
**DETERMINANTS OF VALUE PERCEPTION ON PURCHASE DECISIONS FOR
LABORATORY INSTRUMENTATION PRODUCTS IN THE COVID-19
PANDEMIC ERA**



Santi Atsiriani¹
Universitas Pakuan, Bogor, Indonesia
atsiri1208@gmail.com

Nandan Limakrisna²
Universitas Pakuan, Bogor, Indonesia
correspondent.author@gmail.com

Agus Setyo Pranowo³
Universitas Pakuan, Bogor, Indonesia
agussetyo@unpak.ac.id

Abstract

The purpose of this study is to determine the influence of digital communication and after-sales service on purchasing decisions, with perceived value as an intervening variable. The data in this study were obtained from 166 respondents who use moisture analyzer instruments, with the respondents coming from Quality Control, Quality Assurance, and Research and Development departments. Data analysis in this study used SPSS 26.0. The results of the study indicate that digital communication and after-sales service significantly influence perceived value. However, neither has a direct impact on purchase decisions. Perceived value does not mediate the influence of digital communication, but it does mediate the influence of after-sales service on purchase decisions. After-sales service plays a crucial role in improving purchasing decisions thru value perception in the B2B sector, especially during the pandemic. This research can provide practical input for the development of marketing strategies in the laboratory instrument industry in Indonesia.

Keywords: Digital Communication, After-Sales Service, Value Perception, Purchase Decision

INTRODUCTION

The COVID-19 pandemic declared by the WHO in March 2020 has triggered a global crisis with significant impacts on public health, social activities, and economic stability. In Indonesia, the pandemic caused a contraction in growth in most non-oil and gas industries, except for the pharmaceutical, chemical, and traditional medicine sectors, which actually experienced an increase in demand.

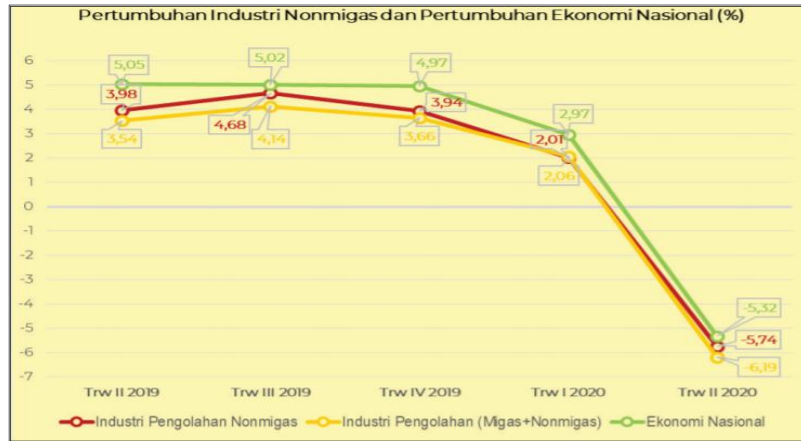


Figure 1

Non-Oil and Gas Industry Growth and National Economic Growth (%)

Source: PUSDATIN, Kemenprin, Ed. III-2020

The pandemic caused a decline in performance across most non-oil and gas industrial sectors, which contracted by up to 5.74% in the second quarter of 2020 (Pusdatin Kemenperin, 2020). Meanwhile, only a few specific sectors such as the chemical, pharmaceutical, and traditional medicine industries experienced positive growth due to the increasing demand for healthcare products. This condition not only reduces the contribution of the manufacturing sector to Gross Domestic Product (GDP) but also impacts the decline in investment in the procurement of laboratory instruments.

As one of the multinational companies providing laboratory analytical instruments, PT. Mettler Toledo Indonesia (MTID) was directly impacted by the situation.

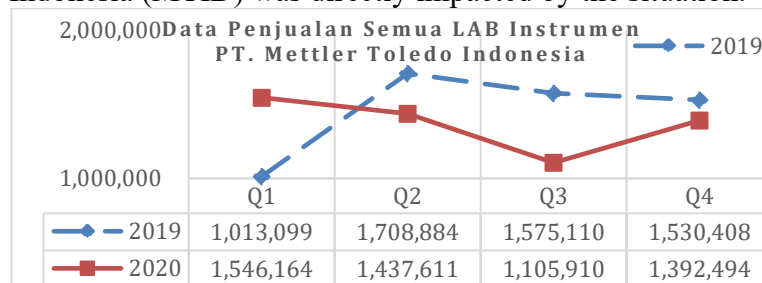


Figure 2

Instrument Lab Sales Data - PT. Mettler Toledo Indonesia (in USD)

Source: MTID LAB Sales Finance Report, 2020

Data shows that sales of moisture analyzer products marketed by MTID experienced a significant decline in the second and third quarters of 2020 before rebounding at the end of the year, primarily due to adjustments in promotion strategies thru bundling programs. This

uncertain market condition requires instrument supply companies to adjust their business strategies, particularly in digital marketing activities and after-sales service improvements. This phenomenon is relevant to study because purchasing decisions in a business-to-business (B2B) context involve multiple parties and consider both rational and perceptual factors that are more complex than business-to-consumer (B2C) transactions.

Several previous studies have emphasized the importance of marketing and service factors in influencing purchasing decisions. Yohanes (2019) found that after-sales service significantly influences consumer satisfaction and repurchase intention. Aji, Djawahir, and Rofiq (2019) showed that product and promotion influence motivation, which in turn determines purchasing decisions. Tabroni's (2021) research highlights the shift from conventional promotion strategies to digital marketing during the pandemic as an adaptive response by companies. Meanwhile, Piramita et al (2021) proved that social media marketing and service quality have a positive influence on purchase decisions thru the mediation of brand perception.

Nevertheless, most previous research has focused more on the business-to-consumer (B2C) context or direct consumer products, while studies on purchasing decisions in the B2B context are still limited. The role of perceived value as a mediating variable between digital communication, after-sales service, and purchase decisions in the laboratory instrument industry has not been extensively researched, especially during the pandemic. This is what forms the research gap and the scientific novelty of this study.

This research is important to conduct in order to understand the factors determining the purchase decisions of premium laboratory instrument products such as Mettler Toledo brand moisture analyzers during the COVID-19 pandemic. The results of this study are expected to not only contribute academically to the development of B2B consumer behavior literature but also practically for companies in formulating digital marketing strategies and improving after-sales service. Specifically, the objectives of this research are to analyze the influence of digital communication and after-sales service on purchasing decisions, with perceived value as a mediating variable, for moisture analyzer products from PT. Mettler Toledo Indonesia during the COVID-19 pandemic.

REVIEW OF LITERATURE

Purchase Decision

Purchase decision is an individual's action in making considerations and direct thoughts to make a decision to purchase a product or service. The dimensions for measuring purchase decisions are: 1) product choice; 2) brand choice; 3) purchase channel (distribution); 4) purchase time; 5) purchase quantity.

Value Perception

Value perception is the consumer's emotional perception of the fairness of the price paid for the quality received by the consumer (social value) and the perceived quality value of the product. The dimensions of value perception include: 1) emotional value, the benefit of the emotional feelings generated by a product or service that can influence emotions; 2) social value, exploiting the product's ability to enhance consumers' social perception. This refers to social acceptance and improving consumers' self-image, which relates to the normal image of people around the consumer and the consumer's social expectations of the product;

3) quality value, the perception of quality expectations for a product, including the benefits after consuming it. A significant contribution to consumer satisfaction is that higher product quality value indicates greater consumer satisfaction.

Digital Communication

Digital communication is an external communication tactic that uses digital technology to convey messages: email, video, text messages, online advertising, paid search, press releases, podcasts, and so on. As for the dimensions based on digital communication from the marketing mix, they are: 1) website, which is a connection using global digital holistically and is perhaps the most crucial part of holistic digital marketing tactics, where online activities will be directed directly to potential customers; 2) search engine optimization (SEO), which is an important part of a website, namely SEO (Search Engine Optimization), or the process of arranging website content so that it is easily found by internet users who are searching for content that is on the website, and also presenting content so that it can be easily found by search engines; 3) paid search click-based advertising (PPC advertising): allows marketers to purchase internet search page results for selected keywords and phrases; 4) affiliate marketing and strategic partnerships. Partnering activities use other organizations/companies and websites. Websites are used to achieve profit and are based on a collaboration to promote products or services; 5) online public relations (Online PR): using online communication channels such as press releases, article syndication (RSS), and blogs to build a positive perception of the brand and/or position the organization/company as an authority in a specific field; 6) social networking: sites or websites used as a gathering place for many people without restrictions, and users have the opportunity to connect by creating personal, group, or social news so that it can be accessed by others, for example, Facebook; 7) email marketing: email remains an important tool for digital marketing activities, sent with the aim of maintaining interaction between existing customers and potential customers who are willing to receive news via email; 8) customer relationship management: maintaining existing customers and building mutually beneficial cooperation with them is one of the crucial elements of digital marketing activities.

After-Sales Service

After-sales service can be said to be any type of action taken by a business to meet consumer expectations. The dimensions of after-sales service are: 1) warranty, assuring consumers that the product is in good condition or free from damage caused by production stigma or the use of poor materials, valid for a certain period; 2) spare parts, procuring spare parts is very important when providing after-sales service, because without spare parts, damaged product components will not function and the product cannot be used; 3) maintenance and repair services; 4) service and maintenance are expected if the product has a long lifespan and requires routine maintenance to keep it permanently functional and repair any damage that occurs to the product during use; 5) facilities & equipment, the product's area and tools are the means for providing maintenance services. Equipment and consumables that can ensure the smooth official service for the maintenance and restoration of products purchased by consumers.

RESEARCH METHOD

This research method uses a quantitative approach with a descriptive design and path analysis. According to Sugiyono (2021), this approach was chosen because it is able to explain the causal relationships, both direct and indirect, between the independent variables of digital communication and after-sales service, the intervening variable of value perception, and the dependent variable of purchase decision. The research was conducted at PT. Mettler Toledo Indonesia, Laboratory Product Division, Bekasi, with the research subjects being consumers who purchased Mettler Toledo Moisture Analyzer instruments during the period 2017–2020.

The research population consisted of 122 companies that purchased Moisture Analyzers, and the sample size was determined using Slovin's formula with a 10% margin of error, resulting in 55 respondents. The sampling method used intentional sampling, which is sampling based on specific considerations and must represent the population being studied (Sugiyono, 2021). In this study, the sample taken was 166 respondents who are consumers of the Mettler Toledo brand moisture analyzer instrument. The characteristics of the respondents in this study include the company name (which can reflect the industry segment) and the job title of the consumers at their respective workplaces.

Research data was collected thru several techniques, namely questionnaires, interviews, document studies, and literature reviews. Before use, the instrument's validity and reliability were tested. Validity testing was conducted using the Pearson Product Moment correlation technique, while reliability testing was performed using Cronbach's Alpha. The instrument was declared valid if the correlation value was $>$ the r-table value at a significance level of 5%, and reliable if the Cronbach's Alpha value was $>$ 0.60.

Data analysis was conducted with the assistance of SPSS software version 26 thru the stages of classical assumption testing, including normality, multicollinearity, and heteroscedasticity tests. Next, hypothesis testing was conducted using the T-test to determine partial effects, the F-test to determine simultaneous effects, and the coefficient of determination (R^2) to assess the model's strength. Path analysis is used as the primary method to measure both direct and indirect influences between variables, thus explaining the pattern of digital communication and after-sales service relationships on purchase decisions thru perceived value.

RESULTS AND DISCUSSION

Data Description and Respondent Characteristics

Data analysis activities for quantitative descriptive research include data presentation and processing, performing calculations to describe the data, and conducting hypothesis testing using SPSS. Quantitative data collection was done by distributing online questionnaires (using Google Forms) to consumers who use the Mettler Toledo moisture analyzer instrument, resulting in 166 respondents. The following is a description of the respondents based on industry segment characteristics and the respondents' positions at their companies, based on the results of the questionnaire distribution conducted by the author in support of this research :

Table 1
Respondent Characteristics

No	Respondent Characteristics	Frequency	Percentage
1.	Industry Segment:		
	a. Food & Beverages	61	37%
	b. Phramacy	43	26%
	c. Chemistry	29	17%
	d. Testing Lab	13	8%
	e. Cosmetics	11	7%
	f. Animal Feed	8	5%
	g. Cigaret	1	1%
	Total Industry Segment	166	100%
2.	Consumer Position:		
	a. QC/QA/R&D Analyst/Staff	96	58%
	b. QC/QA/R&D Supervisor	16	10%
	c. QC/QA/R&D Manager		
	Total Consumer Position	166	100%

Path Analysis

Path analysis is a statistical technique used to test the causal relationships between two or more variables. The results of the path analysis in this study are presented in the following figure:

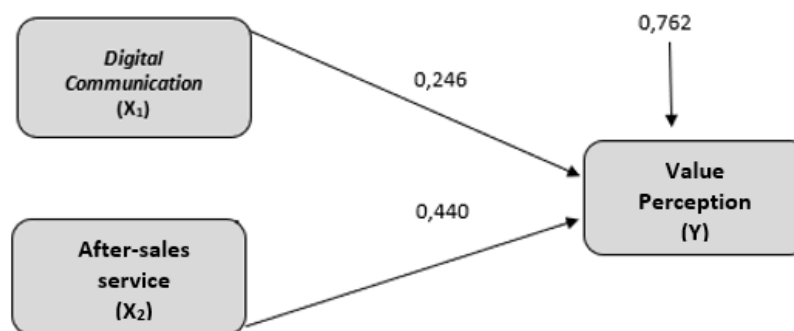


Figure 3
Structural Test Result 1

Based on Figure 4, regarding the relationship between variables X and Y, the first structural equation can be determined as follows:

$$Y = 0,246X1 + 0,440X2 + 0,762$$

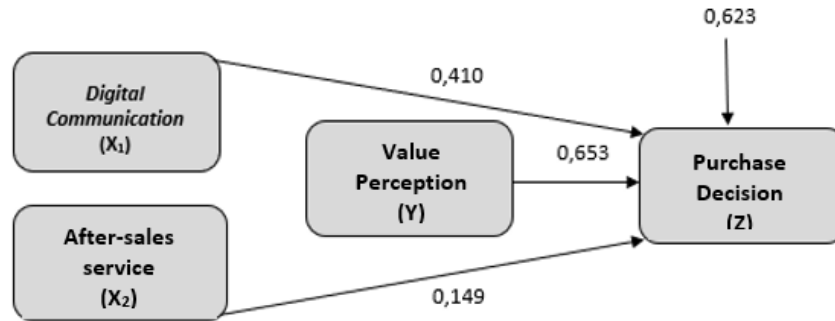


Figure 4
Structural Test Result 2

Based on Figure 5, regarding the relationship between variables X, Y, and Z, the second structural equation can be determined as follows:

$$Z = 0,410X_1 + 0,149X_2 + 0,653Y + 0,623$$

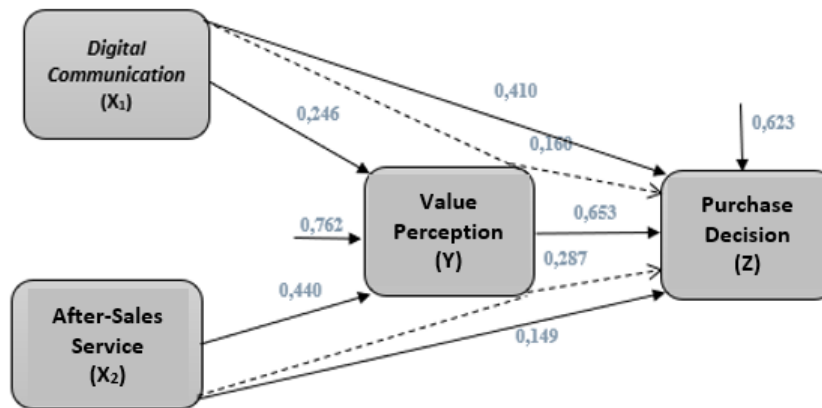


Figure 5
Structural Test Result 3

Based on Figure 6, the third structural equation becomes:

$$Z = \rho_3ZY + \rho_4ZX_1 + \rho_5ZX_2 + \rho_6ZY + \rho_7ZY + \rho_z\epsilon_2$$

$$Z = 0,653Y + 0,410X_1 + 0,149X_2 + 0,160Y + 0,287Y + 0,623$$

Hypothesis Testing

In this study, decision-making regarding the hypothesis was done by comparing the significance value (Sig.) with the commonly used significance level or alpha (α) of 0.05. The hypothesis is accepted if the Sig. value is < 0.05 , which means the independent variable has a significant effect on the dependent variable. Conversely, if the Sig. value is > 0.05 , the hypothesis is rejected because there is no significant effect between the tested variables (Ghozali, 2021). Additionally, the Beta coefficient (β) value is used to see the direction and strength of the influence between variables. This aligns with the view of Hair et al. (2021), who emphasize that regression coefficients are used to interpret the direction and strength of the relationship, while the significance of the relationship is determined by the significance level. Based on the test results, the following conclusions were obtained :

Table 2
Hypothesis Testing Result

	Hypothesis	Beta	Sign.	Result
H1	Digital Communication → Value Perception	0,246	0,008	Accepted
H2	After-Sales Service → Value Perception	0,440	0,000	Accepted
H3	Value Perception → Purchase Decisions	0,653	0,000	Accepted
H4	Digital Communication → Purchase Decisions	0,410	0,597	Rejected
H5	After-Sales Service → Purchase Decisions	0,149	0,066	Rejected
H6	Digital Communication → Value Perception → Purchase Decisions.	0,160	0,160 < 0,410	Rejected
H7	After-Sales Service → Value Perception → Purchase Decisions	0,287	0,287 > 0,149	Accepted

Source: Primary Data, process by Smart PLS 4.0

Digital Communication Significantly Influences The Perceived Value Of The Mettler Toledo Moisture Analyzer Instrument

The findings of this study are consistent with the results of Piramita et al (2021), which proved that social media marketing and service quality have a positive and significant influence on brand perception, ultimately contributing to the formation of product value perception. In line with this, Ramadhoni et al (2025) in their research on social commerce live streaming found that perceived value plays a significant role in increasing engagement, purchase intention, and continuance usage intention. This strengthens the view that effective digital communication can create a perception of value that directly impacts consumer behavior (Ramadhoni et al, 2025).

Additionally, research by Murtiasih et al (2023) revealed that digital marketing communication thru social media and electronic word-of-mouth (e-WOM) significantly influences consumer purchasing decisions during the pandemic. This result reinforces that digital communication is not merely a medium for conveying information, but an important instrument in shaping value perceptions that drive consumers to make purchasing decisions (Murtiasih et al, 2023).

Another study by Nguyen et al (2023) showed that the perceived value of digital content marketing plays an important role in increasing brand loyalty. This finding shows that digital communication capable of delivering informative, relevant, and valuable content will strengthen consumers' perceived value of the product, which will ultimately lead to long-term loyalty (Nguyen et al, 2023).

The results of this study reinforce that digital communication is one of the strategic factors in building consumer value perception. For companies like Mettler Toledo, efforts to

strengthen digital communication thru educational content, customer testimonials, and responsive interaction on digital media will be able to enhance the perceived value of moisture analyzer instruments and strengthen brand positioning in the market.

After-Sales Service Significantly Influences The Perceived Value Of The Mettler Toledo Moisture Analyzer Instrument

Hypothesis H2, which states that after-sales service significantly influences perceived value, was proven to be accepted, with a significance value of 0.000 (<0.05) and a beta coefficient of 0.440. This result indicates that good after-sales service quality can enhance customers' perceived value of the product. This means that the more optimally a company provides post-purchase support, such as offering warranties, ensuring spare parts availability, responding quickly to complaints, and providing reliable technical services, the higher the value perceived by customers.

This finding aligns with the research by Wicaksono & Suhartanti (2018), which proves that e-service quality significantly influences perceived value. Similarly, the study by Piramita et al (2021) confirms that service quality influences consumer perception, thus reinforcing the important role of service in creating perceived value. Furthermore, a recent study by Nursalim et al (2025) indicates that service quality positively influences perceived value and customer satisfaction in the context of e-commerce delivery, with trust as a mediating variable. Yesitadewi & Widodo (2023) research also found a similar relationship, where service quality was proven to increase perceived value and satisfaction, ultimately impacting customer loyalty.

Additionally, a meta-analysis by Chi & Phan (2025) reinforces these findings by confirming that service quality and after-sales service are key determinants in shaping perceived value and customer loyalty across various industries. Thus, the results of this study not only confirm that after-sales service has a significant influence on value perception but are also consistent with recent literature stating that service variables are a strategic factor in creating customer satisfaction, loyalty, and company competitiveness.

Perceived Value Significantly Influences The Purchase Decision For The Mettler Toledo Moisture Analyzer Instrument

Hypothesis H3 was accepted with a significance value of 0.000 (<0.05) and a beta coefficient of 0.653. This result indicates that value perception significantly influences purchase decisions. Thus, the higher the perceived value consumers have, the greater the likelihood that consumers will make a purchase decision. This finding confirms the importance of consumer perception in shaping actual behavior, consistent with Kotler and Keller's (2016) theory that in marketing, consumer perception is more determinant than objective reality. Perceived superior value can drive repurchase, while inadequate value can cause consumers to switch to other products or brands.

The findings of this study are also consistent with Piramita et al (2021), who found that brand perception positively and significantly influences purchase decisions. Furthermore, a recent study by Ramadhoni et al (2025) reinforces the relationship between value perception and purchase decisions in the context of social commerce and e-commerce, where high value perception directly increases consumers' purchase intention. Thus, this research confirms that building a strong value perception thru effective digital communication and quality after-sales service is an important strategy for increasing consumer purchasing decisions.

Digital Communication Significantly Influences The Purchase Decisions For Mettler Toledo Moisture Analyzer Instruments

Hypothesis H4, which states that digital communication significantly influences purchase decisions, was rejected because it obtained a significance value of 0.597 (>0.05). This means that digital communication does not directly influence consumer purchasing decisions. Thus, it can be concluded that digital communication in the context of this research plays more of a role as a means of promotion and communication, but does not directly influence purchasing decisions. The purchase decision-making process requires advanced stages, such as increasing brand awareness and strengthening consumer value perception.

The results of this study differ from the findings of Piramita et al (2021), which showed that social media marketing factors have a positive and significant effect on purchasing decisions, and from the research of Aji et al (2018), which found that promotion significantly affects purchase motivation. However, the results of this study support the findings of Omar & Atteya (2020), who stated that digital marketing does not significantly affect the various stages of the purchase decision-making process. Omar & Atteya (2020) emphasized that digital marketing actually has a positive impact on two stages in Kotler and Keller's five-stage purchase process model, namely the information search and post-purchase stages, but has a negative impact on the purchase decision-making stage. This indicates that although digital marketing is an important communication mechanism for companies (Aisy, 2021), its role is greater in strengthening brand awareness and consumer loyalty, which can then indirectly influence purchasing decisions.

The results of this study indicate that digital communication does not have a significant impact on purchasing decisions. However, digital communication remains important as a medium for promoting products, in this case Mettler Toledo brand moisture analyzers, to reach consumers thru various online channels. This role is more indirect, meaning it builds awareness and relationships with consumers but doesn't necessarily determine purchasing decisions. This aligns with Anwar (2021) opinion, which states that digital marketing is a form of marketing that utilizes digital channels to reach consumers in a relevant, personal, and cost-effective manner.

The results of the simultaneous test show that the digital communication variable, along with the after-sales service and perceived value variables, simultaneously and significantly influence purchasing decisions. This finding supports Kotler & Armstrong (2018) theory regarding the marketing mix, which consists of four main elements (product, price, place, promotion, or the 4Ps strategy). Within that framework, promotion, including digital communication, plays a crucial role in supporting marketing strategies, especially when combined with other factors such as after-sales service and perceived value. Additionally, Kotler's theory emphasizes the importance of psychological processes, particularly perception, as consumer perception can influence actual behavior in purchasing decisions.

After-Sales Service Significantly Influences The Purchase Decision For Mettler Toledo Moisture Analyzer Instruments

Hypothesis H5, which states that after-sales service significantly affects purchasing decisions, was rejected, with a significance value of 0.066 (>0.05). This result indicates that although after-sales service plays an important role in supporting the sustainability of customer relationships, its direct influence on purchasing decisions is not significant enough.

This finding differs from the research by Wicaksono and Suhartanti (2018), who found that e-service quality significantly affects purchase intention. However, the findings of this study actually support the results of Piramita et al (2021), which stated that service quality does not significantly affect purchasing decisions.

Another study that aligns with these findings is by Dewi (2016), which showed that after-sales service did not significantly influence smartphone purchase decisions. Similar findings were also reported in a study by Alaudin et al (2022), which stated that after-sales service did not influence the car purchase decision-making process in the Jabodetabek area. Meanwhile, research by Habiburrahman (2022) shows that after-sales service has a positive and significant effect on the purchase decision of Nozomi brand three-wheeled vehicles at the Main Dealer CV. Sinar Abadi Jambi. Therefore, although after-sales service plays an important role in building long-term relationships with customers, its influence on purchasing decisions can vary depending on the context and other variables that affect it.

Digital Communication Significantly Influences Purchasing Decisions Thru The Perceived Value Of The Mettler Toledo Moisture Analyzer Instrument

Hypothesis H6, which states that digital communication thru perceived value significantly influences purchase decisions, was rejected, with a beta value of 0.160, which is less than 0.410. This means that the influence of digital communication on purchase decisions is stronger directly than thru the mediation of perceived value. Thus, digital communication does not have a significant indirect impact on purchase decisions thru perceived value.

This result differs from the study by Piramita et al (2021), which proved that social media marketing significantly influences purchase decisions thru brand perception (which in the context of this study is related to value perception). However, this finding actually strengthens the conclusion that in this study, digital communication only has a direct impact on value perception, and simultaneously with after-sales service and value perception, significantly influences purchase decisions.

This finding aligns with the research by Hameed et al (2023), which indicates that brand awareness in the digital communication era influences consumer attitudes, which in turn affects purchase intention. This research emphasizes the importance of consumer attitudes as a causal mechanism in the relationship between brand awareness and purchase intention, as well as the moderating role of celebrities in that relationship.

Additionally, a study by Selem et al (2023) revealed that digital communication has a dual effect on purchase intention in a commercial social environment, with a positive influence thru perceived usefulness and a negative influence thru privacy concerns. This research also showed that perceived usefulness acts as a mediator in the relationship between digital communication and purchase intention. This finding differs from previous research by Panigoro (2020), who found that digital communication significantly influences online purchasing behavior thru the Tokopedia platform. This research shows that digital communication can influence purchasing decisions both directly and indirectly thru value perception.

This difference in results can be attributed to various factors, such as differences in product type, consumer characteristics, and research context. Therefore, although digital communication plays an important role in building relationships with customers, its influence

on purchasing decisions thru perceived value can vary depending on the context and other variables that affect it.

After-Sales Service Significantly Influences Purchasing Decisions Thru The Perceived Value Of The Mettler Toledo Moisture Analyzer Instrument

Hypothesis H7, which states that after-sales service thru perceived value significantly influences purchase decisions, was proven to be accepted, with a beta value of 0.287, which is greater than 0.149. This indicates that the influence of after-sales service on purchase decisions becomes stronger when mediated by perceived value. In other words, after-sales service can improve purchasing decisions if it first enhances consumer value perception.

This finding aligns with various studies by Syahrahman (2025), who found that after-sales service has a positive and significant impact on purchasing decisions. Maimunatussa'Diyah (2023) research also confirms that after-sales services, such as warranties and spare parts availability, significantly influence purchasing decisions.

Theoretically, these findings align with several relevant theoretical frameworks. First, the Perceived Value Theory proposed by Zeithaml (1988) states that consumers evaluate the benefits received from a product or service compared to the costs incurred. Thus, good after-sales service can enhance consumer value perception. Second, Customer Satisfaction Theory, developed by Oliver (2014), emphasizes that customer satisfaction is formed by comparing expectations and received experiences. Adequate after-sales service will increase consumer satisfaction, which in turn influences purchasing decisions.

CONCLUSION

This research addresses the research objectives, which are to analyze the influence of digital communication and after-sales service on purchase decisions, with perceived value as an intervening variable. The research results indicate that digital communication and after-sales service significantly influence perceived value, and perceived value is proven to significantly influence purchase decisions. However, digital communication and after-sales service do not directly affect purchase decisions, but rather thru the mediating role of perceived value. Specifically, after-sales service thru perceived value is proven to have a significant impact on purchase decisions, while digital communication thru perceived value does not have a significant impact.

Thus, it can be concluded that value perception is a key variable that mediates the relationship between digital communication and after-sales service on purchase decisions. This research confirms that efforts to strengthen digital communication and improve the quality of after-sales service need to focus on creating a positive perception of value in the minds of consumers. This research can be expanded by incorporating other variables, such as customer satisfaction or loyalty, providing a more comprehensive understanding of the factors influencing purchasing decisions in a business-to-business context.

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