The Impact of Economic Crises on Brand Preferences: A Big Data Study of Self-Image and E-Commerce Behavior

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Abstract **– Indonesia's e-commerce transformation has reshaped consumer behavior, particularly during economic uncertainties. This study explores the relationship between self-image and purchasing patterns across three periods: pre-crisis (2017-2019), crisis (2020-2022), and post-crisis recovery (2022-2023). This study examines how economic pressures influence preferences for global, local, and unbranded products through mixed-methods research combining transactional data analysis and expert interviews. The findings reveal a significant shift during the crisis period, with global brands experiencing decreased preference (average Z-sales dropping from 1.84 to -0.002) while local brands gained momentum through community-focused messaging. The post-crisis period shows a hybrid consumption pattern where consumers balance status with pragmatism, evidenced by global brands' partial recovery (Z-sales: 1.43) and local brands' sustained growth. Self-image considerations evolved from status-oriented to encompassing health consciousness and community support. These insights demonstrate how economic disruptions reshape consumer self-perception and purchasing behavior in digital marketplaces. For practitioners, the findings emphasize the importance of aligning brand messaging with evolving consumer values and leveraging big data analytics for personalized marketing strategies.**

Keywords **– E-commerce, consumer behavior, self-image, economic crisis, big data analytics.**

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1. Introduction

Indonesia's rapid growth in the digital economy over the past decade, once seen as a sign of progress, now faces a potential crisis. While Indonesia has positioned itself as a leading digital economy in Southeast Asia, supported by a tech-savvy population, an expanding middle class, and improved internet access [1]. several critical challenges are threatening to destabilize the success. The convenience and variety offered by e-commerce, which initially fueled its rapid expansion, are now being overshadowed by structural vulnerabilities. As Indonesian consumers have swiftly adapted to online and hybrid shopping models, supported by better logistics and secure payment systems [2], the industry's rapid growth may now be setting the stage for significant disruption.

The e-commerce sector, which once promised unending growth, now faces considerable threats. Data privacy concerns, ethical issues with managing user-generated content, and the pressure to optimize app development are emerging as serious challenges [2]. Moreover, many small and medium-sized enterprises (SMEs) in Indonesia are struggling to keep up with the pace of technological change, as these enterprises either lack the readiness to adopt new tools or are hindered by external pressures. The rise of artificial intelligence and Industry 4.0 has introduced new dimensions to e-commerce, such as personalized recommendations and seamless transactions, but these advancements are also increasing the complexity for businesses already under strain [3].

The rapid growth of e-commerce has disrupted traditional retail, forcing brick-and-mortar stores to rethink business strategies. While some retailers have successfully blended online and offline shopping experiences, many others face a steep decline in foot traffic, highlighting the urgent need for innovation. This shift presents new risks for businesses that fail to adopt digital strategies and stay competitive in a rapidly changing market [4].

Furthermore, consumer behavior is evolving rapidly, driven by AI-powered personalization and advanced analytics, presenting both opportunities and challenges for businesses [5], [6].

Demographic shifts and economic conditions, particularly during periods of financial instability or external crises, can severely impact consumer behavior. Factors such as age, socioeconomic status, and external pressures influence how consumers make purchasing decisions, which can change in response to broader economic or social upheavals [1]. Understanding these dynamics is crucial for businesses to adjust organizational strategies in times of crisis. While the potential for e-commerce remains high, there are significant gaps in understanding key aspects, such as the influence of self-image on online shopping behavior and the full application of big data analytics to predict consumer trends. Most research has focused on technological advances without fully addressing the psychological and behavioral dimensions that can either mitigate or exacerbate crises in the sector [5], [7]. Filling these gaps will not only enhance academic understanding but also offer practical insights for e-commerce businesses to refine organizational strategies and better navigate future disruptions.

2. Theoretical Review

The theoretical foundation of the research encompasses two primary domains that are essential for understanding contemporary consumer behavior in digital environments. First, the relationship between self-image and consumer decision-making provides crucial insights into how individuals navigate product choices based on individual self-perception and social identity. Second, an examination of existing literature reveals significant gaps in understanding how psychological factors influence online purchasing behavior, particularly in the context of evolving digital commerce platforms.

2.1. Self-Image and Consumer Behavior

Studies reveal that the practice of taking self-portraits with products increases preoccupation with self-representation and encourages the exploration of additional alternatives [1]. Individuals engage in the behavior to cultivate a favorable perception and to explore various products in order to enhance respective social desirability. In the realm of e-commerce, the phenomenon becomes particularly evident since online platforms actively promote the act of sharing purchases on social media. Self-image congruence models, such as real self-congruity, ideal self-congruity, social self-congruity, and ideal social self-congruity, have a significant impact on online purchasing behavior.

These models influence the decision-making process through mechanisms such as self-consistency, self-esteem, and social approbation incentive. Consumers tend to select options that correspond with personal self-image [7].

Furthermore, self-imagery has a more significant impact than other forms of imagery in shaping favorable opinions towards advertisements and purchase intentions, particularly when it enhances engagement [5]. This is particularly evident in the field of e-commerce, where tailored advertisements and product suggestions strongly align with self-perception. The purchase of corporate social responsibility (CSR) items is influenced by self-esteem and the need for status, with brand image and self-enhancement acting as mediators [2]. E-commerce platforms can utilize the information to develop marketing tactics that emphasize health-conscious self-image, status symbols, and other pertinent characteristics. Studies indicate that individuals with a strong focus on personal health are significantly influenced by individual self-image when making purchasing decisions in the health food industry. This presents a lucrative opportunity for marketers who aim to target health-conscious consumers in the e-commerce sector [6].

Wellness and aesthetics consumers that value personal health or appearance exhibit greater discernment when choosing products that align with desired self-image. A study by [1] found that capturing self-portraits with these items increases focus on self-representation and prompts individuals to select what improves social attractiveness to others. E-commerce platforms, particularly those integrated with social media, strengthen the practice by actively promoting the display and sharing of consumer purchases. The inclusion of knowledge, knowledge exchange) (KKE) and fashion in the study is pertinent as it demonstrates the process of constructing and upholding self-perception in a digital environment that is more visual and social [2], [5], [6], [8].

2.2. Gaps in the Literature

The relationship between self-awareness and decision-making extends into various aspects of human behavior, including consumer choices. Self-awareness and contentment with individual decisions are positively correlated, where a deeper understanding of personal characteristics often leads to more satisfaction with the choices made [9]. This creates a positive feedback loop: feeling content with decisions enhances self-perception, reinforcing future decision-making. For instance, when planning vacations, individuals with a preference for cruises often select options that align with personal self-image, while those with an aversion may attribute it to psychological or social factors, choosing alternatives that better reflect respective personal values [10].

This connection highlights the critical role of self-control, as it involves regulating personal principles and making deliberate choices, whether in personal decisions or consumer behavior [11].

The link between self-perception and decision-making becomes even more intricate in the context of digital commerce. As consumer behavior continues to evolve with the rapid growth of e-commerce, understanding the psychological underpinnings—such as how self-awareness shapes online purchasing decisions—becomes increasingly important. Digital platforms, with respective advanced data analytics capabilities, offer an unprecedented opportunity to explore these psychological drivers in real-time. However, despite the promising insights big data can provide, there remains a significant gap in understanding how shifts in self-perception affect online consumer behavior.

In fact, the cluster analysis (represented by green nodes in the network visualization) highlights key themes like psychology, motivation, and gender, all of which are critical to understanding human behavior (Figure 1). These factors, particularly motivation and perception, are linked to how consumers make decisions both online and offline. The green cluster, which connects topics like human psychology and motivation, underscores the role that these factors play in shaping consumer behavior, yet these appear underrepresented in the broader context of digital marketing. Research in these areas can provide valuable insights into how businesses can tailor digital experiences to align with consumers' evolving self-perception and psychological needs.

Ultimately, further investigation is needed to fully grasp how changes in self-perception affect consumer behavior online. With the power of big data, researchers can delve deeper into understanding these patterns, providing valuable insights that could reshape digital marketing strategies to better align with consumer psychology.

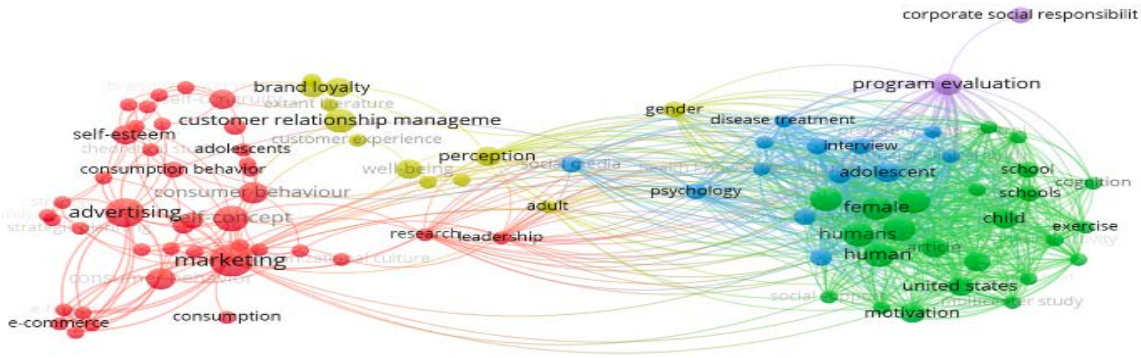

Figure 1. Research gap

3. Methodology

Understanding the complex relationship between self-image and consumer behavior in digital commerce requires a robust methodological approach that captures both quantitative patterns and qualitative insights. A mixed-methods research design was implemented to examine transaction data alongside expert perspectives, providing comprehensive coverage of consumer purchasing behaviors across different temporal contexts. The methodological framework integrates statistical analysis of e-commerce transaction data with thematic analysis of professional interviews, ensuring both breadth and depth in exploring how psychological factors influence online consumer decisions.

3.1. Research Design

This study uses a mixed-methods approach, combining quantitative and qualitative analyses to gain a comprehensive understanding of consumer behavior and self-image in e-commerce. The quantitative analysis examines transaction data, focusing on metrics like Total Payment Volume (TPV), Average Order Value (AOV), and Purchase Frequency. The qualitative analysis involves interviews and focus groups with consumers to explore participant perceptions, motivations, and experiences related to self-image and online purchasing behavior.

A mixed-methods approach enhances the understanding of consumer behavior by incorporating multiple perspectives. Quantitative analysis provides a broad overview, identifying significant trends and correlations, while qualitative analysis offers detailed insights into consumer attitudes and beliefs.

By integrating both methods, the research benefits from the strengths of each, offering a more complete understanding of how self-image influences consumer behavior in e-commerce.

3.2. Data Collection

The research began with a quantitative analysis to systematically identify trends and patterns within a broader population, making the results more generalizable [12]. This approach helps pinpoint key areas for deeper exploration through hypothesis generation and identifying significant relationships among variables [13]. Quantitative data can highlight where qualitative insights are needed to uncover the underlying reasons and motivations [14]. Following the, qualitative analysis provided a more detailed understanding by exploring individual perspectives and contextual factors through interviews and focus groups. This method enriches quantitative findings by offering a comprehensive understanding of the research problem [15]. For example, while quantitative analysis might reveal a unique purchasing behavior in a demographic group during the pandemic, qualitative interviews can uncover the reasons behind the behavior, providing a holistic view of consumer behavior in e-commerce [12].

3.2.1. Quantitative Data

The study analyzed transaction and consumer data from one of Indonesia's top five e-commerce platforms, covering January 2017 to December 2023. This period includes the pre-crisis (January 2017 to December 2019), crisis (January 2020 to December 2022), and post-crisis recovery (January 2022 to December 2023) phases, allowing for comparative analysis across these distinct periods. Data mining techniques were employed to extract detailed purchase behavior data, such as products purchased, prices, and delivery locations.

- Pre-crisis period: This phase represents a time of steady growth and increasing consumer engagement with e-commerce platforms, reflecting typical market behavior and trends.
- Crisis period: During the phase, external disruptions (such as economic downturns, political instability, or natural disasters) significantly altered consumer behavior and supply chain dynamics. Consumer preferences shifted, often toward more essential goods, and delivery challenges affected service consistency.
- Post-crisis recovery period: As the situation stabilized, consumer behavior began to normalize, but with some lasting changes influenced by the crisis. This period offers insights into how consumers adapted to new realities and how e-commerce platforms adjusted organizational strategies for long-term sustainability.

The structured timeline allows for a comprehensive analysis of how e-commerce platforms and consumers responded to external shocks, and it highlights the resilience and adaptability of digital marketplaces in times of crisis.

3.2.2. Qualitative Data

Interviews were conducted with 14 professionals selected through purposive sampling based on respective expertise, as shown in Table 1. The purpose of these interviews was to gain a deeper understanding of how customer behavior has shifted during the crisis period and how it has impacted e-commerce. The data were then analyzed using thematic analysis to identify emerging themes, patterns, and key factors. This approach helped uncover how the crisis influenced consumer preferences, purchasing behaviors, and the broader e-commerce ecosystem, providing insights into both short-term adaptations and long-term changes.

Table 1. List of Professional Interviews

Interviewee Code	Role
P1	Chief Marketing Specialist
P2	Chief Digital Strategist
P3	Chief Content Manager
P4	Head Mass Media
P5	Head of Brand
P6	Social Media and Community
P7	Head Performance Media
P8	EVP Private Label
P9	Chief Marketing Officer
P10	Chief Executive Officer (CEO)
P11	Head of Event and Sponsorship
P12	Head of Product Management
P13	Head of SEO
P14	EVP Consumer Good Trade

3.3. Data Analysis Techniques

The complexity of understanding consumer behavior and self-image dynamics in e-commerce necessitates a comprehensive analytical approach that can capture both measurable patterns and underlying psychological factors. This section outlines the specific analytical methods employed to process and interpret the collected data, ensuring robust findings that address the research objectives. The analysis framework combines rigorous statistical techniques for quantitative data with systematic thematic approaches for qualitative insights, creating a methodological foundation that enables thorough examination of the relationship between self-image and purchasing behavior across different temporal contexts.

3.3.1. Quantitative Analysis

The quantitative data were evaluated using statistical techniques, such as analysis of variance (ANOVA) and T-tests. T-tests were utilized to examine the mean purchasing behaviors across several time periods, including before, during, and after the pandemic, in order to identify any significant alterations. ANOVA analyzed variations among numerous groups, providing insights into the impact of different factors on purchase decisions over a period of time. These techniques facilitated the discovery of crucial patterns in consumer behavior. The study's dependability was confirmed by a Cronbach's alpha coefficient of 0.92, along with a content validity score of 0.89.

3.3.2. Qualitative Analysis

The qualitative study employed a theme methodology to examine data gathered from interviews and focus groups. Through the process of coding replies and categorizing comparable concepts, it is possible to identify reoccurring themes and analyze these in conjunction with the quantitative results. This approach is highly beneficial for comprehending intricate elements that impact consumer behavior in e-commerce, including motivations, perceptions, and expectations.

3.4. Tools and Software for Data Analysis

In the field of quantitative analysis, there are two tools commonly used to ensure accurate manipulation of extensive datasets and those are R Software and Statistical Package for the Social Sciences SPSS. In order to conduct qualitative analysis, the software programs NVivo or ATLAS.ti were utilized to effectively handle and understand interview data. These programs facilitated the systematic identification and organization of themes. These techniques established a solid basis for a thorough examination of both numerical and descriptive information.

4. Results and Discussion

The analysis of collected data encompasses both statistical examination of transaction patterns and thematic exploration of professional perspectives to address the research objectives.

The presentation of findings follows a structured approach, beginning with quantitative results from e-commerce transaction data, followed by qualitative insights from expert interviews, and concluding with an integrated discussion of the implications. This comprehensive analytical framework enables a thorough understanding of the research phenomena while maintaining methodological rigor throughout the investigation.

4.1. Quantitative Results

Table 2 presents the purchase frequency (PF) of various product categories across the pre-pandemic, pandemic, and post-pandemic periods. Analyzing these frequencies reveals clear patterns in consumer behavior. ANOVA results show significant differences in purchase frequency among brands. For example, global brands had an F-value of 10.59 and a p-value of 3.1E-05, indicating substantial variation, while local brands showed even greater differences with an F-value of 13.54 and a p-value of 1.7E-06, reflecting a strong shift in consumer engagement.

Average Z sales across the same periods reveals distinct trends. Global brands maintained positive sales before the pandemic (1.844) and after (1.429), despite a slight dip during the pandemic (-0.0023). In contrast, unbranded products consistently showed negative sales, declining from -0.0800 before the pandemic to -0.1200 afterward. These trends highlight the importance of brand strength in shaping consumer responses to market changes.

The Bonferroni test further supports these findings, showing significant differences in purchase frequency. The pre-during comparison for global brands yielded a p-value of 3.2E-05, indicating a decrease in purchase frequency during the pandemic. Local brands also showed significant shifts, with p-values of 8.4E-07 and 0.0003 for the pre-during and during-post comparisons, respectively. Unbranded products exhibited consistent changes across all periods, with p-values consistently below 2e-16. These findings underscore the pandemic's impact on consumer purchasing behavior, with branded products generally proving more resilient than unbranded ones.

Table 2. ANOVA test result of purchase frequency

Category	Purchase Frequency (PF)							
	Anova Test (CovPer ~ PF)		Average Z Sales			Bonferonni Test (p-value)		
	F-value	p-value	Pre-	During	Post-	Pre-During	During-Post	Pre-Post
Global Brand	10.59	3.1E-05	1,84444444	-0.0023	1,42916667	3.2E-05	0,09027778	1.000
Local Brand	13.54	1.7E-06	1,34583333	-0.0022	0,51111111	8.4E-07	2,125	0,23611111
Unbranded	8,129	< 2e-16	-0.0800	0.0000	-0.1200	< 2e-16	< 2e-16	< 2e-16
Global Brand - Decorative	6.084	0.0025	1,64513889	-0.0023	1,50763889	0.0038	0,30902778	1.000
Global Brand - Care	4.715	0,06944444	2,21944444	-0.0023	1,29097222	0.0077	2,82916667	6,19791667
Local Brand - Decorative	8.048	0.0004	1,42708333	-0.0026	0,77569444	0.0003	1,62638889	3,55416667
Local Brand - Care	6.344	0.0020	1,29236111	-0.0018	0,33125	0.0017	1.000	0,72708333
Unbranded - Decorative	31,157	< 2e-16	-0.0813	0.0007	-0.1267	< 2e-16	< 2e-16	< 2e-16
Unbranded - Care	2,719	< 2e-16	-0.0818	0.0001	-0.1216	< 2e-16	< 2e-16	1.1E-14

4.2. Qualitative Results

Table 3 presents the comprehensive thematic analysis results from the expert interviews. During the crisis, consumer behavior shifted significantly, with a sharp increase in e-commerce activity (P1, P2, P4). As the crisis made in-person shopping more challenging or risky, many consumers turned to online shopping for its convenience and perceived safety (P1, P2, P3). Consumers became more deliberate in respective purchases, spending additional time researching and weighing options before making decisions (P1, P3). This shift highlighted the growing importance of technology and data analytics, such as AI, in helping businesses adapt to these evolving consumer behaviors (P1, P3, P5, P7).

E-commerce companies rapidly adjusted to these changing preferences to stay competitive in a fast-evolving market (P1, P5). Trust and security in online transactions became paramount, as consumers increasingly prioritized safety and reliability (P1, P8). The crisis accelerated digital transformation, leading to lasting changes in shopping habits and creating both challenges and opportunities for e-commerce businesses (P2, P4, P5, P6). To navigate the environment, companies increasingly focused on sustainability and innovation as key strategies for long-term success and competitiveness (P1, P5, P7, P9).

Table 3. Thematic analysis result

Theme	Sub-Theme	Quotations	Interviewee Code
Consumer Behavior Changes during the Crisis	**Shift to Online Shopping**	"The growth of e-commerce during the crisis has significantly increased, indicating a shift in consumer behavior towards online shopping."	P1, P2, P4
	Necessity of New Solutions	"The crisis has forced consumers to switch to online purchases and seek new solutions to meet respective needs."	P1, P2, P3
	Increased Dependence on Online Services	"Consumers have become increasingly reliant on online services for respective daily needs due to disruptions caused by the crisis."	P1, P4, P5
	Adoption of Digital Payment Methods	"The crisis has accelerated the adoption of digital payment methods, as consumers seek contactless ways to complete transactions."	P3, P6
Consumer Engagement	**Increased Research and Consideration**	"Consumer engagement in online shopping has risen, with individuals researching products and considering various aspects before making purchasing decisions."	P1, P3
	Educated Consumers	"Consumers have become more educated about various purchasing options, including online shopping, traditional markets, and social e-commerce."	P1
	Social Media Influence	"Social media platforms have played a significant role in shaping consumer behavior and engagement during the crisis."	P6, P7
	Community and Peer Reviews	"The importance of community and peer reviews has increased, as consumers rely more on the experiences of others when making purchasing decisions."	P3, P8
Impact of Self-Image on Purchasing Decisions	**Reflection of Self-Image**	"Consumers are now more focused on purchasing products that reflect respective self-image, especially during the crisis when personal and home improvement became priorities."	P2, P3
	Enhancing Self-Perception	"The crisis has led consumers to buy items that enhance respective self-perception and adapt to the new normal, such as fitness equipment and home office supplies."	P4, P5
	Health and Wellness Products	"There has been a surge in the purchase of health and wellness products, as consumers prioritize respective physical and mental well-being."	P5, P9
	Fashion and Personal Care	"Despite the crisis, consumers continue to invest in fashion and personal care products to maintain respective self-image and confidence."	P7, P10
	Home and Lifestyle Upgrades	"Consumers are investing in home and lifestyle upgrades, reflecting respective desire to create a comfortable and aesthetically pleasing living environment."	P11, P12

4.3. Discussion

The graph illustrates the average Z sales for global brands, ocal brands, and unbranded products before, during, and after the pandemic. Sales initially dropped sharply across all categories during the pandemic but showed significant recovery in the post-pandemic period. Categories like global brand - care and local brand - decorative experienced particularly strong growth, indicating that consumers gradually adjusted respective behavior in response to changing market conditions and preferences.

4.3.1. Status and Quality of Self Image Theory

The status and quality of self-image are influenced by the type of brand and the period in question. During the crisis, consumer perceptions and preferences for global brands, local brands, and unbranded products shifted significantly, largely due to the effects of the crisis. These shifts were driven by changing consumer priorities, economic uncertainty, and the desire for brands that align with personal values and provide a sense of security or familiarity during uncertain times (See Table 4).

Table 4. Brand category

Category	Example Brands	Pre-Pandemic Preference	During the Pandemic Preference	Post-Pandemic Preference
Global Brand	TBS, L'Oreal, Revlon	Symbols of status and quality; aligned with professionalism and luxury.	Reduced appeal due to fewer social interactions; focus on health and sustainability.	Recovery depends on realigning with health, sustainability, and community values.
Local Brand	Emina, Sensatia Botanicals, Erha	Valued for authenticity and community connection; less status appeal.	Increased preference due to emphasis on sustainability and local support.	Strengthened connection if these maintain social responsibility and sustainability.
Unbranded Products	Rimas, Cantik, Sonik	Less desirable due to lack of brand identity; considered lower quality.	More appealing for practicality and economic efficiency; less focus on status.	Continued appeal for consumers valuing simplicity, sustainability, and functionality.

Influence of brands on self image: Building on the categorization presented in Table 4, the data reveals that brands exert a significant influence on shaping customers' self-perception, and the impact varies as social and economic circumstances develop. Consumer preferences for global brands, local brands, and unbranded products saw shifts in response to the changing circumstances during the pre-pandemic, pandemic, and post-pandemic periods.

Prior to the pandemic, renowned international brands such as TBS, L'Oreal, and Revlon were linked to prestige and excellence, appealing to consumers who appreciated sophistication and opulence [16], [17]. This was evident in the robust sales of these products.

The epidemic, meanwhile, resulted in substantial alterations in consumer behavior. Due to the lack of social interaction, the importance of expressing oneself through international companies diminished. Consumers started giving more importance to respective health and the sustainability of products. These began to wonder if global brands still matched respective changing self-perception [18].

Consequently, there was a decrease in the inclination towards international brands, as consumers showed a preference for products that promoted well-being, environmental consciousness, and the growth of local economies [19].

The decline in worldwide product sales during the epidemic exemplifies the change [7]. In the future, global businesses that modify respective marketing and goods to prioritize health, sustainability, and community support have the potential to reclaim consumer preference [20]. These companies may experience a revival in sales as consumers increasingly prioritize not only quality and status, but also a dedication to well-being and environmental sustainability.

Prior to the pandemic, local brands such as Emina, Sensatia Botanicals, and Erha were highly regarded for respective genuineness and strong ties to the community. Nevertheless, local brands were not commonly regarded as equivalent to international brands in terms of prestige or excellence. According to [21], consumers prefer local brands mostly for emotional reasons and to show respective support for domestic products, rather than for the sake of social standing. Amidst the pandemic, there was an increased emphasis on sustainability and local assistance, which coincided with a change in how consumers perceive themselves, placing greater importance on health, sustainability, and unity [22]. Consumers started to value products that advocated sustainability and provided societal advantages, indicating an increasing recognition of the importance of supporting local companies for both economic and environmental sustainability [23].

Following the pandemic, local brands that preserved a favorable reputation during the crisis bolstered respective rapport with consumers. This achievement enhanced consumer loyalty and maintained the relevance of local brands [24]. Consequently, local companies have not only maintained but even strengthened respective connection with customers, indicating a long-lasting change in values and priorities [25].

Before the pandemic, unbranded products such as Rimas, Cantik, and Sonik were less popular due to respective lack of brand awareness, which made these less appealing to consumers who valued self-expression and social standing. Many individuals who wanted to improve respective social image often ignored these items [26], [27]. Nevertheless, the dynamics underwent a transformation within the pandemic. Due to reduced social contacts and growing economic pressures, customers started giving priority to practicality and cost effectiveness. Unbranded products had an increase in demand, primarily due to respective lower prices, according to [23]. The shift indicated a change in self-perception that prioritized practicality over social standing, in line with the economic and societal conditions brought about by the pandemic [1]. Following the epidemic, the market for non-branded items is seeing further development. While several consumers have reverted back to branded products in order to reaffirm respective social identity, others still prioritize the straightforwardness and cost-effectiveness of unbranded products, particularly if respective self-perception has permanently switched towards substance rather than style [28]. Unbranded products have been popular among cost-conscious consumers, whereas branded goods are gaining favor among individuals who want to showcase respective social aspirations after the pandemic.

Analysis based on time period: The evolving brand preferences described above become even more apparent when examined through a temporal lens. An examination of consumer preferences over a period of time reveals the changes in beauty product selections that occurred prior to, during, and following the crisis. These adjustments were driven by shifting goals, transitioning from an emphasis on quality and prestige to a focus on health, sustainability, and economic efficiency. Gaining an understanding of these developments provides valuable insights into how multinational businesses, local brands, and unbranded items have adapted to evolving consumer expectations.

Prior to the crisis, customer preferences regarding beauty goods were clear. According to [29] global brands such as TBS, L'Oreal, and Revlon were favored for respective high quality, prestige, and alignment with international fashion trends.

These brands appealed to individuals seeking to project a sophisticated self-image. The strong sales of multinational brands before the crisis, as indicated by an average Z-sales score of 1.84, demonstrate the preference. On the other hand, local brands such as Emina, Sensatia Botanicals, and Erha were valued for respective authenticity and support of local enterprises, though lacking the same level of prestige, reflected by an average Z-sales score of 1.35. Unbranded products such as Rimas, Cantik, and Sonik were generally seen as lower in quality and prestige, attracting more cost-conscious consumers, with an average Z-sales score of -0.08 [26].

During the crisis, there was a noticeable shift in customer preferences for cosmetic goods. The allure of international brands like TBS, L'Oreal, and Revlon diminished as consumers shifted respective focus towards health, safety, and supporting local businesses [19]. Self-image became more closely tied to individual well-being and social responsibility [18]. This shift is evident in the decline of the average Z-sales for global brands to -0.0023 during the crisis. In contrast, local brands such as Emina, Sensatia Botanicals, and Erha gained popularity due to respective alignment with personal values, community focus, and sustainability efforts. This was reflected in respective average Z-sales score of -0.0022, as reported by Balis in 2020. At the same time, unbranded products such as Rimas, Cantik, and Sonik saw increased demand as consumers prioritized practicality and essential items, reflecting a shift toward pragmatism. These products had an average Z-sales score of 0.0000 [1].

Consumer preferences for beauty goods have shown recovery and adaptation in the aftermath of the crisis. Prominent international brands such as TBS, L'Oreal, and Revlon have successfully regained ground, as indicated by respective post-crisis average Z-sales score rising to 1.43. This recovery can be attributed to respective ability to adapt to changing consumer values, particularly by emphasizing sustainability, community engagement, and health [20]. Local brands such as Emina, Sensatia Botanicals, and Erha have maintained a strong consumer base, with a post-crisis Z-sales score of 0.51, due to respective continued focus on community values and sustainability [24]. Meanwhile, the market for unbranded items such as Rimas, Cantik, and Sonik has experienced mixed results. While some consumers have returned to branded products, others continue to value the practicality and cost-effectiveness of unbranded goods. This is reflected in a post-crisis Z-sales score of -0.12, indicating a slightly reduced but still present preference among certain consumer groups [1]. These trends, as highlighted in the EY Future Consumer Index (2021), emphasize the ongoing evolution of consumer values and priorities.

4.3.2. Brand Effects on Self-Image Perception

The global crisis had profound ramifications on both the economic and health sectors, instilling worry and uncertainty among individuals [30]. These disruptions precipitated substantial changes in consumer behavior and self-image perception across different brand categories before, during, and after the crisis (Table 5).

Prior to the crisis, consumer behavior showed distinct patterns across brand categories:

- Global brands (TBS, L'Oreal, Revlon) dominated as status symbols, with strong associations to quality, professional image, and luxury (Y for all these aspects)
- Local brands (Emina, Sensatia Botanicals, Erha) maintained strength in community connection and authenticity (Y), but lacked status symbol appeal (N)
- Unbranded products (Rimas, Cantik, Sonik) showed limited appeal across all self-image aspects (N for all aspects)

During the crisis, a significant transformation occurred in consumer preferences:

- Global brands experienced a decline in status symbol, professional image, and luxury associations (shifting from Y to N), while maintaining quality perception (Y)
- Local brands emerged stronger, maintaining respective existing strengths (Y for community connection and authenticity) while gaining new value in status symbol, sustainability image, and social responsibility (N to Y)
- Unbranded products gained significant traction in practicality, cost efficiency, and value for money (N to Y), though still lacking in quality perception and status symbol aspects (remaining N)

The post-crisis period revealed a new equilibrium:

- Global brands regained respective status symbol and luxury associations (returning to Y) while retaining respective newly acquired health/sustainability focus (Y)
- Local brands maintained respective crisis-period gains across all aspects (Y), demonstrating a permanent shift in consumer perception
- Unbranded products retained respective practical advantages (Y for practicality, cost efficiency, and value for money) while maintaining respective limitations in quality perception and status symbol (N)

These shifts align with broader market data showing how consumers' priorities evolved from pure status seeking to a more balanced consideration of health, sustainability, and value for money, particularly during and after the crisis [30], [31].

Table 5. Self-image aspects analysis across brand categories during crisis periods

Brand Category	Self-Image Aspects	Pre-Crisis	During Crisis	Post-Crisis
Global Brands (TBS, L'Oreal, Revlon)	Status Symbol	Y	N	Y
	Quality Perception	Y	Y	Y
	Professional Image	Y	N	Y
	Luxury Association	Y	N	Y
	Health/Sustainability Focus	N	Y	Y
Local Brands (Emina, Sensatia Botanicals, Erha)	Community Connection	Y	Y	Y
	Authenticity	Y	Y	Y
	Status Symbol	N	Y	Y
	Sustainability Image	N	Y	Y
	Social Responsibility	N	Y	Y
Unbranded (Rimas, Cantik, Sonik)	Practicality	N	Y	Y
	Cost Efficiency	N	Y	Y
	Quality Perception	N	N	N
	Status Symbol	N	N	N
	Value for Money	N	Y	Y

The crisis fundamentally transformed retail dynamics, with fear of physical proximity driving a significant shift from traditional in-store shopping to digital platforms [30]. This transition aligned with changing consumer priorities, as shown in Table 6, where practicality gained high priority during the crisis, replacing the previous strong emphasis on status and luxury.

However, the rapid e-commerce expansion presented new challenges, particularly in product authentication and counterfeit prevention, issues that were less prevalent in traditional brick-and-mortar settings [32]. The surge in online purchasing generated vast amounts of consumer behavior data, providing businesses with unprecedented insights into evolving preferences.

This data reveals how consumer priorities shifted from status-focused (pre-crisis) to value-oriented (during crisis) decisions, as evidenced by the table's "Value for Money" metric moving from secondary to primary concern. Through big data analysis, companies can now better understand:

- Product demand patterns
- Consumer decision-making processes
- Loyalty factors across different crisis periods
- Customer segmentation opportunities
- Personalized marketing potential

This evolution of digital retail aligns with the broader trends shown in Table 6, particularly the increased emphasis on health, sustainability, and community support during and after the crisis. Companies leveraging these insights can develop more targeted marketing strategies and personalized recommendations, directly addressing the growing importance of brand values alignment and maintain practicality in the post-crisis period. This data-driven approach enables businesses to adapt to rapidly evolving consumer preferences while enhancing customer satisfaction and loyalty.

Table 6. Consumer behavior trends across crisis periods

Consumer Behavior Aspect	Pre-Crisis	During Crisis	Post-Crisis
Status & Luxury Focus	Strong emphasis	Reduced importance	Balanced with practicality
Brand Recognition	Highly valued	Less prioritized	Selective importance
External Validation	Primary focus	Minimal concern	Moderate importance
Quality Perception	Tied to brand reputation	Tied to practicality	Balanced assessment
Practicality	Low priority	High priority	Maintained importance
Health & Sustainability	Limited focus	Strong emphasis	Continued emphasis
Community Support	Minimal concern	High importance	Strong maintenance
Value for Money	Secondary concern	Primary focus	Important consideration
Brand Values Alignment	Limited importance	Growing importance	High priority

Additionally, big data can assist companies in forecasting demand and optimizing inventory management. Understanding consumer behavior through data analysis allows businesses to anticipate market trends and adjust respective strategies accordingly. This predictive capability is particularly valuable in a post-crisis world, where consumer preferences continue to evolve rapidly. By harnessing big data, companies can craft more effective marketing strategies, leading to greater customer satisfaction and increased sales.

5. Conclusion

An examination of customer behavior in Indonesia's e-commerce market before, during, and following the crisis reveals significant changes driven by shifting priorities and global events. Prior to the crisis, consumer choices were largely influenced by prominent global brands like TBS, L'Oreal, and Revlon, known for respective superior quality, prestigious image, and alignment with international fashion trends. However, as the crisis unfolded, these preferences shifted towards prioritizing health, sustainability, and supporting local economies. As a result, local brands like Emina, Sensatia Botanicals, and Erha gained popularity, while unbranded products also became more attractive due to respective practicality and cost-effectiveness. In the post-crisis period, consumer preferences reflect a blend of pre-crisis values and new priorities.

To regain consumer trust, international brands must now focus on sustainability and community engagement, while local brands continue to benefit from the loyalty established during the crisis.

This study emphasizes the significant impact of self-image on consumer behavior, showing that buying decisions are closely linked to perceived identity and values. The crisis prompted individuals to reassess these factors, leading to shifts in brand preferences and consumption patterns. Furthermore, the rise of e-commerce and the use of advanced data analytics during the crisis provided businesses with deeper insights into customer behavior, enabling crafting more personalized and efficient marketing strategies.

Businesses must adapt respective strategies to align with changing consumer values and self-perception, as these studies indicate. To reclaim respective market position, global brands should emphasize health, sustainability, and community support. Meanwhile, local companies can leverage respective authenticity and strong community ties to maintain consumer loyalty. Additionally, organizations should invest in advanced data analytics to gain a more profound understanding of consumer behavior and predict trends proactively. This approach will allow companies to develop more precise and personalized marketing strategies, improving customer satisfaction, boosting sales, and ensuring competitiveness in the ever-evolving e-commerce landscape.

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