



## The Antecedent of Sustainable Consumption of E-Commerce Consumers during the Covid-19

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**ABSTRACT:** This study aims to examine the effect of perceived effectiveness on consumer economic benefits in predicting sustainable consumption interest, by contributing to adding moderating variables, namely technology anxiety, resistance to change, and pandemic fear in e-commerce users during the Covid-19 pandemic in Bandung City. The research method used is a quantitative method used to test the causal relationship between variables that form a structural equation model. The survey was conducted with five Likert scales for 20 question items. Data were obtained from 330 respondents, and analyzed using SmartPLS 3.2.9 software. The results prove that perceived effectiveness has a positive effect on economic benefits, economic benefits have a positive effect on sustainable consumption interest, and perceived effectiveness has a positive effect on sustainable consumption interest, but technology anxiety, resistance to change, and fear of pandemics cannot moderate the relationship between perceived effectiveness on economic benefits and economic benefits on sustainable consumption interest.

**KEYWORDS:** Change Resistance, Economic Benefits, Pandemic Fear, Perceived Effectiveness, Sustainable Consumption Interest, Technology Anxiety Variables.

### INTRODUCTION

In early 2020, the world was hit by the Covid 19 pandemic. To mitigate the spread of the virus, consumption practices should shift to e-Commerce platforms as these platforms can improve shopping efficiency, enable new purchases, and facilitate access to information and online communication between consumers and sellers [1]. Sustainable consumption through the purchase of products and services from e-Commerce platforms as a means to fulfill needs and desires, and improve health security for oneself and society during the pandemic [2]. Therefore, companies need to be innovative in finding alternatives to increase consumer interest [2]. Covid-19 and the global crisis in general can cause mass anxiety and panic, which is amplified by inaccurate information. In addition, consumers cannot physically assess products when buying online, leading to product uncertainty [3]. Literature shows that online customer information is collected and related to data-driven marketing efforts but is not optimally managed (Bandara, Fernando, and Akter 2020). Personal information security risks were found to have a strong negative effect on online transactions [5]. Based on UGT (Uses and Gratification Theory), consumers' perception of the safety of online transactions increases their intention and ongoing motivation to write positive reviews about products and services. Therefore, online protection is essential for personal data and transactions [6]. The economic benefits derived from e-Commerce platforms can also generate positive emotional responses, thus leading to online purchase intentions. Economic benefits trigger consumers' intention to make sustainable consumption in uncertain situations such as vouchers, money back, and discounts [7]. This economic benefit is to determine consumer responses to financial benefits in shopping at e-Commerce during the Covid-19 pandemic. E-Commerce user behavior and adaptability to environmental changes can determine the success or failure of service and application implementation. One of the things that needs to be considered in technology adoption is the problem of technology anxiety felt by users [8]. The use of e-commerce in the Covid-19 era shows stress, worry, confusion, and tension towards technology [2].

Anxiety in using applications tends to make consumers not see the applications used can have a good impact economically. Changes to daily routines can disrupt a person's comfort zone. Such changes can lead to resistance to change which can affect intentions either directly or indirectly, perceived benefits with emotional responses, for example someone might perceive minor technical problems as rejection of the system and ignore all the positive impacts of technology. The pace of change from the offline market to the online market during the pandemic provides many conveniences so that offline retail stores or traditional markets are now very threatened. In addition, with the disruption caused by the Covid-19 pandemic, all online activities have become increasingly worrying with the



sudden influx of competitors switching to e-Commerce [2]. The World Health Organization (WHO) stated that more than 222 countries and regions have reported cases of the Covid-19 virus in December 2020, the death rate is increasing, because Covid-19 is highly contagious, making people worried about the possibility of physical contact with others [9]. The fear of the Covid-19 pandemic is an environmental factor that encourages people to consume products and services offered online once they understand the economic benefits of digital platforms [2].

Therefore, this research provides an exploratory study where the authors develop a perceived effectiveness model and analyze it against economic benefits, economic benefits against sustainable consumption interest, and perceived effectiveness against sustainable consumption interest. The authors, using usage and gratification theory (UGT), also consider technology anxiety, resistance to change and pandemic fear, to identify a framework that allows to explain why consumers use certain media to satisfy their needs [7]

## LITERATURE REVIEW

### A. UGT (Uses and Gratification Theory)

UGT (Uses and gratifications theory) is a sociological theory or paradigm that explains how individuals actively choose certain media to fulfill certain needs [10]. UGT assumes that individuals are aware of their needs and are goal-oriented in their media use. A person is able to assess the assessment of media content and has the initiative to link needs and satisfaction with certain media choices [10].

### B. Perceived effectiveness

According to Tran (2011) in Barber et al. (2016) Perceived effectiveness is a personal belief that can form under the influence of a more general or abstract value orientation. In the sense that perceived effectiveness can encourage behavior or action to fix problems that occur in the environment. Perceived effectiveness is needed to motivate consumers to express their positive attitude towards products in consumption situations [11]

### C. Economic benefits

Economic benefits mostly refer to consumers' perception that e-Commerce platforms offer price discounts, promotions or other activities [12]. Liu et al. (2019) show that economic benefits obtained from e-Commerce platforms can generate positive emotional responses, leading to online purchase intentions. Economic benefits also trigger consumers' intention to engage in sustainable consumption in uncertain situations e.g. vouchers, cash-back, and discounts [7]

### D. Sustainable consumption

Sustainable consumption is a strategy for achieving more sustainable development that requires widespread behavioral changes at all levels of society to reduce the impact of consumption on the environment [13]. Sustainability, by its very nature, is concerned with temporality, in the long term [14]. Interest in sustainable consumption refers to the lifestyle of consumers to fulfill needs [15]. The existence of environmental standards and regulations, with increasing customer expectations, has made a number of companies interested in the concept of sustainability [16].

### E. Technology anxiety

Technology anxiety is defined as a complex set of emotions such as nervousness, uncertainty, and anxiety associated with using and learning to use technology. In addition, anxiety can lead to resistance to technology [17].

### F. Resistance to change

Resistance to change is the tendency or tendency of a person to endure or resist change, not appreciate change and show hostility to various contexts and types of change around him [18]. When facing a change, resistance or rejection will appear as a natural response to the change [19]. The existence of resistance to change is indicated not from the change itself but from the perception of people who have lost something they like [19].

### G. Pandemic Fear

Pandemic refers to a new disease that most people have no immunity to and is spreading around the world [20]. Fear is a basic emotion in response to perceived threats [21]. Consumer behavior literature illustrates that fear refers to the negative consequences of certain events that can lead to changes in consumer behavior and attitudes [22].



## HYPOTHESIS

- H1: Perceived Effectiveness has a positive and significant effect on Economic benefits in e-Commerce
- H2: Economic benefits have a positive and significant effect on Sustainable Consumption Interest in e-Commerce
- H3: Perceived Effectiveness has a positive and significant effect on Interest in Sustainable Consumption in e-Commerce
- H4: Technological anxiety moderates the effect of perceived effectiveness on economic benefits in e-Commerce.
- H5: Technological anxiety, moderates the effect of economic benefits on interest in sustainable consumption in e-Commerce
- H6: Resistance to change, moderates the effect of perceived effectiveness on economic benefits in e-Commerce
- H7: Resistance to change, moderates the effect of economic benefits on Sustainable Consumption Interest in e-Commerce
- H8: Pandemic fear moderates the effect of perceived effectiveness on economic benefits in e-Commerce
- H9: Pandemic fear moderates the effect of economic benefits on Sustainable Consumption Interest in e-Commerce

## METHODOLOGY

Population is a whole group of people, events, or objects that the researcher finds interesting to study and will serve as a limitation for the research results obtained [23] This means that the research will only apply to the selected population. The population in this study are e-Commerce users in the city of Bandung during the Covid- 19 pandemic. This research uses purposive sampling, which is a non-probability sampling method. Non-probability sampling involves selecting a sample from the population without ensuring equal opportunities for all members to be selected, and it is unclear whether they have equal or different probabilities [23] As a result, research findings cannot be reliably generalized to the population. Meanwhile, purposive sampling is defined as the deliberate selection of certain sample members by researchers because only that sample can represent or provide information to answer research problems. In this study, the sample size selection was determined by considering the number of variables [24] In this study there are six variables, and if a study has 1-10 variables, then the minimum number of samples required is 200. Therefore, the sample appointed for this study consisted of 330 respondents who were e-Commerce users in the city of Bandung during the Covid 19 pandemic.

This study uses a quantitative research approach and uses an online survey as a data collection method. The data analysis technique chosen is Structural Equation Modeling (SEM) which is used to build and evaluate statistical models that describe causal relationships. SEM is a statistical method used to examine and validate the model. When researchers have many variables with several indicators, and these variables can be divided into exogenous and endogenous variables, SEM is most suitable [25]. In this study, SmartPLS software was used because it is considered powerful because it does not depend on various assumptions, requires a relatively small sample size, includes bootstrapping, and is able to test formative and reflective SEM models with different measurement scales for indicators in one model [26]

Measurement Model Evaluation (Outer Model) and Structural Model evaluation (Inner Model) are the two main stages of SEM-PLS testing. Measurement validity and reliability are evaluated using the outer model, while the model fit and R-square values are calculated using the inner model. The validity test shows the extent to which a measurement instrument can measure what it is intended to measure. Therefore, the higher the validity of a measuring instrument, the more accurate its target and the more it reflects what should be measured. Average Variance Extracted (AVE) is usually used to evaluate convergent validity, which measures how much variance in indicators can be explained by latent variables. AVE is tested through Confirmatory Factor Analysis (CFA). The requirement that must be met is  $AVE > 0.5$ , and if the AVE value exceeds 0.5, it means that the indicator can converge and represent the variable. Reliability testing is related to the level of confidence, dependability, consistency, and stability of measurement results. The purpose of reliability testing is to test the consistency of each indicator in a measuring instrument. Reliability testing can be done by measuring Cronbach's Alpha and Construct Reliability (CR). If the Cronbach's Alpha and Construct Reliability (CR) value  $\geq 0.7$ , it can be concluded that the indicator is consistent.

Testing an overall model can be described through Goodness of Fit or the degree of fit and significance of the structural model coefficients. Goodness of Fit shows how well the model fits a set of observations. If the GOF value shows little difference between the observed covariance and the estimated covariance matrix, it is considered good (Henseler 2017). The criteria for goodness of fit index in SmartPLS are Normed Fit Index (NFI) and Standardized Root Mean Square Residual or SRMR (Henseler 2017). In assessing the structural model, we start by examining the R-square value for each endogenous variable as an indicator of the predictive power of the structural model. Changes in the R-square (R<sup>2</sup>) value can be used to explain the substantive effect of specific exogenous latent



variables on endogenous latent variables. R-square values of 0.67, 0.33, and 0.19 can be concluded to represent strong, medium, and weak models.

Hypotheses in research need to be tested to prove the relationship between variables in a research model. In this study, a one-sided hypothesis test was used. One-sided testing involves the H0 rejection region on only one side, either on the right side or on the left side. Because there is only one rejection area, the size of this area is equal to the significance level ( $\alpha$ ), and the critical value is usually denoted by  $Z\alpha$ . When  $\alpha = 0$ .

**RESULT AND DISCUSSION**

The questionnaire was distributed using Google Form to e-Commerce users in Bandung City during the Covid-19 pandemic. This research obtained 330 respondents of e-Commerce users in Bandung City during the Covid-19 pandemic. It is known that 56% or 186 respondents are female, and 44% or 144 respondents are male. The average age of respondents ranges from 21 to 30 years old, and the last education is Bachelor, Master and Doctoral. In addition, the majority of respondents are students and college students with monthly expenses reaching Rp 2,500,000 to Rp 5,000,000.

**A. Measurement (Outer) Model**

The research findings employed PLS-SEM measurement using SmartPLS 3.2.9 software. The outer model aimed to define constructs or variables [25]. Validity testing and reliability assessment can be performed through evaluating the outer model measurement.

**Table 1.** Validity Testing

Variables	Indicators	Loading Factor	AVE	Conclusion
Perceived Effectiveness	PE1	0,813	0.635	Valid
	PE2	0,794		
	PE3	0,814		
	PE4	0,765		
Economic benefits	EB1	0,868	0.670	Valid
	EB2	0,861		
	EB3	0,719		
Sustainable Consumption Interest	SCI1	0,856	0.629	Valid
	SCI2	0,797		
	SCI3	0,721		
Technological anxiety	TA1	0,906	0.795	Valid
	TA2	0,870		
	TA3	0,894		
	TA4	0,896		
Resistance to change	RC1	0,867	0,755	Valid
	RC2	0,877		
	RC3	0,864		
Pandemic fear	PF1	0,853	0.766	Valid
	PF2	0,909		
	PF3	0,862		
TA*PE	Interaction Variable	1,151	1,000	Valid
TA*EB		1,161	1,000	Valid
RC*PE		1,375	1,000	Valid
RC*EB		1,395	1,000	Valid
PF*PE		1,284	1,000	Valid
PF*EB		1,259	1,000	Valid



In the presented table, it is evident that all indicators possess values exceeding 0.50, signifying a substantial correlation between each indicator and its corresponding variable. Furthermore, the AVE values for all variables are greater than 0.50, indicating a convergence of indicators within each variable and affirming their ability to accurately reflect the underlying constructs, thus establishing the validity of the variables.

**Table 2.** Reliability Testing

Variables	Cronbach's Alpha	CR	Conclusion
Perceived Effectiveness (PE)	0.704	0.874	Reliable
Economic Benefits (EB)	0.847	0.858	Reliable
Sustainable Consumption Interest (SCI)	1.000	0.835	Reliable
Technological Anxiety (TA)	1.000	0.939	Reliable
Resistance to Change (RC)	1.000	0.902	Reliable
Pandemic Fear (PF)	0.766	0.838	Reliable
TA*PE	0,914	1,000	Reliable
TA*EB	1,000	1,000	Reliable
RC*PE	0,750	1,000	Reliable
RC*EB	0,808	1,000	Reliable
PF*PE	1,000	1,000	Reliable
PF*EB	1,000	1,000	Reliable

According to the findings presented in Table 2, it is evident that every indicator pertaining to the variable exhibits robust internal consistency and reliability. This conclusion arises from the total variable values of Cronbach's Alpha and Composite Reliability, both surpassing the acceptable threshold of 0.70. The conducted validity and reliability assessments have conclusively demonstrated the validity and reliability of all indicators and variables examined in this study.

**B. Structural (Inner) Model**

**1) Model Fit**

According to the provisions that the SRMR value of 0.1, the findings indicate an SRMR value of 0.062 with a good category. Because it falls between 0.00 and 1.00, the NFI rating of 0.820 falls into the moderate fit. The research model is a workable and effective model to apply, as shown by the outcomes of SRMR and NFI.

**2) R Square**

The R-Square value for the Economic Benefits (EB) variable is 0.491. Which means that EB can be explained by 49.1% by the variables of Perceived Effectiveness (PE), Sustainable Consumption Interest (SCI), Technology Anxiety (TA), Change Resistance (RC), and Pandemic Fear (PF), while the rest can be influenced by other variables that are not studied.

Then in the Sustainable Consumption Interest (SCI) variable, the R-Square value is 0.554, which means that the SCI variable can be explained by 55.4% by the variables of Perceived Effectiveness (PE), Economic Benefits (EB), Technological Anxiety (TA), Change Resistance (RC), and Pandemic Fear (PF), while the rest is influenced by other variables not studied. So based on the R-Square value on all variables, it is known that the Economic Benefits (ME) variable has a weak model because it has a value <0.5, while the Sustainable Consumption Interest (MKB) variable has a moderate model because its R-Square value is > 0.5.

**C. Hypothesis Testing**

Following the preceding discussion's examination of the outer and inner models, hypothesis and significance tests are conducted. To assess each link between variables in light of the previously established hypothesis, hypothesis testing is done. The t-value, p-value, and path coefficient values are used in hypothesis testing. The following lists the findings of the significance and hypothesis testing:



Table 3. Hypothesis Testing

Hypothesis	Path Diagram	Path Coefficient	T-statistic	P-value	Result
H1	PE → EB	0,499	8,350	0,000	Accepted
H2	EB → ISC	0,252	3,370	0,000	Accepted
H3	PE → ISC	0,229	2,657	0,004	Accepted
H4	TA*PE → EB	0,356	3,496	0,001	Accepted
H5	TA*EB → ISC	-0,070	0,777	0,219	Not Accepted
H6	RC*PE → EB	-0,092	1,852	0,032	Not Accepted
H7	RC*EB → ISC	-0,020	0,378	0,353	Not Accepted
H8	PF*PE → EB	0,080	0,410	0,080	Not Accepted
H9	PF*EB → ISC	0,034	0,454	0,326	Not Accepted

The bootstrapping results in Table 3 show the results of hypothesis testing in this study. It can be seen that of the 9 hypotheses proposed, 5 hypotheses are accepted, while 4 hypotheses are rejected. This finding shows a significant relationship between the variables studied, such as Perceived Effectiveness, Economic Benefits, and Interest in Continued Consumption. However, there is an insignificant relationship between Technology Anxiety, Resistance to Change, Fear of Pandemic in moderating the effect of perceived effectiveness on economic benefits, and the effect of economic benefits on sustainable consumption interest. This is because the t-statistic value is less than 1.65 and the p value is greater than 0.05.

**CONCLUSION AND RECOMMENDATION**

It can be concluded that building effective mechanisms to protect personal data and online transactions such as information leakage, credit card fraud and economic offers can affect consumer perceptions of the economic benefits received from using e-Commerce. Economic benefits can increase consumers' sustainable consumption interest supported by the provision of financial benefits felt by consumers such as: vouchers, cash-back, and discounts, etc. In addition, the perception of effectiveness by ensuring the security of personal data and consumer online transactions can make consumers consume sustainably during the Covid-19 pandemic.

Based on these findings, researchers suggest that e-Commerce platform businesses should see the Covid-19 pandemic as an environmental factor that can occur at any time, so that they can respond more effectively if a pandemic occurs again which requires people to do social distancing. In addition, e-Commerce businesses can maintain and increase sustainable consumption interest and user economic benefits by increasing perceived effectiveness.

Increased perceived effectiveness can be indicated by increased consumer perceptions of the effectiveness of e-Commerce in protecting the potential risks of personal information leaks, transactions, fraud, etc. Companies should ask for guarantees from 3rd parties such as shipping services, and banks to compensate online consumers in case of damage to goods in delivery, or errors in transactions. In addition, companies must assure e-Commerce users that e-Commerce platforms do not take advantage of their users such as misuse of personal data, fraud, etc. It is essential for companies to increase efficiency and improve interactive communication with consumers by providing effective online protection. For example, by publishing customer reviews, as reviews make consumers trust products and services.

In addition, it should be noted that consumers also focus on financial benefits when shopping online, which has a positive impact on sustained consumption interest during the Covid-19 pandemic. Companies should highlight lower savings for consumers through discounts, coupons, and promotions so that consumers feel more economical when buying from e-Commerce platforms during the Covid-19 pandemic, and also shopping through e-Commerce platforms can improve consumers' economy.

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