



Impulsive buying behavior: scarcity impact of flash sale through arousal as mediating variable

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ABSTRACT

The scarcity of flash sales is one of the causes of the tendency of individuals to make higher impulse purchases. This study sought to investigate the direct connection between flash sales and impulsive purchases through arousal as a mediator among 160 Generation Z in South Kalimantan who had shopped for flash sales at e-commerce Shopee. This study used an explanatory approach with 160 respondents. The data analysis method makes use of SmartPLS 4.0's Partial Least Square-Structural Equation Modeling (PLS-SEM). This study reveals that limited quantity scarcity and arousal positively and significantly affect impulsive buying. In contrast, limited time scarcity has a positive but insignificant effect on impulsive buying. In addition, the study results show that limited quantity scarcity and limited time scarcity have a positive and significant impact on arousal. In contrast, limited quantity scarcity and limited time scarcity have an indirect effect on impulsive buying through arousal. The research provides managerial implications for business owners to focus on the scarcity of flash sales to create an arousal stimulus for consumers, which results in impulse buying. This research is expected to provide knowledge to business owners regarding product marketing strategies at Shopee that are used to support increased sales.

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1. INTRODUCTION

In Indonesia, the growth of the e-commerce sector is expanding fairly quickly. In recent years, e-commerce has helped Indonesians purchase more effectively and save time (Vannisa et al., 2020). Flash sales is one marketing strategy widely used and developed in e-commerce sales (Martaleni et al., 2022). Flash sale is a new business model offering discounted products in limited quantity and time. In a flash sale, the consumer initially only tries to buy and then buys again until the stock runs out. It is interesting to note that more and more companies are using flash sale programs to sell their new products and increase e-commerce sales (Liu et al., 2021).

The goal of flash sales is to move lots of goods rapidly at low rates. A flash sale approach is used to offer discounts or special rates for goods that are offered during a set window of time. The time constraint is meant to stir up impulsive buying among customers. (Martaleni et al., 2022). Flash sales are short-term promotions that offer online customers discounts, cashback, or free shipping (Wijaksana & Elsina, 2023). Flash sales are used by Generation Z in purchases in e-commerce (Syauqi et al., 2022). One of the most thrilling aspects of a flash sale lies in its scarcity, encompassing both limited quantity and limited time constraints (Wu et al., 2021).

The limited quantity scarcity offer is limited for one time, only a certain limited number of units. The number of available units decreases by one when a consumer purchases one. For limited-edition scarcity promotions, this breeds uncertainty. It takes time and effort to determine the precise quantity of internet buyers interested in a target product. If not, most customers would consider the number of competitors to be at least as great as the number of products available. As a result, with a rise in limited quantity scarcity, the perception of a particular consumer's rivalry with an unidentified group of competitors increases significantly (Wu et al., 2021).

On the other hand, limited time scarcity is a promotional offer that provides a predetermined period until the product is no longer available (Tiffany Sutrisno et al., 2022). Instead of competing with other purchasers, they only need to meet the deadlines specified by sellers to take advantage of promotional offers (Wu et al., 2021). Online shoppers who keep track of their remaining shopping time feel under pressure. Due to the potential for deadlines to increase the perceived need for quick judgments, particularly as deadlines approach, deadlines are routinely imposed to operationalize time constraints. Even with products available, consumers cannot purchase after the promotion timeout. In low limited time scarcity conditions, consumers have sufficient time to search for and evaluate a product before purchasing. Product availability is the primary concern of consumers (Wu et al., 2021).

Generation Z is interested in products when the flash sale program is done with a brief bidding period since the product price is less than the normal price. (Syauqi et al., 2022). Limited-time offers are appealing since they highlight deals that are only available at that moment (Mou & Shin, 2018), and purchasers frequently experience joy and enthusiasm when seeing short-term specials (Guo et al., 2017). Fears of not receiving the same offer again can also cause someone to feel stimulated or aroused to purchase a goods. (T. Y. Chen et al., 2021). Once the flash sale period has concluded, the items available may either be sold again at regular prices or not offered for sale again.

Another consideration where a person feels interested, more dynamic or passionate, and has a severe area of strength for the product presented in a shopping environment is arousal (Situmorang, 2018). Explicitly demonstrated that competitive arousal results in over-bidding (Ku et al., 2005). Then, (Adam et al., 2015) explain how the desire to buy peaks due to peer competition and time pressure and emphasize arousal's effect on offers. The existence of arousal in Generation Z results in impulse buying when making purchases through e-commerce. Flash sales create excitement and intense shopping excitement from unexpected shoppers making impulse purchases. Generation Z is highly motivated and stimulated to make purchases as soon as possible (Syauqi et al., 2022).

When someone is exposed to particular stimuli, their sudden, strong, and persistent desire results in unthinking, hasty, and undesirable purchases, which is known as impulse buying (Rook & Fisher, 1995). They make purchases on the spur of the moment without thinking or planning anything; instead, they do it out of urgency to ensure everything runs smoothly. Then, customers plan to buy the products they need while waiting for flash sale promos in e-commerce because these promos have many discounted prices. They automatically buy immediately without thinking or carelessly when the item they need is having a flash sale promotion. Even so, there are always flash sale promos, except for the most popular promo days every day. These promotions do not

offer significant price reductions but cut prices by half or 70%, which can still attract customers (Wijaksana & Elsina, 2023). Currently, Generation Z dominates internet shopping when compared to other age groups. In Indonesia, One of the traits of clients that make impulse buys is Generation Z (Venia & Marzuki, 2021).

According to research, limited supply and limited time scarcity have a big impact on impulsive purchases (Wu et al., 2021). In contrast, the study's results (Tiffany Sutrisno et al., 2022) demonstrate that time and resource constraints have no discernible impact on impulse buying.

This study additionally showcases how arousal impacts the motivation to make a purchase, differing from the effects of enjoyment and attitudes towards flash sales, the impact of arousal on purchases has a significant effect on impulse buying. This demonstrates how arousal might affect flash sale impulse purchases. These findings also lend credence to the idea that people can buy things without intending to, only out of stimulation or a burning desire to do so (W. K. Chen et al., 2020). This occurs when people lack the self-control and ability to restrain themselves when they are aroused, leading them to make impulsive purchases (Verplanken & Sato, 2011); (Ju & Ahn, 2016).

Impulse buying in flash sales is often done. This can be proven in several studies Flash sales significantly influence impulse purchase. (Wangi & Andarini, 2021); (Darwipat & Syam, 2020); (Rizki Octaviana et al., 2022). However, this is contrary to research (Martaleni et al., 2022); (Nighel & Sharif, 2022) Flash sales do not have a significant impact on elevating impulse buying. Impulsive purchases influenced by flash sales occur through emotional mediation. (Pencerah et al., 2023). The flash sale phenomenon that occurs when impulse buying on arousal produces a positive effect (Theresia, 2014); (Liao et al., 2016); (Situmorang, 2018); (Lamis et al., 2022) but there are also results showing that arousal does not affect impulse buying (Hashmi et al., 2020); (W. K. Chen et al., 2020); (Wu et al., 2021). According to a study conducted by the Boston Counseling Gathering, compared to other generations, Generation Z behaves differently when it comes to purchasing and spending money, especially when doing so through online retailers (Venia & Marzuki, 2021). Flash sales significantly affect impulse buying in Generation Z at Shopee (Syauqi et al., 2022). However, there is also research that impulse buying through flash sales does not significantly affect Generation Z (Nighel & Sharif, 2022). Given this, this study aims to look at how arousal in Generation Z influences impulse purchases in response to limited amounts and limited time scarcity.

Prior studies have explored related themes. For instance, a study by (Wu et al., 2021) delved into the impact of scarcity promotion on impulse purchase intention through arousal among 98 participants in China, specifically on the Taobao.com platform, focusing on Kyoho grape farming products, in alignment with the S-O-R theory and the dual-system theory, a series of three studies were conducted to explore the underlying mechanism that drives consumers' intention to make impulsive purchases during live streams. Similarly, research conducted by (J. V. Chen et al., 2022) examined the same variable, namely arousal related to impulsive buying urges, among 137 individuals in Taiwan using an augmented reality (3D visual display) mobile shopping app, utilizing concepts from the Spatial Presence Theory and the Elaboration Likelihood Model, the present research endeavors to conduct an empirical examination of factors associated with Augmented Reality (AR) such as vividness, spatial accuracy, and local presence. The study seeks to understand how these AR-related factors influence elements of impulse buying behavior, including arousal, perceived diagnosticity, and the inclination to make impulsive purchases within the context of AR mobile shopping applications. Additionally, (Liao et al., 2016) researched the variable of arousal about impulse buying. They sampled 64 undergraduate business students in Taiwan, with a focus on digital photo frame products and sports watches, drawing from the Stimulus-Organism-Response framework, this study suggests that two variables, presentation mode and product category, have an impact on consumers' emotional states, specifically pleasure, and arousal, consequently influencing their decisions regarding impulse buying.

The present study holds significance as it investigates impulse buying behavior among Generation Z consumers in South Kalimantan who have engaged in flash sale purchases on the Shopee platform. This research aims to contribute to the existing entrepreneurship literature and address a research gap by examining a specific geographical and demographic context that has not been extensively studied before. By providing novel empirical evidence and insights, this study can enhance our comprehension of the factors influencing impulse buying in this particular region. Furthermore, this research seeks to reconcile conflicting findings from prior studies regarding the impact of limited quantity scarcity and limited time scarcity on impulse buying, using arousal as a mediating variable.

2. RESEARCH METHOD

Quantitative research is characterized by an emphasis on numerical data (numbers), which are analyzed using statistical methodologies. This study uses an explanatory methodology with 160 South Kalimantan-based members of Generation Z who have taken part in flash sales on the Shopee e-commerce platform. calculating the minimum sample size using (Hair et al., 2017). This study uses non-probability sampling with purposive sampling in collecting data. A social media campaign to distribute an online questionnaire served as the study tool. Each variable's measurement is taken from the pertinent introductory research. 4 variables, namely limited quantity scarcity (LQS), limited time scarcity (LTS), arousal (ARO), and impulse buying (IB), were measured using instruments from (Lamis et al., 2022). A 5-point Likert scale was utilized for measurement items. Using the SmartPLS 4.0 software, the data was then suitably examined.

H1a: Limited quantity scarcity affects impulse buying

H1b: Limited quantity scarcity affects arousal

H2a: Limited time scarcity affects impulse buying

H2b: Limited time scarcity affects arousal

H3: Arousal affects impulse buying

H4a: Limited quantity scarcity indirectly influences impulse buying by way of arousal

H4b: Limited time scarcity indirectly impacts impulse buying through its influence on arousal

Building upon the theoretical foundations discussed earlier, this framework will provide a roadmap for understanding and working towards the research objectives. The proposed framework is outlined as follows

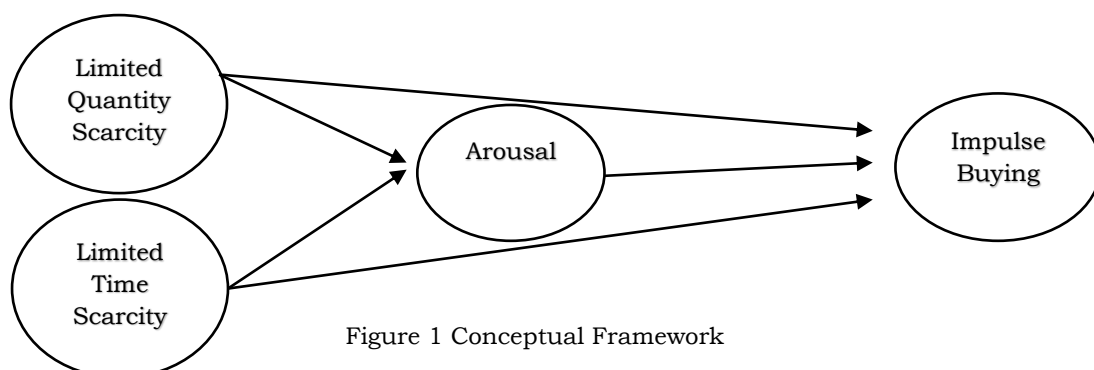


Figure 1 Conceptual Framework

Referring to Figure 1, a framework has been established to elucidate the connections between various factors. Specifically, it depicts the relationship between limited quantity scarcity (X1) on arousal (Z), the effect of limited quantity scarcity (X1) on impulse buying (Y), the influence of limited time scarcity (X2) on arousal (Z), and the impact of limited time scarcity (X2) on impulse buying (Y). Furthermore, it illustrates how

arousal (Z) plays a mediating role in the relationship between limited quantity scarcity (X1) and impulse buying (Y), as well as between limited time scarcity (X2) and impulse buying (Y).

Table 1 Operational Definitions

Variabel Penelitian	Operational definition	Indikator
Limited Quantity Scarcity (LQS)	The number of things that can be purchased by consumers is limited	1. Products with limited stock availability 2. Quickly sold 3. The quantity of products that is restricted 4. Rarely available
Limited Time Scarcity (LTS)	The products to be sold are in minimal quantities. Marketers focus on the availability of several products	1. limited time 2. not last long 3. remaining time 4. ends quickly
Arousal (ARO)	Arousal refers to the level where Individuals feel interested, alert, or active in a situation	1. Stimulated 2. Excited 3. Aroused 4. Enthusiastic
Impulse Buying (IB)	Purchasing activities carried out by an individual spontaneously or suddenly without any prior purchase intention or plan	1. Spontaneously 2. Unplanned 3. not initially want to buy 4. not initially intend to buy

To establish a clear understanding of the variables relevant to this research, it is essential to provide operational definitions. These operational definitions serve the purpose of specifying the nature and criteria of the variables under investigation. Additionally, they assist in determining the appropriate measurement scales for each variable, facilitating the use of suitable tools for hypothesis testing. According to (Sugiyono, 2017), an operational definition of a variable is a researcher-defined attribute, characteristic, or value associated with an object or activity that exhibits specific variations, allowing for systematic study and the drawing of meaningful conclusions.

3. RESULTS AND DISCUSSIONS

Table 2 displays the demographic information of the survey participants. Table 2 demonstrates that compared to male respondents, female respondents are more interested in purchasing things during Shopee flash discounts. Generation Z, who buys the most in flash sales at Shopee, is aged 16 to 26 years, and most are unmarried. Most of the respondents to this survey have an average monthly allowance or income of under one million rupiah.

Table 2 Description of the Respondent's Data

	Information	Frequency	Percentage
Gender	Female	125	78,13%
	Male	35	21,88%
Age	11-15	22	13,75%
	16-20	64	40%
	21-26	74	46,25%
Marital status	Married	18	11,25%
	Not married	142	88,75%
Income every month (Rp)	< 1 million	99	61,88%
	1 – 2 million	29	18,13%
	2 – 3 million	19	11,88%
	3 – 4 million	9	5,63%
	4 – 5 million	3	1,88%
	> 5 million	1	0,63%
Total		160	100%

3.1. Measurement Models

Validity testing consists of two components, namely convergent validity, and discriminant validity.

Table 3 Loading Factor

	LQS	LTS	IB	ARO
ARO2				0.793
ARO3				0.831
ARO4				0.844
IB1			0.779	
IB2			0.844	
IB3			0.860	
IB4			0.877	
LQS3	1.000			
LTS3		0.819		
LTS4		0.891		

Convergent validity is assessed by examining Average Variance Extract (AVE) values and loading factors, while discriminant validity is evaluated through the Fornell-Larcker criterion and cross-loading analysis.

Table 4 Average Variance Extracted (AVE)

	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
LTS	0.639	0.845	0.732
IB	0.861	0.906	0.707
ARO	0.762	0.863	0.677

An indicator is deemed reliable when its loading factor exceeds 0.7, and an instrument is considered valid for measuring variables or dimensions when its AVE value surpasses 0.5. The findings demonstrated that the AVE in this study varied between 0.677 and 0.732, indicating that it satisfied the requirements and was deemed legitimate.

Table 5 Fornell Larcker

	LQS	LTS	IB	ARO
LQS	1.000			
LTS	0.531	0.763		
IB	0.606	0.505	0.841	
ARO	0.574	0.571	0.607	0.823

The Fornell Larcker criterion, which states that the variable's self-correlation should outweigh its correlation with other variables, should be followed to ensure the variable's dependability. The reliability of each study item was assessed by utilizing both Cronbach's alpha and the Composite Reliability (CR) score. For Cronbach's alpha, the acceptable minimum level is 0.6, whereas for Composite reliability, it is 0.7. The dependability of each variable was indicated by a Cronbach's alpha score that was greater than 0.6, ranging from 0.639 to 0.861. Furthermore, the Composite Reliability (CR) score for each variable exceeded 0.7, falling within the range of 0.845 to 0.906, providing additional evidence of their reliability.

3.2. Structural Models

Path coefficients will be said to be positive if they range from 0 to 1. Based on the path coefficients test, they produce positive values for all variables because they have a range between 0 and 1.

Table 6 Path Coefficient Test

	LQS	LTS	IB	ARO
LQS			0.350	0.385
LTS			0.117	0.359
IB				
ARO			0.341	

Limited quantity scarcity (0.350), limited time scarcity (0.117), and arousal (0.341) All of these elements have a favorable impact on impulsive purchasing.

Table 7 T- Statistic Test

	Original sample (O)	T statistics	P values	Q ² predict	RMSE	MAE	R-square
LQS -> IB	0.350	3.682	0.000	0.378	0.806	0.560	
LTS -> IB	0.117	1.322	0.186				0.476
ARO -> IB	0.341	3.472	0.001				
LQS -> ARO	0.385	4.649	0.000	0.397	0.796	0.611	0.422
LTS -> ARO	0.359	4.171	0.000				

A positive path coefficient and a P-value below the significance level (Alpha = 5%), suggest a substantial impact. Before conducting hypothesis testing, it is essential to establish the connections between the independent and dependent variables.

Due to the p-value being recorded as $0.000 < 0.5$ and the t-statistic exceeding 1.90 at 3.682, Table 7 demonstrates a significant and favorable influence of restricted quantity scarcity on impulsive purchasing. Restricted quantity scarcity displays a positive and notable effect in capturing the attention of potential customers, supported by a p-value of $0.000 < 0.5$ and a t-statistic of 4.649, which also surpasses the 1.90 threshold. Conversely, limited temporal scarcity, although yielding a p-value of $0.186 > 0.5$, still exhibits a positive but relatively modest impact on impulse buys, with a t-statistic of 1.322, just above 1.90. It's worth noting that limited time scarcity exerts a significant and positive influence on arousal, as indicated by a p-value of $0.000 < 0.5$ and a t-statistic of 4.171, well above 1.90. Moreover, arousal itself is demonstrated to have a substantial and positive effect on impulse purchasing, as evidenced by a p-value of $0.000 < 0.5$ and a t-statistic of 3.472, surpassing the 1.90 threshold.

The adjusted R-squared value of the arousal variable is 0.476 or 47.6% which has a substantial predicate. This indicates that both limited quantity scarcity and limited time scarcity, collectively explain 47.6% of the variance in factors related to impulse buying. In simpler terms, these two factors together exert a 47.6% impact on impulse purchasing, while other unexamined factors contribute to the remaining 52.4%.

The arousal variable's corrected R-squared value is 0.422, or 42.2%. This illustrates that the variables of limited quantity scarcity and limited time scarcity can explain 47.6% of the variance in arousal variables. In other words, restricted quantity and temporal scarcity account for 42.2% of arousal, whereas additional factors not included in this study account for the remaining 47.6%.

The impulsive purchase variable is deemed to have strong predictive validity because its Q-squared value, which is more significant than zero, is 0.378. The arousal

variable is deemed to have strong predictive validity since its Q-squared value, which is 0.397, is greater than zero.

Table 8 Specific Indirect Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values
LQS -> ARO -> IB	0.131	0.129	0.045	2.934	0.004
LTS -> ARO -> IB	0.123	0.120	0.051	2.381	0.018

The t-statistics value based on the test results for (indirect effect) limited quantity scarcity on impulse buying is 2.934 and more significant than 1.96. This shows that limited scarcity significantly affects impulse buying when mediated by arousal. Meanwhile, the test results (indirect effect) of limited time scarcity on impulse buying has a t-statistics value of 2.381 and shows that limited time scarcity significantly influences impulse buying through arousal.

Based on data analysis, limited quantity scarcity significantly influences impulse buying. Thus, H1a is accepted. This relates to a recent study by (Lamis et al., 2022). During a flash sale, merchandise is sold in limited quantities, and the price is lower than expected to create a perception among buyers that the flash sale program is a good offer and will lose a Valuable opportunity to buy at a high discount. This makes them make purchases immediately and makes consumers rush, which in turn leads to impulsive purchases (Wu et al., 2021).

Limited quantity scarcity has a significant role in consumer arousal during flash sales. Therefore, H1b is accepted. This result aligns with findings (Zheng et al., 2013); (Guo et al., 2017), which contend that by forcing consumers to compete with one another to obtain a product, supplying a small number of products can stimulate and arouse consumers.

Limited time scarcity has a positive but statistically non-significant impact on impulse purchasing. This implies that the H2a hypothesis is accepted, consistent with the findings for limited time scarcity. The urge to make decisions or judgments more rapidly is felt more acutely when there is less time available, which can lead to impulsive behavior. (Carnevale & Lawler, 1986).

Limited time scarcity exerts a positive and noteworthy influence on arousal. Consequently, H2b is confirmed. The time-limited offer during the flash sale has a notable impact on enhancing stimulation and arousal for making a purchase. This limited time scarcity encourages consumers to make purchases because it is a significant component of the online promotion strategy. In addition, the appeal of scarcity is an essential strategic tool for generating arousal stimuli (Aggarwal et al., 2011).

The outcomes of data analysis in this study confirm earlier findings that arousal plays a crucial role in impulsive purchases (Lamis et al., 2022); (Situmorang, 2018); (Theresia, 2014). The assertion that impulsive purchases are more impacted by emotional or affective states is supported by the acceptance of this theory (Verhagen & Van Dolen, 2011); (Guo et al., 2017). Thus, H3 is accepted.

Arousal can moderate the effect of restricted quantity scarcity on impulse buying, according to hypothesis testing. Impulsive buying is caused by the combination of restricted quantity and temporal scarcity on the feeling of arousal (Wu et al., 2021), so H4a is accepted. Likewise, limited time scarcity affects impulse buying with arousal as mediation, so H4b is accepted.

4. CONCLUSION

The study's findings indicate that within this research, the limited quantity factor and the degree of excitement (arousal) have a favorable and substantial effect on impulsive purchases. Conversely, the time constraint factor solely exerts a favorable yet statistically insignificant influence on impulsive buying. The research outcomes also unveil that both quantity constraints and time constraints distinctly contribute to heightened levels of excitement (arousal). These findings suggest that individuals engaging in flash sale promotions believe that the apprehension surrounding limited product quantities and short timeframes can generate a significant surge in enthusiasm for purchasing specific items. Additionally, this study also discerned that the impact of quantity limitations on impulsive buying does not occur directly but instead transpires through the influence it exerts on excitement (arousal). Similarly, the influence of time constraints on impulsive buying is not direct but operates indirectly through its effect on excitement (arousal).

A flash sale is a technique used in business where a product or service is given for a short period at a discounted price. We are encouraging impulse purchases because the scarcity of flash sale strategy can effectively encourage impulse purchases among consumers. A sense of urgency to take advantage of limited discount offers at short notice can trigger quick actions and impulse buying decisions. Flash sales, with their element of rarity, tend to increase short-term sales significantly. This can help a business achieve sales targets quickly, especially when accompanied by a strong marketing campaign. Overcoming excess stock If a business has excess stock of a product, flash sales with scarcity elements can help reduce stock quickly. In connection with these matters, business owners in e-commerce should take advantage of the scarcity of flash sales in marketing their products to support a rapid increase in sales.

In summary, this study enhances our knowledge within the realm of entrepreneurship by providing a more profound insight into the determinants of consumer impulse buying. These discoveries underscore the importance of implementing specific measures to boost impulse buying and providing assistance to entrepreneurs.

Flash sales involve two components in their stimulus: scarcity and characteristics. This study has primarily examined scarcity elements, including limited time and the quantity of available products. The characteristics of flash sales can be categorized into four aspects: information, visual appeal, entertainment value, and economic advantages. These characteristics within flash sales can serve as variables for further research development. It's important to note that this research focuses exclusively on Generation Z, representing a single generational perspective. A more comprehensive approach would involve comparing this generation with others, which could provide a more nuanced understanding. Exploring the relationship between a specific generation, its income, or educational level might yield distinct insights. Hence, future research could replicate similar investigations to bolster findings by introducing additional variables and conducting comparisons across two or more generations. Expanding the scope of research to different contexts could enhance the predictive capacity of the model.

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