**Exploring Frugal Buying, Social Influence, and App Behavior in Online Food Shopping in Indonesia**

**Abstract:**

***Objectives:*** *This quantitative study investigates the relationships among Frugal Buying Habits, Social Influence, Task-oriented app usage, Pleasure-oriented app usage, and Digital persuasion in the context of online food shopping via delivery apps in Indonesia.*

***Methodology:*** *We employ an explanatory research design, testing hypotheses derived from existing literature. A purposive sampling method selects 300 active users of online food delivery apps. Structural Equation Modeling (SEM) with Smart PLS software analyzes the data.*

***Findings:*** *Frugal Buying Habits are associated with both Task-oriented and Pleasure-oriented app usage. Social Influence strongly impacts Digital Persuasion. Task-oriented app usage positively correlates with Digital Persuasion, while Pleasure-oriented app usage does not.*

***Conclusion:*** *These findings highlight opportunities for app developers to cater to frugal consumers and leverage social influence, improving user experiences. Policymakers should consider regulating digital persuasion tactics for ethical practices. This research contributes to understanding online food shopping dynamics.*

***Keywords:*** *Frugal Buying Habits; Social Influence; Task-oriented app usage; Pleasure-oriented app usage; Digital persuasion.*

**INTRODUCTION**

The digital landscape is undergoing significant growth on a global scale, with Indonesia emerging as a key player in the Asian continent. With a population of 277.7 million and 204.7 million active internet users, Indonesia is poised for substantial digital economic growth (Datareportal, 2022). The proliferation of mobile phone users, indicated by the presence of 370.1 million cellular mobile connections in Indonesia in early 2022, reflects an upward trajectory in mobile application usage (Datareportal, 2022). In the context of online food shopping, the evolution of "shared-economy delivery models" has given rise to popular online food delivery platforms (Gunden et al., 2020). Platforms like Uber Eats, FavorDelivery, or DoorDash have revolutionized the way consumers interact with restaurants, providing a seamless experience for browsing, selecting, ordering, and receiving food orders (DoorDash, 2018). This trend has extended its influence to Southeast Asian countries, including Indonesia, where several companies have introduced online food delivery platforms that offer convenience and security for ordering food and beverages without the need to leave one's home.

The Gross Merchandise Value (GMV) in the online food delivery market in Southeast Asia is projected to reach $49.7 billion by 2030. Key players like GrabFood, Foodpanda, and Go-Food collectively contributed to 84.8% of the market share in 2021, with GrabFood leading at 47.8% (Techinasia, 2022). Venture capital company 'Momentum Works' reported a remarkable 24.3% growth in Indonesia's food delivery services market share in 2021, solidifying its position as the largest food delivery market in Southeast Asia (Jakarta-Post, 2022). This growth was influenced by social restriction policies and the widespread adoption of work-from-home practices across various business sectors.

According to Statista (2021), Go-Food (Go-Jek) held the top spot in the online food delivery industry in Indonesia with a 25% usage share, closely followed by GrabFood with 20%. Other notable players included Yum Brands (KFC, Pizza Hut, Taco Bell) at 15%, Zomato at 10%, Dominos Pizza and McDelivery (McDonalds) each at 5%, and various other online food delivery platforms at 15%. Notably, the dominant players were super-applications that offered diverse online services within a single app, reflecting the increasing competition with the emergence of new entrants like TravelokaEats, ShopeeFood, AirAsia Food, and others.

In this fiercely competitive online food delivery industry, companies must continually innovate and harness technology for sustainable growth. A crucial element in this endeavor is the strategic use of "persuasion" to expand user bases, ultimately driving transaction volume. "Persuasion" involves intentionally altering individual attitudes (Petty and Cacioppo, 1986) and behavior (Fogg, 2003), making it a vital concept in marketing and consumer psychology. While extensively studied in general marketing literature (Cyr et al., 2018), its application in the hospitality sector remained relatively unexplored (Morosan et al., 2014). For online food delivery platforms and restaurants within these systems to flourish, "persuasion" may hold the key to aligning consumer goals with marketers' objectives (Gunden et al., 2020). Notably, literature or research related to "persuasion" in the context of food and beverage delivery services, particularly in Southeast Asia and Indonesia as a developing country, is limited, highlighting a critical research gap that warrants immediate attention.

Drawing inspiration from Fogg's theory of "persuasion" (2003) regarding persuasive information in information systems, this research aims to construct a conceptual framework that elucidates the interplay between consumers and persuasive information disseminated online, leading to consumer persuasion. Specifically, this study focuses on two primary predictors, namely task-oriented mobile app usage and pleasure-oriented app usage , which exert a significant influence on consumer persuasion (Fogg, 2003). However, our study specifically delves into the realm of online food delivery applications, emphasizing their use on smartphones or mobile-based platforms. Interaction transpires as consumers engage with online food delivery applications and consume persuasive content presented within these applications.

Previous studies conducted outside Southeast Asia have identified critical predictors influencing consumer persuasion. Gunden et al. (2020) empirically demonstrated that social influence and hedonic browsing strongly impact consumer persuasion, whereas utilitarian browsing exhibited no significant effect. Importantly, the utilitarian and hedonic facets were found to be substantially influenced by consumers' "frugal buying habits." These habits reflect consumers' beliefs that utilizing an online food delivery application can lead to cost savings by locating the best value deals from merchants on the platform. This dimension gains significance in Indonesia, where online consumers are known for their price sensitivity (Handayani et al., 2020). Research by Handayani et al. (2020) revealed that the majority of respondents preferred online grocery shopping due to perceived cost savings. Additionally, the study underscored the meticulous price comparison habits of Indonesian consumers. From a business standpoint, pricing strategies, such as discounts and rebates, play a pivotal role in influencing consumer decisions in the online food and beverage domain. The restaurant industry, characterized by robust price fragmentation, underscores the importance of price-saving objectives in consumer food choices (Kotler et al., 2016).

Furthermore, social influence emerges as a key driver of online shopping behavior. Consumers often place greater trust in recommendations from family and close friends than in brand endorsements (Kotler et al., 2017). As life's pace accelerates, information spreads rapidly, and attention spans shrink, consumers increasingly rely on their social networks for guidance. They actively connect, seek brand-related advice, and endorse products to their peers (Kotler et al., 2021). When purchasing goods, consumers leverage opinions and endorsements from friends and family as credible sources of information, particularly for search-quality goods. In contrast, when engaging in services, consumers turn to online review platforms, direct communication with friends and family, and social media for guidance (Wilson et al., 2021). While social influence has been explored in the context of hotel information systems (Morosan and DeFranco, 2016), its role in shaping behavior related to online food delivery systems remains underexplored, especially within the Southeast Asian context. Gunden et al. (2020) gave substantial attention to this predictor and successfully demonstrated that social influence strongly predicts consumer persuasion, as consumers rely on recommendations from close contacts to embrace online food delivery applications for ordering food and beverages.

In light of the aforementioned data and descriptions, this study primarily seeks to elucidate consumer persuasion within the framework of online food delivery applications in Indonesia, a nation boasting the highest digital economy potential in Southeast Asia. Specifically, this research investigates and dissects the key determinants or influencers of Indonesian online consumer behavior. Various consumer motivations underpin the use of online food delivery platforms, including the appeal of minimal wait times, a vast selection of food and beverage offerings, and the essential nature of food products. Therefore, understanding how consumers make decisions in the online food delivery environment becomes paramount. Consumer decision-making in this context exhibits unique characteristics, driven by motivational states (Gunden et al., 2020). This study also endeavors to analyze motivations that are posited to influence consumer persuasion, whereby the information accessible through online food delivery applications and the usage of these applications motivate consumers to alter their choices, experiment with new products or services, and shift away from traditional telephone-based food and beverage ordering methods.

**LITERATURE REVIEW**

***Frugal Buying Habits***

In the digital era, consumers are afforded the convenience of searching and comparing product prices online. The transparency of information provided through the internet creates 'well-informed customers,' empowering customers to compare offers online and develop a heightened sensitivity to prices (Kotler, Pfoertsch, and Sponholz, 2021). Additionally, customers go beyond monetary considerations, factoring in the time and effort required for certain services (Wirtz and Lovelock, 2018).

Consumer behavior theory recognizes that frugal buying habits are the primary motivators for online purchases (Jensen, 2012). The role of frugal buying habits as the key determinant of task-oriented and pleasure-oriented mobile app usage has drawn the attention of researchers in the context of online food delivery services. Frugal buying habits pertain to the inclination to seek economic benefits (Escobar-Rodríguez and Carvajal-Trujillo, 2014). It holds significant importance, enabling consumers to compare prices of online products by conducting online searches across various websites (Punj, 2012).

In this study, frugal buying habits are defined as online consumers' efforts to seek the best prices and offers provided by merchants through the information available in online food delivery service applications. Frugal buying habits have been studied in various information systems contexts (Gupta and Arora, 2017), including hospitality, tourism, and online food delivery service websites (Escobar-Rodríguez and Carvajal-Trujillo, 2014; Gunden et al., 2020). This study extends the use of frugal buying habits as the primary predictor, applying it to consumers/application users (mobile-phone based) with the expectation of gaining novel insights.

Consumers utilize platforms like online food delivery systems to compare food products based on price (Yeo et al., 2017) and other attributes, motivating them to make purchases when favorable prices are available (Ollila, 2011). Escobar-Rodríguez and Carvajal-Trujillo (2013) elaborate that frugal buying habits manifest when consumers can achieve monetary savings through price comparisons on an online food delivery system. Consumers receive various economic offers from numerous restaurants/merchants within the system, including value-for-money offerings. This is believed to significantly impact the search motives of online consumers when using online food delivery service applications.

To gather the knowledge and insights needed to identify products/prices, consumers tend to intensify their search for information on relevant platforms (Pirolli, 2009). The primary method for intensifying the search is task-oriented and pleasure-oriented mobile app usage, which can be categorized into two main motivations: task-oriented and pleasure-oriented. Consumers often intensify both forms of usage (Gunden et al., 2020). Bilgihan et al. (2015) revealed that ease of use and features for comparing prices fall within the task-oriented category, while enjoyment is associated with the pleasure-oriented dimension. Furthermore, in line with the studies by Bilgihan et al. (2015) and Park et al. (2012), mobile app usage can be classified into two types: task-oriented mobile app usage and pleasure-oriented mobile app usage. Task-oriented mobile app usage focuses on aspects such as the availability of product information, price/product comparisons from different merchants, and efficiency. Conversely, pleasure-oriented mobile app usage emphasizes the enjoyment aspect of using mobile apps.

Based on the above descriptions, the following hypotheses are proposed:

*Hypothesis 1 (H1): Frugal Buying Habits have a positive effect on task-oriented mobile app usage.*

*Hypothesis 2 (H2): Frugal Buying Habits have a positive effect on pleasure-oriented mobile app usage.*

***Task-Oriented & Pleasure-Oriented App Usage***

Browsing is considered the initial step in online shopping, capable of motivating consumers to seek information and make informed purchasing decisions. Typically, consumers engage in browsing to facilitate comparisons, evaluating both the price and quality of specific products or services. In the context of online shopping, browsing encompasses processes that enable consumers to gather information while mitigating potential risks associated with online transactions, such as financial, security, and privacy concerns (Park et al., 2012).

Recent research endeavors have focused on the study of two distinct types of browsing: task-oriented mobile app usage and pleasure-oriented app usage. This growing body of work acknowledges the relevance of both forms of browsing to impulsive buying behavior (Rezaei et al., 2016). Both task-oriented and pleasure-oriented app usage have been recognized as motivational factors that illuminate consumers' shopping experiences (Zheng et al., 2019).

Task-oriented mobile app usage is characterized by website attributes that prioritize user-friendliness and efficient navigation. This encourages goal-oriented consumers to concentrate on completing specific tasks (Bilgihan et al., 2015). Task-oriented browsing involves consumers seeking to obtain product-related information, aligning closely with the "basic needs" of online consumers during their searches, including product/service information, price/product comparisons, and time efficiency. Rooted in the general theory of technology adoption, task-oriented mobile app usage has been validated as a precursor to various online consumer shopping behaviors, encompassing industries such as hospitality and tourism (Gunden et al., 2020).

Park et al. (2012) implicitly define utilitarian web browsing as the concerted efforts of consumers to locate valuable products, gather product information from websites, and compare offerings between different stores with the aim of enhancing efficiency in their online shopping experience. In contrast to this previous study that primarily focused on desktop websites, our research takes on a dynamic approach as consumers actively collect information and compare prices and products using mobile-based applications for online food delivery. Previous research by Gunden et al. (2020) revealed that online food delivery systems offer special incentives such as discounts and comprehensive food information, which ultimately assist consumers in their decision-making process. Online food delivery systems, in general, provide a wealth of information aimed at enhancing the consumer experience and influencing consumers to utilize these platforms for ordering. In this study, all persuasive information is accessed through an online food delivery service platform via smartphones, requiring consumers to install the platform.

Conversely, pleasure-oriented app usage differs fundamentally from task-oriented app usage as it places a strong emphasis on the element of enjoyment. In the context of online shopping, consumers can experience a range of emotions, including pleasure, during their hedonic browsing experiences on websites. Hedonic browsing is closely associated with the pursuit of "pleasure" as a fundamental motivator for consumers when searching for product information online (Park et al., 2012). More precisely, hedonic browsing encapsulates consumers' hedonically motivated interactions with information systems (Gunden et al., 2020). This concept holds significant importance in the hospitality and tourism industry, as exemplified by visually appealing hotel booking websites that offer guests a pleasurable online experience through features such as animated images and attractive visual layouts (Ozturk et al., 2016). This parallels the experience of using online food delivery services, where mobile applications incorporate elements designed to elicit pleasure, including gamification and tantalizing food imagery, with the goal of satisfying consumer desires and providing a delightful, positive experience. Hedonic browsing embodies the fulfillment of consumers' desire for an enjoyable shopping experience, even in the absence of actual purchases (Moe, 2003). It represents the user's enjoyment when using or exploring products on an application platform.

Based on the above descriptions, this study proposes the following two hypotheses:

*Hypothesis 3 (H3): Task-oriented mobile app usage positively influences digital persuasion.*

*Hypothesis 4 (H4): Pleasure-oriented app usage positively influences digital persuasion.*

***Social Influence***

Social influence is a pivotal construct defined as the extent to which an individual perceives validation of a particular behavior from their social circle (Gunden et al., 2020). It has long been recognized as a cornerstone of information system adoption theory (Venkatesh et al., 2012). Venkatesh et al. (2012) implicitly underscored that social influence is a situation in which consumers are swayed by the opinions and actions of their close peers before making decisions or purchases. Within the scope of this study, consumer behavior was substantially molded by the preferences and recommendations of close friends, family members, or co-workers when opting to employ an online food delivery service application for ordering food or beverages online.

The consumption of food products procured through online food delivery systems predominantly occurs within a social setting. In other words, consumers recreate the "dining experience" within the confines of their homes or offices, often in the presence of family, friends, or colleagues. Moreover, online food delivery systems afford consumers the ability to assess multiple restaurants (merchants) and food items through a ratings system (Gunden et al., 2020). This reflects consumers' efforts to secure products or services offering the best value, competitive prices, and other discernible benefits. Customers frequently develop a profound sense of brand loyalty, exemplified by repeat purchases, long-term patronage, and enthusiastic recommendations to others (Rachbini et al., 2020).

Technology wields significant influence as a tool for modifying behavior, capable of encouraging digital activism and fostering social change (Kotler et al., 2021). Some customers opt to share their purchasing experiences with friends or post reviews on websites (Rachbini et al., 2021). Consumers may be swayed or maintain their initial choices based on the evaluations of fellow consumers, such as star ratings and reviews (Kupor et al., 2018). It is anticipated that the substantial impact of social influence, serving as a prominent point of reference, can influence consumer persuasion when utilizing an online food delivery system (Gunden et al., 2020).

Therefore, grounded in the amalgamation of prior research findings and the elucidation provided above, this study posits the following hypothesis:

*Hypothesis 5 (H5): Social Influence exerts a positive influence on digital persuasion.*

***Digital Persuasion***

The process of digital persuasion, especially in the context of online food shopping, is a dynamic and multifaceted phenomenon that has garnered significant attention in recent literature. Various theoretical perspectives emphasize the pivotal role of persuasive information in shaping consumer behavior and attitudes. Researchers concur that well-crafted persuasive content can effectively influence individuals, particularly in situations where direct interpersonal persuasion is absent (Gunden et al., 2020).

One compelling facet of digital persuasion is the exploration of indirect persuasion techniques. Gamliel and Herstein (2012) demonstrated the efficacy of indirect persuasion, wherein consumers are subjected to subtle and often subconscious persuasive efforts. Techniques such as framing and the foot-in-the-door method have been found to subtly influence consumer choices. Additionally, recent insights have shed light on self-persuasion, a concept in which consumers rely on self-generated information to alter their attitudes and decisions (Bernritter et al., 2017).

Measuring digital persuasion encompasses a diverse array of approaches, with studies employing various methods to assess its impact. However, the precision offered by behavioral measures has gained prominence in recent research. Behavioral measures are particularly adept at evaluating persuasion outcomes (Gunden et al., 2020). These outcomes typically relate to crucial dimensions such as purchase intention (Janssen et al., 2016), purchase choices (Hornik et al., 2017), and even tipping behavior (Bernritter et al., 2017). In line with this literature, our study seeks to operationalize digital persuasion by examining changes in online consumers' choices as a consequence of interactions with information embedded in online food delivery service applications.

Fogg (2003) introduced the concept of guided persuasion within the framework of online food delivery systems. He postulated that these systems guide consumers through sequential purchasing processes, which can yield guided persuasion. By offering various product customizations and adjustments, online food delivery systems enhance the relevance of end products, ultimately persuading consumers to make specific choices. In our study, digital persuasion encompasses the experiences of consumers using online food delivery service applications. Interactions with the wealth of information available within these applications motivate consumers to alter their preferences, experiment with new products or services, and reduce their reliance on other methods such as telephone orders and dine-in services.

**METHODOLOGY**

The research in this study primarily follows a quantitative-based research approach. This approach aims to employ numerical data and statistical analysis to investigate the relationships and patterns among variables (Frugal Buying Habits, Social Influence, Task-oriented mobile app usage, Pleasure-oriented app usage, and Digital persuasion).

The research design utilized in this study is explanatory research. Explanatory research is chosen to test the proposed hypotheses, which have been formulated based on existing literature and insights from prior studies. Additionally, this research design seeks to explore and explain the correlations and influences among the research variables, shedding light on the patterns, directions, and strengths of these relationships (Leedy and Ormrod, 2005).

Sampling in this study adopts a non-probability sampling method. This method is chosen for its ability to provide reliable insights that closely align with the research population. The sampling design further employs a purposive-sampling approach, where respondents are selected based on specific criteria established by the researcher. Among these criteria, participants are required to be active users of online food delivery service applications who have made purchases of food or beverages through these applications.

To gather data, the study utilizes Google Forms for distributing online questionnaires. Data collection spans from April 2023 to June 2023, allowing for a comprehensive pool of responses from eligible participants. The research employs the Structural Equation Model (SEM) technique, facilitated by Smart PLS software, for data analysis. SEM is chosen due to its suitability for analyzing complex models with multiple constructs. This study involves a sample of 300 respondents. Generally, Structural Equation Modeling (SEM) necessitates a minimum sample size of 150 respondents for models containing up to seven constructs (Hair et al., 2019). The number of respondents obtained for this study meets this requirement.

*Research Questionnaire*

The study employs a set of indicators to measure each variable effectively. These indicators have been drawn from prior studies that have empirically tested and demonstrated their validity and reliability. Specifically, the Frugal Buying Habits variable is measured using indicators adopted from the research of Escobar-Rodríguez and Carvajal-Trujillo (2013) and Gunden et al. (2020). The Task-oriented mobile app usage and Pleasure-oriented app usage variables are derived from the study conducted by Park et al. (2012). The Social Influence variable is adopted from previous research by Venkatesh et al. (2012). Finally, for the Digital persuasion variable, the researcher refers to the studies of Gunden et al. (2020) and Atwood and Morosan (2015) to select appropriate indicators. The questionnaire statement items corresponding to each variable can be found in Table 1.

**Results and Discussion**

*Descriptive Statistics*

The survey data reveals valuable insights into the demographic and behavioral profiles of the 300 participants. In terms of gender distribution, the study included 108 male participants, constituting 36.0% of the sample, while the remaining 192 participants were female, accounting for 64.0%. When examining the age groups of the respondents, a substantial portion, comprising 54.3%, falls below the age of 20. Additionally, 33.0% fall within the age bracket of 20 to 39 years, while 10.3% are aged between 40 and 54, and a smaller fraction of 2.3% is aged over 54 years. In regards to education, 46.3% have completed high school, 33.3% possess a diploma or bachelor's degree, 11.7% have pursued master's or doctorate degrees, and 8.7% hold other educational qualifications.

When it comes to the residential region of the participants, a significant majority, constituting 83.3%, reside in the Jakarta, Bogor, Depok, Tangerang, Bekasi (JABODETABEK) area, reflecting the urban concentration of the sample. Other regions include West Java/Banten, Jawa Tengah/DIY (Central Java/Yogyakarta), Jawa Timur (East Java), Kalimantan, Maluku, Papua, Sulawesi, and Sumatra.

Furthermore, the data sheds light on the income distribution of the participants, with 57.0% indicating that they do not currently have personal income. Among those with income, 19.0% report earnings of less than or equal to 5 million IDR, 12.7% earn between 5 million and 15 million IDR, 7.7% earn between 15 million and 25 million IDR, and 3.7% earn more than 25 million IDR per month. These findings provide a comprehensive overview of the study's participant demographics, setting the stage for further analysis of their online food delivery behaviors and preferences.

*Validity and Reliability Test*

Table 1 presents the results of the research validity and reliability tests for the key variables in this study. The indicators for each construct, including Frugal Buying Habits, Task-oriented mobile app usage, Pleasure-oriented app usage, Social Influence, and Digital persuasion, are assessed for their loading factors, composite reliability (CR), and average variance extracted (AVE).

Table 1. Research Validity and Reliability Test Results

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Indicator** | **CODE** | **Loading Factor** | **CR** | **AVE** |
| Frugal Buying Habits | I can save money by comparing prices from various restaurants/merchants listed in the Online Food Delivery application. | FBH1 | 0.770 | 0.858 | 0.604 |
| I like to find frugal (moneysaving) deals from various restaurants/merchants listed in the Online Food Delivery application. | FBH2 | 0.771 |
| I often search for costeffective offers from various restaurants/merchants listed in the Online Food Delivery application. | FBH3 | 0.786 |
| Restaurants/merchants in the Online Food Delivery application offer better value (value for money). | FBH4 | 0.783 |
| Task-oriented mobile app usage | I use the Online Food Delivery application to purchase food and drinks from various restaurants/merchants. | TOU1 | 0.782 | 0.824 | 0.539 |
| I utilize the Online Food Delivery application to acquire information about food and drinks from various restaurants/merchants. | TOU2 | 0.746 |
| I engage in comparisons before placing orders for food/drinks in the Online Food Delivery application. | TOU3 | 0.687 |
| I employ the Online Food Delivery application to enhance the efficiency of my food and beverage shopping. | TOU4 | 0.719 |
| Pleasure-oriented app usage | I feel a great sense of relaxation when using the Online Food Delivery application. | POU1 | 0.729 | 0.873 | 0.634 |
| I experience a high level of excitement and joy, as if I'm playing, while using the Online Food Delivery application. | POU 2 | 0.882 |
| I genuinely enjoy using the Online Food Delivery application, to the point where it makes me lose track of time. | POU 3 | 0.813 |
| I explore the Online Food Delivery application for food and drinks just for the fun of it. | POU 4 | 0.752 |
| Social Influence | Important people in my life believe that I should use the Online Food Delivery application. | SIF1 | 0.909 | 0.945 | 0.811 |
| Both my family and close friends recommend using the Online Food Delivery application. | SIF2 | 0.914 |
| Individuals who have influenced my behavior think that I should utilize the Online Food Delivery app. | SIF3 | 0.909 |
| People whose opinions I highly value have encouraged me to use the Online Food Delivery application for ordering food and drinks. | SIF4 | 0.869 |
| Digital persuasion | The information provided in the Online Food Delivery application successfully influenced my choice of restaurant/merchant from my initial preference. | DPR1 | 0.741 | 0.862 | 0.516 |
| The information available on the Online Food Delivery application effectively altered my original food choices. | DPR 2 | 0.785 |
| The information accessible through the Online Food Delivery application motivates me to explore new food options and restaurants. | DPR 4 | 0.648 |
| The information found in the Online Food Delivery application has led me to discontinue using the telephone order method. | DPR 5 | 0.756 |
| Utilizing the Online Food Delivery application has resulted in a reduction in my frequency of dining in at restaurants. | DPR 6 | 0.789 |

Notes: All constructs using five-point Likert-type scale, from 1 “Strongly disagree” to 5 “Strongly agree”

The loading factors for all indicators are substantial, indicating that they are well-aligned with their respective constructs. Additionally, the CR values are all above the recommended threshold of 0.7, demonstrating strong internal consistency. Moreover, the AVE values, which measure convergent validity, exceed the acceptable threshold of 0.5, indicating that these constructs adequately explain the variance in their indicators. These results suggest that the measurement model exhibits good reliability and validity, providing confidence in the robustness of the data collection process and the suitability of the constructs for subsequent structural analysis.

**Hypothesis testing**

The purpose of presenting a diagram is to provide an overview of the relationship between variables in a clear and concise manner. It allows the reader to visualize the relationship and understand the nature of the relationship between variables. The Figure 1 is presented to provide an illustration of the relationship between variables.

A diagram of a network

Description automatically generated

Figure 1 The relationship between variables

The Table 2 below shows the results of hypothesis testing for the path coefficients between constructs in the research model. The null hypothesis for each test is that there is no significant relationship between the two constructs, and the alternative hypothesis is that there is a significant relationship.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Table 2. Path CoefficientsMean, STDEV, T-Values, P-Values | | | | | |
|  |  |  |  |  |  |
|  | **Original Sample (O)** | **Sample Mean (M)** | **Standard Deviation (STDEV)** | **T Statistics (|O/STDEV|)** | **P Values** |
| Frugal Buying Habits -> Digital persuasion | 0.247 | 0.244 | 0.056 | 4.389 | 0.000 |
| Frugal Buying Habits -> Pleasure-oriented app usage | 0.345 | 0.348 | 0.051 | 6.747 | 0.000 |
| Frugal Buying Habits -> Task-oriented mobile app usage | 0.595 | 0.600 | 0.047 | 12.697 | 0.000 |
| Pleasure-oriented app usage -> Digital persuasion | -0.064 | -0.062 | 0.058 | 1.101 | 0.272 |
| Social Influence -> Digital persuasion | 0.349 | 0.352 | 0.056 | 6.227 | 0.000 |
| Task-oriented mobile app usage -> Digital persuasion | 0.212 | 0.214 | 0.064 | 3.319 | 0.001 |

Hypotheses testing was conducted to assess the relationships between the variables in the study, and the results are summarized in the following paragraph. Path coefficients, mean values, standard deviations (STDEV), t-statistics, and p-values were examined to determine the significance of these relationships.

First, the path from Frugal Buying Habits to Digital persuasion yielded a path coefficient of 0.247. When compared to the sample mean (M) of 0.244, the standard deviation (STDEV) of 0.056, and the calculated t-statistic of 4.389, it resulted in a remarkably low p-value of 0.000, indicating a statistically significant positive relationship.

Next, the path from Frugal Buying Habits to Pleasure-oriented app usage demonstrated a path coefficient of 0.345. In comparison to the sample mean (M) of 0.348 and the standard deviation (STDEV) of 0.051, the associated t-statistic of 6.747 generated an exceedingly low p-value of 0.000, signifying a statistically significant positive relationship.

The path from Frugal Buying Habits to Task-oriented mobile app usage revealed a path coefficient of 0.595, which was notably higher than the sample mean (M) of 0.600 and the standard deviation (STDEV) of 0.047. The resulting t-statistic of 12.697 produced an extremely low p-value of 0.000, indicating a highly statistically significant positive relationship.

Conversely, the path from Pleasure-oriented app usage to Digital persuasion exhibited a path coefficient of -0.064. Despite a slight deviation from the sample mean (M) of -0.062, the relatively low standard deviation (STDEV) of 0.058 and the resulting t-statistic of 1.101 led to a p-value of 0.272, indicating a lack of statistical significance in this relationship.

Moving on, the path from Social Influence to Digital persuasion yielded a path coefficient of 0.349, exceeding the sample mean (M) of 0.352 and the standard deviation (STDEV) of 0.056. The corresponding t-statistic of 6.227 resulted in a notably low p-value of 0.000, signifying a statistically significant positive relationship.

Finally, the path from Task-oriented mobile app usage to Digital persuasion showed a path coefficient of 0.212, which was slightly lower than the sample mean (M) of 0.214. With a standard deviation (STDEV) of 0.064, the calculated t-statistic of 3.319 led to a p-value of 0.001, indicating a statistically significant positive relationship.

In summary, the hypotheses testing results confirmed significant positive relationships between Frugal Buying Habits and Digital persuasion, Frugal Buying Habits and Pleasure-oriented app usage, Frugal Buying Habits and Task-oriented mobile app usage, Social Influence and Digital persuasion, as well as Task-oriented mobile app usage and Digital persuasion. However, no statistically significant relationship was observed between Pleasure-oriented app usage and Digital persuasion. These findings provide valuable insights into the interplay of these variables within the context of online food delivery applications.

Based on the Table 2 above, here are the structural equations:

1. Digital Persuasion (DPR) = 0.247\*FBH + 0.349\*SIF + 0.212\*TOU - 0.064\*POU + ε

2. Pleasure-oriented App Usage (POU) = 0.345\*FBH + ε

3. Task-oriented Mobile App Usage (TOU) = 0.595\*FBH + ε

The findings of the study provide significant insights into the relationships between various factors within the context of online food delivery applications. The analysis revealed a statistically significant positive relationship between Frugal Buying Habits and Digital persuasion. This suggests that individuals who exhibit frugal buying habits, such as seeking cost-effective deals and comparing prices from various restaurants/merchants within the online food delivery application, are more likely to be influenced and persuaded by the digital information available in the app.

Another noteworthy finding is the statistically significant positive relationship between Frugal Buying Habits and Pleasure-oriented app usage. This indicates that individuals with frugal buying habits also tend to derive pleasure from using the online food delivery application. They may enjoy searching for cost-effective deals and exploring various restaurant options within the app, contributing to a pleasurable experience.

The study uncovered a highly significant positive relationship between Frugal Buying Habits and Task-oriented mobile app usage. This implies that individuals who prioritize cost-saving measures and efficient shopping behaviors are more likely to utilize the app in a task-oriented manner. They may actively seek information, compare prices, and make efficient choices when ordering food and beverages.

Surprisingly, no statistically significant relationship was found between Pleasure-oriented app usage and Digital persuasion. This suggests that while some users may derive pleasure from using the app, this pleasure does not necessarily translate into being strongly persuaded by the digital information available within the application when making food choices.

The study established a significant positive relationship between Social Influence and Digital persuasion. This highlights the impact of social factors, such as the opinions and recommendations of important individuals in one's life, in influencing and persuading users when using the online food delivery application. Friends and family's influence plays a significant role in decision-making.

Lastly, a significant positive relationship was identified between Task-oriented mobile app usage and Digital persuasion. Users who approach the app with a task-oriented mindset, focusing on efficient and practical aspects of food ordering, are more likely to be persuaded by the digital information and content available within the application.

Given the positive relationship between Frugal Buying Habits and Digital persuasion, policymakers and app developers should consider strategies to encourage and support frugal behaviors within online food delivery applications. This can be achieved by highlighting cost-saving options, providing clear price comparisons, and offering discounts or promotions, as previous research has indicated the significance of price-related factors in online consumer behavior (Escobar-Rodríguez & Carvajal-Trujillo, 2014).

Recognizing the impact of Social Influence on Digital persuasion, policymakers and businesses can focus on leveraging the social aspect of app usage. Encouraging users to share their experiences, reviews, and recommendations with friends and family within the app can enhance persuasive elements. This aligns with the findings that social influence plays a crucial role in shaping consumer choices (Venkatesh et al., 2012).

As Task-Oriented Mobile App Usage positively influences Digital persuasion, app developers should prioritize a user-friendly and efficient interface. This involves streamlining the app's navigation, ensuring easy access to relevant information, and facilitating quick and hassle-free ordering processes. Research supports the idea that utilitarian features influence online consumer behavior (Bilgihan et al., 2015).

While no significant relationship was found between Pleasure-Oriented App Usage and Digital persuasion, businesses can still enhance the overall user experience by incorporating pleasurable elements, such as gamification, appealing visuals, and interactive content. These features can contribute to user satisfaction and engagement, even if they don't directly impact persuasion (Ozturk et al., 2016). To refine app features and content, continuous monitoring of user behavior and feedback collection is crucial. This aligns with previous research emphasizing the importance of user feedback in improving online platforms (Atwood & Morosan, 2015).

By implementing these policy and practice implications, businesses and policymakers can enhance the persuasive capabilities of online food delivery applications, ultimately influencing users' food choices and promoting efficient and cost-effective consumption.

The novelty of this research lies in its investigation of the interplay between Frugal Buying Habits, Social Influence, App Behavior (Task-oriented and Pleasure-oriented mobile app usage), and Digital Persuasion within the context of online food shopping through online food delivery applications. While previous studies have explored various aspects of online consumer behavior and the factors influencing it, this research contributes novelty through several key aspects.

The study narrows its focus to the unique context of online food delivery applications. While previous research has addressed online shopping behavior in general, this research delves into the specifics of online food shopping, which involves distinct user motivations and behaviors.

The research integrates and examines multiple variables, including Frugal Buying Habits, Social Influence, Task-oriented, and Pleasure-oriented app usage, and Digital Persuasion. By considering these factors simultaneously, the study provides a comprehensive understanding of how they interact and influence each other within the online food shopping environment. The study investigates the role of Digital Persuasion within the online food delivery app context. Understanding how digital platforms persuade users to make specific choices regarding food orders is a relatively novel area of research, particularly when combined with other influential factors.

The research not only contributes to theoretical knowledge but also offers practical implications for app developers and policymakers. It suggests strategies for enhancing user experience and persuasion within these apps, which can have a tangible impact on the food delivery industry. The study encompasses respondents from various geographic locations within Indonesia, providing insights into how online food shopping behaviors may vary across regions. This adds a dimension of regional diversity that has not been extensively explored in previous research.

Several limitations should be acknowledged in this study. Firstly, the research employed a non-probability sampling method, specifically purposive sampling, to target active users of online food delivery apps. While this approach was chosen to capture insights from individuals familiar with the subject matter, it unintentionally excluded individuals who either do not use these apps or use them infrequently. This sampling bias could limit the generalizability of the study's findings to a more diverse population of online consumers.

Secondly, the study examined Digital Persuasion as a singular construct without delving into the specific mechanisms and strategies used for digital persuasion within online food delivery applications. A more detailed analysis of the tactics and content employed for persuasion could provide a more nuanced understanding of this critical aspect of the online food shopping experience.

Lastly, the research assumed unidirectional relationships between variables, treating them as independent influences on each other. However, it is essential to acknowledge the potential for endogeneity, which implies reciprocal influences among these variables. Future studies could benefit from employing advanced statistical techniques to explore and address potential endogeneity issues, offering a more comprehensive and accurate analysis of the complex interplay among Frugal Buying Habits, Social Influence, App Behavior, and Digital Persuasion within the context of online food shopping.

**Conclusion**

In conclusion, this study has explored the intricate nexus of Frugal Buying Habits, Social Influence, App Behavior (Task-oriented and Pleasure-oriented mobile app usage), and Digital Persuasion in the context of online food shopping through online food delivery applications. Through comprehensive data analysis and hypothesis testing, several key findings and insights have emerged.

Firstly, it was evident that Frugal Buying Habits significantly influence Task-oriented mobile app usage and Pleasure-oriented app usage. Consumers who exhibit a tendency for frugality are more likely to engage in both utilitarian and hedonic browsing behaviors when using online food delivery apps. This suggests that users seek both cost-saving deals and pleasurable experiences when making food orders through these platforms.

Secondly, Social Influence was found to exert a substantial impact on Digital Persuasion. Individuals who are influenced by important people in their lives, such as family and friends, are more susceptible to digital persuasion tactics employed by online food delivery apps. This implies that recommendations and opinions from close circles play a crucial role in shaping consumer choices within this context.

Thirdly, Task-oriented mobile app usage was positively associated with Digital Persuasion. Users who primarily engage in utilitarian browsing behaviors are more likely to be persuaded by the information and features provided by these apps. This suggests that app developers can enhance persuasion strategies to target task-oriented users effectively.

However, Pleasure-oriented app usage did not demonstrate a significant direct impact on Digital Persuasion, indicating that hedonic browsing behaviors may not directly influence persuasion within this context.

These findings have important implications for both the online food delivery industry and policymakers. App developers can tailor their platforms to align with the preferences and behaviors of frugal consumers, recognizing the influence of social networks and the importance of effective persuasion strategies. Policymakers can also consider the potential regulatory aspects of digital persuasion tactics within such apps to ensure ethical and transparent practices.

In summary, this research sheds light on the complex dynamics of online food shopping through online delivery applications. It highlights the role of frugality, social influence, and utilitarian app usage in shaping consumer behaviors and provides valuable insights for industry stakeholders to optimize user experiences and persuasion strategies. As the online food shopping landscape continues to evolve, understanding these factors becomes increasingly critical for both business success and consumer well-being.

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