DESIGNED TO BE OVERSPEND: A BEHAVIORAL LOOK INTO MARKETING'S FINANCIAL IMPACT IN THE DIGITAL AGE

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Abstract: In the digital era, consumer behavior has shifted with the development of technology and marketing strategies. Currently, people are increasingly using e-commerce for buying and selling transactions. They obtain product information that they want to buy from their social media platform. This phenomenon leads to overspending behavior. Overspending can be caused by several factors, including cognitive bias, present bias, and urgency to buy. Therefore, the purpose of this research is to examine the role of cognitive bias, present bias, and urgency to buy in shaping overspending behavior. This research is necessary because the topics related to overspending, cognitive bias, present bias, and urgency to buy are still rarely studied. It is hoped that the results of this research can help develop digital marketing strategies. Respondents in this research were Indonesians of productive age (18-55 years) who actively use social media. Respondents were asked to complete a questionnaire, and all data obtained were processed using the SEM-PLS (Structural Equation Modeling – Partial Least Squares) method. This research shows that cognitive bias mainly influences overspending, cognitive bias influences present bias, present bias influences overspending, and present bias does not mediate the relationship between cognitive bias and overspending. Furthermore, the urgency to buy moderates the existing relationship between present bias and overspending.

1. Introduction

Consumerism is the constant desire or need for goods or services. Consumerism today is heavily influenced by the modern world, the digital age (Zair et al., 2025). In the digital age, many of the world's population use social media for business. Many businesses have developed marketing applications to promote their business as well as educate customers (Tonkova, 2023). Applications such as e-commerce provide the doctrine that ever-increasing consumption of goods and services is the basis of a healthy economy that allows direct involvement, payment, and targeted advertising (Lucius & Hanson, 2016). As a result, consumerism has become more aggressive than before the digital era, leading to overspending (Fani et al., 2025). According to Kucuk (2016), if this is not handled properly, the community will suffer losses and damage to the market price.

Overspending is a behavior that causes individuals to neglect financial needs in the long term due to uncertainties about the actual goods and services required by individuals.

Uncertainty about what is needed has become a reason for someone to spend money beyond any logical benefit. (Maji & Prasad, 2025; Rotfeld, 2007). Overspending is highly dependent on the price of goods and services (Nguyen, 2016). If the goods and services offered feel profitable, there is a greater chance of someone overspending. Excessive spending significantly affects well-being, physical and mental health (Achtziger, 2022). Overspending reflects the individual's failure to manage his or her impulses and finances, so that the individual can engage in impulsive buying. According to Zhang et al. (2015), the pressures and social influences felt by individuals, both explicitly (such as social promotion) and implicitly (such as status expectations), would affect their decision to make a purchase even though they had no prior intention of purchasing the product. Thus, by linking the promotional uploads seen on social media with consumer online behavior, we can explore consumer impulsivity in a fully data-driven way (Saini, 2024). This can improve overspending behavior in the digital age life which causes consumer decision-making to be not entirely rational.

Irrational decisions are caused by cognitive biases (Dewangan, 2025). Cognitive bias is an individual's decision-making that can encourage a person's tendency to prefer immediate rewards over future rewards, even when the present reward value is smaller (Maji & Prasad, 2025). Cognitive bias consists of many types of bias. These biases are discrete, and each has its own unique characteristics. Factors such as intelligence, cognitive reflection, and thinking dispositions explain only a small portion of the variability in responses to bias (Teovanović et al., 2015). Cognitive bias can cause a person to process information distortedly and develop symptoms parallel to anxiety and depression. This bias operates independently of personality and can be modified, although with small effects (Vos et al., 2025). This bias is also used subtly in marketing strategies such as commercial messaging. Commercial messages are messages that can evoke the flow of feelings that most people consider to be emotional experiences. Advertisers can use EEG (Electroencephalography) to check brainwave activity, heart rate, and breathing to enter the consumer's subconscious mind so that they can target consumers effectively (Fauzan, 2015). One of the most common forms of cognitive bias is present bias (Shah, 2024).

Present bias is a person's tendency to be patient in the long term, but show impatience in the short term. Someone with this bias might plan to limit spending in the long term, but may spontaneously abandon that plan and spend more money than expected because of an attractive offer. Someone who exhibits present bias will usually overspend (Nguyen, 2016). Present bias is the temptation for individuals to overestimate current rewards at the expense of greater future rewards. Present bias is also considered one of the prominent cognitive biases in economic behavior, reflecting a time preference deviation that makes current consumption appear more profitable than future consumption. Present bias can help explain why individuals often fail to adhere to certain plans in reality. Someone with present bias cannot save enough for retirement because they prioritize immediate pleasure over carrying out daily money management tasks (Maji & Prasad, 2025). Present bias does not simply appear but can be used strategically, thus triggering overspending behavior. This can be proven from marketing strategies that are deliberately designed to strengthen consumers' present bias, such as artificial urgency (Turan, 2019). As consumers focus more on direct rewards, they will be interested in strategies that have been created and will purchase as soon as possible without lengthy consideration (Saravanan & Surya, 2023). Such artificial urgency may be called urgency to buy.

Urgency to buy is a person's desire to purchase a product as soon as possible. This urgency indirectly limits consumers' freedom to delay purchasing decisions. When goods are in limited supply, consumers feel a sense of urgency because if they don't buy immediately, someone else

will. A strong sense of consumer urgency can help generate greater profits for businesses. Companies can create this urgency through various marketing strategies. One way is to collaborate with well-known brands and create limited-edition items, thereby increasing consumer urgency to purchase the product (Childs & Jin, 2020). In sales, the goal of urgency is to influence attitudinal change and the urge to act "now." Successful sales must make consumers aware of a need and facilitate a sense of urgency to fulfill that need (DeCormier & Beirn, 2003). Once consumers feel a sense of urgency to purchase an item, they are less likely to refuse. This urgency does not occur naturally. But it is constructed through marketing strategies to trigger impulsive buying. In the digital age, one of the popular strategies implemented in e-commerce is flash sales (Suvarna & Malagi, 2025). That strategy creates a perception of urgency because goods are sold quickly, as if they are scarce and difficult to obtain if they are not purchased at that time. Thus, flash sales strategies can increase consumer impulsivity (Utami, 2024). Increasing impulsivity due to urgency is also one of the causes of overspending.

Studies examining overspending, cognitive biases, present biases, and urgency to buy have been frequently found. However, research that examines this at the same time is still difficult to find, so the purpose of this research is to see how the overspending phenomenon occurs in real life. Based on this, this research needs to be conducted in order to provide a more comprehensive understanding of psychological factors that encourage overspending behavior.

2. Research Method

This research employed quantitative methods. The population used in this research comprised Indonesian citizens from all over the island (Java, Kalimantan, Sulawesi, Sumatra, Bali, and Papua). The entire population aged 18–55, where individuals of that age are classified as of productive age, so they are still using social media actively. The number of populations to be used is not yet known, so the sample size to be used according to the Hair method is a minimum of 95 people (19 indicators multiplied by 5). Research data will be collected by sharing the questionnaire as a measure of respondents' consent and on their responses to research variables. The questionnaire is made by an online form that is distributed to all respondents. The questionnaire uses the Likert 1-5 scale method, ranging from Strongly Disagree (SD) to Strongly Agree (SA). After sharing the questionnaire, the collected data will be processed using SEM-PLS to test and develop a variable relationship model.
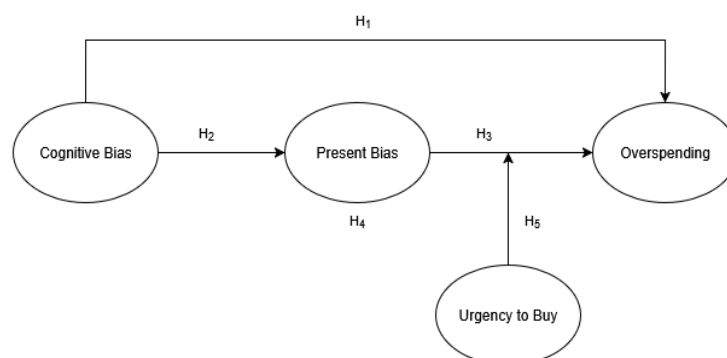
Research Hypothesis

Figure 1. Conceptual Framework
Source: Processed Data (2025)

Based on Figure 1, the hypothesis of this research:
H_1: Cognitive bias has an effect on overspending
H_2: Cognitive bias has an effect on present bias
H_3: Present bias has an effect on overspending
H_4: Present bias mediates the effect of cognitive bias on overspending
H_5: Urgency to buy moderates the effect of present bias on overspending

3.   Results and Discussion
3.1. Results
Descriptive Analysis of Respondents

After the questionnaire was distributed, the total data collected for this research was 143 respondents. The characteristics of the respondents shall be as specified in Table 1.

Table 1. Characteristics of Respondent

Category	Group	Total	Percentage
Age	18 – 25 years	93	65.03%
	26 – 35 years	12	8.39%
	36 – 45 years	20	13.99%
	46 – 55 years	18	12.59%
Domicile	Java	56	39.16%
	Kalimantan	52	36.36%
	Sulawesi	11	7.69%
	Sumatra	10	6.99%
	Bali	9	6.29%
	Papua	5	3.51%
Job	University/College Student	87	60.84%
	Employee	28	19.58%
	Housewife	19	13.29%
	Entrepreneur	7	4.90%
	Civil Servant	1	0.70%
	Driver	1	0.70%
Monthly Salary	< Rp 5,000,000	91	63.64%
	Rp 5,000,000 - Rp 10,000,000	38	26.57%
	Rp 10,000,001 – Rp 20,000,000	7	4.90%
	> Rp 20,000,000	7	4.90%
Monthly Expenses	< Rp 3,000,000	66	46.15%
	Rp 3,000,001 – Rp 5,000,000	49	34.27%
	Rp 5,000,001 – Rp 10,000,000	18	12.59%
	> Rp 10,000,000	10	6.99%
Already Married	Not Yet	104	72.73%
	Yes	39	27.27%
Last Education	Senior High School	94	65.73%
	D3	5	3.50%
	S1	43	30.07%
	S2	1	0.70%

Source: Processed Data (2025)

Respondents in this research were dominated by Indonesian citizens aged 18 to 25 who use social media and e-commerce most frequently compared to other age. The respondent's domicile was dominated by residents from Java and Kalimantan Island. Then, the job of respondents was dominated by 87 students (60.84%). This can be due to a higher frequency of students' social media usage for comparing products, so they have a higher chance to be overspending. Most respondents had less than Rp 5,000,000 in income and less than Rp 3,000,000 in expenditure. This indicates that the expenditure is still within normal limits, but the type of expenditure is still unknown, so it cannot be judged whether the expenditure is on overspending or not. Most respondents were also not yet married and had only completed high school education. Therefore, their self-control was likely still developing, which could lead to overspending behavior.

Descriptive Analysis of Variable

Table 2. Respondent's Answer Interval Length

Interval	Criteria
1.00 – 1.80	Strongly Disagree
1.81 – 2.60	Disagree
2.61 – 3.40	Quiet Agree
3.41 – 4.20	Agree
4.21 – 5.00	Strongly Agree

Source: Processed Data (2025)

The collected data from the questionnaire results were processed to determine descriptive statistical tests. Table 2 is used to look at the category of means. The descriptive statistical test consists of the mean analysis and standard deviation analysis, which are available in Table 3.

Table 3. Mean and Standard Deviation

Variable	Item	Mean	Standard Deviation
Overspending	OVR 1	3.75	1.20
	OVR 2	3.56	1.28
	OVR 3	3.18	1.45
	OVR 4	3.02	1.45
	OVR 5	2.84	1.24
	OVR 6	3.67	1.32
	OVR 7	1.73	1.05
	OVR 8	1.64	1.05
	OVR 9	1.99	1.46
	OVR 10	1.99	1.36
	OVR 11	2.43	1.25
	OVR 12	2.38	1.21
Cognitive Bias	COB 1	1.60	0.92
	COB 2	1.74	1.12
	COB 3	2.66	1.33
	COB 4	2.28	1.16
	COB 5	2.08	1.17
	COB 6	3.13	1.29

	COB 7	2.13	1.22
	COB 8	2.18	1.27
Present Bias	PRB 1	3.27	1.50
	PRB 2	3.81	1.19
	PRB 3	3.36	1.28
	PRB 4	3.38	1.28
	PRB 5	3.20	1.37
	PRB 6	3.33	1.21
	PRB 7	3.69	1.36
	PRB 8	3.13	1.48
	PRB 9	3.98	1.14
Urgency to Buy	UTB 1	3.61	1.24
	UTB 2	2.97	1.14
	UTB 3	2.34	1.11
	UTB 4	3.17	1.25
	UTB 5	4.06	1.16
	UTB 6	3.48	1.41
	UTB 7	2.82	1.09
	UTB 8	2.92	1.26
	UTB 9	2.55	1.25
	UTB 10	3.92	1.12
	UTB 11	4.17	0.97

Source: Processed Data (2025)

Based on Table 3, the indicator with the highest mean value of the overspending variable is OVR1, with a value of 3.75, which falls into the interval value of 3.41 - 4.20, where the average respondent agrees with the statement regarding those who feel compelled to buy something unplanned when seeing discounts or promotions on social media. The indicator with the lowest mean value of the overspending variable is OVR8, with a value of 1.64, which falls into the interval value of 1.00 - 1.80, where the average respondent strongly disagrees with the question regarding seeing other people have expensive items, they are encouraged to buy them too, even though their finances are limited. The next value that has an influence on descriptive statistics is the standard deviation. The lowest standard deviation value of the overspending variable is OVR7 and OVR8, with a value of 1.05. A standard deviation value approaching 0 indicates that the data is increasingly homogeneous.

The indicator that has the highest mean value of the cognitive bias variable is COB6, with a value of 3.13, which falls into the interval value of 2.61 - 3.40, where the average respondent quite agrees with the statement about those who often think they need something, but have not thought it through. The indicator that has the lowest mean value of the cognitive bias variable is COB1, with a value of 1.60, which falls into the interval value of 1.00 - 1.80, where the average respondent strongly disagrees with the question about those who often buy something just because they feel others expect them to have it. The lowest standard deviation value of the cognitive bias variable is COB1, with a value of 0.92.

The indicator with the highest mean value of the present bias variable is PRB9, with a value of 3.98, which falls into the interval value of 3.41 - 4.20, where the average respondent

agrees with the statement regarding those who believe that saving money in assets that are not easily liquidated can help them manage their finances better. The indicator with the lowest mean value of the present bias variable is PRB8, with a value of 3.13, which falls into the interval value of 2.61 - 3.40, where the average respondent quite agrees with the question that if there are no obstacles to accessing money, they tend to spend it faster. The lowest standard deviation value of the present bias variable is PRB9 with a value of 1.14.

The indicator that has the highest mean value of the urgency to buy variable is UTB11, with a value of 4.17, which falls into the interval value of 3.41 - 4.20, where the average respondent agrees with the statement that there is a certain price that is most reasonable to buy a product. The indicator that has the lowest mean value of the urgency to buy variable is UTB3, with a value of 2.34, which falls into the interval value of 1.81 - 2.60, where the average respondent disagrees with the question about those who will have difficulty restraining themselves from buying a product if they see it. The lowest standard deviation value of the urgency to buy variable is UTB11 with a value of 0.97.
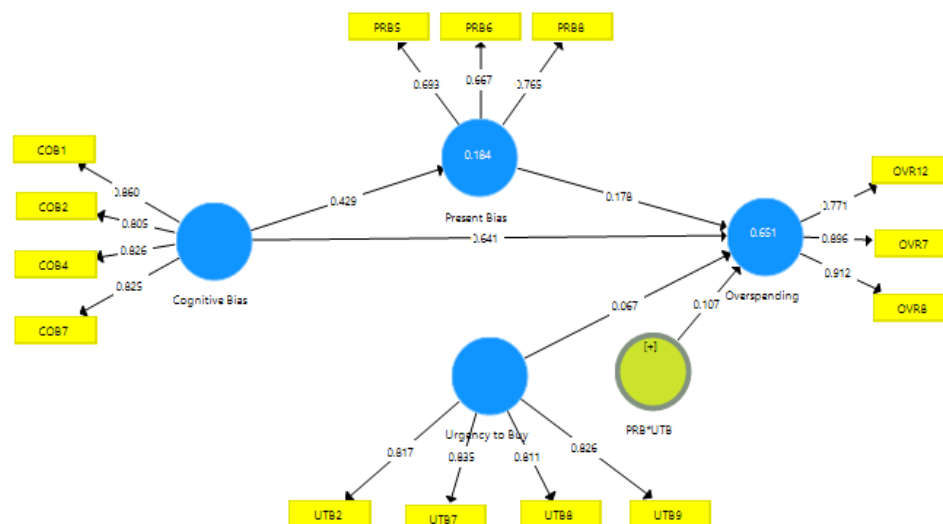
Outer Model Test

Figure 2. Outer Model
Source: Processed Data (2025)

Convergent Validation

Convergent validation describes the level of correlation that can be seen through the Average Variance Extract (AVE). Acceptable result from AVE is ≥ 0.5 (Sander & The, 2014). Based on Table 4, it is known that each indicator has a good level of correlation and meets the criteria of an average variance extract value ≥ 0.5.

Table 4. Average Variance Extracted (AVE)

Cognitive Bias	0.688
Overspending	0.743
Present Bias	0.504
Urgency to Buy	0.676

Source: Processed Data (2025)

Reliability Test

A reliability test can be conducted by examining Cronbach's alpha and composite reliability values to ensure the precision and accuracy of each research indicator. The Cronbach's alpha value has a requirement of ≥ 0.5 (Bujang et al., 2018), and the composite reliability value has a requirement of ≥ 0.5 for the test results to be considered precise and accurate. Based on Table 5, it is known that each indicator can test the construct precisely and accurately because it has met the criteria, namely a Cronbach's alpha value of ≥ 0.5 and a composite reliability value of ≥ 0.7.

Table 5. Cronbach's Alpha and Composite Reliability

Variable	Cronbach's Alpha	Composite Reliability
Cognitive Bias	0.849	0.898
Overspending	0.823	0.896
Present Bias	0.520	0.752
Urgency to Buy	0.841	0.893

Source: Processed Data (2025)

Outer Loadings

Items in the outer loadings of a research must have a value of ≥ 0.6 (Ghozali, 2015). After data collection, several items were removed because they had values below 0.6. Table 6 shows the items that were retained because they had values above 0.6.

Table 6. Outer Loadings

Item	Cognitive Bias	Overspending	PRB*UTB	Present Bias	Urgency to Buy
COB1	0.860				
COB2	0.805				
COB4	0.826				
COB7	0.825				
OVR12		0.771			
OVR7		0.896			
OVR8		0.912			
PRB5				0.693	
PRB6				0.667	
PRB8				0.765	
PRB*UTB			1.135		
UTB2					0.817
UTB7					0.835
UTB8					0.811
UTB9					0.826

Source: Processed Data (2025)

Inner Model Test
Model Test

The research model was tested using the Q^2 value. The Q^2 value is used to indicate predictive relevance if the Q^2 result is > 0 (Sakinah et al., 2020). Q^2 value > 0 also indicates that the variable model has good predictive relevance. Conversely, a Q^2 value < 0 indicates that the variable model has poor or no predictive relevance. Based on Table 7, the Q^2 value for the overspending variable is 0.466, and the Q^2 value for the present bias variable is 0.086. The Q^2

values for both variables are > 0, indicating that both variable models have good predictive relevance.

Table 7. Q^2

Variable	Q^2
Overspending	0.466
Present Bias	0.086

Source: Processed Data (2025)

Hypothesis Test

Table 8. Path Coefficients and Specific Indirect Effects

	Hypothesis	P Values	Result
H_1	Cognitive Bias -> Overspending	0.000	Accept
H_2	Cognitive Bias -> Present Bias	0.000	Accept
H_3	Present Bias -> Overspending	0.006	Accept
H_4	Cognitive Bias -> Present Bias -> Overspending	0.076	Decline
H_5	PRB*UTB -> Overspending	0.014	Accept

Source: Processed Data (2025)

Table 8 shows the results of the hypothesis test that was calculated using SEM-PLS. If the p-value is below 0.05, then the hypothesis is accepted. This statistic proves that cognitive bias has an influence on overspending with a p-value of 0.000. Cognitive bias also has an influence on present bias, with a p-value of 0.000. In addition, it was also found that present bias has an influence on overspending. However, present bias does not mediate the effect of cognitive bias on overspending. From this research, it is known that urgency to buy moderates the relationship between present bias and overspending. It can be seen from the p-value of hypothesis 5, which has a value of 0.014.

3.2. Discussion
Cognitive Biases Effect on Overspending

Based on Table 8, the p-values for the relationship between cognitive bias and overspending indicate a significant effect on H_1. These research findings support the fact that cognitive bias can cause a person to process information distortedly and develop symptoms parallel to anxiety and depression (Vos et al., 2025). In the digital era, cognitive bias is increasingly prevalent because they must process too much information in a short time (Zahrani et al., 2025). People are increasingly immersed in online environments using online platforms due to the privacy afforded to all users and the amount of information in it. Online platforms use personalized algorithms to recommend products that users will enjoy. When privacy and personification are emphasized, a person cannot rely on others' opinions and lack of ability to be cautious (Che, 2024). It can be argued that when individuals encounter personalized messages on social media that align with their desires, they will respond positively because they are innovative and novel, thus increasing impulsive buying behavior (Aslam et al., 2021). When impulsive buying occurs, overspending automatically occurs as well. This is because impulsive buying is an indicator of overspending (Vastag & Eisinger-Balassa, 2024). Therefore, it can be emphasized that a company deliberately designed this algorithm personification strategy to trigger cognitive bias in individuals so that users overspend (Bahg et al., 2025).

Cognitive Bias Effect on Present Bias

The p-values in Table 8 indicate that the relationship between cognitive bias and present bias in H_2 is significant. This finding is supported by Oda (2025) statement that individuals with cognitive bias have very high self-confidence, leading to misperceptions and incorrect predictions. Consequently, present bias becomes stronger because individuals always choose current satisfaction because they believe they can control the future. Therefore, it can be said that cognitive bias is a deviation in an individual's mindset in the assessment of time and risk that causes present bias (Korteling et al., 2023). Present bias is considered one of the prominent cognitive biases in economic behavior, reflecting a deviation in time preference that makes current consumption seem more profitable than future consumption (Maji & Prasad, 2025).

Present Bias Effect on Overspending

From Table 8, the p-value for the relationship between present bias and overspending indicates that H_3 has a significant effect. These research findings support the behavior of individuals with present bias. Individuals overestimate current imbalances at the expense of greater future imbalances, leading them to automatically overspend (Maji & Prasad, 2025). This leads to individuals failing to implement financial management plans and under-saving for future needs, prioritizing present pleasure over future ones. It can be argued that individuals with present bias have low self-control and a high desire for instant gratification, thus demonstrating inconsistency (Xiao & Porto, 2019). Therefore, it can be asserted that digital marketing strategies are deliberately designed to exploit consumer behavioral biases, including presenting biases through various marketing tactics such as personifying social media algorithms to build consumers' loyalty (Gombar, 2025). This strategy also reinforces existing bias tendencies, so overspending is not merely an individual weakness but rather the result of a marketing system designed specifically to maximize consumption. So it can be said that someone who has present bias will overspend (Nguyen, 2016).

The Mediating Role of Present Bias on the Relationship Between Cognitive Bias and Overspending

Table 8 shows that the p-values in H_4 do not have a significant effect. This means that present bias does not mediate the relationship between cognitive bias and overspending. This may be because cognitive bias has a direct influence on present bias, as present bias is a prominent part of cognitive bias in economic behavior (Maji & Prasad, 2025). Individuals experiencing cognitive bias will fear missing opportunities and are willing to pay more, resulting in overspending (Liu, 2023). Cognitive bias certainly has a direct influence on present bias. And the research by Nguyen (2016) states that individuals with present bias will also overspend, which means that present bias has a direct influence on overspending. From this, it can be seen that cognitive bias and present bias have a direct influence on overspending. Therefore, the role of mediation is no longer necessary.

The Moderating Role of Present Bias on the Relationship Between Present Bias and Overspending

Based on Table 8, the p-values for the moderating role of urgency to buy on the relationship between present bias and overspending indicate that H_5 has a significant effect. This means that the urgency to buy strengthens the relationship between present bias and overspending. While present bias does have a direct influence on overspending, the relationship is strengthened by the moderating effect of urgency to buy. This is because individuals with

urgency are more likely to overspend (Rose & Sergrint, 2014). Urgency to buy aims to influence changes in attitudes and individual motivation to act immediately. With a digital marketing strategy that emphasizes urgency and focuses on present rewards, individuals are more likely to consume without further consideration (Suvarna & Malagi, 2025). Therefore, the algorithmic personification marketing strategy is modified by adding urgency strategies to products that already align with individual desires. This strategy will attract individuals, leading to overspending.

4. Conclusion

Based on the research that has been conducted, several conclusions were reached regarding the overspending phenomenon that occurred in the digital era. The conclusion of this research is:
1. Cognitive bias has a significant effect on overspending.
2. Cognitive bias has a significant effect on present bias.
3. Present bias has a significant effect on overspending.
4. Present bias does not mediate the cognitive bias effect on overspending.
5. There is a moderating role of urgency to buy in present bias and overspending relationships.
From the findings in this research, there are suggestions that can be made for further research. Respondents in this research were of productive age. For subsequent research, it would be beneficial to research respondents from other age groups.

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