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New Statistical Approach and Innovation to Measure Social Well-Being and Sustainable Growth

Identifying the Profile of Scam Victim: Unveiling Vulnerabilities behind Personality

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Abstract:

In an increasingly interconnected world, where technology accelerates communication and transactions, a shadowy counterpart lurks in the virtual alleyways of the digital age. Scams, cunning and deceptive, have evolved alongside our modern society, exploiting trust, information gaps, and human vulnerabilities. From the classic Nigerian prince email scam to sophisticated phishing schemes and investment frauds, scams have woven themselves into the fabric of our lives, leaving no demographic untouched. This study has explored the discriminant features between scam victim and non-victim groups by analyzing their personality traits. The Big-5 Personality, gullibility, and susceptibility to persuasion have all been added to the deck to investigate which of these could discriminate between the two victim groups. Eighty-two respondents completed an online survey. Results of this study has identified two significant discriminators; gullibility, and susceptible to persuasion. This combination of discriminator has proved that scam victim is highly gullible and highly susceptible to persuasion. Thus, policymakers can direct cybersecurity training for the populations that fit the profile. In conclusion, those who exhibit the aforementioned traits need to be aware and guard out for scams.

Keywords:

Scam victim; The Big-5; gullibility; susceptibility; discriminant

1. Introduction:

Behind every scam victim lies a unique interplay of personality traits that shape their interaction with the world around them. The artful scheme fabricated by scammers often mark not through random chance, but through a calculated

understanding of human behavior. From the gullible optimist who sees the best in everyone to the cautious skeptic who questions every motives, scam victim encompass a diverse range of personalities that both mirror and contrast the intricacies of the scams themselves. In the pages that follow, we embark on a journey into the realm of scam victim personalities, specifically looking into the traits of Big-5, gullibility and susceptible to persuasion. This paper is extracted from the full paper titled “Psychological Profiling of Scam Victim: A Discriminant Analysis”, discussing only on personality as denominator. Hence, we intend to explore the psychological factors that render certain individuals more susceptible and shedding light on the intricate dance between vulnerability and manipulation.

Malaysia is not spared from such crime. In 2022, the Cyber Security Malaysia through MyCERT stated that more than 4000 cases of online fraud has been reported and announced as the most reported cyber threat incidents throughout the years (1). The nation has been rained with online dating scam, job scam abroad and even bank and insurance fraud. The government has established initiatives such as setting up Commercial Crime Investigation Departments (CCID) and the National Scam Response Centre (NSCR) to curb the incidence of scam (2,3). In order to explain the modus operandi and prepare the people for the surprise attack, awareness campaigns have also been undertaken across nation.

This study introduces personality variables to be tested across among the respondents. There are the Big-5 Personality traits, gullibility and susceptible to persuasion.

The Big-5 Trait

The series of Big-5 explained one’s dichotomous personality either low or high (4). Openness is characterized by a willingness to consider new experiences and perspective which makes individuals more receptive to scamming tactics. Next, conscientiousness is often cautious in making decision and attentive to details, hence low-level of this trait could cause impulsive decision-making (5). For extraversion, highly sociable make them more susceptible to scams that involve personal connections (6). As for agreeableness, the traits that make them compassionate, trusting will make them fall for friendly scammer right away (6). As for neuroticism, emotional instability in this trait could fall for urgency and turns impulsive when dealing with con scheme (6). Certain traits might increase potential vulnerabilities and the risk of scam victimization.

Gullibility Trait

Gullibility is a characteristic of individuals who tend to trust others easily without questioning or doubting them (7). It refers to a person’s inclination to accept false information; especially when there are untrustworthy cues present (8). The presence of untrustworthy cues is a critical indicator of gullibility, as individuals who are less

gullible tend to deliberate and question information before accepting it as demonstrated in a study by Laroche (9). However, Hugo Mercier argued that humans have an inherent ability of open vigilance cognitive mechanism (plausibility checking) to discern and determine between trustworthy and untrustworthy sources (10). He asserted that people are not gullible, but are the result of deliberating on the wrong or poor material. Individuals attempt to link new information to prior sources, make comparison between them, and test new information against their intuitions.

Susceptible to Persuasion Trait

Susceptibility to persuasion refers to the tendency of someone to believe and comply with information they perceive as true. Scams have a definite scheme to make them believable and trap their targets, making scam victims particularly susceptible. The victims are drawn to, called to, or feel responsible for the fraudster's story due to specific characteristics that make them susceptible to the scam (11). According to a study, individuals who tend to think more deliberately or less intuitively are less susceptible to framing manipulations. This study suggested that cognitive style and decision-making can affect susceptibility to persuasion (12).

Victimization of Scam

In this study, the idea of victimhood in con games entails interaction between the fraudster and the victim. Hence, the respondents belonged into two groups. Victims are those who engage and lose money, while non-victims are those who engage but are able to end their participation without losing money.

By unraveling the complex tapestry of these traits, we aim to gain a deeper understanding of how scammer exploits the human psyche and how awareness of these dynamics can serve as a shield against their deceitful designs.

2. Methodology:

The research employed a cross-sectional survey design, in which the data will be analyzed using discriminant analysis. The Big-Five-2-S Inventory (4) as used to measure participants' personality, while the Gullibility Scale (8) assessed gullibility. Then, the Susceptible-to-Persuasion II (StPII) (13) was used to assess susceptibility. The significant differences among the victim and non-victims were analyzed based on the hypotheses formulated as follow:

HO₁: People who are introverted, highly agreeable, low conscientiousness, highly neurotic, and highly open to experience are not likely to be a scam victim

HO₂: Victims of a scam are unlikely to be a scam victim

HO₃: Victims of a scam are unlikely to be susceptible to persuasion

Based from G*Power 3.1.9.4 power analysis, a sample size of 6 with the power of 80% and alpha of .05 is sensitive enough to detect a large effect of 0.70. There were 2 samples gathered upon considering the attrition rates of 25-30%.

The criteria includes Malaysians, at least 18 years old, and who have either previously been scammed and lost money (victimized) or who nearly fell victim to a scam but were able to break off the engagement and avoid losing any money (not victimized.).

The study recruited the participants with purposive sampling. They were reached via anti-scam activist organization (Malaysia Anti-Scam, Scam Alert in Malaysia, and Ponzi) on social media platform. Some of the participants were recruited from the Meeting of Online Scam Victim Group in Kelana Jaya.

3. Result:

The data of 82 participants has been analyzed thoroughly. The description of the sample is tabulated in Table 1.

Table 1. Description of Samples

	Frequency	Percent	Valid Percent	Cumulative Percent
Gender				
Male	33	40.2	40.2	40.2
Female	49	59.8	59.8	100.0
Age group				
18 – 24 years old	37	45.1	45.1	45.1
25 – 64 years old	42	51.2	51.2	96.3
65 and above	3	3.7	3.7	100.0
Education Level				
High school	3	3.7	3.7	3.7
Diploma	6	7.3	7.3	11.0
Degree	54	65.9	65.9	76.8
Master Degree	18	22.0	22.0	98.8
Doctoral Degree	1	1.2	1.2	100.0
Income group				
B40	36	43.9	43.9	43.9
M40	26	31.7	31.7	7.6
T20	20	24.4	24.4	100.0
Marital status				
Single	59	72.0	72.0	72.0
Married	22	26.8	26.8	96.8
Widowed	1	1.2	1.2	100.0

Gullibility and susceptible to persuasion were found significant as the predictor in scam victimization (Gullibility; $F(1,80) = 42.721, p < .001$) (Susceptible to persuasion; $F(1,80) = 10.035, p < .05$) (see Table 2). Both Box's M indicated that the assumption

of equality of covariance matrices were not violated (see Table 3). Meanwhile, the multicollinearity test of VIF shows no significant multicollinearity found between the independent variables (see Table 4).

Table 2. Mean Comparison of Victim and Non-victims on Personality

Variables	Non-victim	Victim	Mean differences	F ratio	Sig.
Personality					
Extraversion	18.27	17.85	-0.42	.119	.731
Agreeableness	21.02	21.80	0.78	.646	.424
Conscientiousness	20.37	19.71	-0.66	.532	.468
Neuroticism	16.83	18.07	1.24	1.667	.200
Openness	20.41	19.78	-0.63	.885	.350
Gullibility	39.39	59.10	19.71	42.721**	<.001
Susceptible to persuasion	219.22	245.22	26.00	10.035*	.002

* $p < .05$, ** $p < .001$

Table 3. Test of Variance Covariance Matrices for Personality Variables

		Personality
Box's M	F	46.332
	Approx	1.500
	Dif1	28
	Dif2	22301.270
	Sig	.143

Table 4. Test of Multicollinearity VIF

Model	Tolerance	VIF
Personality ^a		
	Agreeableness	.729
	Conscientiousness	.570
	Neuroticism	.569
	Openness	.705
	Gullibility	.592
	Susceptible to persuasion	.666

a. Dependent Variable: Extraversion

The personality function; gullibility and susceptible to persuasion retains its discriminatory power with 36.1% variance explained between the victim and the

non-victim (Wilk's $\lambda = .639$, $p < .05$). Gullibility is the major contributor (.972), and the runner up is susceptible to persuasion (.471) (see Table 5). The overall combination correctly classified 75.6% of the respondents (see Table 6).

Table 5. Summary of Interpretive Measure for Discriminant Analysis (Personality)

Independent variables	Unstandardized	Standardized	Discriminant Loading (rank)
Extraversion	.008	.046	.051 (7)
Agreeableness	.012	.051	.119 (5)
Conscientiousness	-.042	-.172	-.108 (6)
Neuroticism	-.019	-.083	.192 (3)
Openness	.063	.193	-.140 (4)
Gullibility	.077	1.046	.972(1)
Susceptible to persuasion	.000	.010	.471 (2)
Group centroid low		-.743	
Group centroid high		.743	
Wilk's lambda		.639**	
(Canonical correlation) ²		.601	

** $p < .001$, Bolded is the significant variables

Table 6. Ratio for Cases Selected from Personality

Actual group	No. of cases	Predicted membership			
		Correctly classified grouped		Cross validation	
		Non-victim	Victim	Non-victim	Victim
Non-victim	41	26 (63.4)	9 (22.0)	24 (58.5)	17 (41.5)
Victim	41	5 (12.2)	36 (87.8)	9 (22.0)	32 (78.0)

Percentage of 'grouped' cases correctly classified; 75.6%, and 68.3% for cross validation. Numbers in italics indicate the row percentage

However, we include the stepwise estimation method to emit the suppressor effect. Here, the analysis will only picked the significant predictors and improved the percentage of explained variances (Wilk's $\lambda = .595$, $p < .001$) (see Table 7). Hence, H_{O1} and H_{O2} are rejected.

Table 7. Wilk's Lambda Table (Personality)

Step	Number	Lambda	df1	df2	df3	Exact F		
						Statisti	df 1	df2

of Variables		c							
1	1	.652	1	1	80	42.721	1	80	<.001
2	2	.595	2	1	80	33.773	2	79	<.001

4. Discussion and Conclusion:

The current study showed two (2) traits that efficiently predict the scam victim characteristics from the discriminant analysis. There are (i) gullibility (ii) susceptible to persuasion from the personality factor.

The Big-5 traits did not successfully discriminate the characterization of the scam victim, which is an intriguing finding from this study. The sample size collected makes it impossible to distinguish between the members; either it is too small, or the scores were generated at random. Less characterization could be portrayed from the combinations if the size was too small, which also reduced the likelihood of being able to distinguish between two groups. Or the responses were too haphazard to yield several descriptions of a single characteristic.

According to a study, the Big 5 personality traits are not specifically linked to falling victim to a cyber scam since they are more descriptive than explanatory and do not fully take into account individual differences (14).

A more thorough investigation is needed to explore the causes of any situations where the victims do not fulfill these criteria. Beyond these, there are additional unexplained qualities that require consideration as factors and research among the general populace. A role that mediates vulnerability in any situation is also anticipated to influence one's propensity to become a victim (15). Therefore, a more extensive and detailed examination of the scam victim's profile can define a range of personality characteristics.

With all deceptions, the journey of scam victim is one marked by both adversity and potential for growth. It becomes evident that the aftermath of falling prey to a scam extends beyond financial loss. The adversities include loss sense of trust, self-worth and security. However, there is a lesson of vigilance, resilience and the power of awareness. This research proved that discriminant analysis managed to point out that scam victim is most likely to be gullible and susceptible to persuasion. Hence, cultivating a culture of awareness and resilience ensuring that the lesson learned from scams become the armor that guards us in the digital age.

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