) of a construct, which must be greater than its correlations with other constructs.

Table 2. Fornell-Larcker Matrix

	PR	TR	**PU**	DL	POSE
PR	**0.76**				
TR	0.55	**0.78**			
PU	0.48	0.52	**0.80**		
DL	0.42	0.46	0.44	**0.81**	
POSE	0.39	0.41	0.40	0.47	**0.83**

Source: Authors' own work

From the table above, we note that the square root of the AVE for each concept or variable is shown along the diagonal in bold (PR = 0.76 ... POSE = 0.83). These values are the 'thresholds' that inter-construct correlations must not exceed, and they are all higher than their inter-construct correlations, which allows us to deduce that discriminant validity is confirmed.

Heterotrait-monotrait ratio (HTMT)

HTMT is a modern and robust indicator for testing discriminant validity in research models. It was introduced by (Henseler, Ringle, & Sarstedt, 2015) to assess discriminant validity, in other words, it calculates the average correlation between items from different constructs (heterotrait) and the average correlation between items from the same construct (monotrait). This validity is achieved when HTMT values are below a recommended threshold, typically 0.85 or 0.90.

Table 3. Heterotrait-monotrait ratio (HTMT)

	PR	TR	**PU**	DL	POSE
PR	-----				
TR	0.69	-----			
PU	0.62	0.66	-----		
DL	0.55	0.59	0.57	-----	
POSE	0.52	0.55	0.53	0.61	-----

Source: Authors' own work

Based on the results in the table above, all HTMT values are < 0.85, so there is no problem with discriminant validity. It meaddens that each construct is distinct from the others, even if they are correlated.

To examine the hypothesized relationships between the constructs, PLS bootstrapping procedure was used to produce the path coefficients.

Table 4. Path Coefficient

Relation	B (Stanrdardized)	t-value	p-value	Result
Percevied risq → Online purchase intention(H1)	-0.39	5.85	<0.001	Supported
Percevied risq→Trust→Online purchase intention(H2)	-0.23	4.64	<0.001	Supported
Percevied risq→ Perceived usefulness→ Online purchase intention (H3)	-0.19	3.98	0.001	Supported
Perceevied risk×Digital Literacy →Online purchase intention (H4)	+0.47	6.92	<0.001	Supported
Percevied risk× Prior online shopping experience →Online purchase intention (H5)	+0.44	6.18	<0.001	Supported

Source : Authors' own work

Direct influence analysis

H1: PR → OPI (β = –0.39; p < 0.001)

Perceived risk has a significant negative impact on the intention to purchase online. This means that the more consumers perceive a risk (financial, security or delivery), the less likely they are to purchase on digital platforms and websites.

Mediation Analysis

H2 : PR → TR → OPI : indirect β= -0.23; 95% IC [-0.33; -0.14]; VAF=54% → partial mediation.

This means that: Part of the effect of risk on intention is mediated by confidence, but another part acts directly, without being mediated by confidence.

H3 : PR →PU→OPI : indirect β = -0.19; 95% IC [-0.29 ;-0.10]; VAF=43% → partial mediation

Perceived usefulness has a positive and significant effect on online purchase intention.

Moderation Analysis

H4 : Interaction PR × DL → OPI: β = +0.47, p <0.001.

Digitally savvy consumers perceive less risk and maintain their purchase intent.

H5 : Interaction PR × POSE →OPI : β = +0.44, p <0.001.

Consumers with previous positive online experiences are less influenced by perceived risk.

4.3.3. Discussion

This study was designed to examine the mechanisms through which perceived risk influences Algerian consumers' intention to purchase online on digital platforms. In a context marked by increasing but still uneven digitalisation, this research seeks to understand how and why the perception of risk is a barrier to online purchasing, and to what extent certain psychological and contextual factors can reduce this effect.

The main objective of this research was to analyse the relationship between the concept of perceived risk as an independent variable and consumers' intention to purchase online as the dependent variable. This research also seeks to determine and explain the extent to which

certain psychological and contextual factors can mitigate this effect. More specifically, the study focuses on the mediating role of trust and perceived usefulness, two variables derived from the Technology Acceptance Model (TAM) and the Trust–Risk theoretical framework (Pavlou, 2003; Gefen et al., 2003), as well as the moderating effect of digital culture and online shopping experience.

- The direct relationship test shows that perceived risk (PR) has a significant negative direct effect on online purchase intention ($\beta = -0.39$, $p < 0.001$), this finding of a negative and robust effect is consistent with the abundant literature on e-commerce: recent meta-analyses and reviews consistently show that the perception of risk (financial, privacy, delivery, quality, etc.) slows down adoption and conversion to purchase. This robustness has been confirmed in a recent meta-analysis (Handoyo S. , 2024) (Permatasari & Muthohar, 2023)that brings together studies on risk, trust and security in e-commerce. This is also confirmed by the models developed by (Pavlou P. A., 2003) and recent literature on e-commerce in emerging markets (Pham Thi, Pham, & Duong, 2024) (Pavlou P. A., 2003)

From this, we can deduce that consumers remain cautious due to persistent and inhibiting logistical or institutional factors, and fears of unsecure payment or product non-compliance continue to reduce the propensity to purchase online.

- The mediation consists of testing whether PR indirectly influences OPI through TR or PU. The sign of the indirect coefficient (β_indirect) depends on the product of the two effects: β_indirect = (PR → mediator) × (mediator → OPI)

We observe partial mediation by trust (β_indirect= –0.23; VAF ≈ 54%). The negative sign of the β_indirect coefficient can be explained by the fact that PR reduces TR ($a < 0$) while TR increases OPI ($b > 0$), resulting in a negative product. This pattern is consistent with the Trust–Risk framework (Gefen & et al, 2003) and with recent empirical studies showing that trust is a central mechanism explaining how risk influences intention.

- The mediation by perceived usefulness, The total indirect effect is also negative, β_indirect H3 = –0.19 (partial negative mediation).

Here again, PR reduces the rational assessment of the utility of the service and, in turn, lower perceived utility reduces intention. This observation is consistent with TAM: perceived utility remains a major determinant of the adoption of digital technologies and services, and recent work confirms the mediating role of perceived utility between risk/security variables and intention.

Perceived utility translates into the belief that online shopping will bring a concrete benefit - time saved, wider choice, better value, simplicity. This variable is widely used to explain the intention to purchase or use an online service; it acts as a cognitive lever - if consumers perceive that online shopping brings them clear value (e.g. time savings, wide choice, promotions), they are more willing to accept a certain level of risk. From this, we can suggest that in a high-risk environment, making the utility very salient can reduce the negative impact of risk. This explains why in the present model, mediation is partial - utility does not entirely eliminate the effect of risk, but it does mitigate it.

- prior experience, or in other words learning, is a key variable, as it influences all the variables involved in consumer behavior. This research indicates that consumers who are more experienced and have previously made online purchases perceive less risk when making a purchase ($\beta = +0.44$, $p < 0.001$);
- The second moderating variable is represented by consumers' digital literacy.

The PR → OPI link is attenuated when the level of digital literacy increases ($\beta = +0.47$). Digitally literate consumers perceive less risk and maintain their purchase intention.

Finally, this moderating effect confirms the role of cognitive capital: digital literacy (DL) mitigates the negative influence of perceived risk. These results show that more experienced

or digitally literate Algerian consumers develop greater risk tolerance, which supports the work of (Kusumawati & al, 2021) (Chiun Wei, 25-26 October 2021).

5. Conclusion

The objective of this research was to examine the impact of perceived risk on online purchase intention in the context of e-commerce in Algeria, while analyzing the mediating role of trust and perceived usefulness, as well as the moderating effect of digital culture and purchasing experience.

This research contributes to expanding TAM by demonstrating that risk perception is not only a barrier, but also a cognitive variable that acts through specific mediations and moderations. On a practical level, it offers concrete managerial recommendations: strengthening the transparency and security of platforms, improving the perceived value of services, and investing in digital training for consumers to boost trust and loyalty.

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