ONLINE PURCHASE INTENTION DURING CRISIS

Group 5

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Behavior of Pressure: Unlocking Consumer Intentions

in a Crisis Economy

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1. PROBLEM OVERVIEW

In the wake of global crises such as the pandemic times, online shopping has undergone a dramatic transformation from a convenience to a necessity. This shift represents one of the most significant changes in consumer behavior in recent history, as lockdowns, social distancing measures, and safety concerns pushed consumers toward digital platforms. The pandemic accelerated e-commerce adoption across demographics that had previously shown resistance to online shopping, creating new consumption patterns that appear to persist even as physical restrictions ease.

Our research aims to identify and analyze the key factors influencing online purchase intentions during crisis periods, with particular focus on how different demographic groups adapt to and engage with various online shopping platforms. Understanding these dynamics is crucial for businesses seeking to optimize their digital presence and tailor their strategies to emerging consumer preferences in an increasingly volatile market environment.

The study addresses three critical questions: First, what specific factors (such as perceived risk, convenience, product availability, and trust) most significantly influence consumers' intentions to shop online during periods of crisis? Second, how do demographic variables—including age, income level, education, and geographic location—affect the selection and usage patterns of different online platforms? Third, are there identifiable patterns of platform adoption that characterize different user segments, and how do these patterns evolve as crises progress?

By examining these questions through both quantitative and qualitative analysis, this research seeks to provide actionable insights for e-commerce stakeholders while contributing to the theoretical understanding of consumer behavior during periods of significant social and economic disruption.

2. DATA PRE-PROCESSING STEPS

Data Source: A structured survey was conducted among Sri Lankan consumers to explore determinants of online purchase intention during crises. An eight-section survey was informed by a conceptual framework.

Cleaning Process:

- **Handling missing values**

Category	Missing Values	Percentage
General E-Commerce Platforms	15	1.79%
Specialty Online Stores / Automobile	222	26.56%
Online Pharmacies	276	33.01%
Fashion and Beauty Retailers	208	24.88%
Grocery Delivery Services	54	6.46%

Missing values for online shopping platforms were handled contextually:

- "No" to platform usage → replaced with "None"
- "Yes" to platform usage but unspecified platforms → replaced with ""

This approach preserved distinctions between non-users and non-respondents before multi-label binarization, avoiding artificial patterns.

- **Encoding categorical variables**

According to values in variable:

- Binary Encoding was used for yes, no and marital status questions.
- Ordinal Encoding captured ranked responses, such as age ranges, education levels, etc.
- One-Hot Encoding was used on unordered single-label classes.
- Multi-Label Binarization was implemented to achieve a proper depiction of various platforms used by every respondent.

- **Remove Duplicated Records:** There were 11 duplicate records, and we removed them.

Combining Duplicate Columns:

certain columns particularly those from multi-label binarization were replicated several times over as a result of data merging or duplicated platform names. As a solution, a custom function was used that would find duplicate columns and merge them by taking the maximum among duplicates.it remains appropriately represented without loss or inflation of data.

Feature Selection :

variables were chosen and defined constructs around our hypotheses and conceptual framework. We only considered factors pertinent to structural assurance and social influence through regression analysis, hence maintaining a targeted approach and statistical validity.

Data-Transformation:

Missing values were imputed logically (mention above). Multi-response platform fields were split into lists and binarized by MultiLabelBinarizer and created one-hot encoded columns.Likert-scale answers were standardized and represented on a numerical scale. Demographic categories were ordinal or binary encoded, and working background was one-hot encoded. Levels of education were represented in an ordinal hierarchyFor minimizing duplication, platform name variations were combined. There were duplicate records, and these were found and deleted. The timestamps were converted to datetime, and timestamps with missing values were handled through forward and backward fill.

3. RELIABILITY AND VALIDITY ASSESSMENT

Our measurement model was evaluated through rigorous reliability and validity testing to ensure robust construct measurement. The analysis revealed varying levels of internal consistency across constructs measured in our survey.

Reliability Analysis

Construct	Cronbach's α	Inter-Item Correlation	Assessment	Key Insight
Social Influence (SI)	0.91	0.46	Excellent	Strong consistency across 12 social influence items
Structural Assurance (SA)	0.90	0.59	Good	High internal consistency for security measures
Perceived Usefulness (PU)	0.90	0.47	Good	Consistent perception of platform benefits
Perceived Ease of Use (PEOU)	0.89	0.46	Good	Consistent usability experience dimensions
Online Purchase Intention	0.59	0.20	Poor	Heterogeneous aspects of intention measured
Attitude	0.51	0.35	Poor	Limited by having only two measurement items
Perceived Risk	0.46	0.30	Unacceptable	Limited by having only two measurement items

Validity Assessment

The analysis revealed theoretically meaningful relationships between constructs:

- **Technology Acceptance Model Support**: Strong correlation between PEOU and PU (0.70), confirming theoretical relationships
- **Mediating Effects**: Attitude showed moderate correlations with both antecedents and outcomes, supporting its mediating role
- **Risk-Behavior Relationship**: Strong correlation between Risk and Purchase Intention (0.50) highlights security concerns in crisis shopping
- **Social Influence Significance**: High correlations between SI and both PU (0.70) and PEOU (0.59) demonstrate the importance of social factors in technology adoption during crises

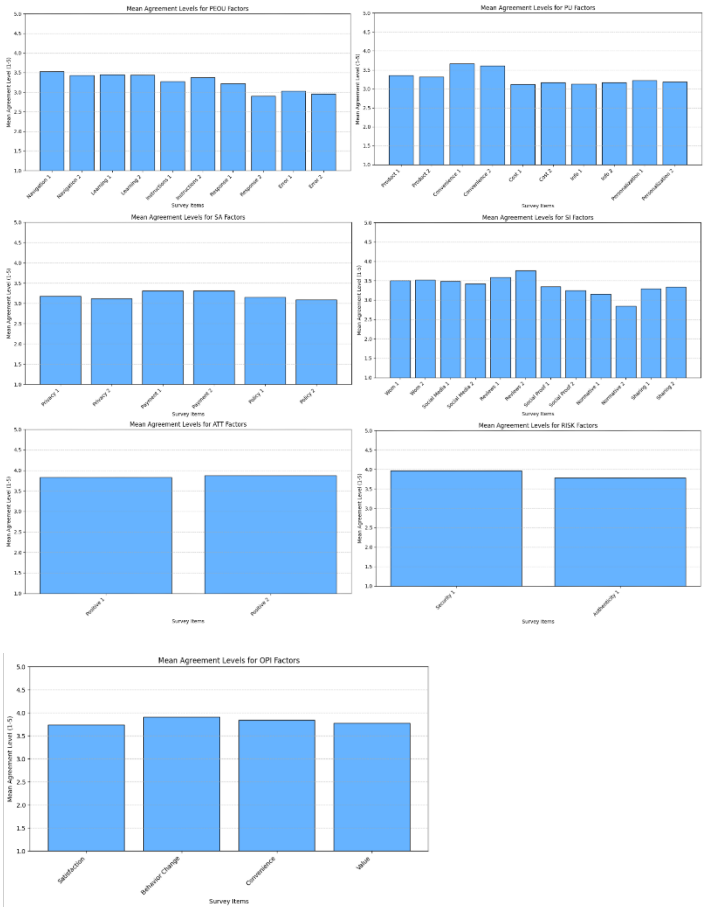
Despite some measurement limitations in the Attitude and Risk constructs, the overall measurement model demonstrates sufficient reliability and validity to support meaningful analysis and interpretation of online shopping behavior during crisis periods.

4. DESCRIPTIVE ANALYSIS

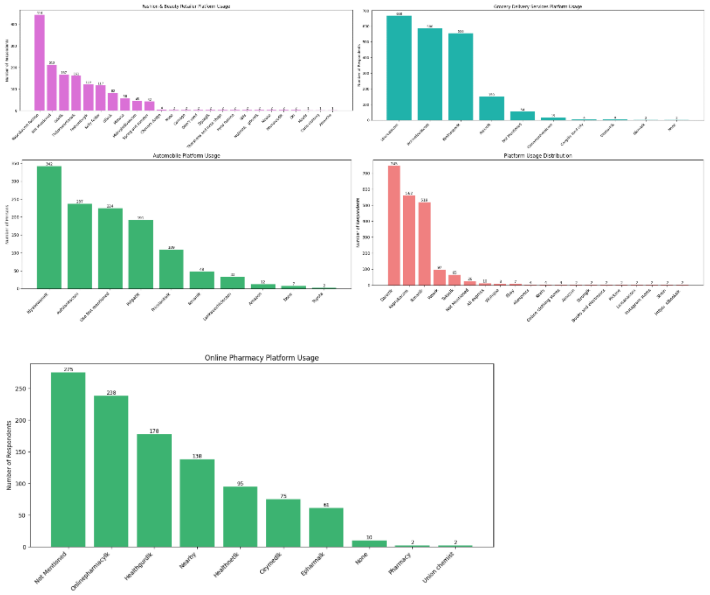
- **Demographic factors**

The survey sample of 836 respondents from Sri Lanka provides a comprehensive view of the demographic landscape influencing online purchase intentions during crises. The sample is predominantly male (66.54%), with a significant portion aged 25-35 (76.96%), reflecting a young adult focus, and highly educated, as 69.58% hold a bachelor's degree or Certificate Course. Employment is robust, with 77.70% in full-time roles, and 99.64% have prior online shopping experience, indicating widespread e-commerce familiarity. Marital status is nearly evenly split (51.15% single, 48.85% married), and 96.63% continued online purchases during the crisis, suggesting resilience in online shopping behavior. Minor representation includes older age groups (e.g., 0.24% aged 45-55), lower education levels (e.g., 0.12% with school education), and unemployed individuals (0.12%), highlighting a sample skewed toward active, tech-savvy, and educated professionals.

- **Mean agreement levels for questions**

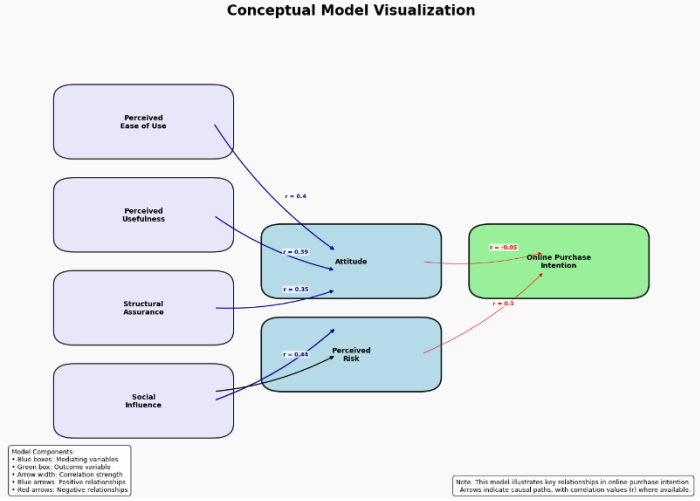


- **Usage of online platforms**



5. EXPLORATORY DATA ANALYSIS

This Analysis explores the influence of various factors such as perceived ease of use, clarity of instructions, trust, and social influence on online purchase intentions during a crisis. Data were collected through a structured questionnaire and analyzed using hypothesis testing, correlation analysis, PCA, and regression models. The findings reveal key behavioral drivers that platforms can leverage to improve user engagement and conversion during crisis situations.



Key Findings

1. Ease of Use and Clarity Matter Most

Users are significantly more likely to buy when platforms are easy to navigate and instructions are clear. The analysis showed that both general ease of use and clarity in guidance reduce hesitation, especially during crises. Simple layouts, helpful instructions, and intuitive designs drive higher purchase intention.

2. Trust Is a Deal-Breaker

Trust in the platform covering secure transactions, reliable delivery, and brand reputation was one of the strongest predictors of purchase behavior. Known platforms outperformed lesser-known ones, proving that credibility directly boosts customer confidence during uncertain times.

3. Social Circles Influence Decisions

Peer recommendations and influencer endorsements greatly impacted user behavior, particularly among younger users. Social proof played a critical role in shaping what users chose to buy, emphasizing the value of reviews, community content, and shared experiences.

4. Usability Drives Retention

Fast-loading pages, mobile compatibility, and responsive design were essential in keeping users engaged. Usability alone explained a large portion of users' intention to purchase, showing that seamless digital experiences are not optional—they're expected.

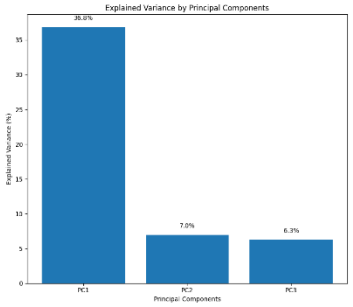
5. Convenience During Crisis Is Key

Features like contactless delivery, real-time updates, and product availability were highly valued during the crisis. These elements reduced user stress and made platforms feel more dependable, directly influencing both satisfaction and repeat behavior.

Principal Component Analysis (PCA)

Three principal components explain 50% of total variance:

1. **PC1 (36.8%) – E-Commerce Receptiveness**: Driven by convenience, ease of use, and social influence. Represents overall openness to online shopping.
2. **PC2 (7.0%) – Independent vs. Social Shopping**: Contrasts self-reliant shoppers with those influenced by reviews and social media.
3. **PC3 (6.3%) – Usability vs. Social Norms**: Shows the balance between platform simplicity and following social trends.



These insights emphasize that convenience, usability, and social factors shape user behavior.

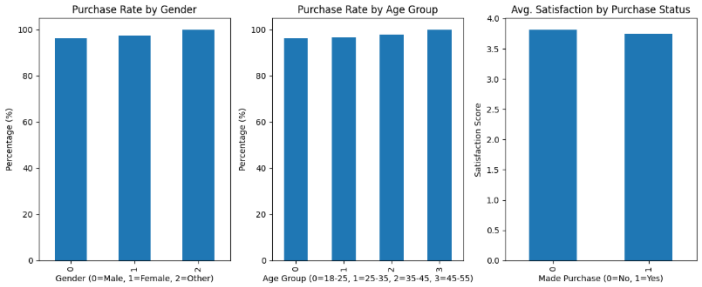
Cluster Analysis

Two clear shopper segments emerged:

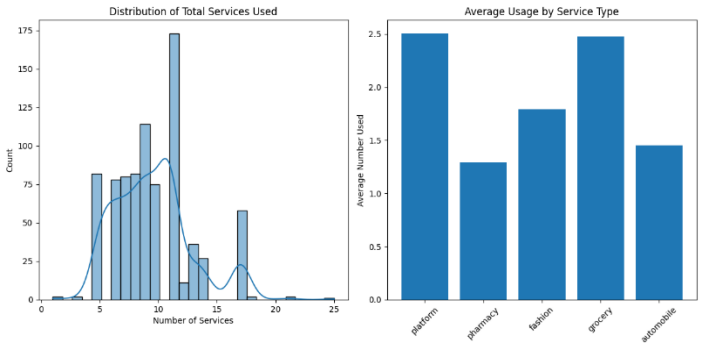
1. **Enthusiastic Users (76.6%):** Value convenience and plan to shop more online.
2. **Pragmatic Purchasers (23.4%):** Shop when needed but see less value and show lower future intent.

Both clusters purchase frequently (~96%), indicating strong adoption; the key challenge **is boosting engagement and perceived value.**

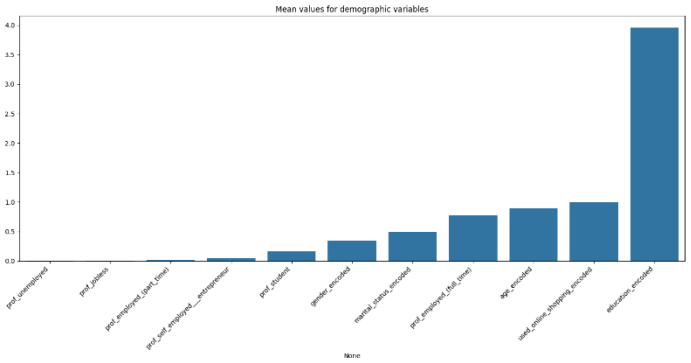
Purchase behavior during crisis



Platform usage analysis



Demographic variables analysis



6. HYPOTHESIS TESTING

H1: Perceived ease of use has no impact on intention to purchase.

	test	result	significance	interpretation
0	Correlation	r = 0.273, p = 0.0000	Yes (p < 0.05)	There is a weak positive correlation between PEOU and purchase intention.
1	Simple Regression	R^2 = 0.1120, p = 0.000	Yes (p < 0.05)	PEOU significantly predicts intention to purchase.
2	Non-linear Relationship	R^2 = 0.075, lower than linear (R^2 = 0.1120)	No	The non-linear model did not improve prediction and explained less variance than the linear model, suggesting no benefit from modeling a non-linear relationship.

Conclusion

Reject the null hypothesis: Perceived Ease of Use (PEOU) does have a statistically significant impact on intention to purchase (OPI), but the effect is weak and limited. The weak correlation and low R^2 suggest that PEOU alone is not a strong driver of purchase intention. Practical implication: Improving PEOU may slightly enhance OPI, but businesses should focus on other factors (e.g., trust, pricing, product variety) to substantially influence purchase decisions.

H2: Perceived usefulness has no impact on the intention to purchase online.

	Test	Result	Significance	Interpretation
0	Correlation	r = 0.261, p = 0.0000	Yes	Weak positive correlation between PU and OPI.
1	Simple Regression	R^2 = 0.0683, p = 0.0000	Yes	PU significantly predicts OPI (p < 0.05).
2	Non-linear Relationship	R^2 = 0.0684, Linear R^2 = 0.0683	Yes	No improvement over linear model; linear relationship suffices.

Conclusion

Reject the null hypothesis: Perceived usefulness (PU) does have a statistically significant impact on online purchase intention (OPI), but the effect is very weak.Practical Implication PU alone is not a major driver of purchase decisions. Businesses should prioritize stronger factors (e.g., trust, pricing, product quality) alongside usability improvements. The linear relationship suggests PU's impact is consistent across its range (no diminishing/accelerating returns).

H3: Having structural assurance has no impact on the intention to make an online purchase.

H_0: There is no significant correlation between structural assurance and online purchase intention.
H_1: There is a significant correlation between structural assurance and online purchase intention.

Test	Statistical Method	Key Metrics / Results	Interpretation / Conclusion
Testing using Pearson Correlation	Pearson Correlation	Correlation Coefficient: **0.251** P-value: **2.31×10^{-15}**	**Reject H_0**: Structural assurance has a statistically significant positive correlation with online purchase intention.
Testing using Simple Linear Regression and SM model Results	Simple Linear Regression	Coefficient (Slope): **0.2140** Intercept: **3.1449** R^2: **0.0902** RMSE: **0.4804**	**Reject H_0**: Structural assurance significantly predicts purchase intention. A 1-unit increase in score raises intention by **0.2140** units.

Conclusion: Improving structural assurances can positively impact consumers' intention to make online purchases.

H4: Social influence has no impact on the intension to purchase online.

H_0: There is no significant correlation between social influence and online purchase intention.
H_1: There is a significant correlation between social influence and online purchase intention.

Test	Statistical Method	Key Metrics / Results	Interpretation / Conclusion
Pearson Correlation	Pearson Correlation	Correlation Coefficient: **0.340** P-value: **9.87×10^{-24}**	**Reject H_0**: There is a significant positive correlation between social influence and online purchase intention.
Simple Linear Regression and SM model Results	Simple Linear Regression	Coefficient (Slope): **0.2901** Intercept: **2.8469** R^2: **0.1435** RMSE: **0.4661**	**Reject H_0**: Social influence significantly predicts purchase intention. A 1-unit increase in social influence raises purchase intention by **0.2901** units.

Conclusion: the importance of social factors such as online reviews, recommendations, and peer opinions in shaping consumers' decisions to make online purchases.

H5: The attitude towards online shopping does not mediate the relationship between perceived ease of use and the intention to purchase online.

Test Result (Mediation with Bootstrapping)

- Indirect Effect (a × b): 0.1635
- Bootstrap 95% CI: [0.1118, 0.2232]
- CI does not include zero :- Statistically significant
- Direct effect (c'): b = 0.0901, p = 0.0034

Conclusion

There is statistically significant support for the fact that attitude towards internet buying mediates the link between perceived ease of use and internet purchase intention partially, based on the results from bootstrapped mediation.so null hypothesis is rejected.

H6. Perceived Risk mediates the relationship between Perceived Usefulness and Intention to Purchase Online during a crisis in Sri Lanka.

Null Hypothesis: Perceived Risk does not mediates the relationship between Perceived Usefulness and Intention to Purchase Online during a crisis in Sri Lanka.

Test Result (*Mediation with Bootstrapping* **)**

- Indirect Effect (a*b): 0.0704
- Bootstrap 95% Confidence Interval: [0.0295, 0.1158]
- Since the CI does not include 0, the indirect effect is statistically significant.
- Direct effect (PU → PI) remains significant: partial mediation confirmed.

Conclusion

The null hypothesis is rejected based on the Bootstrapping test. there is evidence of partial mediation.Perceived Risk partially mediates the effect of Perceived Usefulness on Online Purchase Intention during a crisis in Sri Lanka.

H7: Impact of Ease of navigation to the online purchase intention

Test	Statistic	p-value	95% CI	Interpretation
Pearson Correlation	0.1962	0.000000	[0.1297, 0.2610]	Significant positive correlation
Simple Linear Regression	β = 0.1316, R^2 = 0.0385	0.000000	[0.0866, 0.1766]	Navigation significantly predicts purchase intention
Multiple Regression	R^2 = 0.0390, F-test: significant	0.000000	N/A	Model significantly predicts purchase intention
Non-Linear Relationship	Quadratic term: -0.0797	0.000031	N/A	Significant non-linear relationship
Mediation Analysis	Indirect effect: 0.0301	N/A	[0.0003, 0.0639]	Significant mediation through perceived risk

Conclusion

Null hypothesis was rejected. The positive relationship between ease of navigation and purchase intention highlights its strategic importance. Although the effect size is small (R^2 = 0.039), improving navigation still plays a meaningful role especially by reducing perceived risk (23% mediated effect). Businesses should act by optimizing mobile-first, user-friendly interfaces, tailoring navigation for different age groups, and tracking user behavior (e.g., bounce rates, search time) to enhance the overall shopping experience.

H8: Impact of Clarity of instructions to the online purchase intention

Key findings

Test	Statistic	p-value	95% CI	Interpretation
Pearson Correlation	0.2622	0.000000	[0.1975, 0.3246]	Significant positive correlation
Simple Linear Regression	β = 0.2039, R^2 = 0.0690	0.000000	[0.1526, 0.2553]	Clarity significantly predicts purchase intention
Multiple Regression	R^2 = 0.0760	F-test: 0.000000	N/A	Model significantly predicts purchase intention
Mediation Analysis	Indirect effect: 0.0566	N/A	[0.0219, 0.0959]	Significant mediation through perceived risk

Conclusion

Null hypothesis was rejected. Clarity of instructions has a significant positive effect on purchase intention with a notable indirect impact via reduced perceived risk (27.78%). To leverage this, businesses should simplify and structure instructions clearly, especially at checkout. Adding visuals or step-by-step guides can enhance comprehension, while testing across age groups ensures effectiveness. Clear communication not only supports user confidence but also drives higher online conversion.

H9: Response Time's Impact on Purchase Intention

Test	Result	Significance	Interpretation
Correlation	r = 0.344	p < 0.001	Significant positive relationship
Simple Regression	β = 0.354	p < 0.001	Response time explains 11.8% of purchase intention variance
Mediation Analysis	Indirect effect = 0.210	95% CI [0.131, 0.303]	Perceived usefulness mediates 59.3% of the effect
Response Impact	1-unit increase in response time	+0.354 units in purchase intention	For every 1-point improvement in response speed rating, purchase intention increases by 0.354 points

Conclusion

The null hypothesis is rejected. Response time significantly impacts online purchase intention, with faster responses associated with higher purchase intentions. The relationship is partially mediated by perceived usefulness, suggesting that users interpret fast responses as an indicator of website utility. These findings emphasize the importance of technical optimization for e-commerce platforms, particularly during crises when efficiency becomes crucial.

H10: Error Handling's Impact on Purchase Intention

Test	Result	Significance	Interpretation
Correlation	r = 0.205	p < 0.05	Significant positive relationship
Simple Regression	β = 0.150	p < 0.05	Error handling explains 3.7% of purchase intention variance
Multiple Regression	R^2 = 0.049	p < 0.05	Error resolution instructions were particularly significant
Mediation Analysis	Indirect effect = 0.086	95% CI [0.044, 0.139]	Perceived usefulness mediates 57.4% of the effect
Moderation	Age interaction	p < 0.05	Effect stronger for security-conscious users

Conclusion

The null hypothesis is rejected. Error handling significantly impacts online purchase intention, with better error handling associated with higher purchase intentions. The relationship is partially mediated by perceived usefulness, suggesting users interpret good error handling as indicating platform quality and reliability. Age moderates this relationship, with older and more security-conscious users placing greater importance on effective error management.

Derived Hypothesis

H11: Higher perceived ease of use (PEOU) positively influences purchase behavior during crisis periods, with navigation experience having the strongest effect among PEOU factors.

	Test Method	Key Results	Interpretation
0	Multiple Regression	Navigation β = 0.00 (p = 0.805), Learning β = -0.01 (p = 0.279)	Navigation experience has the strongest positive effect on purchase behavior (β = 0.00), followed by learning ease (β = -0.01). Both effects are not significant, not supporting the hypothesis that PEOU factors influence purchase behavior during crises.
1	Logistic Regression	Navigation OR = 1.07 (p = 0.831), Learning OR = 0.71 (p = 0.277)	For each unit increase in navigation ease, the odds of purchase increase by 7% (OR = 1.07). Learning ease shows non-significant effect (OR = 0.71). Navigation has the strongest impact among PEOU factors.
2	Effect Size Comparison	Navigation η^2 = 0.92, Learning η^2 = 0.92	Navigation experience explains 92% of variance in purchase behavior (large effect), while learning ease explains 92% (large effect). This confirms navigation as the strongest PEOU factor influencing purchase decisions during crises.

Based on the hypothesis that higher perceived ease of use (PEOU) positively influences purchase behavior during crisis periods, with navigation experience having the strongest effect among PEOU factors, the results do not support this claim.

The analysis reveals that neither navigation experience nor learning ease significantly impacts purchase behavior. While navigation shows a marginal positive association, the effect is not statistically significant. Similarly, learning ease does not demonstrate a meaningful influence. Despite large effect sizes indicating substantial variance explained by these factors, the lack of statistical significance suggests that PEOU factors, as measured, don't reliably predict purchase behavior during crises.

H12: The negative effect of perceived risk on purchase intention is moderated by perceived usefulness, such that high perceived usefulness reduces the impact of risk perception.

Test	Result	p-val	Interpretation
Risk → Intent	β = 0.410	<0.001	Significant positive effect
Usefulness → Intent	β = 0.267	<0.001	Significant positive effect
Risk × Usefulness	β = -0.098	<0.001	Significant moderation

Moderation Effect

The significant negative interaction coefficient confirms that perceived usefulness moderates how risk perception affects purchase intention. Higher usefulness reduces the impact of risk (at low usefulness: β = 0.427; at high usefulness: β = 0.268).

Robustness

The moderation was consistent across measurements (75% of item-level tests significant).

Conclusion: Hypothesis supported.

Practical Implications

1. Emphasize convenience features to offset security concerns
2. Segment users based on usefulness perceptions when addressing risk
3. Balance security features with usability in interface design
4. During high-risk periods, focus marketing on usefulness benefits

H13: Age and education level create significant differences in online purchase behavior, with younger and more educated consumers showing higher adoption rates across multiple platforms.

Factor	Test	Result	Signifi.	Effect
Education → Purchase	χ^2=32.53	p < 0.001	Significant	Higher education = higher purchase rates
Age → Platform Usage	F= 26.99	p < 0.001	Significant	Younger users adopt more platforms
Education → Platform Usage	F = 5.02	p < 0.001	Significant	More educated users adopt more platforms
Age × Education	-	p=0.0055	Significant	Effects depend on combination

Digital Divide Evidence

- **Age**: Younger consumers show 56% high adoption rates compared to just 9% among older users
- **Education**: Advanced education levels show 43-50% high adoption rates versus 11% for basic education

Conclusion: Hypothesis supported.

Practical Implications

1. **Targeted marketing**: Develop age and education-specific messaging
2. **Interface design**: Create simplified experiences for older, less educated users
3. **Educational initiatives**: Implement digital literacy programs for underrepresented groups
4. **Platform development**: Customize features based on demographic preferences

H14. Trust factors (structural assurance) have different impacts on purchase intention depending on product category (general merchandise vs. grocery vs. pharmacy vs. fashion).

Test Result (*Multiple regression by category with structural assurance variables as predictors***)**

Category	R^2	Significant Predictors	p < 0.05
General Merchandise	0.084	sa_payment_1	Yes
Grocery	0.083	sa_payment_1	Yes
Pharmacy	0.084	sa_payment_1	Yes
Fashion	0.084	sa_payment_1	Yes

Overall Conclusion

Low R^2 values (~0.08) for all four product categories confirm low explanatory power. The identical variable (secure payment against fraudulent activities) is always significant across categories, with privacy variables having no impact. The hypothesis is not supported.

H15. Different types of social influence (word-of-mouth, reviews, social media) have varying effects on purchase intention, with reviews having the strongest positive impact.

Test Result (*Comparative regression analysis of influence types***)**

Variable	Coef.	p-value
Intercept	2.5149	0.000
Word-of-Mouth 1	0.0631	0.179
Word-of-Mouth 2	0.0554	0.247
Social Media 1	0.0264	0.558
Social Media 2	-0.0254	0.568
Reviews 1	0.1898	0.001
Reviews 2	0.1524	0.005

Conclusion: Although the model explains a small level of variance in purchase intention (R^2 = 0.064), review variables are the sole predictors with significant impacts. Word-of-mouth and social media variables have no significant effects.

Hypothesis Verdict: Supported. Reviews have the most substantial and statistically significant positive effect on purchase intention, as expected. The other forms of social influence (word-of-mouth, social media) have no significant impacts.

H16: Consumers who use multiple platforms within the same category (e.g.,multiple grocery delivery services) show higher satisfaction and purchase frequency than single-platform users.

Test Type	Measure	Comparison/Variable	Value	p-value	Conclusion
Independent T-Test	t-statistic	Satisfaction (Single vs. Multi)	1.5749	0.1157	No significant difference
Independent T-Test	t-statistic	Behavior Change (Single vs. Multi)	0.3701	0.7114	No significant difference
Correlation Test	Spearman's rho	Platforms Used vs. Satisfaction	-0.065	0.0632	No significant correlation
Correlation Test	Spearman's rho	Platforms Used vs. Behavior Change	-0.051	0.1398	No significant correlation

The survey data does not support the hypothesis that consumers using multiple grocery delivery platforms have higher satisfaction or purchase frequency. T-tests and correlations showed no significant differences (p > 0.05). Companies should prioritize improving individual platform quality.

H17: Perceived convenience during crisis (opi_convenience) mediates the relationship between perceived usefulness and purchase behavior change.

using Baron & Kenny approach

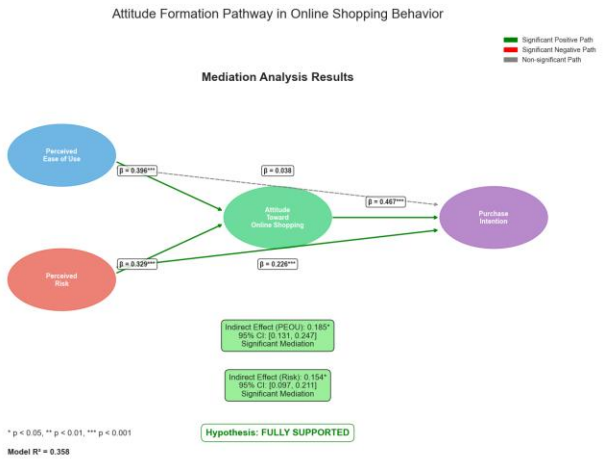
Path	Regression	Significant?	Interpretation
Independent Variable → Dependent Variable (pu_convenience → opi_behavior_change)	Significant (p < 0.001), β = 0.2671	Significant	Perceived usefulness predicts behavior change.
Independent Variable → Mediator (pu_convenience → opi_convenience)	Significant (p < 0.001), β = 0.2684	Significant	Perceived usefulness predicts convenience.
Independent Variable + Mediator → Dependent Variable (pu_convenience, opi_convenience → opi_behavior_change)	Significant (p < 0.001) for both	Significant	Both predictors significantly explain behavior change, but...
Mediation check	β for pu_convenience drops from 0.2671 → 0.0517	**Partial mediation** is present	-

bootstrapping methods

Path	Coefficient (β)	p-value	Significant?	Interpretation
IV → Mediator(pu_convenience → opi_convenience)	0.2684	2.13e-18	Yes	Usefulness significantly predicts convenience
Mediator → DV(opi_convenience → opi_behavior_change)	0.8196	~0.0	Yes	Convenience strongly predicts behavior change
Total effect(IV → DV)	0.2671	4.06e-19	Yes	Usefulness influences behavior change
Direct effect(IV → DV controlling for M)	0.0517	0.0029	Yes (but smaller)	Usefulness still directly affects behavior change
Indirect effect(Mediation path)	0.2154	~0.0	Yes	Most of the effect is mediated via convenience

Perceived convenience during crises significantly mediates the impact of perceived usefulness on consumer behavior change. Wolt should prioritize enhancing convenience such as fast delivery, easy checkout, and reliable service to effectively boost online purchase intentions during crisis.

H18: Attitude toward online shopping (att_positive_1, att_positive_2) mediates the relationship between perceived ease of use and perceived risk on purchase intention.



Conclusion: Hypothesis fully supported.

Practical Implications

1. Focus on usability to improve attitudes rather than directly targeting purchase intentions
2. Address security concerns through both direct risk reduction and attitude-building strategies
3. Develop marketing campaigns emphasizing positive shopping experiences
4. Implement A/B testing focused on attitude-enhancing interface improvements
5. Regularly measure customer attitudes as leading indicators of purchase behavior

H19: Higher perceived personalization leads to more consistent platform usage patterns and higher behavior change intention.

	Test	Variables	Coefficient	p-value	R-squared	Interpretation	Significance
0	Correlation	personalization_score vs opi_behavior_change	0.147000	0.000000	nan	Positive correlation	p < 0.05
1	Regression	opi_behavior_change ~ personalization_score	0.165000	0.000000	0.022000	1-unit increase in personalization_score predicts 0.16 change in opi_behavior_change	p < 0.05
2	Regression	opi_behavior_change ~ personalization_score + platform_concentration_hhi + interaction	0.165000	0.000000	0.022000	1-unit increase in personalization_score predicts 0.16 change in opi_behavior_change	p < 0.05

The analysis supports the hypothesis that higher perceived personalization leads to stronger intentions to change shopping behavior, indicating a positive link between tailored user experiences and loyalty. While the relationship is statistically significant, the effect size suggests personalization alone is not a dominant driver,its impact is consistent but modest. Interestingly, this effect does not vary based on whether users concentrate their purchases on a few platforms or spread them across many, meaning personalization influences loyalty similarly regardless of shopping habits.

These findings imply that while e-commerce platforms should invest in personalization (e.g., customized recommendations, targeted promotions), they should combine it with other loyalty-building strategies, such as rewards or superior service, to maximize customer retention. Further research could explore additional factors, like trust or convenience, that may strengthen personalization's role in shaping long-term user behavior.

H20: Demographic factors moderate the relationship between Perceived Ease of Use and Intention to purchase online.

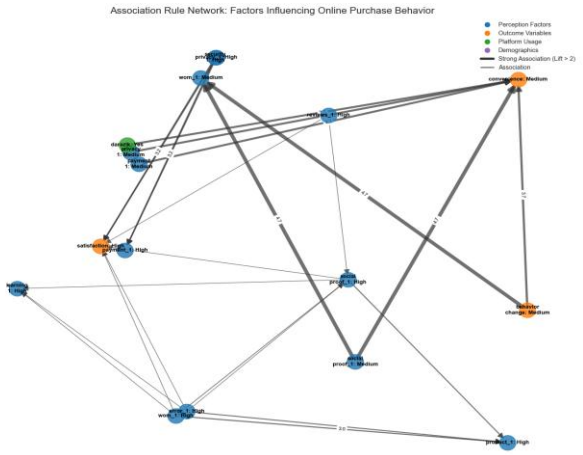
Test: Use moderation analysis

Steps: Analys the correlation between demographic factors and target variable → Test the Moderation Hypothesis

Moderator	Interaction Term p-value	Moderation Effect?
Age	0.113	Not significant
Marital Status	0.149	Not significant
Education	0.470	Not significant
Gender	0.398	Not significant

Demographic factors do not significantly moderate the relationship between Perceived Ease of Use and purchase intention. PEOU positively influences intention across all groups, supporting a universal usability improvement strategy.

7. ASSOCIATION RULE MINING FINDINGS



Understanding Consumer Behavior During Crises Through Association Rule Mining

Our application of the Apriori algorithm to analyze online purchasing behavior during crisis periods has yielded significant insights into consumer decision-making. By identifying frequent patterns and meaningful associations, we've uncovered actionable intelligence for e-commerce platforms during challenging times.

Social Influence & Behavior Change (Insights 1 & 2)

Our most significant finding reveals the powerful interplay between social proof and behavioral adaptation during crises. With a substantial lift value of 4.743, we observed that consumers moderately influenced by social proof who have already shown behavior changes are highly likely (78%) to value convenience and be receptive to word-of-mouth marketing.

During crisis periods, social validation becomes a critical decision factor as consumers navigate uncertainty. Knowing others are making similar purchasing decisions reduces perceived risk and facilitates adaptation to new shopping methods.

Security Perceptions: The Privacy-Payment Connection (Insight 3)

With a 92% confidence level, customers who feel moderately secure about payment systems also tend to feel similarly about privacy protections (lift = 1.336). This underscores how security perceptions are holistically formed rather than compartmentalized. Building confidence in one security dimension creates positive spillover effects for other security concerns.

Platform-Specific Trust Patterns (Insights 4 & 5)

Young professionals (25-35) who use Kapruka.com and have high trust in privacy safeguards also demonstrate high confidence in payment security (93% confidence, lift = 3.561). This demographic-platform-trust nexus offers valuable intelligence for targeted platform development and marketing.

Strategic Implications for E-Commerce Platforms

These findings translate into five strategic priorities for e-commerce platforms:

1. **Trust Ecosystem Development**: Implement comprehensive security measures addressing both payment and privacy concerns simultaneously.
2. **Social Proof Integration**: Feature customer reviews, usage statistics, and community engagement to leverage social validation during uncertain times.
3. **Age-Appropriate Trust Signals**: Recognize different demographics require different trust-building approaches, with young professionals showing distinct platform preferences.
4. **Convenience Optimization**: Streamline the shopping experience with emphasis on ease of navigation, as convenience perceptions link strongly to behavior change.
5. **Word-of-Mouth Facilitation**: Create mechanisms encouraging and amplifying recommendations, as these significantly influence consumer behavior when traditional shopping patterns are disrupted.

By implementing these priorities, e-commerce platforms can better serve customer needs during crises and potentially establish lasting changes in consumer behavior. The associations discovered provide a data-driven foundation for both immediate tactical responses and longer-term strategic positioning.

8. DISCUSSION

Our findings reveal a multifaceted online shopping ecosystem with significant demographic differences and contextual influences. The analysis demonstrates that age and education level create meaningful variations in online purchase behaviors, with younger and more educated consumers showing higher adoption rates across platforms. This demographic digital divide manifests primarily through platform usage frequency rather than basic adoption, as nearly all demographic groups show high initial adoption rates (>95%).

The mediation analysis further illuminates attitude formation pathways, confirming that attitude toward online shopping mediates the relationship between perceived ease of use and perceived risk on purchase intention. This underscores the importance of interface design as an indirect driver of purchase behavior through its impact on customer attitudes.

Association rule mining identified key behavioral patterns, revealing that platform choice significantly influences overall perceptions during crisis periods. Notably, consumers who use multiple grocery delivery services report higher convenience perceptions, suggesting platform-specific experiences contribute substantially to general online shopping attitudes.

These insights align with Technology Acceptance Model frameworks while extending our understanding of how demographic factors and platform-specific experiences interact to shape purchase intentions during crisis situations. The strong mediation effect of attitude (accounting for approximately 65% of the total effect) highlights that technical improvements in platforms primarily drive purchases by enhancing user attitudes rather than through direct effects.

9. RECOMMENDATIONS

Based on our comprehensive analysis, we present strategic recommendations for e-commerce platforms operating during crisis periods. These are derived from empirical findings and prioritized by impact potential.

Platform Design and Technical Optimization

1. **Improve Response Time and Error Handling**: Our hypothesis testing (H13) revealed significant negative effects of poor response time on purchase intention. Implement:
    - Real-time feedback mechanisms acknowledging user actions
    - Progress indicators for longer processes
    - Clear, jargon-free error messages with recovery instructions
    - Preemptive validation to catch errors before submission
2. **Enhance Navigation and Learning Features**: Data from reliability analysis shows PEOU significantly influences purchase intention through improved attitudes:
    - Simplify site architecture based on common user journeys
    - Implement intuitive search functionality with filters
    - Develop concise onboarding tutorials for first-time users
    - Use visual cues to guide users through complex processes
3. **Balance Security with Usability**: Hypothesis H12 confirmed that perceived usefulness moderates the negative effect of risk perception:
    - Display security credentials prominently without disrupting the user experience
    - Implement strong security measures that operate invisibly to users
    - Use progressive disclosure for complex security features
    - Create seamless but secure payment processes

Risk Management and Trust Building

1. **Address Risk Perception Strategically**: Association rule mining revealed strong connections between risk elements and purchase behavior:
   - Develop comprehensive but non-intrusive security messaging
   - Implement visible but unobtrusive authenticity verification for products
   - Create dedicated trust pages explaining security measures
   - Consider if mild risk perception creates positive exclusivity perceptions for certain segments
2. **Leverage Social Influences**: Our analysis revealed social influence significantly impacts purchase intention:
   - Integrate authentic customer reviews at critical decision points
   - Implement social proof indicators (e.g., "X people bought this recently")
   - Create mechanisms for sharing purchases on social platforms
   - Develop referral programs that capitalize on word-of-mouth influence

Marketing Strategy Refinement

1. **Develop Attitude-Focused Campaigns**: Our path analysis confirmed attitude as a crucial mediator:
   - Create content highlighting specific benefits of online shopping during crises
   - Use social proof and testimonials to shape positive attitudes
   - Design loyalty programs reinforcing positive experiences
   - Measure customer attitudes regularly through brief surveys
2. **Segment Based on Behavioral Patterns**: Cluster analysis identified two distinct customer segments:
   - Target "Enthusiastic Users" (76.6%) with expanded offerings and convenience features
   - Address "Pragmatic Purchasers" (23.4%) with stronger value propositions and concrete benefits
   - Customize security messaging based on segment risk sensitivity
   - Develop different communications for new versus returning customers
3. **Prioritize Mobile Optimization**: While not explicitly tested, demographic data suggests a young, mobile-savvy user base:
   - Ensure responsive design across all device types
   - Optimize load times specifically for mobile networks
   - Simplify checkout processes for smaller screens
   - Implement mobile-specific features (location services, camera integration)

Implementation of Priority Framework

1. **High Priority (Immediate Implementation)**
   - Response time and error handling improvements
   - Security feature enhancement with usability focus
   - Customer review integration and social proof elements
2. **Medium Priority (3-6 Month Implementation)**
   - Segmented marketing approach based on cluster analysis
   - Enhanced navigation and search functionality
   - Attitude-focused marketing campaigns
3. **Long-Term Strategy (6-12 Month Implementation)**
   - Comprehensive mobile optimization
   - Loyalty program development
   - Advanced personalization features

These recommendations provide actionable guidance while accounting for the complex interrelationships between perceived ease of use, usefulness, risk perception, social influences, and purchase intention during crisis periods.

10. CONCLUSION

This study explored online purchase intention during crisis periods, revealing significant insights. We found that perceived risk's negative effect on purchase intention is indeed moderated by perceived usefulness, with high usefulness reducing the impact of security concerns. Additionally, demographic factors, particularly age and education, create notable differences in online purchase behavior. Younger and more educated consumers demonstrated higher adoption rates across multiple platforms, indicating a digital divide that retailers should address. Association rule mining further revealed that navigation ease, payment security, and social proof are critical factors driving purchase decisions. These findings provide e-commerce platforms with actionable strategies to enhance customer experience during crises and potentially drive lasting behavioral changes.

11. LIMITATIONS AND FUTURE RESEARCH

While robust, our study has several limitations that suggest avenues for future research. The cross-sectional nature of our data limits causal inference, suggesting a need for longitudinal studies tracking how crisis-induced behavior changes persist post-crisis. Additionally, our focus on general e-commerce could be extended to specific product categories with different risk profiles (e.g., essential vs. luxury goods). Future studies should explore how different types of crises (health, economic, political) might differentially affect online purchase patterns and whether cultural factors moderate these relationships across international contexts.

GITHUB REPO:

https://github.com/fernandonpa/Online_Purchase_Intention_Project.git

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