

Printer Product Positioning in Tokopedia E-Commerce Based on Analysis of Consumer Reviews

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DOIs: <https://doi.org/10.52403/ijrr.20230659>

ABSTRACT

Proper product positioning is the key to success in attracting consumer interest. Consumer reviews on e-commerce platforms such as Tokopedia provide valuable insights into consumer perceptions of printer products and can be used to identify effective product positioning. This research aims to analyze the positioning of printer products from various brands sold at Tokopedia, based on an analysis of online consumer reviews; formulate managerial implications that printer companies can apply in managing online marketing activities based on the results of positioning from online reviews on Tokopedia. The data were obtained from search results and observations, uploaded reviews of consumers who bought printer products at the official store on Tokopedia e-commerce. Review data collection was carried out using non-probability sampling with a purposive sampling technique, then collected using data scraping techniques. Data were analyzed using descriptive analysis, content analysis and correspondence analysis using SPSS 26 software. The results showed that Canon printers had a strong positioning in terms of packaging in periods I and II; there was a change in consumer positioning towards Brother printers from period I to period II; there was a change in consumer positioning towards HP printers from period I to period II; consumers on Epson printers position Epson printers primarily in the context of good customer service by consumers.

Keywords: content analysis, correspondence analysis, online customer review, product positioning

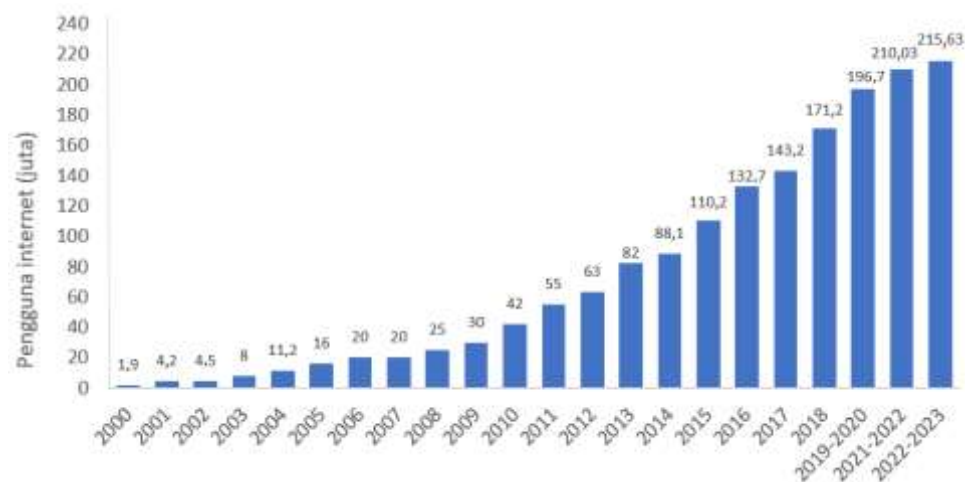
INTRODUCTION

In the last few decades, internet technology has experienced rapid developments that greatly affect human life. The Internet has become a very important source of information, means of communication and business platform. This can be seen from the increasing trend of internet users from year to year, which continues to increase along with technological developments. Data published by the Association of Indonesian Internet Service Providers (APJII) in Figure 1, shows that in 2000, there were only around 1.9 million internet users in Indonesia. However, in 2022-2023, the number of internet users in Indonesia will increase drastically to 215.63 million. When compared with the total population of Indonesia in 2022-2023 based on BPS projection data, namely 275.77 million people, there will be internet penetration of 78.19% in 2022-2023.

The development of internet technology has had a significant impact on many aspects of human life, including business and economics. According to Ngafifi (2014), technology psychologically affects all types of human activity and behavior. People's dependence on the internet has resulted in changes in how to get information and changes in behavior in buying and selling, which were originally done offline to online (Santoso et al. 2020), so that internet-based businesses such as e-commerce are growing.

The number of e-commerce visitors in Indonesia has fluctuated every month during the Q1 2021-Q2 2022 period, but overall it

has increased with Tokopedia being the e-commerce with the highest number of monthly visitors in Indonesia.



Source: APJII
Figure 1 Data on the development of internet users in Indonesia 2000-2023

Many people tend to shop online because of the convenience the shopping system offers (Harahap and Amanah 2018). A good online shopping experience allows consumers to spread positive word of mouth through the consumer review and rating features on the site. Based on the reviews and experiences of consumers who have purchased products from online sellers, consumers can obtain the quality of the products they are looking for (Mo et al. 2015). Consumer reviews and online consumer ratings on websites can influence consumer perceptions (Auliya et al. 2017) and consumer purchasing decisions (Lackermair et al. 2013; Ardianti and Widiartanto 2019; Arbaini et al. 2020). The better the evaluation of other consumers about the product, the more consumers will buy the product (Kamila et al. 2019), so that online consumer reviews serve as a guideline for consumers to see product performance and quality (Filieri 2015).

Exploring online review texts offers companies the opportunity to broaden and deepen their knowledge in aspects such as brand positioning and consumer preferences (Hartmann et al. 2019). Online reviews can provide information about product quality, customer satisfaction, product pros and cons, and user experience. This information can

influence consumer perceptions of the brand and its products and affect brand positioning in the market.

The convenience offered by various e-commerce platforms, such as the ease of comparing printer products from various brands and choosing the one that best suits their needs, the ease of making payments and shipping products, makes consumers prefer to shop online. Online transactions can also assist companies in expanding distribution channels and increasing the efficiency of the sales process, as well as assisting companies in developing their business and increasing their revenue in the long term.

However, to take advantage of the increasing trend of online transactions, printer companies need to develop effective online marketing strategies to increase sales opportunities and expand the market. Research on consumer positioning from online reviews is also important in helping companies determine the right marketing strategy. By knowing consumer views on products and brands, companies can improve and enhance product quality, adjust prices, and improve sales performance. Therefore, research on the printer industry is very important to keep abreast of market trends and meet consumer needs effectively.

Based on the description above, there are four problem formulations in this study, namely as follows:

1. How is the positioning of printer products from various brands sold at Tokopedia based on an analysis of online consumer reviews?
2. What are the managerial implications that printer companies can apply in managing online marketing activities based on the results of positioning analysis from online reviews on Tokopedia?

LITERATURE REVIEW

Positioning

According to Kotler and Keller (2016), positioning refers to planning a company's offering and image so that it occupies a special place in the minds of the target market. The goal is to place the brand in the minds of consumers to maximize the company's profit potential. Good brand positioning helps guide marketing strategy by clarifying the essence of the brand, identifying goals consumers want to achieve, and doing so in a unique way. One result of positioning is the successful creation of customer-oriented values. Positioning requires the marketer to define and communicate the similarities and differences between the brand and its competitors.

According to Kasali (2000), positioning is a form of communication strategy designed to penetrate the window of the consumer's brain so that the products and brands offered have a certain meaning, which in many cases explains the superiority of consumers to products or brands in associative relationships. Therefore, positioning refers to how manufacturers position their products or brands among competitors and position their products with the brand in the minds of consumers.

Consumer behavior

According to Kotler and Keller (2016), consumer behavior is the study of how individuals, groups, and organizations select, buy, use, and dispose of goods, services,

ideas, or experiences to satisfy their needs and wants. According to Sumarwan (2017), consumer behavior is all actions, activities, and psychological processes that motivate these actions before buying, when buying, using, consuming products and services after completing the things above or evaluating activities. Consumer purchase behavior (consumer purchase behavior) includes the process by which consumers make decisions about what types of products to buy, where to buy, and how to pay.

There are five reference groups that are closely related to consumers (Sumarwan 2017), namely:

1. Friendship groups, consumers need friends and acquaintances as social beings.
2. Shopping groups, namely two or more consumers who shop together at the same time.
3. Work groups influence consumption behavior and consumer decision making when buying products and services and choosing brands.
4. Virtual groups or communities, which were born from the development of computer technology and often access the information needed to make decisions in selecting and purchasing products.
5. Consumer activist groups, groups that can help when harmed by producers.

Sellers or producers who understand consumer behavior can predict how consumers tend to react to the information they receive, enabling sellers or producers to design appropriate marketing strategies (Sumarwan 2017). Therefore, online businesses must have and carry out appropriate strategies to attract internet users who have never shopped online and retain existing customers by knowing consumers' online shopping behavior first (Harahap and Amanah 2018).

Online Consumer Reviews

Online consumer reviews are a form of word-of-mouth communication in online sales (Filieri 2015) where prospective buyers receive information about products from

consumers who have experienced the benefits of these products. When shopping online, it is difficult for consumers to predict product quality, especially when the specified product criteria are not clear, thus making information one of the determining factors in the decision-making process. This information comes from consumer reviews that have purchased or used the product. The information provided in online reviews is considered useful for knowing the product and differentiating its quality and efficiency, so that consumers can better consider this information in the decision-making process (Filieri 2015). According to Mo et al. (2015), Consumers cannot get all the information before making a purchase and need to collect online reviews before making a purchase to increase awareness (Mo et al. 2015). Information in online reviews can be in the form of product reviews, product prices, seller responses, seller speed in processing orders and shipping speed. Consumers will focus on important aspects of a product that can be assessed through online reviews from other consumers when deciding to buy a product. Online reviews can provide consumers with a real shopping experience and a reference for understanding products (Augustina et al. 2018). When consumers want to buy a product, they see positive or negative feedback from previous consumer experiences, which leads them to like or dislike the product.

E-commerce

According to Harahap and Amanah (2018), e-commerce can be defined as any form of commercial transaction or sale of goods or services using electronic media. Chaffey (2015) defines e-commerce as all transactions mediated electronically between organizations and third parties. The development of e-commerce in Indonesia is very rapid, this is reflected in the development of the number of buying and selling transactions in electronic commerce which continues to increase from year to year (Firmansyah 2018). According to Lutfihad

and Dwanto (2013), there are six factors that can drive the development of e-commerce in Indonesia, namely perceived benefits, perceived ease of use, trust, risk, perceived community, and seller status and reputation. Based on iPrice data (2023), Shopee, Tokopedia, Bukalapak, and Lazada are the four e-commerce sites most visited by Indonesian surfers every month.

Conceptual Research Framework

Chasanah (2021) states that there has been an increase in the use of digital marketing as an important marketing tool during the Covid-19 pandemic, which offers opportunities to expand markets. With the increase in digital marketing users during the pandemic, researchers felt it was important to divide research data into two periods, namely before the Covid-19 pandemic and during the Covid-19 pandemic.

The period for collecting review data on e-commerce Tokopedia before the Covid-19 pandemic was categorized as the Period I, namely the period from the start of the official store printer joining e-commerce until March 31 2020. Meanwhile, the period during the Covid-19 pandemic was categorized as Period II, namely from 1 April 2020 to 31 January 2022. The selection of 31 March 2020 was the limit for the review data collection period in this study because on 31 March 2020 the government issued regulation no 21 of 2020 concerning Large-Scale Social Restrictions (PSBB) and early April 2020 various cities in Indonesia have started implementing PSBB. PSBB is a government decision in preventing the spread of the Covid-19 virus which includes limiting educational activities, work, religious activities, activities in public facilities, as well as restrictions on modes of transportation. By dividing this research period, the author wants to see whether there are differences in positioning towards printer products before the pandemic and during the Covid-19 pandemic. Based on this explanation, the framework of this research can be described as shown in Figure 2.

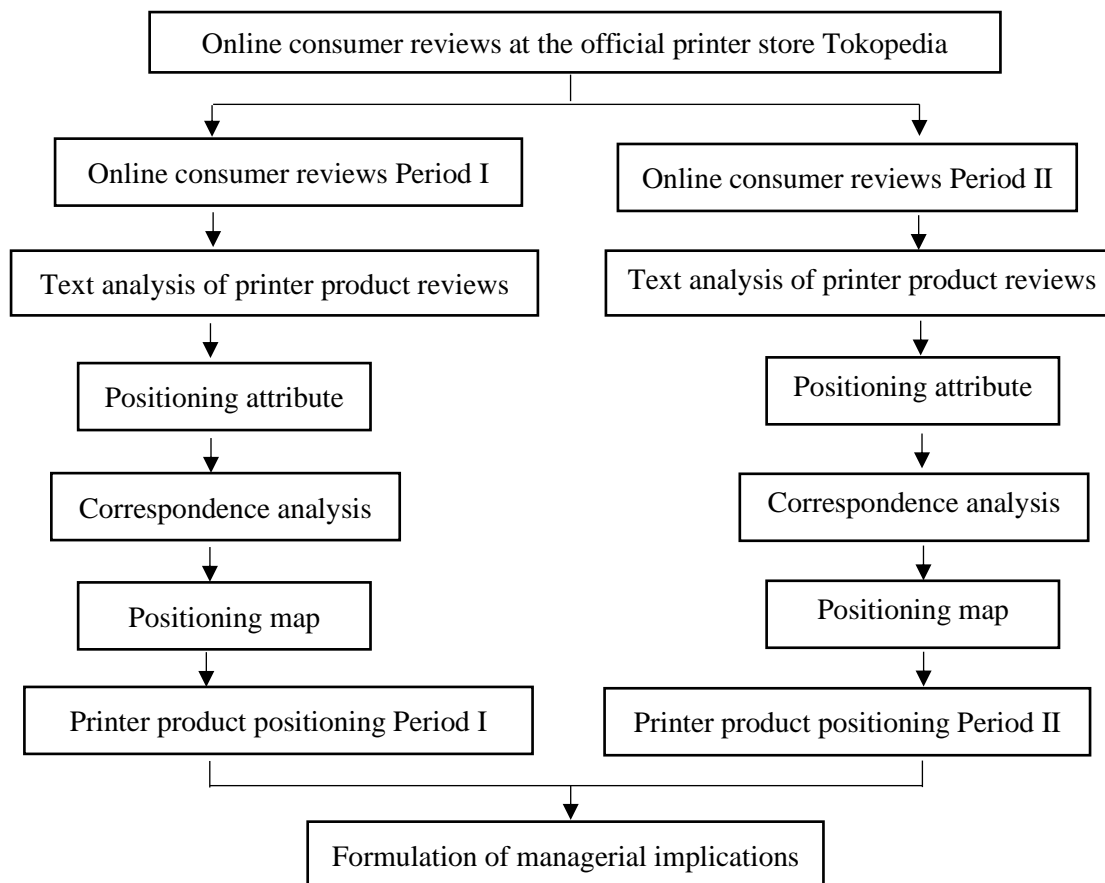


Figure 2 Conceptual framework

MATERIALS & METHODS

This study uses a qualitative and quantitative approach. A qualitative approach is used through content analysis, while a quantitative approach is used through correspondence analysis. Primary data was obtained from search results and observations, uploaded reviews of consumers who bought printer products at the official store on e-commerce Tokopedia, while secondary data was obtained through books, journals and other literature relevant to the research topic. Data on consumer reviews taken from stores that have the official store printer category on Tokopedia e-commerce. Retrieval of review data was carried out using nonprobability sampling with a purposive sampling technique, namely a sampling technique based on certain criteria from the population (Kurniawan 2016), with special consideration or selection (Siyoto and Sodik 2015).

The printer brands that were sampled in this study were Brother, Canon, HP, and Epson. Online review data are collected using data scraping techniques. This study uses descriptive data analysis, content analysis, and correspondence analysis. Descriptive analysis was formed in simple tabulation results and then collected and processed with Microsoft Excel. Data from content analysis is in the form of verbal writing uploaded by consumers into the review column in each e-commerce. Correspondence analysis in this study was carried out to understand the relationship between product aspects reviewed by consumers, identify differences between brands or types, and identify consumer preferences.

RESULTS

In this study, an analysis of consumer reviews from the Tokopedia e-commerce platform was carried out using the web scraping method. Consumer reviews

obtained from scraping results have unstructured sentence forms or are not in accordance with good Indonesian language rules. Therefore, before analyzing the review data for each e-commerce and printer brand, it is necessary to carry out translating and cleaning the review data through spelling normalization activities.

1) Translating

At this stage, all reviews in English or Indonesian English are translated manually into good and correct Indonesian. This is done to facilitate the processing of the next stage.

2) Spelling normalization

At this stage, words that are not in accordance with the rules of good and correct Indonesian writing are corrected. Such as reviews that use abbreviated words or misspelled reviews such as the word "good" written with the word "bagyssss", "bagoes", "baguuuss", "baguss", the word "which" is written "which" and so on. To analyze consumer reviews, after the spelling normalization process, the pre-processing of the text is continued. According to Sasmita (2018), the pre-processing steps that are usually carried out are case folding, tokenizing, filtering, stemming, tagging, and analysis.

a. Case folding

The case folding stage is the stage of changing all the letters in the review to lowercase. Additionally, reviews with excess spaces and punctuation are removed at this stage. This step is done so that each word written in uppercase and lowercase has no difference.

b. Tokenizing

The tokenizing stage is the stage of breaking reviews or documents into small units called tokens. Tokens can be words, phrases or symbols. The purpose of this stage is to identify these tokens for further processing in the text analysis stage.

c. Filtering

In the filtering stage, the process of removing or filtering certain words or pronouns that have no meaning or are not needed in the analysis is carried out. The purpose of this

stage is to improve data quality and obtain more accurate analysis results. Words that have no meaning such as prepositions, conjunctions, auxiliary words, and so on. Filtering can also be done by removing words or comments that are less relevant or have no meaning. In this study, the filtering stage was carried out with the help of the Nvivo 12 plus software. This software provides a filter menu so that words that are not important or do not affect one another can be removed and do not appear during the analysis process.

d. Stemming

The stemming stage is the stage of removing all affixes and changing words into basic words. According to Büschken and Allenby (2016), several studies on text analysis show that the stemming process can make important information lost because words that have the same root word may have different meanings, for example, the word "order", "and "ordering", which have the same root word "message". The word "order" refers to the goods purchased. The term "order" means the method or process of ordering, while the root word "order" itself can mean orders, advice, or words. Therefore, stemming can eliminate unwanted differences in meaning in connection with the identification and interpretation of hidden text themes, therefore in this study the stemming process was not carried out on all review data, the stemming process was only carried out on words that had certain affixes, such as words which has the prefix "in" and the suffix "its".

e. Tagging

The tagging process is a process by looking for the root form of each past word or stemming word. In this study, the tagging process was not carried out because this process can only be carried out on review data that has the past tense, such as review data in English. After pre-processing activities, the review data is divided into two periods. Data for review in period I was taken from December 2017 to March 2020, for period II data was taken from April 2020 to January 2022. List of printers and the number

of consumer reviews at Tokopedia's official store printers for the period December 2017 to January 2022 can be seen in Table 1.

Table 1 List of printers and the number of consumer reviews at Tokopedia's official store printers for the period December 2017 to January 2022

E-commerce	Printer brand	Joined	Beginning of review taking	Product sold	Number of reviews before cleaning			Number of reviews after cleaning		
					I	II	Total	I	II	Total
Tokopedia	Brother	Dec 2017	Dec 2017	1,100	51	112	163	51	109	160
	Canons	May 2017	Dec 2017	993	77	123	200	76	122	198
	HP	Feb 2017	Dec 2017	4,077	176	672	848	175	664	839
	Epson	Aug 2017	Dec 2017	6,750	518	590	1.108	515	586	1.101

After the pre-processing stage and the distribution of review data have been carried out, the analysis process can be carried out. In this study, the positioning analysis process was carried out through two stages, namely the review data extraction stage and the consumer perception mapping stage through correspondence analysis.

1. Extraction of review data

In the data extraction stage of this review, the data is analyzed using count-based evaluation, which identifies terms with the highest frequency of occurrence. According to Sasmita and Falani (2018), words with the highest frequency of occurrence in a text are considered important because they show how important the word is in the text.

Different consumer reviews are of different lengths, long reviews tend to contain more specific terms than shorter reviews. As a result, certain terms with high frequency are probably caused by several long reviews mentioned many times. In other words, the high frequency of a particular term is not based on the number of reviews. To normalize the frequency data, taking into account the number of documents and terms that appear, the TF-IDF (Term Frequency-Inverse Document Frequency) method is used. TF-IDF is a way of giving weight to the relationship of a word to a document. This TF-IDF is a statistical measure used to estimate how important a word is in a document or sentence (Melita et al. 2018). This method combines two weight calculation concepts, namely the frequency of occurrence of a word in a particular document, called the Term Frequency (TF),

and the inverse frequency of documents containing words called the Inverse Document Frequency (IDF). A word in a particular document shows how important the word is in the document, so the weight of the relationship between a word and a document will be high when the frequency of words in the document is high and the total frequency of documents containing the word will be low in the document set (Sasmita and Falani 2018). General formula for TF-IDF : A word in a particular document shows how important the word is in the document, so the weight of the relationship between a word and a document will be high when the frequency of words in the document is high and the total frequency of documents containing the word will be low in the document set (Sasmita and Falani 2018). General formula for TF-IDF :

$$Wdt = TFdt * IDFt$$

Where:

d = d-th document

t= the t-word of the keyword

W = weight of the d-th document to the t-word

TF = the number of words to search for in a document

IDF= *Inverse Document Frequency*

D = total documents

Df = many documents containing the searched word

High weight values are given to terms that appear frequently in the document but rarely appear in the document set. W will increase with the number of occurrences of the term in the document. After the weight (W) of each document is known, a sorting process is carried out where the higher the W value, the more suitable the document is with the keywords and vice versa (Sasmita and Falani 2018). For the TF-IDF calculation stage, the review data used is review data that has gone through the pre-processing stages, namely case folding, tokenizing, filtering, and stemming. TF-IDF calculations are performed with the help of Microsoft Excel with keywords selected from words that have a high frequency of occurrence in the review data and are relevant to the research topic. From a series of words that appear then grouped into attributes that will be mapped on the perception map. The purpose of this perception mapping is to find the right

positioning based on consumer reviews by taking into account the most important attributes of consumers and competitors' positions on the perception map. After the attributes are derived from the keyword list, then the TF-IDF is recalculated. The list of attributes resulting from grouping keywords in consumer reviews of printer buyers at Tokopedia periods I and II along with the TF-IDF values can be seen in Table 2 and Table 3. After the attributes are derived from the keyword list, then the TF-IDF is recalculated. The list of attributes resulting from grouping keywords in consumer reviews of printer buyers at Tokopedia periods I and II along with the TF-IDF values can be seen in Table 2 and Table 3. After the attributes are derived from the keyword list, then the TF-IDF is recalculated. The list of attributes resulting from grouping keywords in consumer reviews of printer buyers at Tokopedia periods I and II along with the TF-IDF values can be seen in Table 2 and Table 3.

Table 2. The TF-IDF values of the attributes extracted from consumer reviews of printer buyers at Tokopedia period I

Attribute	Symbol	TF-IDF value			
		Brother	Canon	HP	Epson
Print quality	X1	6,51	7,25	16,00	48,70
Price	X2	0,00	3,16	7,72	13,07
Promotion	X3	0,00	7,72	6,56	13,54
Printer authenticity	X4	5,53	7,25	6,56	42,75
Ease of use	X5	1,71	4,74	11,60	36,13
Printer reliability	X6	0,00	5,12	9,26	27,16
Delivery	X7	7,08	11,71	31,78	85,25
Packaging	X8	6,04	12,04	21,92	53,22
Description conformity	X9	7,08	11,06	24,97	77,62
Customer service	X10	3,69	5,91	23,42	80,10
After sales service	X11	5,04	5,91	8,20	20,04

Table 3 The TF-IDF values of the attributes extracted from consumer reviews of printer buyers at Tokopedia period II

Attribute	Symbol	TF-IDF value			
		Brother	Canon	HP	Epson
Print quality	X1	12,95	11,95	77,19	48,51
Price	X2	7,56	3,57	49,70	30,80
Promotion	X3	5,74	2,09	45,03	23,16
Printer authenticity	X4	5,74	9,47	53,95	50,60
Ease of use	X5	14,64	10,86	68,73	32,27
Printer reliability	X6	6,69	6,94	54,00	28,29
Delivery	X7	17,38	20,31	121,93	96,94
Packaging	X8	10,83	14,12	83,48	65,03
Description conformity	X9	12,92	16,95	87,11	85,61
Customer service	X10	13,72	15,47	92,59	85,52
After sales service	X11	8,81	3,57	42,63	42,13

2. Correspondence analysis and perceptual mapping of review data

After a collection of attributes is derived from keywords, perception mapping is then

carried out using correspondence analysis to analyze the relationship between printer brands and attributes and to find out the positioning of each printer brand. Perception

mapping generated through input from consumer review text analysis can accurately reflect consumer perceptions (Hananto 2015), thereby providing insights to companies regarding their position relative to competitors and helping companies understand and gain sustainable advantages over competitors. The main advantage of perceptual mapping is its ability to clearly describe how attributes are correlated which

enables targeted brand positioning as well as focusing on key attributes (Gigauri 2019). Input data for correspondence analysis is obtained from values TF-IDF each attribute. From these selected attributes, contingencies are then developed as input data for correspondence analysis. Association test was conducted to find out whether there is a relationship or association between the attributes. The results of the association test are presented in Table 4.

Table 4 Association test results between review attributes and printer type

E-commerce	Chi-Square Value	Free degrees	P-values	Contingency coefficient	Association between review and printer attributes ($\alpha=5\%$)
Tokopedia I	37.06	30	0.18	0.21	There is but not significant effect
Tokopedia II	32,33	30	0.35	0.14	There is but not significant effect

The table above shows that the P-value for e-commerce Tokopedia I and Tokopedia II are greater than the standard error of 0.05. This shows that the review attribute on Tokopedia I and Tokopedia II is not related or has no significant relationship with the printer attribute. However, if you look at the review contingency coefficient values on e-commerce Tokopedia for each period, the contingency coefficient values for all periods have values that are more than zero but below 0.5. This value indicates that there is a moderate or weak relationship between the two attributes. This relationship may not be as strong or significant, but there is still an association between review and printer attributes. Although the chi-square test is not significant and the contingency coefficient value is small which indicates a weak relationship between the review attributes, Correspondence analysis still needs to be continued to obtain more information about the relationship between the review attributes and each printer brand. The plot of the correspondence analysis results of consumer reviews of printer buyers at Tokopedia

periods I and II are shown in Figure 3 and Figure 4, where the closer the printer is to the attributes, the more these attributes are associated. To explain the positioning and competition map among the four printer brands, it will be described as follows:

Positioning Printer Brand on Tokopedia E-commerce

In Tokopedia I (Figure 3), the two main axes explain the magnitude 87.3% of the total diversity of original data, while for Tokopedia II (Figure 4), the two main axes explain 89.70% of the total diversity of original data. The attribute category that is best explained by the first main axis in Tokopedia I is attribute X3 (Promotion) at 58.1%, while the attribute that is best explained on the second main axis is X11 (After sales service) at 32.2%. For Tokopedia II, the attribute that is best explained by the first main axis is attribute X5 (Ease of use) at 31.5%, while for the attribute that is best explained on the second main axis is X11 (Service after sales) at 30.1%.

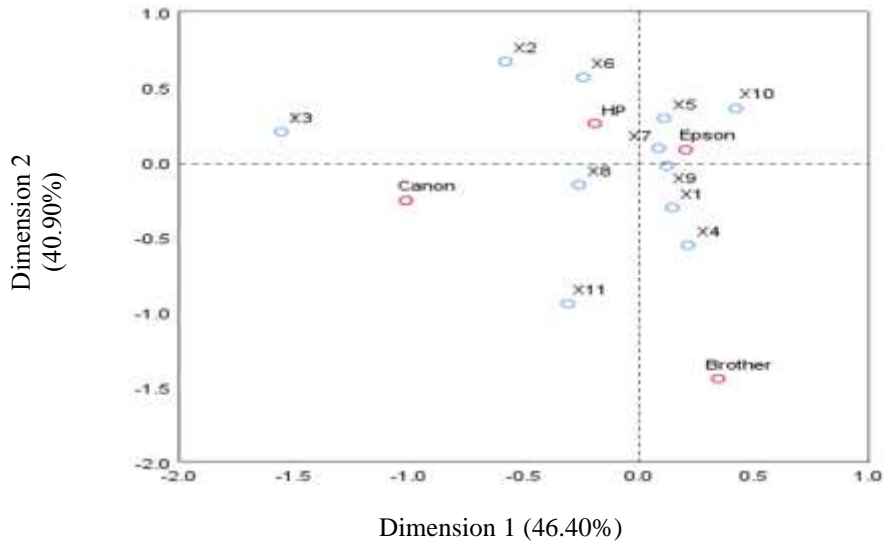


Figure 3 Correspondence map of Tokopedia review period I

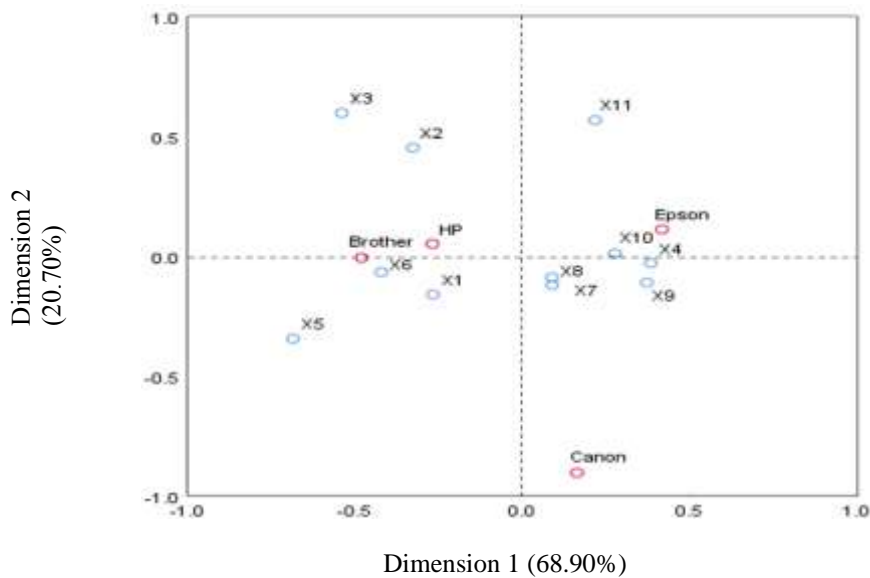


Figure 4 Correspondence map of Tokopedia review period II

In order to interpret the correspondence map to be more meaningful, Bendixen (1996) suggests interpreting the meaning of the associations by examining the quality of representational indicators (dimensional contribution to point of inertia) for column points. If brand *printers* certain dimensions receive a higher dimension contribution value to the point of inertia in certain dimensions, then the printer tends to be associated with that dimension. For example, for Tokopedia I Canon printers have a dimension contribution value to the point of inertia of 0.904 for Dimension 1 and 0.055 for Dimension 2, so Canon printers tend to be

more associated with Dimension 2. The same thing applies to attribute categories which can be seen in the representation indicator line point.

On the Tokopedia I correspondence map, it can be seen that Canon printer plots are closer to the left side of Dimension 1. Canon printers will be more associated with attributes that are on the same side and Dimension (a summary of attributes can be seen in Table 5). Promotion (X3) and Packaging (X8) which are on the left side of Dimension 1 will be more associated with Canon printers than description conformity (X9), Customer Service Services (X10) and

description conformity (X9) which are on the right side of Dimension 1. However, when viewed from the quadrant position, Promotion (X3) is in a different quadrant from Canon printers, while Packaging (X8) is in the same quadrant as Canon printers, namely quadrant IV. Attributes that are in the same quadrant indicate that these attributes

are considered relevant or have a positive influence and indicate that they have an important contribution in forming patterns or relationships observed in the data. So it can be concluded that Packaging (X8) is more associated with Canon printers than Promotion (X3).

Table 5 Summary of Dimension 1 and Dimension 2 attributes on the Tokopedia e-commerce perception map

Dimension 1			
Tokopedia I		Tokopedia II	
Attributes on the left side	Attributes on the right side	Attributes on the left side	Attributes on the right side
X3 (58.1%)	X9 (1.5%)	X1 (5.7%)	X4 (9.3%)
X8 (5.5%)	X10 (17.2%)	X3 (11.7%)	X7 (1.1%)
		X5 (31.5%)	X8 (0.7%)
		X6 (9%)	X9 (14.9%)
			X10 (8.4%)
Dimension 2			
Tokopedia I		Tokopedia II	
Attributes on the top side	Attributes on the lower side	Attributes on the top side	Attributes on the lower side
X2 (9.8%)	X1 (6.7%)	X2(18%)	
X5 (4.2%)	X11 (32.2%)	X11 (30.1%)	
X6 (12.1%)	X4 (17.7%)		
X7 (1%)			

When compared to Canon printers on the plot of the Tokopedia II correspondence map, it can be seen that Canon printers are on the lower side of Dimension 2 (quadrant III), which is very far from other printers, which means that Canon printers are perceived by consumers as having a significant difference compared to other printer brands. There are no attributes that have the same sides and dimensions as Canon printers in this Tokopedia II and there are no attributes that surround Canon printers. However, there is a Packaging attribute (X8) in quadrant III which has almost the same dimension contribution value to point inertia between Dimension 1 and Dimension 2, which means that there is a contribution in the relationship or association with Canon printers. From the results of the perception mapping of Tokopedia I and Tokopedia II,

The position of the Brother printer on the Tokopedia I correspondence map (Figure 3) is on the underside of Dimension 2. The position of the Brother printer which is far from other printer positions is perceived by consumers as having a significant difference compared to other printer brands. The attributes that have the same sides, dimensions and quadrants as the Brother

printer on Tokopedia I are print quality (X1) and printer authenticity (X4). On the Tokopedia II correspondence map (Figure 4), Brother printers are located on the left side of Dimension 1 which is adjacent to HP printers which are both on the left side of Dimension 1. There are similarities between Brother printers and HP printers in consumer perceptions which causes Brother printers is the main competitor for HP printers in Tokopedia e-commerce period II or the period during the Covid-19 pandemic.

If from the Tokopedia II correspondence map the HP printer has a position adjacent to the Bother printer, then on the Tokopedia I correspondence map the HP printer has a position adjacent to the Epson printer. Even though their positions are close together, it seems that consumers have different perceptions between HP printers and Epson printers. HP printers in Tokopedia I are on the top side of Dimension 2, while Epson printers are on the right side of Dimension 1. HP printers are more associated with price (X2) and printer reliability (X6), while Epson printers are more associated with Customer Service (X10).). However, if you look at the correspondence map of Tokopedia II, Epson printers are on the right side of Dimension 1

which has a relatively long distance from other printers which means that consumers have different perceptions of Epson printers. Even though Epson printers have a close proximity to Authenticity printers (X4), Customer Service Services (X10), and Conformance descriptions (X9), only Customer Service Services (X10) have attributes with the same dimensions and quadrants, so that on Tokopedia II Customer Service (X10) is more associated with Epson printers than other attributes.

When compared between Tokopedia I and Tokopedia II, Brother printers have the same perception of consumers in period I and period II. Brother printers have consistently maintained print quality (X1) as a positioning in consumer perceptions in both periods I and II, as expressed in the following comments:

"The quality of the printer is outstanding, easy to use and the wifi feature makes it simple. Can use wireless from laptops and cellphones, I'm satisfied with Brother..."(buyers of Brother printers at Tokopedia official store period II).

There has been a change in consumer perception of HP printers in Tokopedia I and II. In period I, consumers considered that price (X2) and printer reliability (X6) were important things in buying an HP printer. However, in period II, consumers began to turn their attention to Promotion (X3) as an important thing in buying printers. However, when viewed from the same quadrant position in Tokopedia II (quadrant I), it appears that price (X2) has a positive influence or has an important contribution in forming patterns or relationships, as reflected in the following comments:

"Inexpensive printer but not cheap.. Features according to price.. I'll give 10 stars."(buyers of HP printers at Tokopedia official store period I).

"Great, can scan feeder, connected to cellphones and computers, and has refill ink"(buyers of HP printers at Tokopedia official store period I).

"The printer is very useful for supporting online learning today. Incidentally, you can get promo prices and cashback too, plus the

prizes are also good. CS service is also good. I hope the printer lasts a long time."(buyers of HP printers at Tokopedia official store period II).

The importance of product quality as the main attribute that has a significant influence on purchasing decisions has been widely recognized, as well as the price factor which has a positive impact on purchasing decisions on e-commerce platforms (Rahayu, 2021). In research by Priandewi (2021), it was also found that product quality and promotions play an important role in purchasing decisions in e-commerce. The quality of customer service has an important role in determining the level of consumer satisfaction in buying products in e-commerce (Auliya, 2021). This is in line with consumer perceptions of Epson printers, where Customer Service (X10) is an important factor when purchasing printer products in periods I and II.

DISCUSSION

Based on the things that have been explained in the positioning analysis of printer products using correspondence analysis, then based on these results a managerial policy can be developed that can be applied to management. The following is an explanation of the managerial implications for printer companies, especially in supporting the company's strategy to increase sales in e-commerce:

1) Canon Printers:

- Maintaining the already strong packaging strategy and further strengthening. Canon companies can continue to innovate in attractive and quality packaging designs, and consider ecological and environmentally friendly aspects to increase the positive impression of consumers.
- There is also a need to increase focus and attention on aspects of after sales service to strengthen the image and customer satisfaction. By improving after-sales services, such as product warranties, technical support, and

responsiveness to customer inquiries, companies can build stronger customer loyalty.

2) Brother Printers:

- The Brother Company needs to pay more attention to the ease of use factor in period II or the period after the Covid pandemic. In product development and user interface design, companies can ensure that Brother printers have features that are easy to use and intuitive, and provide clear guidance to consumers.
- While print quality is still an advantage, Brother is able to communicate other advantages of their products, such as durability, reliability and efficiency, to improve overall consumer perception.

3) HP Printers:

- The HP company needs to strengthen consumer positioning related to affordable prices through more effective promotions on e-commerce platforms. You can consider special pricing strategies, discounts, bundling packages, or other special offers that are attractive to consumers on Tokopedia and other e-commerce sites.
- In addition, companies need to consider using more targeted promotions and advertisements to educate consumers about the quality of their products and the advantages that HP printers have, so that they not only focus on price but also appreciate the quality offered.

4) Epson Printers:

- The Epson company needs to maintain focus and investment on customer service. It can be further enhanced by ensuring rapid responsiveness to consumer questions and concerns, providing clear usage guidelines, and providing easily accessible communication channels.
- Epson can also strengthen their image as the best customer service provider

by engaging consumers in new product development, conducting regular customer satisfaction surveys, and increasing positive interactions with consumers through social media and other online platforms.

By implementing these suggestions, companies can optimize the positioning of their printer products, improve customer satisfaction, and face increasingly fierce competition in the print industry.

CONCLUSION

From the results of this study, it can be concluded that:

- 1) Canon printers are seen to have a strong positioning in terms of packaging in periods I and II. Consumers tend to associate Canon with good product packaging. This shows that Canon has succeeded in building a positive image related to its product packaging in the eyes of consumers.
- 2) There was a change in consumer positioning towards Brother printers from period I to period II. In period I, Brother printers were positioned with good print quality. In period II, although print quality remained an important factor, ease of use became a more dominant factor. This shows that consumers pay more attention to ease of use as an important factor in choosing a Brother printer during this period.
- 3) There was a change in consumer positioning towards HP printers from period I to period II. In period I, consumers considered the price and reliability of HP printers as important factors in purchasing decisions. However, in period II, consumers began to turn their attention to the promotion factor as an important thing in buying an HP printer. HP companies need to adapt their positioning strategy by strengthening product promotions to meet consumer demands in period II.
- 4) With Epson printers, consumers position Epson printers primarily in the context of

customer service. Despite the changing times, Epson continues to be associated with good customer service by consumers. This shows that Epson has succeeded in building a good reputation in terms of customer service in the eyes of consumers.

Declaration by Authors

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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- How to cite this article: Augustina Sri Harniati, Ujang Sumarwan, Siti Jahroh. Printer product positioning in Tokopedia e-commerce based on analysis of consumer reviews. *International Journal of Research and Review*. 2023; 10(6): 468-482.
DOI: <https://doi.org/10.52403/ijrr.20230659>
