

Analysis of Marketing Mix Effect on Air Purifier Purchase Decisions During Covid-19 Pandemic

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Abstract:- Covid-19 pandemic that occurred first outbreak in 2020 has had so many impacts to people's lives. One of them is the impact on the economy which causes a decrease in consumer buying ability or purchase power. Daily basic needs and health products are prioritized, but in the other hand, the fact show that electronic product, especially air purifier actually had increased sales during pandemic. This is because public awareness of the importance of clean and healthy indoor air quality has increased. Air purifier is an electronic appliances that functions to filter the air in the room (indoor air). Based on this, this research would like to examine about what factors influence consumer behavior in purchasing decisions for air purifier products. The factors studied are the marketing mix which includes product, price, place and promotion. The statistical test used in data processing is logistic regression to see how the decision to buy or not to buy is associated with marketing mix. Furthermore, the finding of the analysis, the results of the factors that have a big influence are product which the appearance / design of the air purifier, and features that equipped on the air purifier. The price variable is an attractive offer such as a discount or cashback, for a place, which is an offer of convenience in a store location that provides an air purifier, so that it is further expanded for distribution route, and for promotional variables, the importance of store sales promoters to be able to serve and provide product information to consumers. The results of this analysis are used as information for brand marketing or strategies for electronic and e-commerce stores to highlight points that become consumers' attractiveness and consideration in purchasing an air purifier. So that in the future there can be continued improvement in marketing strategies to increase sales of air purifier products.

Keywords:- Consumer Behaviour, Logistic Regression, Marketing Mix.

I. INTRODUCTION

This research is conducted start by the coronavirus pandemics had occurred in 2020, all over the world, also in Indonesia. Coronavirus Disease (Covid-19) is a viruses that cause mild to severe illnesses, such as the common cold or runny nose and serious diseases such as MERS and SARS (Ministry of Health, 2020). In Indonesia, this virus began to spread in early March 2020 and continuing to more than a year the impact is very large, not only in the health sector, but also has an impact on many changes in community activities.

One of the major impacts caused by the pandemic is the country's economic condition, where many companies are experiencing operational difficulties, requiring them to carry out massive labor reductions. Many layoffs had caused people's purchasing power to decline since they didn't get a monthly salary. They would prioritize the purchase of basic daily needs and health primary needs such as masks, medicines, hand sanitizers, etc. Based on data (*Euromonitor*, 2020), in Indonesia, one of the product categories that experienced a decline in sales results was consumer household appliances and electronic products with a decrease of up to 5%.

Even though the data showed that sales of electronics product are decreased, in the other hand, air purifier is showed significantly increasing of sales result. This is convinced based on sales report data on one of big brand (Arfyana Citra Rahayu, 2020), mentioned that air purifier sales jumped sharply from 2,000-3,000 units / month to 10,000 units on September 2020, this also happened to another big brand, mentioned the same thing, the increase in January-March to 190% compared to last year's fiscal year (Fio Revel, 2020). Even in future, more units of air purifier sales will be targeted, considering that people have begun to be concerned about the importance of health.

On previous research, according to Fatma (2020) on decision making for product electronics, it is stated that price has a strong influence on purchasing decision factors by consumers in India. In addition, previous research also states that price, product, and promotion also have a major influence on purchase decisions for batik products in Lamongan, Indonesia (Martono & Irani, 2014). According to Vijayalakshmi & Mahalakshmi (2013), social factors, psychological factors, promotion and place are closely related to purchasing decisions for electronic goods in India.

By the condition during pandemic for economic difficulty, mostly people thought that electronics are not a priority item to buy. Meanwhile, health is an essential thing that must be fulfilled in order to protect self and family member. So that in this study, will be discussed about the decision to purchase air purifier products. The marketing mix, consist of product, price, place and promotion. Evaluating the factors are influential so that it can be further analyzed regarding customer behavior and also sales marketing strategies by companies to continue to increase market share in the future.

II. EASE OF USE

A. Purchase Decision

According to Kotler & Amstron (2012) purchasing decisions are the stage in the decision-making process where consumers actually buy. Decision making is an individual activity that is directly involved in obtaining and using the goods offered. It can also be said that a purchase decision is a buyer's decision about which brand to buy. Consumers can form an intention to buy the most preferred brand.

The purchase decision is the stage of the purchasing decision consideration process, when consumers actually buy the product. Where consumers recognize their problems, seek information about certain products or brands and evaluate how well each of these alternatives can solve their problems which then leads to a purchase decision. (Kotler, 2008)

B. Stages of Decision Making

In purchasing decisions, the stages of the decision-making process, there are 5 stages in the purchasing decision making, there are: (Kotler & Amstron, 2012)

➤ Problem introduction

For consumer there will be a several process in order to buy a product, it might be influenced by internal or external factors. On marketing side, need to identify the circumstances that trigger a particular need. By collecting information that supporting this decision, such as number of consumers, what mostly arouse interest in the categories that are able to trigger consumer interest in buying process.

➤ Information Search and Deep Dive

Consumers whose needs are aroused will encouraged to seek deep dive information. There are 2 level of this phase, milder information-seeking situation that called attention-strengthening, in this level people are more sensitive towards product information. For next level is called active

information search, which looking for more details information also from external source such as reading materials, ask friends/colleague, including visiting stores to learn about specific products. Consumer information sources are classified into four groups:

- Personal sources: family, friends, neighbors, acquaintances
- Commercial sources: advertising, salespeople, distributors, packaging, product display in stores
- Public sources: mass and social media, consumer rating
- Experiential sources: product introduction, review, and use

➤ Evaluation of alternatives

There are several decision evaluation processes, and the most recent model views the consumer evaluation process as a cognitively oriented process, i.e. the model assumes that consumers form judgments about products very consciously and rationally. Some basic concepts will help us understand the consumer evaluation process.

First, consumers try to fulfill needs. Second, consumers view each product as a set of attributes with different abilities to provide the benefits utilize to satisfy that need. Basically, consumers have many angle or difference attitudes towards attributes that are considered relevant and important. They will choose and decide to pay the greatest attention to the attributes that provide the benefits/usage they are looking for in a products.

➤ Purchase decision

In the evaluation stage, consumers form preferences for brands in the choice set. The process how consumer choose most is by two factors that influence, which are:

- Attitude, in this factor the extent to which other people's attitudes reduce a person's preferred alternative will depend on the intensity of other people's negative attitudes towards consumers' preferred alternatives and consumers' motivation to comply with other people's wishes. The more intense the negative attitude of others and the closer these others are to consumers, the more consumers will change their purchase intentions.
- Unanticipated situational factors that can fluctuate and change purchase intentions, such as: expected price, expected benefits. The stages of the purchase decision-making process above indicate that consumers have to passes the entire sequence of stages when buying a product, but this is not always the sequences, in many cases consumers may skip or reverse these stages.

C. Marketing Mix

According to Stanton & Lamarto (2016) marketing mix is a term used to describe the combination of four inputs that are the core of an organization's marketing system. The four elements are product offerings, price structure, promotional activities and distribution system. Elements of the marketing mix according to Kotler & Keller (2007) consists of 4Ps, namely product, price, place, and promotion. The understanding of each marketing mix is as follows:

➤ *Product*

Something that can be offered to the market to get attention, so that the products sold will be bought, used or consumed which can fulfill a desire or need from consumers.

➤ *Price*

The amount of value that consumers exchange for the benefits of owning or using a product or service whose value is set by buyers and sellers through bargaining, or set by sellers for one price that is the same for all buyers.

➤ *Place*

Place is associated with distribution channels aimed at reaching target consumers. This distribution system includes location, transportation, warehousing, and so on.

➤ *Promotion*

Promotion means activities that convey the benefits of the product and persuade customers to buy it.

D. Logistics Regression

Logistic regression is an approach to model predictions just like linear regression or what is commonly referred to as Ordinary Least Squares (OLS) regression. The difference is that in logistic regression, researchers predict dependent variables that have a dichotomous scale. The dichotomous scale in question is a nominal data scale with two categories, for example: Yes and No, Good and Bad or High and Low.

OLS requires the condition or assumption that the error variance (residual) is normally distributed. In contrast, logistic regression does not require this assumption because logistic regression follows the logistic distribution.

Assumptions that must be met in Logistic Regression include:

- Logistic regression does not require a linear relationship between the independent variable and the dependent variable.
- The independent variables do not require the assumption of multivariate normality.
- Homoscedasticity assumption is not required
- The independent variable does not need to be converted into metric form (interval or ratio scale).
- The dependent variable must be dichotomous (2 categories, e.g. high and low or good and bad)
- Independent variables do not have to have the same diversity between variable groups
- The categories in the independent variable must be separate from each other or mutually exclusive.
- A relatively large sample size is required, with a minimum of 50 data samples required for a predictor (independent) variable.
- Logistic regression can select relationships because it uses a non-linear log transformation approach to predict the odds ratio. Odd in logistic regression is often expressed as a probability. (Widarjono, 2010)

E. Software SPSS

SPSS is one of the most widely used application programs for statistical analysis in the social sciences. It is used by market researchers, survey companies, health researchers, government, educational researchers, marketing organizations and others. SPSS original manual SPSS has a user interface that is very user friendly or easy for users to understand, easy to use and the results or SPSS output are very attractive with an extraordinary appearance when compared to other statistical applications.

Another advantage of SPSS is the database. SPSS has its own database system and can be run or linked with other applications, such as excel applications. This is very possible for users, because the SPSS database is included in the ODBC group, so that it can be run or connected with various SQL-based applications. SPSS is used by various universities, institutions, and companies to analyze data. Here are some examples of the use of SPSS, Conducting marketing research (market research), analyzing survey or questionnaire data. data mining, helping to make decisions for a company, public health research, Documenting data, statistical data representation. (Nie, N.N.H., D.H. Bent., 1970)

III. RESEARCH METHODOLOGY

A. Conceptual Model

The conceptual model of this research is to see how the marketing mix influences purchasing decisions for air purifier products during the Covid-19 pandemic. This will be examined further regarding products related to the pandemic where air purifiers are included in the category of electronic products which are not staple products but the demand has soared during the pandemic, price where the price is very high.

Influential in purchasing air purifier products during the pandemic, place or sales location because online buying has also increased compared to offline stores, and promotion which is very influential and persuasive on consumer decisions. From this condition, it will be seen how the marketing mix influences the decision to purchase an air purifier.

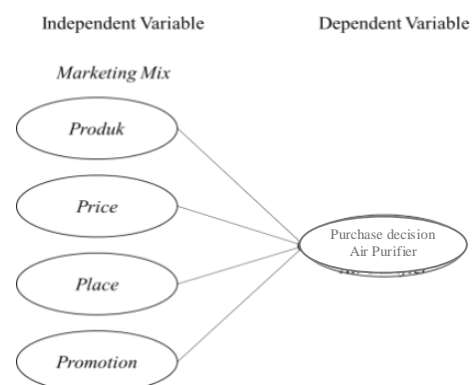


Fig 1. Research Conceptual Model

B. Number of Respondents and Data Collection

The number of sample respondents in this study was 10x the number of variables (Hair, et al, 2019) So that with 4 marketing mix variables, the number of respondents needed is at least 40 people. Respondents in this study were 50 people, with the method of filling out questionnaires online on the month. The contents of the questionnaire contained a

total of 20 indicators of independent variables and independent variables, with filling using a Likert scale of 1-5 (strongly disagree, disagree, doubt, agree, and strongly agree). Firstly, conducted pilot test study for 30 respondents to test if the questionnaire is feasible to spread for the other respondent. After the pilot study then continued to distribute the questionnaire for respondent using online method.

Table 1. List of Indicators on Questionnaire

Variabel	Questions (Indicators)
Product	PD1. There are many choices of types / models of Air Purifiers on the market
	PD2. The quality of the Air Purifier is durable and has maximum function performance (can feel the effect on the air in the room)
	PD3. Design / Appearance Air Purifier looks modern and attractive
	PD4. Many features are available on Air Purifier products
	PD5. The chosen Air Purifier brand (preferable) must be well-known and trusted
	PD6. The dimensions of the Air Purifier are compact, not too big and easy to place in any area of the house
	PD7. After sales service for Air Purifier products offers good and responsive service
	PD8. The longer the warranty offered, the better
Price	PR1. The price of the Air Purifier is quite competitive and worth the function
	PR2. There are many discount offers (sales, discounts) for Air Purifier products on the market
	PR3. The existence of other additional bonuses (example: cashback, gift vouchers) offered is attractive in determining the decision to purchase an Air Purifier
	PR4. Many payment convenience options are offered (installments, credit cards, etc.)
Place	PL1. Purchasing online (e-commerce, website, etc.) is more practical and easy for Air Purifier products
	PL2. Offline purchases (electronic stores, household goods stores, etc.) will make you more confident in selecting Air Purifier products
	PL3. Many electronics stores/household stores offer Air Purifier products around your home location
	PL4. The process of delivering Air Purifier items to your home is quick and easy
Promotion	PM1. Advertisements on various social media (online advertising) attract your attention to Air Purifier products
	PM2. Advertisements in mass media such as TV, newspapers, etc. (offline advertising) attract your attention to Air Purifier products
	PM3. Offers directly at the store by sales / promoters will convince you in determining the selection of Air Purifier products
	PM4. Influences from outsiders such as recommendations from family, friends, or public figures (endorsements) influence your purchase of an Air Purifier

There are 50 responses received, collecting data were in October 2020, to proceed to the statistical testing process, the data transformation begins first for all indicators using MSI (*method of interval*) to change ordinal data to interval data. The questionnaire's charging process comes with a choice of scale of Likert 1-5, which includes the data in ordinal data.

Based on the survey results, the demographics of respondents are dominated by 21-30 years of age where this age includes productive and consumptive working age in purchasing goods. Respondents' occupations vary from employees, entrepreneurs, students, to housewives, mainly private employees. In terms of income, the most dominant is in the range of Rp. 5,000,000.00 - Rp. 10,000,000.00, (Indonesian rupiah) where this range is averagely an affordable income of ability range in purchasing an air purifier.

C. Data Testing with Logistics Regression

After transforming data using the MSI method, the statistics data test with regression of using SPSS. First thing is validating no data are missing, using case processing summary. Then di signification model coefficient

Based on output, biggest model value is 0.013. Because this value is less than 5%, we reject H0 at a 5% significance so that it concludes that free variables used together affect the decision to purchase purifier water products. Or at least there's one loose variable that's affected.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	36.692	20	.013
	Block	36.692	20	.013
	Model	36.692	20	.013

Fig 1. Output Omnibus Test if Model Coefficient

D. Percentage Correct

The percentage of model accuracy in personifying the observation is 88%. It means that from 50 observations, there are 44 correct observations classified by the regression model of the logistics. From the following table it can also be seen that the number of those who do not decide buy (code 0) is as much as 6 and those who decide to buy (code 1) is 44.

Classification Table^a

Observed		Predicted		Percentage Correct
		0	1	
Step 1	B1	6	0	100.0
		0	44	100.0
Overall Percentage				100.0

a. The cut value is .500

Fig 2. Output Percentage Correct

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	.000 ^a	.520	1.000

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Fig 3. Output R square Value

R-square measures 0.520 or 52% (cox & snell) and 1,000 (Nagelkerke). It may be interpreted as saying with 20 variables tested, it would indicate that the ability of independent variables to explain dependency variables would be 0.520 or 52%.

E. Hosmer and Lemeshow Test

The Hosmer and Lemeshow Test is a Goodness of fit test (GoF), which is a test to determine whether the model formed is correct or not.

The hypothesis is:

H0 = The model adequately explains the data (GoF)

H1 = The model does not adequately explain the data

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	5	1.000

Fig 4. Uji Hosmer and Lemeshow Test

F. Partial Test and Model Building

From the Fig 5, it can be seen which variables have a significant effect so that they can be included in the model. If the wald test value < α (0.05) then Ho is rejected.

Reject the null hypothesis (H0) if the significance p-value < 0.05. The pvalue of significance of the variables all show numbers more than 0.05, so the conclusion is that Ho is rejected. The table also shows that the value of all indicators for the wald test is < 0.005. Thus it can be said that all indicators of the marketing mix, namely product, price, place, and promotion have a significant influence on the dependent variable, namely the purchase of an air purifier.

Variables in the Equation

Step 1 ^a		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
	PD1	4.732	319914.031	.000	1	1.000	113.544	.000	.
	PD2	-8.681	208077.944	.000	1	1.000	.000	.000	.
	PD3	19.932	342765.920	.000	1	1.000	453489876.7	.000	.
	PD4	16.559	62999.750	.000	1	1.000	15535847.90	.000	.
	PD5	-1.457	114751.250	.000	1	1.000	.233	.000	.
	PD6	3.461	310733.024	.000	1	1.000	31.851	.000	.
	PD7	-6.798	452504.771	.000	1	1.000	.001	.000	.
	PD8	-9.421	192199.858	.000	1	1.000	.000	.000	.
	PR1	11.019	80854.785	.000	1	1.000	61000.489	.000	.
	PR2	15.806	17586.960	.000	1	.999	7317419.983	.000	.
	PR3	-13.245	39355.154	.000	1	1.000	.000	.000	.
	PR4	6.357	278213.875	.000	1	1.000	576.718	.000	.
	PL1	.734	87983.718	.000	1	1.000	2.083	.000	.
	PL2	-23.783	386465.989	.000	1	1.000	.000	.000	.
	PL3	12.611	166851.417	.000	1	1.000	299864.971	.000	.
	PL4	9.984	179226.599	.000	1	1.000	21672.684	.000	.
	PM1	-4.546	554482.548	.000	1	1.000	.011	.000	.
	PM2	6.525	311878.587	.000	1	1.000	682.240	.000	.
	PM3	22.424	139159.005	.000	1	1.000	5476875994	.000	.
	PM4	20.833	149145.584	.000	1	1.000	1116440037	.000	.
	Constant	-204.051	436828.496	.000	1	1.000	.000		

a. Variable(s) entered on step 1: PD1, PD2, PD3, PD4, PD5, PD6, PD7, PD8, PR1, PR2, PR3, PR4, PL1, PL2, PL3, PL4, PM1, PM2, PM3, PM4.

Fig 5. Variable in the Equation

IV. RESULT AND DISCUSSION

Data processing in this study uses logistic regression, where this method aims to be able to see how respondent's decisions to purchase air purifiers during this pandemic. With logistic regression, where the dependent variable is binary / dichotomous, namely buying (1) or not buying (0) and the dependent variable is continuous data. This research is designed by asking questions in relation to the marketing mix which includes product, price, place and promotion.

In each variable, it will be seen from the largest score that is considered the most influential based on the results of data processing using SPSS software for the logistic regression method. It will also be seen what factors have a large influence value of the 20 independent variable indicators. Indicators of each variable can be seen in which points can be strengthened to be highlighted as a sales point for the marketing of each brand or electronic store both online and offline because in terms of consumers, the results obtained in the survey regarding things that influence the marketing mix.

By analyze from the test results which have a large Odd Ratio or Exp (B) value, namely, on product indicators, PD3 (design / appearance of the air purifier) and PD4 (features on the air purifier). Display is a very attractive point for consumers when buying electronic products.

In the price indicator, the most influential is PR2 (many discounts), one of the marketing strategies that can be highlighted to attract consumer buying interest is by offering several attractive programs such as discounts or cashback. From the most significant place variable, namely PL3 (the number of stores that provide air purifiers around the house), the ease of buying and affordable access by prospective buyers greatly influences the decision to purchase an air purifier. With the ease with which they can make purchases will be one of the important considerations.

From the promotion variable, the indicator with the greatest value is PM3 (direct offer in the store by sales / promoter). Explanations made by sales promoters in the store provide a lot of information to potential buyers, besides that if there are questions from customers they can immediately get answers and explanations from promoters, so that buyers feel they have enough information before finally making a purchase decision on the product.

In the future, especially on this post pandemic condition where people health consciousness is increase, influential factors can be used as sales points that are more emphasized as a marketing strategy by the company or electronic stores both online and offline to continue to be able to target an increase in sales of air purifiers that function importantly in maintaining air quality in the house.

V. CONCLUSION

What can be concluded from this research is that during the Covid-19 pandemic, people are increasingly aware of their health, including the quality of air at home. Air purifiers experienced a significant increase in sales during the Covid-19 pandemic. In relation to purchasing decisions for air purifier products, based on the survey results and data processing, it is found that the marketing mix consisting of product, price, place, and promotion has a significant influence on consumer considerations in purchasing air purifiers. The processing results showed that 44 people considered/decided to buy, while 6 people decided not to buy.

To further maximize sales, marketing strategies by air purifier brands and also for electronic stores and e-commerce in selling air purifiers, namely being able to further highlight some of the points that have the greatest influence. For product variables, regarding the appearance/design of the air purifier, the features contained in the air purifier. In the price variable is an attractive offer such as a discount or cashback, for place, namely the offer of convenience. in the purchase location that provides air purifiers, so that it is more expanded for the distribution network, and for the promotion variable, namely the importance of store sales promoters to be able to serve and provide product information to potential customers clearly.

REFERENCES

- [1]. Agus Widarjono. (2010). *Analisis Statistika Multivariat Terapan. Edisi pertama.*
- [2]. Arfyana Citra Rahayu. (2020, September 22). *Selama pandemi, penjualan air purifier Sharp Electronics Indonesia naik 5 kali lipat.* <https://industri.kontan.co.id/news/selama-pandemi-penjualan-air-purifier-sharp-electronics-indonesia-naik-5-kali-lipat>
- [3]. *Euromonitor.* (2020). <https://login.euromonitor.com/>
- [4]. Fatma, S. (2020). Influence of Pricing on Consumer Decision Making with Reference to E-commerce. *SSRN Electronic Journal, November.* <https://doi.org/10.2139/ssrn.3540096>
- [5]. Fio Revel. (2020, April 10). *Sejak WFH Bisnis Panasonic Gobel Penjualan AC dan Air Purifier Meningkat.* <https://keuanganonline.id/ekonomi-2/sejak-wfh-bisnis-panasonic-gobel-penjualan-ac-dan-air-purifier-meningkat/>
- [6]. Joseph F. Hair, William C. Black, Barry J. Babin, R. E. A. (2019). *Multivariate Data Analysis. Eight Edition.* Cengage.
- [7]. Kotler, P., & Armstrong, G. (2012). *Prinsip-prinsip Pemasaran. Edisi 13.*
- [8]. Kotler, P., & Kevin Lane Keller. (2007). *Marketing Management.*
- [9]. Martono, & Irani, S. S. (2014). Analisis Pengaruh Kualitas Produk, Harga Dan Promosi Terhadap Minat Beli Konsumen Produk Batik Sendang Duwur Lamongan. In *Jurnal Ilmu Manajemen* (Vol. 2, Issue 2, pp. 687–699). <https://jurnalmahasiswa.unesa.ac.id/index.php/jim/article/download/10202/9971>
- [10]. Ministry of Health. (2020). *Tentang Novel Coronavirus (NCov).* kemkes.go.id
- [11]. Nie, N.N.H., D.H. Bent., D. H. H. (1970). *Statistical Package for the Social Sciences. Propriety Software.*
- [12]. Stanton, W. J., & Lamarto, Y. (2016). *Fundamentals of marketing.*
- [13]. Vijayalakshmi, S., & Mahalakshmi, V. (2013). An Impact Of Consumer Buying Behavior In Decision Making Process In Purchase Of Electronic Home Appliances In Chennai (India): An Empirical Study. *Elixir Marketing Management*, 59(May 2013), 15267–15273.