PATTERNS OF NATURAL-BASED HEALTH PRODUCT USE AND HALAL PERCEPTION FOR WOMEN'S HEALTH AMONG UNDERGRADUATE FEMALE STUDENTS IN UNIVERSITAS ISLAM INDONESIA

THESIS

To meet one of the requirements to achieve a Bachelor of Pharmacy (S.Farm.) degree

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APPROVAL OF THESIS DEFENSE

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STATEMENT

I hereby declare that in this thesis there is no work that has ever been submitted to obtain a bachelor's degree at a university, and as far as I know there is also no work or opinion that has been written or published by others, except in writing it is referred to in this manuscript and published in the bibliography.

Yogyakarta, 14 July 2026

Writer



Zulaika Zamri

PREFACE

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Yogyakarta, 14 July 2026

Zulaika Zamri

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PATTERNS OF NATURAL-BASED HEALTH PRODUCT USE AND HALAL PERCEPTION FOR WOMEN'S HEALTH AMONG UNDERGRADUATE FEMALE STUDENTS IN UNIVERSITAS ISLAM INDONESIA

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ABSTRACT

Background: Natural-based health products are increasingly used by women to support reproductive health, beauty, and overall well-being. Among undergraduate Muslim female students, halal perception is considered an important factor influencing health-related product choices. However, empirical evidence on the influence of halal perception on the use of natural-based health products among female university students remains limited.
Objective: This study aimed to know the patterns of natural-based health product use for women's health, identify factors influencing that use, and examine the influence of halal perception on natural-based health product use among female students at Universitas Islam Indonesia.
Methods: This study employed a quantitative cross-sectional design. Data were collected through an online questionnaire from 102 eligible female students of Universitas Islam Indonesia. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.
Results: Natural products were commonly used by respondents to support reproductive health, beauty, and overall well-being. Halal perception had a positive and significant influence on the use of natural products ($\beta = 0.820$, $t = 16.160$, $p < 0.001$). The coefficient of determination ($R^2 = 0.672$) indicated that halal perception explained 67.2% of the variance in natural product use.
Conclusion: Natural products are widely used by female students at Universitas Islam Indonesia for women's health. The main factors influencing their use were perceived effectiveness, positive experiences, routine health practices, and women's health needs. Halal perception had a positive and significant influence on natural-based health product use, highlighting the role of halal considerations in shaping health-related consumption behavior among Muslim female students.
Keywords: Halal perception, natural-based health product use, women's health, female students, PLS-SEM, Universitas Islam Indonesia

CHAPTER I
INTRODUCTION
1.1 Background

Women's health encompasses a complex and interrelated set of needs, from reproductive health and beauty care to overall well-being, influenced by hormonal and physiological dynamics throughout the life cycle. During early adulthood, particularly among college-aged women, academic responsibilities, social transitions, and lifestyle changes increase health demands and exposure to stress, underscoring the importance of early prevention and health maintenance strategies (Lassi et al., 2025). From a biological perspective, women's health is further influenced by hormonal and physiological regulation through the neuroendocrine-reproductive axis, which underlies reproductive and related outcomes (Liu et al., 2025). This condition contributes to the growing interest in Natural-Based Health Products as part of health-maintenance strategies, aligned with the back-to-nature movement that repositions natural products as alternatives perceived to have fewer side effects and a more holistic interaction with the body's physiological systems (Abdallah et al., 2023; Dahia et al., 2025). This increased interest is reflected of the Indonesian herbal medicine market, which was valued at approximately USD 12,821.8 million in 2023, is projected to reach USD 13,732.1 million in 2024, and is expected to grow further to USD 25,459.1 million in 2033 with a compound annual growth rate (CAGR) of 7.1%, indicating a significant increase in demand for nature-based health solutions (Sirsat, 2024).

In line with this market growth, Natural-Based Health Products are increasingly incorporated into holistic health and self-care approaches, particularly through herbal medicines and plant-based health and beauty products. These products are commonly perceived to offer better compatibility with the body and lower potential for side effects compared to synthetic formulations, making them more acceptable for regular and long-term use, especially among women with health and wellness-oriented needs (Akram et al., 2023; Mitterer-Daltoé et al., 2023). This is particularly evident in the growing popularity of traditional herbal preparations such as turmeric-tamarind (kunyit asam) and ginger-based drinks, which are widely used by young Indonesian women to address menstrual

discomfort and support hormonal balance, reflecting the continued use of traditional herbal practices (Supatmi et al., 2024). In addition, modern Natural-Based Health Products such as matcha-based functional beverages have gained popularity among Generation Z due to their perceived health benefits and functional properties, including bioactive compounds such as catechins and theanine that may support overall well-being (Nisa et al., 2025).

Considering these health needs, undergraduate female students at Universitas Islam Indonesia (UII) represent an appropriate population for this study. Women are among the primary users of Natural-Based Health Products because they commonly utilize these products to support reproductive health, menstrual health, hormonal balance, beauty, and wellness throughout early adulthood. Furthermore, university students are at a developmental stage in which they begin making independent decisions regarding healthcare, dietary supplementation, cosmetics selection, and self-care practices, making this population particularly relevant for understanding health-related consumption behavior. The selection of Universitas Islam Indonesia (UII) as the study setting is justified by its integration of Islamic values into academic and campus life, where halal principles are expected to influence students' health-related decision-making. In addition, undergraduate female students at UII come from diverse academic disciplines, providing heterogeneous educational backgrounds that may shape differences in health awareness, product knowledge, and halal perception. Within this context, the halal aspect of Natural-Based Health Products becomes increasingly important for Muslim consumers. From an Islamic perspective, the consumption of halal and thayyib products is a fundamental principle, as stated in the Qur'an, Surah Al-Baqarah verse 168. Halal compliance extends beyond the selection of raw materials to include every stage of production, processing, storage, and distribution (Republik Indonesia, 2023). Consequently, halal assurance may strengthen consumer trust and influence the use of Natural-Based Health Products, particularly among Muslim women who routinely use these products for health and personal care purposes (Riswandi et al., 2023)

Although the utilization of Natural-Based Health Products to support women's health continues to increase, empirical studies integrating women's

health, Natural-Based Health Product use, and halal perception remain limited. Previous studies have primarily examined halal cosmetics among university students (Prakasita & Wardana, 2022), halal Korean cosmetics (Sudarsono et al., 2025), and halal cosmetic behavior (Utami & Fetrina, 2024), while research on natural product use has focused on midlife women (Dahia et al., 2025). Consequently, little is known about how halal perception relates to natural-based health product use among female university students, highlighting an important gap in the current literature. Therefore, this study describes the pattern of natural-based health product use for women's health, identifies factors related to natural-based health products, and examines the influence of halal perception on natural-based health product use among female students at Universitas Islam Indonesia.

1.2 Problem Formulation

1. What are the patterns of Natural-Based Health Products use for women's health among undergraduate female students at Universitas Islam Indonesia?
2. What factors influence undergraduate female students at Universitas Islam Indonesia in their use of Natural-Based Health Products?
3. What is the influence of halal perceptions on the use of Natural-Based Health Products among undergraduate female students at Universitas Islam Indonesia?

1.3 Research Objective

1. To know the patterns of use of Natural-Based Health Products for women's health among undergraduate female students at Universitas Islam Indonesia.
2. To know the factors that influence undergraduate female students at Universitas Islam Indonesia in their use of Natural-Based Health Products.
3. To know the influence of halal perceptions on the use of Natural-Based Health Products among undergraduate female students at Universitas Islam Indonesia.

1.4 Research Output

1. An overview of the patterns of Natural-Based Health Product use for women's health among undergraduate female students at Universitas Islam Indonesia.

2. Identification of factors influencing undergraduate female students at Universitas Islam Indonesia in their use of Natural-Based Health Products.
3. An analysis of the influence of halal perception on the use of Natural-Based Health Products among undergraduate female students at Universitas Islam Indonesia

1.5 Integration with Islamic Values

Al-Qur'an Surah An-Nahl verse 69, about natural products:

ثُمَّ كُلِيْ مِنْ كُلِّ الثَّمَرٰتِ فَاسْلُكِيْ سُبُلَ رَبِّكِ ذُلُلًاۗ يَخْرُجُ مِنْ بُطُوْنِهَا شَرَابٌ مُّخْتَلِفٌ اَلْوَانُهٗ فِيْهِ شِفَاۤءٌ لِّلنَّاسِۗ اِنَّ فِيْ ذٰلِكَ لَاٰيَةً لِّقَوْمٍ يَّتَفَكَّرُوْنَ ﴿٦٩﴾

"Then eat from all the fruits and follow the ways of your Lord laid down [for you]." There emerges from their bellies a drink, varying in colors, in which there is healing for people; indeed, in that is a sign for a people who give thought." (Q.S An-Nahl 16:69)

Al-Qur'an Surah Al-Baqarah verse 168, about halal:

يٰٓاَيُّهَا النَّاسُ كُلُوْا مِمَّا فِى الْاَرْضِ حَلٰلًا طَيِّبًا وَّلَا تَتَّبِعُوْا خُطُوٰتِ الشَّيْطٰنِۗ اِنَّهٗ لَكُمْ عَدُوٌّ مُّبِيْنٌ ﴿١٦٨﴾

"O mankind, eat from whatever is on earth [that is] lawful and good and do not follow the footsteps of Satan. Indeed, he is to you a clear enemy." (Q.S Al-Baqarah 2:168)

1.6 Research Benefits

1. This research is expected to contribute to the development of knowledge in the field of Social Pharmacy and Administration, particularly in understanding the patterns of use of natural-based health products and the role of halal perception in shaping consumption behavior among undergraduate female students in Universitas Islam Indonesia.
2. The results of this study are expected to be a source of information for pharmaceutical personnel, producers, and educational institutions in developing and promoting safe, effective, and halal-compliant Natural-Based Health Products.
3. This research can be used as a basis for consideration by relevant parties in formulating strategies for the promotion, regulation, and supervision of

natural-based health products, especially those intended for female university students.

CHAPTER II
LITERATURE REVIEW
2.1 Literature Review
2.1.1 Natural-Based Health Product

Natural products are bioactive compounds or substances derived from natural sources, including plants, animals, microorganisms, and marine organisms, that possess biological activities and have potential applications in disease prevention, health promotion, and therapeutic development. Due to their structural diversity and various pharmacological properties, natural products have contributed significantly to the discovery and development of therapeutic agents. Although synthetic compounds and biotechnology-based products continue to advance, natural products remain an important source of bioactive substances for supporting health promotion, disease prevention, and therapeutic development. Advances in analytical methods and biotechnology have further enhanced the identification, characterization, and evaluation of natural compounds, expanding their applications in modern healthcare (Ooi & Pak, 2025).

In Indonesia, natural medicines are formally regulated under the Regulation of the Food and Drug Authority (BPOM) Number 29 of 2023 concerning Natural Medicines. This regulation defines natural medicines as ingredients or preparations derived from natural sources, including plants, animals, minerals, or other natural materials, which have been used empirically and/or scientifically evaluated to ensure their efficacy, safety, and quality (BPOM RI, 2023). Based on the level of scientific evidence and standardization, BPOM classifies natural medicines into three categories: Jamu, Standardized Herbal Medicine (Obat Herbal Terstandar/OHT), and Phytopharmaceuticals (Fitofarmaka) (BPOM RI, 2023). Jamu refers to products developed based on empirical experience passed down through generations. Standardized Herbal Medicine refers to products that have undergone preclinical testing using standardized raw materials. Phytopharmaceuticals represent the highest classification, as their safety and efficacy have been demonstrated through preclinical and clinical trials under established quality standards (BPOM RI, 2019). These classifications represent different levels of scientific evidence and standardization applied to natural medicinal products in Indonesia.

For this study, Natural-Based Health Products are defined as health-related products containing at least one ingredient derived from natural resources and intended to support health maintenance, wellness, and personal care. These products include herbal medicines, health supplements, functional foods, nutraceuticals, traditional remedies, cosmetics, skincare products, personal care products, aromatherapy preparations, and other products formulated using naturally derived ingredients. The inclusion of cosmetics and beauty care products is based on the increasing application of natural ingredients in personal care practices, particularly among women, where natural-based formulations are commonly associated with wellness, skin health, and self-care. Therefore, Natural-Based Health Products in this research refer to products containing at least one naturally derived ingredient that are used by female students for health-related purposes, including women's health, beauty care, and overall well-being.

2.1.2 Halal

Halal is a legal status in Islam that indicates that a product is lawful and compliant with Sharia principles for consumption or use. Linguistically, the term halal derives from the Arabic root ḥ-l-l, which conveys the meaning of "to release," "to untie," or "to free from restriction." Semantically, something considered halal is understood as being released from prohibition and therefore allowed within the framework of Islamic law (Mudakir et al., 2024).

In the context of health products, halal status refers to the compliance status of a product based on its ingredients and manufacturing process. A product is categorized as halal if it does not contain prohibited substances such as pork, blood, carrion, intoxicating alcohol, or other unlawful elements, and if it is produced through processes that comply with halal standards. Therefore, halal as a product status is relatively static, as it is determined by the composition and production process at a particular point in time (Republik Indonesia, 2023)

In Indonesia, halal status is formally recognized through a halal certification process regulated by the government. The halal certification system involves several institutions with distinct responsibilities. The Badan Penyelenggara Jaminan Produk Halal (BPJPH) is responsible for administering the halal certification process, issuing halal certificates, and supervising the implementation

of halal assurance systems. Meanwhile, the Majelis Ulama Indonesia (MUI) determines the halal status of products through the issuance of halal fatwas based on the results of inspections conducted by accredited Halal Inspection Bodies (*Lembaga Pemeriksa Halal*-LPH). Therefore, while MUI provides the religious ruling regarding the halalness of a product, BPJPH is responsible for the administrative and regulatory aspects of halal certification (BPJPH, 2023; Republik Indonesia, 2023).

Products that complete the certification process are granted a halal certificate and are permitted to display the official halal label on their packaging. The halal label serves as a visible indicator that a product has met halal requirements and provides assurance to consumers regarding the product's compliance with Islamic principles. For Muslim consumers, the presence of a halal label often functions as an important source of trust and confidence when selecting products, particularly those related to food, pharmaceuticals, cosmetics, and health products (Anam et al., 2018; Riswandi et al., 2023).

Beyond halal status and certification, the concept of halal assurance plays a crucial role in maintaining the integrity of halal products. Halal Assurance, known in Indonesia as the *Sistem Jaminan Produk Halal* (SJPH), is a management system designed to ensure that halal compliance is maintained consistently throughout all stages of production and distribution. The system includes halal policies, the establishment of halal management teams, employee training, verification of raw materials, monitoring of production processes, documentation procedures, and corrective actions for non-compliant products (BPJPH, 2023; Republik Indonesia, 2023).

Unlike halal status, which represents the compliance status of a product at a specific point in time, halal assurance is dynamic and preventive in nature. It focuses on maintaining continuous compliance and preventing potential violations that may arise from changes in suppliers, raw materials, personnel, production facilities, or operational procedures. Through the implementation of SJPH, organizations can ensure the sustainability and consistency of halal compliance even when operational changes occur. Consequently, halal assurance serves as an

essential mechanism for protecting consumer trust and supporting the long-term credibility of halal-certified products (BPJPH, 2023; Republik Indonesia, 2024).

2.1.3 Women's Health

Women's health is a multidimensional concept influenced by biological changes and hormonal regulation that occur throughout the life cycle. Since entering reproductive age, women experience various physiological phases, ranging from menstruation, pregnancy, childbirth, to menopause, each of which has different characteristics and health needs. The hormonal changes that accompany each of these phases not only affect physical condition but also influence psychological aspects and overall well-being (Lassi et al., 2025). Therefore, women's health needs to be understood through a holistic approach that considers the interrelationship between physical, mental, and social aspects (Dahia et al., 2025).

From a holistic perspective, women's health is not limited to reproductive health alone, but also includes the dimensions of beauty and wellness (Nasralla, 2024). Reproductive health plays an important role in maintaining physiological function and hormonal balance (Lassi et al., 2025), while beauty is related to skin health, hair, and physical appearance, which can affect self-confidence and mental health (Bai, 2024). The wellness dimension reflects the balance of physical and psychological health, including an individual's ability to manage stress, maintain a healthy lifestyle, and maintain an optimal quality of life (Algera, 2025). Thus, women's health in this study is understood as a holistic concept that includes reproductive health, beauty maintenance as a reflection of physical and mental health, and wellness that supports overall quality of life (Dahia et al., 2025).

Women in early adulthood, especially those aged 18 years and above, represent a strategic population group in women's health research. At this stage of life, individuals typically begin to exercise greater independence in decision-making, including decisions related to health maintenance, lifestyle behaviors, and the selection of health products. Epidemiological data indicate that individuals aged above 18 years experience a relatively high prevalence of mental health issues such as depression, highlighting the importance of targeted health promotion and preventive strategies in this age group (Lee et al., 2023). These conditions can affect

attitudes, perceptions, and health behaviours, including preferences for products that are considered safe, practical, and in line with their values (Zandstra et al., 2024).

Considering the health and self-care needs of women in early adulthood, this group represents an important population for studying natural-based health products use behavior. Previous studies have highlighted the increasing interest in natural-based cosmetic products among women, particularly due to their perceived benefits for beauty and personal care (Aufi, 2021). However, broader aspects of natural-based health product use related to women's health and halal perception require further investigation.

2.1.4 Women's Health Needs

Women's health needs are multidimensional and interrelated, encompassing biological, psychological, and social aspects that affect overall quality of life (Lassi et al., 2025). During early adulthood, women increasingly engage in independent health-related decision-making, including choices related to health maintenance, product selection, and self-care practices (Algera, 2025). Therefore, understanding the health needs of women in this age group is essential as a foundation for examining health behaviors and health-related decision-making, particularly given the higher prevalence of mental health issues such as depression among women in early adulthood aged 18-24 years (Lee et al., 2023).

Women's health needs in terms of reproduction are related to maintaining reproductive organ function, hormonal balance, and managing the menstrual cycle (Lassi et al., 2025). Women in early adulthood generally experience various reproductive complaints, such as menstrual pain, irregular menstrual cycles, and mood swings, which can affect daily activities (Dahia et al., 2025). Meeting reproductive health needs includes efforts to maintain regular menstrual cycles, reduce discomfort during menstruation, and support hormonal balance safely and sustainably (Akram et al., 2023). These needs are important factors that influence women's attitudes and decisions in choosing health solutions that are suitable for long-term use (Zandstra et al., 2024).

In addition to reproductive health, women's health needs also include beauty, which is related to skin, hair, and physical appearance as a reflection of internal

health (Nasralla, 2024). Beauty maintenance is not only aimed at improving aesthetics, but also contributes to women's self-confidence and psychological well-being. Therefore, women tend to need products and care practices that support skin and body health naturally and are safe for routine use (Mitterer-Daltoé et al., 2023).

Wellness is another important aspect of women's health that encompasses a balance between physical, mental, and emotional health. Women in early adulthood often face academic, work, and social pressures that can increase stress levels and fatigue. Therefore, wellness needs include stress management, improving sleep quality, relaxation, and adopting a healthy lifestyle (Algera, 2025; Lee et al., 2023).

Overall, women's health needs include the fulfillment of reproductive, beauty, and wellness aspects in an integrated manner (Lassi et al., 2025). Understanding these needs is an important basis for examining women's health behaviors, including the selection and use of natural-based health products. By understanding women's health needs holistically, this study can identify factors that influence the use of natural-based health products as part of sustainable health maintenance efforts (Mitterer-Daltoé et al., 2023).

2.2 Theoretical Foundations

Previous studies have shown that natural-based health product play an important role in supporting women's health through multidimensional biological mechanisms. A comprehensive review by Liu et al. (2025) confirms that plant bioactive compounds, such as polyphenols, catechins, and phytoestrogens, have antioxidant and anti-inflammatory activities, as well as the ability to modulate the neuroendocrine-reproductive system. These mechanisms are associated with reproductive health, emotional stability, and women's holistic well-being. In the context of everyday use, Prakasita and Wardana (2022) report that female students tend to choose natural cosmetic products because they are perceived as safer and of higher quality for long-term use. This indicates that cosmetics are increasingly understood as part of personal healthcare, not just as aesthetic products. These findings are reinforced by Sudarsono et al. (2025), who show that consumer literacy, evaluation of the procurement process, and product safety perceptions are related to the intention and behavior of cosmetic use among female students.

Previous research also confirms that the halal status of the production process is an important factor in shaping attitudes and use behavior regarding the use of health and cosmetic products among Muslim women. A study by Prakasita and Wardana (2022) shows that halal is not only understood as compliance with religious teaching but also interpreted as an indicator of safety, hygiene, and quality of the production process. This increases consumer confidence in the products used. In line with this, research by Utami and Fetrina (2024) reports that religiosity, knowledge, and attitudes have a significant influence on the intention to use halal products, indicating that consumption behavior is shaped by the interaction between personal values and rational considerations. Furthermore, Sudarsono et al. (2025) emphasize that halal loiteracy, perceptions of the production process, and halal legitimacy play important roles in shaping product use behavior among female students by strengthening trust and bridging the gap between itention and actual use.

2.3 Empirical Information

Previous empirical studies indicate that the use of natural-based health products among female university students is influenced by health-related needs and functional considerations, particularly perceptions of product safety and quality, which are more strongly associated with actual usage behavior than with mere purchase intention. Prakasita and Wardana (2022) demonstrated that among female Muslim students, halal perception functions not only as a religious requirement but also as an indicator of product safety, cleanliness, and quality assurance, thereby strengthening consumer trust in products that are used regularly. Additional empirical evidence suggests that halal perception interacts with personal values and product attributes in shaping consumption behavior. Sudarsono et al. (2025) found that halal literacy and positive attitudes toward halal products significantly influence both behavioral intention and actual usage among female students, indicating that trust derived from halal compliance plays a critical role in consumption behavior. Despite these findings, previous studies have predominantly focused on halal cosmetics or purchase intention rather than the broader use of Natural-Based Health Products for women's health. Furthermore, limited empirical evidence has examined the influence of halal perception on Natural-Based Health

Product use among undergraduate female students within an Islamic university setting. Therefore, further research is needed to examine this relationship and provide empirical evidence regarding the role of halal perception in shaping Natural-Based Health Product use among undergraduate female students at Universitas Islam Indonesia.

2.4 Research Concept Framework

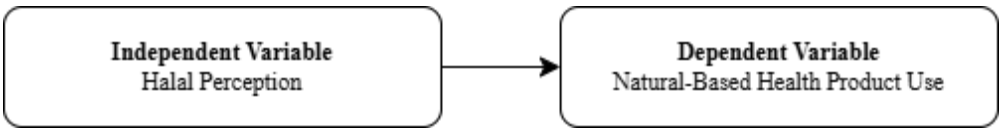


Figure 2.1 Research Framework

CHAPTER III
RESEARCH METHODS

3.1 Research Design

This study employed a quantitative research approach using a cross-sectional design. Data were collected at a single point in time through a structured questionnaire to examine the influence of Halal Perception on Natural-Based Health Product Use among undergraduate female students at Universitas Islam Indonesia. A quantitative approach was selected because it enables the systematic measurement of latent constructs and the statistical examination of relationships between variables.

To analyze the proposed research model, this study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4 software. According to Hair et al. (2021), PLS-SEM is particularly suitable for studies that aim to explain relationships among latent constructs while simultaneously estimating the measurement model and the structural model. Furthermore, PLS-SEM is appropriate for exploratory research that seeks to extend theoretical understanding in contexts where empirical evidence remains limited. Since this study investigates the influence of Halal Perception on Natural-Based Health Product Use among university female students, an area that has received limited empirical attention, PLS-SEM provides an appropriate analytical approach for evaluating the hypothesized relationship between the constructs. In addition, PLS-SEM allows the assessment of construct reliability and validity, as well as the evaluation of the structural model through path coefficients, coefficient of determination (R^2), effect size (f^2), and hypothesis testing using the bootstrapping procedure (Hair et al., 2021).

3.2 Research Location and Time

The study was conducted at Universitas Islam Indonesia (UII), Yogyakarta, involving undergraduate female students from non-health faculties, excluding the Faculty of Medicine and the Pharmacy Department, in accordance with the study's exclusion criteria. Data collection used online Google Forms questionnaires, an effective method for reaching female students across faculties.

The research time spans January to June 2026, including preparation, ethical clearance submission, questionnaire distribution, data processing, and analysis.

3.3 Population Criteria

3.3.1 Inclusion and Exclusion Criteria

Inclusion Criteria :

1. Active female students of Universitas Islam Indonesia who are currently enrolled in Bachelor's Degree (S1) or Diploma IV (D4) study programs.
2. Aged 18 years or older.
3. Prior use of natural-based health products for women's health, defined as at least one use within the past 12 months.
4. Willing to complete informed consent and the full questionnaire.

Exclusion Criteria :

1. Female students from health faculties/programs (the Faculty of Medicine and the Pharmacy Department) are excluded to avoid professional knowledge bias.
2. Respondents with incomplete sociodemographic information or inconsistent questionnaire responses.

Excluded to minimize professional knowledge bias that may influence perception and interpretation of health-related products.

3.3.2 Population and Sample

The population comprises all active undergraduate (S1) and Diploma IV (D4) female students at Universitas Islam Indonesia. Based on the latest academic data, the total population consisted of 12,524 active undergraduate female students enrolled across the University's nine faculties, namely the Faculty of Business and Economics (FBE), Faculty of Law (FH), Faculty of Islamic Studies (FIAI), Faculty of Social and Cultural Sciences (FISB), Faculty of Medicine (FM), Faculty of Mathematics and Natural Sciences (FMIPA), Faculty of Psychology (FP), Faculty of Civil Engineering and Planning (FTSP), and Faculty of Industrial Technology (FTI) (Universitas Islam Indonesia, 2025).

A sample is a portion of a population that is taken to represent the characteristics of all members of the population. The minimum sample size in this study was calculated using the Slovin formula as follows :

$$\text{n} = \frac{N}{1 + N(e)^2}$$

Explanation :

- n = Minimum sample size.
- N = Population size (12,524 female students).
- e = *Margin of error* or tolerated error rate.

In this study, a margin of error of 10% (0.10) was adopted to determine the minimum sample size. The margin of error represents the level of precision specified by the researcher and reflects the acceptable difference between the sample estimate and the true population value. A 10% margin of error was considered appropriate to obtain a representative sample while maintaining a feasible sample size within the study's time and resource constraints (Santoso, 2023).

Based on the population size (N) of 12,524 female students, the sample size calculation is as follows:

$$n = \frac{12{,}524}{1 + 12{,}524(0.1)^2}$$

$$n = 99.20$$

The minimum required sample size was determined using Slovin's formula with a 10% margin of error, resulting in a minimum sample requirement of 100 respondents. Although proportional sampling across faculties was considered to ensure representation, the final number of respondents obtained from each faculty varied due to differences in response availability and participation willingness. Therefore, the adequacy of the sample was assessed based on the total number of respondents, which met the minimum sample size requirement, rather than requiring each faculty to individually fulfill a predetermined minimum number of respondents.

3.4 Operational Definition

3.4.1 Operational Definition of Research Variables

This study examines two primary variables, Halal Perception as the independent variable and Natural-Based Health Product Use as the dependent variable.

1. Halal Perception

Halal Perception refers to the extent to which female students recognize, appreciate, and consider halal status for using natural-based health products in accordance with Islamic teachings. This construct is operationalized with indicators: Knowledge of Halal Products which measures awareness of which ingredients and products are considered halal, Attitude towards Halal Compliance which assesses positive or negative evaluations towards using products that comply with halal standards, Importance of Halal in Decision Making which reflects the extent to which halal certification influences product selection, Trust in Halal Certification which captures trust in the accuracy and reliability of halal labels and the certification process and Behavioral Intention to Use Halal Products, which measures female students' willingness and intention to consistently choose products based on their halal status. Measurements were made using a 4-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree), allowing for assessment of the level of agreement with each statement.

2. Natural-Based Health Product Use

Natural-Based Health Product Use refers to the utilization of health-related products containing at least one naturally derived ingredient to support women's health, beauty, wellness, and overall well-being. In this study, a product is classified as a Natural-Based Health Product if it contains one or more ingredients derived from natural sources, regardless of whether the formulation is entirely natural. This definition includes herbal medicines, health supplements, functional foods, nutraceuticals, cosmetics, skincare products, personal care products, aromatherapy preparations, and other health-related products formulated with naturally derived ingredients. This construct is operationalized through four indicators: Frequency of Use, which measures how often respondents use Natural-Based Health Products; Purpose of Use, which identifies respondents' reasons for using these products; Consistency of Use, which assesses the regularity of product utilization over time; and Perceived Effectiveness, which evaluates respondents' perceptions regarding the benefits and effectiveness of Natural-Based Health Products in supporting women's health, beauty, wellness, and overall well-being. Responses were measured using a four-point Likert scale ranging from 1 (Strongly Disagree) to 4

(Strongly Agree), with higher scores indicating greater Natural-Based Health Product use.

3.4.2 Operational Definition of Population Criteria

The population in this study was all female undergraduate students enrolled at the Universitas Islam Indonesia. To ensure research ethics compliance, data quality, and methodological accuracy, this study established inclusion and exclusion criteria that were operationally defined as follows :

1. Active female students enrolled in Diploma IV (D4) and Bachelor's Degree (S1) programs at Universitas Islam Indonesia.

This criterion was established to ensure that the respondents accurately represented the study's target population, namely female students pursuing Diploma IV (D4) and Bachelor's Degree (S1) programs at Universitas Islam Indonesia. This study specifically focused on female students because women are among the primary users of natural-based health products, particularly for reproductive health, menstrual health, hormonal balance, and self-care purposes. According to the women's health life-course approach, women's health needs and healthcare-seeking behaviors are influenced by biological and reproductive factors across different stages of life, making women an important population in studies involving natural-based health products (Dahia et al., 2025; Lassi et al., 2025).

2. Aged 18 years or older.

The age limit of more than 18 years was set based on ethical, legal, medical, and health considerations. Ethically and legally, individuals of this age are categorized as adults and are therefore capable of giving their informed consent to participate in research (Republik Indonesia, 2014). The age of more than 18 years represents early adulthood, when biological growth and development, including the endocrine and reproductive systems in women, have reached a relatively stable level of maturity. This condition allows respondents to have a better understanding of their health conditions, self-care needs, and experience in using health products, enabling them to provide relevant and reflective answers to the questionnaire (Settersten et al., 2015).

3. Prior use of natural-based health products for women’s health, defined as at least one use within the past 12 months.

This criterion aims to ensure that respondents have direct and relevant experience with the use of natural-based health products for women's health. The 12-month time limit is set to minimize recall bias and ensure that the experience of using the product is still current and relevant to current conditions of use. (Jilani et al., 2024)

4. Willing to complete informed consent and the full questionnaire.

This criterion is established to ensure compliance with research ethics principles, particularly regarding voluntary participation. Respondents' willingness to complete the sociodemographic information and the full questionnaire is also important for maintaining data completeness and research quality. (Bibbins-Domingo et al., 2025)

5. Female students enrolled in the Faculty of Medicine or the Pharmacy Department were excluded to minimize professional knowledge bias.

Respondents from health faculties or study programs are excluded to avoid professional knowledge bias. Students in medicine and pharmacy programs receive formal education regarding medicines, herbal products, and healthcare practices, which may influence their perceptions and attitudes toward health-related products. Previous studies have shown that educational background in health sciences is associated with differences in attitudes and perceptions regarding complementary and alternative medicine (Yilmaz et al., 2020).

6. Respondents with incomplete or inconsistent questionnaire responses.

Respondents with incomplete or inconsistent responses were excluded to ensure data validity and reliability. According to the PLS-SEM methodological framework, complete and consistent datasets are required to obtain accurate parameter estimates and reliable structural model results. Missing or contradictory responses may reduce the quality and interpretability of the findings (Hair et al., 2021).

3.4.3 Research Instrument

The research instrument used in this study was a structured self-administered questionnaire developed based on the operational definitions of the research variables and adapted from previously validated instruments. The questionnaire was designed to measure Halal Perception and Natural-Based Health Product Use

among undergraduate female students at Universitas Islam Indonesia. All measurement items were presented in English and Indonesian, and administered electronically using Google Forms. To ensure consistency in respondents' understanding and responses, the questionnaire was organized into several sequential sections.

The questionnaire began with a brief introduction describing the study, followed by an informed consent section. The informed consent provided respondents with information regarding the purpose of the study, research procedures, potential risks, expected benefits, confidentiality of the collected information, and the voluntary nature of participation. Respondents were also informed of their right to refuse participation or withdraw from the study at any time without any consequences. Only respondents who agreed to participate by providing informed consent were allowed to continue to the questionnaire.

The subsequent section collected respondents' sociodemographic information, including name, student identification number (NIM), gender, confirmation of active student status at Universitas Islam Indonesia, age, and faculty. To ensure that respondents met the study eligibility criteria and shared a common understanding of the research object, a screening question regarding previous use of Natural-Based Health Products for women's health within the past 12 months was presented together with a brief explanatory statement. The statement defined Natural-Based Health Products as products containing at least one naturally derived ingredient used to support women's health, beauty, wellness, or overall well-being. Examples included herbal medicines, dietary supplements, cosmetics, skincare products, and other personal care products formulated with naturally derived ingredients. This explanation was intended to standardize respondents' interpretation of the term Natural-Based Health Products throughout the questionnaire.

Respondents who met the eligibility criteria proceeded to the main questionnaire, which consisted of two research constructs: Halal Perception and Natural-Based Health Product Use. Halal Perception was measured using fifteen questionnaire items across five domains, while Natural-Based Health Product Use was measured using fifteen questionnaire items across five domains. All items were

assessed using a four-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). After completing the questionnaire, respondents could voluntarily provide their WhatsApp number for reward distribution. This information was stored separately from the research dataset and was not included in the statistical analysis.

The measurement domain, item codes for the Halal Perception with HP code and the Natural-Based Health Product Use with NPU code, and questionnaire indicators are presented in Table 3.1.

Table 3.1 Research Instrument and Measurement Items

Variable	Domain	Code	Indicator (Questionnaire Item)
Halal Perception	Knowledge of Halal Products	HP1.1	I understand the criteria for determining whether a product is halal according to Islamic principles.
		HP1.2	I know how to identify whether Natural-Based Health Products contain halal or non-halal ingredients.
		HP1.3	I understand that halal status is determined not only by ingredients but also by the production process.
	Attitude toward Halal Compliance	HP2.1	Using halal-certified Natural-Based Health Products is important to me.
		HP2.2	I feel more comfortable using halal-certified Natural-Based Health Products.
		HP2.3	I believe the command to consume *halalan thayyiban*, as stated in the Qur'an (Al-Baqarah: 168), is relevant to my daily health product choices.
	Importance of Halal in Decision-Making	HP3.1	The values contained in the Qur'an (Surah Al-Mā'idah: 3) influence the way I evaluate whether a product is appropriate for use.
		HP3.2	I prioritize halal-certified Natural-Based Health Products over products that are not certified.

		HP3.3	I avoid Natural-Based Health Products if their halal status is unclear.
	Trust in Halal Certification	HP4.1	I trust halal certification issued by authorized institutions.
		HP4.2	The presence of a halal logo increases my confidence in a product.
		HP4.3	Halal certification guarantees product safety and compliance with Islamic principles.
	Behavioral Intention to Use Halal Products	HP5.1	I intend to continue using halal-certified Natural-Based Health Products.
		HP5.2	I will recommend halal-certified Natural-Based Health Products to others.
		HP5.3	I prefer to switch to halal-certified Natural-Based Health Products whenever they are available.
Natural-Based Health Product Use	Frequency of Use	NPU1.1	I regularly use Natural-Based Health Products for health purposes.
		NPU1.2	I use Natural-Based Health Products at least once a month.
		NPU1.3	Natural-Based Health Products are part of my routine health practices.
	Type of Product Used	NPU2.1	I use herbal medicines or natural-based dietary supplements for women's health.
		NPU2.2	I use natural-based cosmetic or skincare products.
		NPU2.3	I consume plant-derived functional foods or beverages.
	Purpose of Use	NPU3.1	I use Natural-Based Health Products to maintain reproductive or hormonal health.
		NPU3.2	I use Natural-Based Health Products to improve my mood or emotional well-being.
		NPU3.3	I use Natural-Based Health Products for beauty and skin health.

	Consistency of Use	NPU4.1	I use Natural-Based Health Products continuously rather than occasionally.
		NPU4.2	I follow the recommended instructions when using Natural-Based Health Products.
		NPU4.3	I prefer Natural-Based Health Products for long-term health management.
	Perceived Effectiveness	NPU5.1	I believe Natural-Based Health Products are effective in supporting women's health.
		NPU5.2	I experience health benefits after using Natural-Based Health Products.
		NPU5.3	I believe Natural-Based Health Products are safer than synthetic alternatives.

3.5 Data Collection Procedure

Data collection in this study was conducted using a structured self-administered questionnaire distributed to female students of Universitas Islam Indonesia (UII). The questionnaire was designed to collect primary data on respondents' demographic characteristics, halal perceptions, and use of natural-based health products in women's health. The data collected in this study consisted of primary quantitative data obtained directly from respondents through an online questionnaire. The questionnaire items were adapted from previously validated studies and modified to align with the objectives and context of the present research. All questionnaire items were measured using a 4- point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree).

Before the main data collection, a pilot test was conducted to evaluate the clarity, comprehensibility, and suitability of the questionnaire items. The pilot study involved 30 female students who met the inclusion criteria but were not included in the final research sample. Feedback obtained from the pilot test was used to improve wording, readability, and questionnaire structure before distribution to the target population. The final questionnaire was distributed online through Google Forms. Participants were informed about the purpose of the study and provided informed

consent before completing the questionnaire. Data collection was conducted over the designated study period until the required sample size was achieved. The completed questionnaires were screened to ensure completeness and eligibility before being included in the statistical analysis.

3.6 Pilot Test

Before conducting the main survey, a pilot test was carried out to evaluate the clarity, comprehensibility, and preliminary psychometric properties of the questionnaire. A pilot study is an essential step in survey-based research because it helps identify ambiguous wording, improve questionnaire structure, and assess whether the measurement items adequately represent the intended latent constructs before large-scale data collection (Hair et al., 2021). The pilot test involved 30 female students who met the inclusion criteria but were not included in the final research sample. A sample of approximately 30 respondents is commonly considered sufficient for preliminary instrument evaluation and allows researchers to identify potential measurement problems before administering the questionnaire to the target population.

The validity and reliability testing in this study were conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) method with the assistance of SmartPLS 4 software through the evaluation of the outer model or measurement model. The evaluation of the measurement model aims to ensure that the indicators used are capable of measuring latent constructs accurately, consistently, and reliably. In PLS-SEM, the measurement model is tested before the structural model is evaluated because relationships between constructs can only be interpreted if the research instruments meet the criteria for validity and reliability.

PLS-SEM was selected because it is particularly suitable for exploratory research, accommodates complex models involving latent variables, and does not require multivariate normal data distribution. Furthermore, this variance-based structural equation modeling approach enables researchers to evaluate reflective measurement models (Hair et al., 2021).

3.6.1 Convergent Validity

Convergent validity is used to measure the extent to which indicators within a single construct exhibit a high level of correlation, thereby demonstrating their

ability to represent the same construct. According to Hair et al. (2021), convergent validity in a reflective model is evaluated using outer loading values and Average Variance Extracted (AVE). An indicator with a high outer loading value indicates that it makes a strong contribution to explaining the latent construct being measured.

An indicator is considered to meet convergent validity if it has an outer loading value of ≥ 0.70. However, in exploratory research, loading values between 0.60 and 0.70 are still acceptable provided that the AVE and construct reliability meet the required criteria. Additionally, a construct is considered to have good convergent validity if the AVE is ≥ 0.50, indicating that the construct explains more than 50% of the variance in its indicators. Thus, the higher the outer loading and AVE values, the better the construct's ability to explain the indicators used.

3.6.2 Discriminant Validity

Discriminant validity aims to determine the extent to which a construct is empirically distinct from other constructs in the research model. This assessment ensures that the indicators of a construct represent the intended construct and do not exhibit stronger relationships with other constructs. According to Hair et al. (2021), discriminant validity in reflective measurement models can be evaluated using the Heterotrait-Monotrait Ratio (HTMT), which is considered a more sensitive approach compared to traditional methods.

The HTMT value represents the ratio of the average correlations between indicators from different constructs to the average correlations among indicators within the same construct. Discriminant validity is established when the HTMT value is below 0.90 for conceptually similar constructs or below 0.85 for conceptually distinct constructs (Hair et al., 2021). In this study, HTMT was used as the primary method for assessing discriminant validity because it provides a more reliable detection of potential discriminant validity issues in reflective measurement models.

3.6.3 Reliability Test

Reliability testing was conducted to assess the internal consistency of the indicators used to measure the research construct. According to Hair et al. (2021), construct reliability in PLS-SEM can be evaluated using Composite Reliability and

Cronbach's Alpha. This test aims to ensure that the indicators within a construct provide consistent and stable measurement results.

The Composite Reliability value is generally recommended in PLS-SEM because it provides a more accurate reliability estimate than Cronbach's Alpha, especially in models with indicators that have varying loadings. A construct is considered reliable if it has a Composite Reliability value of ≥ 0.70 and a Cronbach's Alpha value of ≥ 0.70. High reliability values indicate that the indicators within the construct have a good level of internal consistency, making them suitable for use in research.

3.7 Data Processing and Analysis

Data analysis was performed using SmartPLS 4 software with the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. PLS-SEM was selected to examine relationships among latent variables through the evaluation of the measurement model (outer model) and structural model (inner model). According to Hair et al. (2021), PLS-SEM is suitable for predictive research models, relatively small sample sizes, and data that do not require normal distribution assumptions.

The data analysis consisted of descriptive analysis, evaluation of the measurement model, evaluation of the structural model, and hypothesis testing.

3.7.1 Descriptive Analysis

Descriptive analysis is used to provide an overview of the respondents' characteristics and the distribution of their responses to each research indicator. This analysis aims to help researchers understand the data before conducting further analysis using PLS-SEM.

In this study, descriptive analysis includes the distribution of faculties and the distribution of responses to each statement item in the Halal Perception and Natural-Based Health Product Use variables. The data were analyzed using percentages, mean, and standard deviation values. Frequency and percentage values were used to indicate the number and proportion of respondents' answers in each response category. The mean is used to determine the average tendency of respondents' answers toward a particular indicator, while the standard deviation is used to assess the degree of variation in respondents' answers. The smaller the standard deviation

value, the more homogeneous the respondents' answers. The results of the descriptive analysis are presented in the form of tables, diagrams, and percentages to facilitate the interpretation of the research data (Kaur et al., 2018).

3.7.2 Outer Model Evaluation

The evaluation of the outer model was conducted to assess the quality of the indicators in measuring the latent construct of the study. According to Hair et al. (2021), the evaluation of the measurement model aims to ensure that the study's indicators are valid and reliable so that they can measure the construct accurately and consistently.

The outer model evaluation in this study was conducted through tests of convergent validity, discriminant validity, and composite reliability.

a. Convergent Validity

Convergent validity is used to determine the extent to which indicators within a single construct have a strong relationship and are capable of explaining the same construct. This test is conducted using outer loading values and Average Variance Extracted (AVE).

Outer loading values indicate the strength of the relationship between an indicator and the latent construct. The higher the outer loading value, the greater the indicator's contribution to explaining the construct. According to Hair et al. (2021), an indicator is considered to meet convergent validity if it has an outer loading value of ≥ 0.70.

Additionally, convergent validity is evaluated using the AVE value. The AVE value indicates the construct's ability to explain the variance of its indicators. A construct is considered to meet convergent validity if it has an AVE value of ≥ 0.50, meaning the construct explains more than 50% of the indicators' variance.

b. Discriminant Validity

Discriminant validity is used to assess whether a construct is sufficiently distinct from other constructs in the research model. This test ensures that the indicators of a construct represent the intended construct and are not strongly associated with other constructs. In this study, discriminant validity was evaluated using the Heterotrait-Monotrait Ratio (HTMT), which is recommended as a more sensitive approach for detecting discriminant validity issues in reflective

measurement models. Discriminant validity is established when the HTMT value is below 0.90 for conceptually similar constructs or below 0.85 for conceptually distinct constructs (Hair et al., 2021).

c. Reliability Test

Reliability is used to measure the consistency of indicators within a construct. This test aims to ensure that all indicators within the construct provide stable and consistent measurement results.

Construct reliability in this study was evaluated using Composite Reliability and Cronbach's Alpha values. According to Hair et al. (2021), a construct is considered reliable if it has a Composite Reliability value of ≥ 0.70 and a Cronbach's Alpha of ≥ 0.70.

The Composite Reliability value is considered superior in PLS-SEM because it provides a more accurate reliability estimate than Cronbach's Alpha, particularly when indicators have varying loading values.

3.7.3 Inner Model Evaluation

The evaluation of the structural model, or inner model, is an analytical step in the Partial Least Squares Structural Equation Modeling (PLS-SEM) method that is conducted after all constructs in the measurement model (outer model) have been determined to be valid and reliable. The inner model is used to evaluate the relationships among latent constructs in the research model based on the formulated hypotheses. This evaluation aims to determine the model's ability to explain causal relationships among latent variables and to assess the model's predictive ability regarding endogenous constructs. Thus, the evaluation of the inner model serves not only to test the significance of relationships among variables but also to assess how well the research model explains the phenomena under study.

According to Hair et al. (2021), the evaluation of the internal model in PLS-SEM is conducted through several main stages, namely the collinearity test (Variance Inflation Factor/VIF), testing the significance and relevance of path coefficients, testing the coefficient of determination (R^2), testing the effect size (f^2), and testing the model's predictive power using PLSpredict. These steps are carried out systematically to ensure that the structural model possesses good explanatory and predictive power.

a. Collinearity Test (Variance Inflation Factor/VIF)

A collinearity test is conducted to determine whether there is excessive correlation among the predictor constructs in the structural model. High levels of collinearity may inflate the standard errors of the estimated path coefficients and reduce the stability of the structural model estimates. Therefore, assessing collinearity is necessary before interpreting the relationships among latent constructsz (Hair et al., 2021).

Collinearity within the inner model is measured using the Variance Inflation Factor (VIF). The VIF value indicates the level of correlation among predictor constructs in each structural equation within the model. The higher the VIF value, the greater the level of multicollinearity among the predictor constructs. Therefore, VIF evaluation is necessary to ensure that the structural model is free from multicollinearity issues that can reduce the quality of model estimates.

Table 3.2 Variance Inflation Factor (VIF) Assessment Criteria

VIF Value	Interpretation
VIF < 3	Preferred; collinearity is not a concern
VIF = 3-5	Acceptable; potential collinearity should be monitored
VIF >5	Indicates a potential collinearity problem

(Source: Adapted from Hair et al. (2021))

b. Coefficient of Determination (R^2) Test

The coefficient of determination (R^2) is a measure used to assess the ability of a structural model to explain the variance of the endogenous construct. The R^2 value indicates the proportion of the dependent variable's variance that can be explained by all independent constructs in the model simultaneously. In other words, the R^2 value reflects the model's explanatory power regarding the predicted variable.

The R^2 value ranges from 0 to 1. The higher the R^2 value, the greater the model's ability to explain the variability of the endogenous construct. In social and behavioral research, the R^2 value is generally not very high because human behavior is influenced by many complex factors. Therefore, the interpretation of the R^2 value must be done contextually according to the research field and the complexity of the model used.

According to Hair et al. (2021), R^2 values are categorized into three levels: strong, moderate, and weak. These categories are used to assess whether a research model has good explanatory power regarding the endogenous construct.

Table 3.3 Coefficient of Determination (R^2) Interpretation

R^2 Value	Category
0,75	Strong (*substantial*)
0,50	Moderate (*moderate*)
0,25	Weak (*weak*)

(Source: Adapted from Hair et al. (2021))

In addition to reporting the R^2 value, researchers are also advised to report the adjusted R^2 because this value takes into account the number of predictor constructs and the study sample size, thereby providing a more conservative estimate.

c. Effect Size Test (f^2)

Effect size (f^2) is a measure used to determine the magnitude of a predictor construct's contribution to the R^2 value of the endogenous construct. The f^2 value indicates how much the R^2 value changes when a predictor construct is removed from the structural model. Thus, effect size testing helps researchers understand the specific contribution of each independent variable in explaining the dependent variable.

Testing f^2 is important because a statistically significant relationship does not necessarily have a large practical effect. Therefore, the f^2 value is used to evaluate the strength of a construct's influence on other constructs within the research model.

According to Hair et al. (2021), the interpretation of the f^2 value is categorized into small, moderate, and large effects as follows.

Table 3.4 Effect Size (f^2) Interpretation

f^2 Value	Category
0,02	Small effect
0,15	Medium effect
0,35	Large effect

(Source: Adapted from Hair et al. (2021))

The larger the f^2 value, the greater the contribution of the predictor construct in improving the model's explanatory power regarding the endogenous construct.

3.7.4 Hypothesis Testing

Hypothesis testing in PLS-SEM is performed to evaluate the significance of the structural relationships between latent constructs. This assessment is conducted using the bootstrapping procedure, which is a nonparametric resampling technique that generates an empirical sampling distribution without requiring the assumption of normally distributed data (Hair et al., 2021). Bootstrapping produces estimates of the path coefficients (β), standard deviation, t-statistic, p-value, and confidence interval, which are used to determine whether the proposed hypotheses are statistically supported.

The path coefficients (β) represent the direction and strength of the relationship between latent constructs in the structural model. A positive coefficient indicates a positive relationship. Path coefficient values closer to +1 or -1 indicate stronger relationships, while values closer to 0 indicate weaker relationships.

The significance of the structural relationship was assessed based on the t-statistic, p-value, and 95% confidence interval using a two-tailed significance test at a 5% significance level. A hypothesis is accepted when the t-statistic exceeds the critical value of 1.960, the p-value is below 0.05, and the 95% confidence interval does not include zero (Hair et al., 2021).

Table 3.5 Hypothesis Testing Criteria

Parameter	Acceptance Criterion
t-statistic (α = 5%, two-tailed)	> 1.960
p-value	< 0.05
Confidence interval 95%	Does not contain 0

(Source: Adapted from Hair et al. (2021))

Based on these criteria, the hypothesis is considered supported when the bootstrapping results show a statistically significant relationship between the predictor and endogenous construct under the two-tailed significance test. In this study, hypothesis testing was conducted to determine whether Halal Perception has a significant effect on Natural-Based Health Product Use among female students at Universitas Islam Indonesia.

3.8 Research Flow

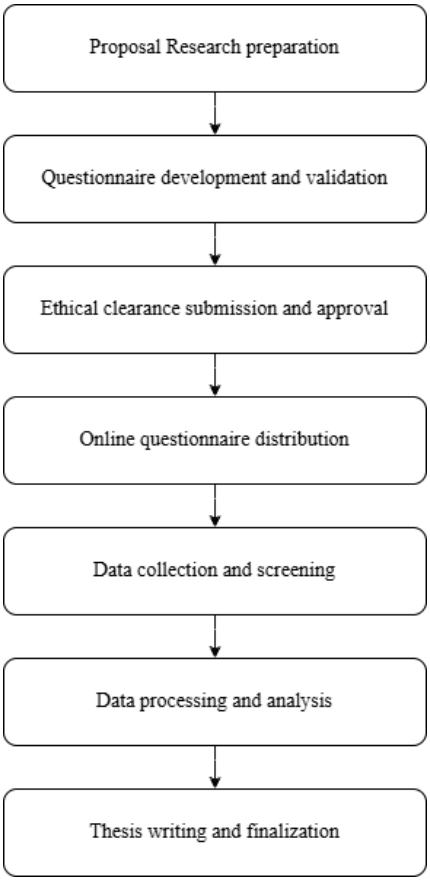


Figure 3.1 Research Scheme

CHAPTER IV
RESULTS AND DISCUSSION

This study is a quantitative study in which the data generated are numerical and were analyzed using SmartPLS 4 software. The purpose of this study is to analyze the influence of halal perception on the use of natural-based health products among female students at the Universitas Islam Indonesia. The population in this study consists of undergraduate female students at the Universitas Islam Indonesia who met the research criteria, with a total sample size of 130 respondents obtained through the distribution of an online questionnaire, of which 102 respondents met the inclusion criteria and were included in the final analysis. The research instrument utilized a Likert scale with a range of 1- 4, where a score of 1 indicates "strongly disagree," and a score of 4 indicates "strongly agree." This study consists of one independent variable, namely Halal Perception, and one dependent variable, namely Natural-Based Health Product Use.

The study began with a pilot test to evaluate the quality of the instrument before the main data collection. After the instrument demostrated satisfactory validity and reliability, the main survey was conducted, and the results were analyzed through measurement model evaluation (outer model) and structural model analysis (inner model).

4.1 Data Collection and Respondent Screening Process

Before the statistical analysis was conducted, the collected questionnaire data underwent several screenings to ensure that all respondents met the predefined inclusion criteria and that the final dataset was suitable for analysis. Data collection was conducted in two stages using two separate Google Forms links.

The first stage consisted of a pilot test to evaluate the validity and reliability of the questionnaire before the main survey. The pilot questionnaire was distributed using the first Google Forms link and received 57 responses. All responses were screened according to the predetermined eligibility criteria. After the screening process, 30 respondents met all inclusion criteria and were included in the pilot test analysis, whereas 27 responses were excluded because they did not meet the research eligibility criteria. The pilot test results were analyzed the validity criteria were removed before proceeding to the main survey.

The second stage involved the distribution of the revised questionnaire through a new Google Form link for the main survey. A total of 130 responses were collected. During the initial screening, 6 responses from male participants were excluded because the study specifically targeted female students. The remaining 124 female respondents were then assessed against the predefined eligibility criteria. Among these, 12 respondents were excluded because they did not meet the study requirements, including postgraduate (S2) students and respondents from other universities. Consequently, 102 respondents fulfilled all eligibility criteria and were included in the final dataset for descriptive analysis and PLS-SEM.

This screening process ensured that only respondents who matched the target population and provided valid and consistent responses were included in the final analysis, thereby improving the quality and credibility of the research findings.

4.2 Pilot Test

The pilot test was conducted with 30 respondents who met the inclusion criteria to evaluate the measurement model before the main data collection. The data were analyzed using the PLS-SEM measurement model assessment procedure, including evaluations of indicator reliability, internal consistency reliability, convergent validity, and discriminant validity (Hair et al., 2021).

4.2.1 Characteristics of Pilot Test Respondents

The characteristics of respondents in the pilot test phase were analyzed to determine the distribution of respondents by faculty at the Universitas Islam Indonesia. A diverse distribution of respondents is necessary so that the research instrument can be tested on groups with different academic backgrounds, thereby providing a broader picture of respondents' levels of understanding. The results of the pilot test respondent distribution by faculty are presented in Table 4.1.

Table 4.1 Distribution of Pilot Test Respondents by Faculty

Faculty	Frequency	Percentage (%)
Faculty of Law (FH)	9	30
Faculty of Islamic Studies (FIAI)	1	3.3
Faculty of Civil Engineering and Planning (FTSP)	2	6.7
Faculty of Psychology (FP)	1	3.3
Faculty of Social and Cultural Sciences (FISB)	4	13.3
Faculty of Industrial Technology (FTI)	4	13.3
Faculty of Business and Economics (FBE)	3	10
Faculty of Mathematics and Natural Sciences (FMIPA – Non-Pharmacy)	6	20
Total	**30**	**100**

(Source: Data Processing, 2026)

Based on Table 4.1, the respondents participating in the pilot test represented all eight non-health faculties included in this study at Universitas Islam Indonesia. The largest proportion of respondents came from the Faculty of Law (30.0%), followed by the Faculty of Mathematics and Natural Sciences (Non-Pharmacy) with 20.0%. The Faculty of Social and Cultural Sciences and the Faculty of Industrial Technology each contributed 13.3%, while the Faculty of Business and Economics accounted for 10.0% of the respondents. The Faculty of Civil Engineering and Planning contributed 6.7%, whereas the Faculty of Islamic Studies and the Faculty of Psychology each represented 3.3% of the sample. This distribution indicates that the pilot test included respondents from diverse academic backgrounds across all eligible non-health faculties, thereby providing a comprehensive evaluation of the questionnaire's clarity, validity, and reliability before the main survey was conducted.

4.2.2 Evaluation of the Measurement Model - Pilot Test

The evaluation of the measurement model or outer model during the pilot test phase was conducted to assess the quality of the research instruments in measuring the latent constructs used in the study. In the Partial Least Squares Structural Equation Modeling (PLS-SEM) method, the evaluation of the outer model for

reflective constructs includes testing for convergent validity, discriminant validity, and reliability. According to Hair et al. (2021), the evaluation of the measurement model must be conducted before structural equation modeling analysis to ensure that the indicators used are valid and reliable in representing the research constructs.

a. Convergent Validity

An indicator is said to meet convergent validity if it has an outer loading value of ≥ 0.70. However, in exploratory research, indicators with an outer loading value of ≥ 0.60 are still acceptable if the AVE and construct reliability values continue to meet the required criteria. In this pilot test phase, the threshold for the outer loading value is set at 0.60. Therefore, indicators with an outer loading value below 0.60 will be eliminated from the model before the main data collection.

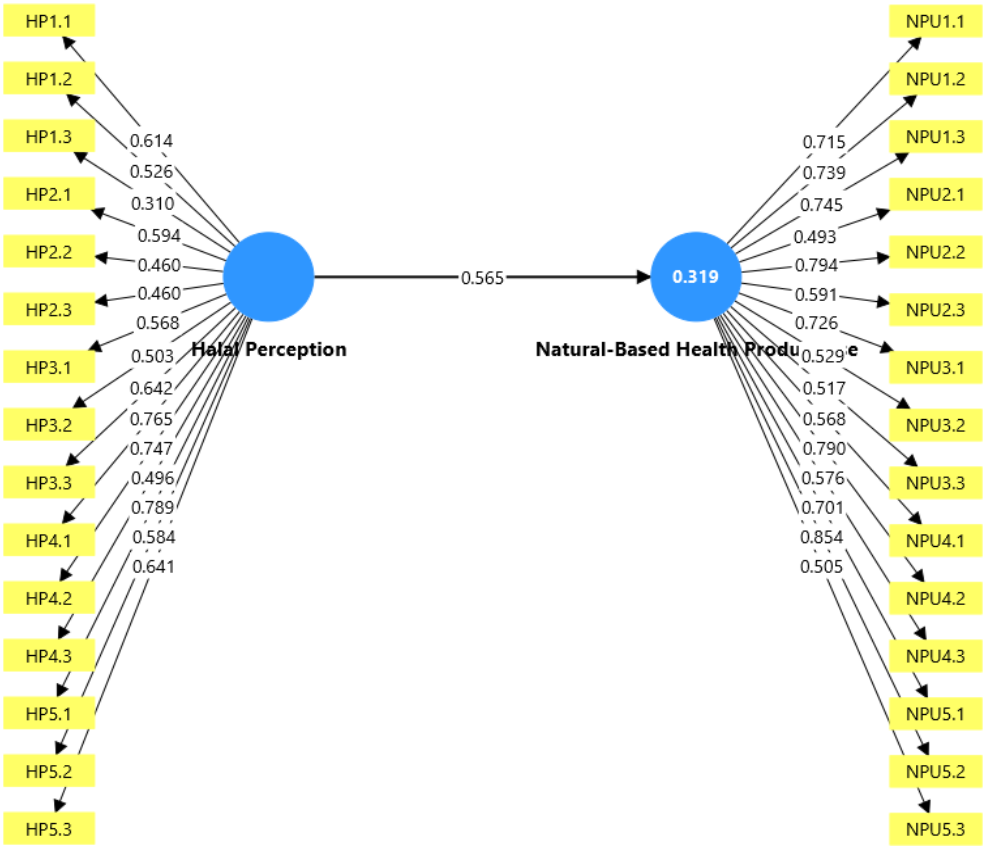


Figure 4.1 Outer Loading Values – Pilot Test

Figure 4.1 presents the outer loading values of all indicators in the pilot test model. Several indicators showed loading values below the recommended threshold of 0.60 and were therefore considered for elimination before the main survey.

Table 4.2 Outer Loading Values – Pilot Test

Variable	Code	Indicators	Outer Loading
Halal Perception	HP1.1	I understand the criteria for determining whether a product is halal according to Islamic principles.	0.614
	HP1.2	I know how to identify whether Natural-Based Health Products contain halal or non-halal ingredients.	0.526*
	HP1.3	I understand that halal status is determined not only by ingredients but also by the production process.	0.310*
	HP2.1	Using halal-certified Natural-Based Health Products is important to me.	0.594*
	HP2.2	I feel more comfortable using halal-certified Natural-Based Health Products.	0.460*
	HP2.3	I believe the command to consume *halalan thayyiban*, as stated in the Qur'an (Al-Baqarah: 168), is relevant to my daily health product choices.	0.460*
	HP3.1	The values contained in the Qur'an (Surah Al-Mā'idah: 3) influence the way I evaluate whether a product is appropriate for use.	0.568*
	HP3.2	I prioritize halal-certified Natural-Based Health Products over products that are not certified.	0.503*
	HP3.3	I avoid Natural-Based Health Products if their halal status is unclear.	0.642
	HP4.1	I trust halal certification or labeling issued by authorized institutions.	0.765

	HP4.2	The presence of a halal logo increases my confidence in a product.	0.747
	HP4.3	Halal certification guarantees product safety and compliance with Islamic principles.	0.496*
	HP5.1	I intend to continue using halal-certified Natural-Based Health Products.	0.789
	HP5.2	I will recommend halal-certified Natural-Based Health Products to others.	0.584*
	HP5.3	I prefer to switch to halal-certified Natural-Based Health Products whenever they are available.	0.641
Natural-Based Health Product Use	NPU1.1	I regularly use Natural-Based Health Products for health purposes.	0.715
	NPU1.2	I use Natural-Based Health Products at least once a month.	0.739
	NPU1.3	Natural-Based Health Products are part of my routine health practices.	0.745
	NPU2.1	I use herbal medicines or natural-based dietary supplements for women's health.	0.493*
	NPU2.2	I use natural-based cosmetic or skincare products.	0.794
	NPU2.3	I consume plant-derived functional foods or beverages.	0.591*
	NPU3.1	I use Natural-Based Health Products to maintain reproductive or hormonal health.	0.726

NPU3.2	I use Natural-Based Health Products to improve my mood or emotional well-being.	0.529*
NPU3.3	I use Natural-Based Health Products for beauty and skin health.	0.517*
NPU4.1	I use Natural-Based Health Products continuously rather than occasionally.	0.568*
NPU4.2	I follow the recommended instructions when using Natural-Based Health Products.	0.790
NPU4.3	I prefer Natural-Based Health Products for long-term health management.	0.576*
NPU5.1	I believe Natural-Based Health Products are effective in supporting women's health.	0.701
NPU5.2	I experience health benefits after using Natural-Based Health Products.	0.854
NPU5.3	I believe Natural-Based Health Products are safer than synthetic alternatives.	0.505*

Note: * = eliminated due to outer loading < 0.60. (Source: SmartPLS Data Analysis, 2026)

Based on Table 4.2, the results of the outer loading test show that several indicators met the acceptance threshold of ≥ 0.60. For the Halal Perception variable, the indicators meeting the criteria are HP1.1 (0.614), HP3.3 (0.642), HP4.1 (0.765), HP4.2 (0.747), HP5.1 (0.789), and HP5.3 (0.641). For the Natural-Based Health Product Use variable, the indicators meeting the acceptability threshold of ≥ 0.60 include NPU1.1 (0.715), NPU1.2 (0.739), NPU1.3 (0.745), NPU2.2 (0.794), NPU3.1 (0.726), NPU4.2 (0.790), NPU5.1 (0.701), and NPU5.2 (0.854). The test results indicate that several indicators met the acceptance threshold for outer loading of ≥ 0.60, while others remained below the minimum threshold and were therefore considered for elimination during the instrument revision phase.

However, there are still several indicators with outer loading values below 0.60, such as HP1.2 (0.526), HP1.3 (0.310), HP2.1 (0.594), HP2.2 (0.460), HP2.3 (0.460), HP3.1 (0.568), HP3.2 (0.503), HP4.3 (0.496), HP5.2 (0.584), NPU2.1 (0.493), NPU2.3 (0.591), NPU3.2 (0.529), NPU4.1 (0.568), NPU4.3 (0.576), and NPU5.3 (0.505). These indicators demonstrate low ability to represent the measured construct and are therefore considered for elimination during the instrument revision stage. According to Hair et al. (2021), indicators with an outer loading below 0.60 should be eliminated as they can reduce the quality of the measurement model.

In addition to external loading, convergent validity was also evaluated using the Average Variance Extracted (AVE) value, with a minimum acceptable value of 0.50. An AVE value of ≥ 0.50 indicates that the construct explains more than 50% of the variance in the indicators that comprise it.

Table 4.3 AVE – Pilot Test

Variable	**Average Variance Extracted (AVE)**
Halal Perception	0.549
Natural-Based Health Product Use	0.590

(Source: SmartPLS Data Analysis, 2026)

Based on the test results in Table 4.3, the Halal Perception variable has an AVE value of 0.549, indicating that the construct meets convergent validity because the value is above the minimum threshold of 0.50. Meanwhile, the Natural-Based Health Product Use variable has an AVE value of 0.590, thus meeting convergent validity. Thus, the indicators used in this study are capable of adequately explaining the latent constructs.

b. Discriminant Validity

Discriminant validity assesses the extent to which a construct is empirically distinct from other constructs in the measurement model. According to Hair et al. (2021), the Heterotrait-Monotrait Ratio (HTMT) is the recommended approach for assessing discriminant validity in reflective measurement models because it provides greater sensitivity in detecting a lack of discriminant validity than traditional methods. A construct is considered to have adequate discriminant validity when the HTMT value is below 0.85 for conceptually distinct constructs or below 0.90 for conceptually similar constructs.

Table 4.4 HTMT – Pilot Test

Variable	**Halal Perception**	**Natural-Based Health Product Use**
Halal Perception		-
Natural-Based Health Product Use	0.527	-

(Source: SmartPLS Data Analysis, 2026)

Based on the HTMT results presented in Table 4.4, the HTMT value between the Halal Perception and Natural-Based Health Product Use constructs is 0.527. This value is below the recommended thresholds of 0.85 and 0.90, indicating that the two constructs are empirically distinct and measure different conceptual domains. Therefore, the measurement model demonstrates adequate discriminant validity, and no discriminant validity issues were identified during the pilot test phase.

c. Reliability test

A reliability test was conducted to measure the internal consistency of the indicators in measuring the research construct. According to Hair et al. (2021), a construct is considered reliable if it has a Cronbach's Alpha and Composite Reliability of ≥ 0.70.

Table 4.5 Cronbach's Alpha and Composite Reliability – Pilot Test

Variable	**Composite Reliability (rho_c)**	**Cronbach's alpha**
Halal Perception	0.878	0.835
Natural-Based Health Product Use	0.920	0.905

(Source: SmartPLS Data Analysis, 2026)

Based on the test results in Table 4.5, the Halal Perception variable has a Composite Reliability value of 0.878 and a Cronbach's Alpha of 0.835. All of these values are above the minimum threshold of 0.70, indicating that the Halal Perception construct has a good level of internal consistency.

Meanwhile, the Natural-Based Health Product Use variable has a Composite Reliability value of 0.920 and a Cronbach's Alpha of 0.905, indicating a very high level of reliability.

4.2.3 Pilot Test Results

The pilot test results indicate that the research instrument has met most of the validity and reliability criteria in the measurement model evaluation (outer model). The evaluation was conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach through tests of convergent validity, discriminant validity, and reliability. Based on the analysis results, several indicators had outer loadings below the acceptance threshold, so indicators that did not meet the criteria for convergent validity were eliminated. According to Hair et al. (2021), indicators with outer loading values below 0.70 should ideally be eliminated. However, in exploratory research, indicators with outer loading values ≥ 0.60 can still be retained if the AVE and construct reliability values continue to meet the required criteria. Therefore, in this study, a minimum outer loading threshold of 0.60 was used.

In the early stages of testing, there were still several indicators with outer loadings below 0.60, such as HP1.2, HP1.3, HP2.1, HP2.2, HP2.3, HP3. 1, HP3.2, HP4.3, HP5.2, NPU2.1, NPU2.3, NPU3.2, NPU3.3, NPU4.1, NPU4.3, and NPU5.3. These indicators demonstrated suboptimal ability to represent the research construct and were therefore considered for elimination during the instrument revision phase. After the elimination process was carried out, the measurement model showed an improvement in validity and reliability.

The results of the convergent validity evaluation following indicator elimination showed that all retained indicators had outer loadings of ≥ 0.60, and the AVE values for each construct were above 0.50. The Halal Perception variable had an AVE of 0.549, while the Natural-Based Health Product Use variable had an AVE of 0.590. These values indicate that each construct is able to explain more than 50%

of the variance of the indicators that comprise it, thus meeting the criteria for convergent validity. Additionally, the Composite Reliability and Cronbach's Alpha values for both constructs were also above the minimum threshold of 0.70, indicating that the instrument possesses a good level of internal consistency.

In the discriminant validity assessment, all constructs demonstrated adequate discriminant validity based on the Heterotrait-Monotrait Ratio (HTMT). The HTMT value between the Halal Perception and Natural-Based Health Product Use constructs was 0.527, which was below the recommended thresholds of 0.85 and 0.90. These results indicate that the two constructs are empirically distinct and that no discriminant validity issues were identified in the measurement model.

Overall, the results of the pilot test indicate that the research instrument met the criteria for validity and reliability following the evaluation and elimination of unsuitable indicators. Consequently, the research instrument was deemed suitable for use in the main survey to measure the influence of halal perception on natural-based health product use among female students at the Universitas Islam Indonesia.

After the indicator elimination process was completed, the final questionnaire to be used in the main survey consisted of 6 indicators for the Halal Perception variable and 8 indicators for the Natural-Based Health Product Use variable. The results of data processing after indicator elimination are presented in the following table.

Table 4.6 Final Indicators Retained for Main Survey

Variable	Code	Indicators	Outer Loading
Halal Perception	HP1.1	I understand the criteria for determining whether a product is halal according to Islamic principles.	0.611
	HP3.3	I avoid Natural-Based Health Products if their halal status is unclear.	0.718
	HP4.1	I trust halal certification or labeling issued by authorized institutions.	0.841

	HP4.2	The presence of a halal logo increases my confidence in a product.	0.817
	HP5.1	I intend to continue using natural-based health products that are halal-certified or labeled halal.	0.784
	HP5.3	I prefer to switch to halal-certified Natural-Based Health Products whenever they are available.	0.643
Natural-Based Health Product Use	NPU1.1	I regularly use natural-based health products for health purposes.	0.767
	NPU1.2	I use natural-based health products at least once a month.	0.754
	NPU1.3	Natural-based health products are part of my routine health practices.	0.724
	NPU2.2	I use natural-based cosmetic or skincare products.	0.832
	NPU3.1	I use natural-based health products to maintain reproductive or hormonal health.	0.704
	NPU4.2	I follow the recommended usage instructions for natural-based health products.	0.828
	NPU5.1	I believe natural-based health products are effective for women's health.	0.659
	NPU5.2	I feel the benefits after using natural-based health products.	0.854

(Source: SmartPLS Data Analysis, 2026)

Based on the results of the measurement model evaluation during the pilot test phase, indicators with an outer loading value of ≥ 0.60 were retained and used in the main survey phase. Meanwhile, indicators with outer loading values below

the acceptance threshold were eliminated to improve the validity and reliability of the research instrument.

4.3 Main Survey Results

The main survey was conducted after the research instrument was refined based on the results of the pilot test. Data collection was conducted online via Google Forms distributed through social media and communication groups for female students at the Universitas Islam Indonesia. Of the total 130 respondents who completed the questionnaire, 102 met all the study's inclusion criteria and were deemed suitable for further analysis. All respondents provided consent to participate in the study via digital informed consent before completing the questionnaire.

4.3.1 Characteristics of the Main Research Respondents

Table 4.7 Distribution of Main Survey Respondents by Faculty

Faculty	Frequency	Percentage (%)
Faculty of Law (FH)	18	17.6
Faculty of Islamic Studies (FIAI)	12	11.8
Faculty of Civil Engineering and Planning (FTSP)	12	11.8
Faculty of Psychology (FP)	11	10.8
Faculty of Social and Cultural Sciences (FIPB)	4	3.9
Faculty of Industrial Technology (FTI)	20	19.6
Faculty of Business and Economics (FBE)	15	14.7
Faculty of Mathematics and Natural Sciences (FMIPA – Non-Pharmacy)	10	9.8
Total	**102**	**100**

(Source: Data Processing, 2026)

According to able 4.7 presents the distribution of respondents in the main survey according to their faculty affiliation. The Faculty of Industrial Technology (FTI) contributed the largest proportion of respondents, accounting for 20 participants (19.6%), followed by the Faculty of Law (FH) with 18 respondents (17.6%). The Faculty of Business and Economics (FBE) represented 15

respondents (14.7%), while both the Faculty of Islamic Studies (FIAI) and the Faculty of Civil Engineering and Planning (FTSP) each contributed 12 respondents (11.8%). The Faculty of Psychology (FP) accounted for 11 respondents (10.8%), followed by the Faculty of Mathematics and Natural Sciences (FMIPA – Non-Pharmacy) with 10 respondents (9.8%). The smallest proportion of respondents came from the Faculty of Social and Cultural Sciences (FISB), with 4 respondents (3.9%). Overall, respondents were drawn from all eight eligible non-health faculties included in this study, indicating that the sample represented a diverse range of academic backgrounds. This diversity enhances the representativeness of the findings regarding Halal Perception and Natural-Based Health Product Use among undergraduate female students at Universitas Islam Indonesia.

4.3.2 Descriptive Analysis of Variables

A descriptive analysis was conducted to provide an overview of the characteristics of respondents' answers regarding the research variables, namely Halal Perception and Natural-Based Health Product Use. The descriptive analysis aimed to identify trends in respondents' answers through the minimum, maximum, mean, and standard deviation values of each research variable. Additionally, the frequency distribution of responses for each indicator was analyzed to provide a more detailed picture of the patterns of respondents' perceptions and behaviors regarding each statement in the questionnaire. According to Kaur et al. (2018), descriptive analysis is used to describe or depict the collected data without intending to make broader generalizations.

In this study, descriptive analysis was conducted on the indicators that met the validity and reliability criteria during the pilot test using the measurement model evaluation stage. The measurement scale used was a 1-4 Likert scale, where a score of 4 indicates Strongly Agree, a score of 3 indicates Agree, a score of 2 indicates Disagree, and a score of 1 indicates Strongly Disagree.

Table 4.8 Descriptive Statistics of Research Variables

Variable	N	Min	Max	Mean	SD
Halal Perception	102	1	4	3.40	0.764
Natural-Based Health Product Use	102	1	4	3.21	0.743

(Source: Data Processing, 2026)

Based on Table 4.8, the Halal Perception variable has a mean value of 3.40 and a standard deviation of 0.764. The mean value indicates that respondents generally have a high level of halal perception regarding natural-based health products, while the relatively low standard deviation suggests that respondents' responses were relatively consistent.

The Natural-Based Health Product Use variable obtained a mean value of 3.21 with a standard deviation of 0.743. These results indicate that respondents generally agree with the use of natural-based products for maintaining health, and the relatively low standard deviation reflects a consistent pattern of responses among respondents.

Overall, the descriptive statistical results indicate that female students at Universitas Islam Indonesia exhibit relatively high levels of halal perception and natural-based health product use.

a. Descriptive Analysis of the Halal Perception Variable

A descriptive analysis of the Halal Perception variable was conducted to identify trends in respondents' answers regarding the halal perception indicators used in this study. Based on the overall responses across the halal perception indicators, respondents from the Faculty of Law (FH) demonstrated the highest level of halal perception among all participating faculties. The consistently high halal perception observed among Faculty of Law students suggests that awareness of halal principles and trust in halal certification may contribute to greater confidence in selecting and using natural-based health products. Although the pilot study was primarily conducted to evaluate the validity and reliability of the research instrument rather than to compare faculties, this descriptive finding supports the notion that halal awareness can play an important role in shaping health product selection among Muslim consumers.

Table 4.9 Frequency Distribution of Respondents' Answers: Halal Perception Variable

Indicator	Strongly Agree	Agree	Disagree	Strongly Disagree	Positive (%)	Negative (%)
HP1.1	44	49	2	7	91	9
HP3.3	61	32	6	3	91	9
HP4.1	46	49	2	5	93	7
HP4.2	59	36	4	3	93	7
HP5.1	56	39	1	6	93	7
HP5.3	56	38	3	5	92	8

(Source: Data Processing, 2026)

Based on Table 4.9, the majority of respondents gave positive responses to all indicators under the Halal Perception variable. The percentage of positive responses ranged from 91% to 93%, indicating that most respondents have a good understanding of and trust in the importance of halal aspects in the use of natural health products. Indicators HP4.1, HP4.2, and HP5.1 received the highest percentage of positive responses, at 93%, indicating a high level of respondent trust in halal certification and a tendency to continue using halal products. Meanwhile, the percentage of negative responses across all indicators was relatively low, ranging from 7% to 9%, indicating that respondents' halal perceptions are very good.

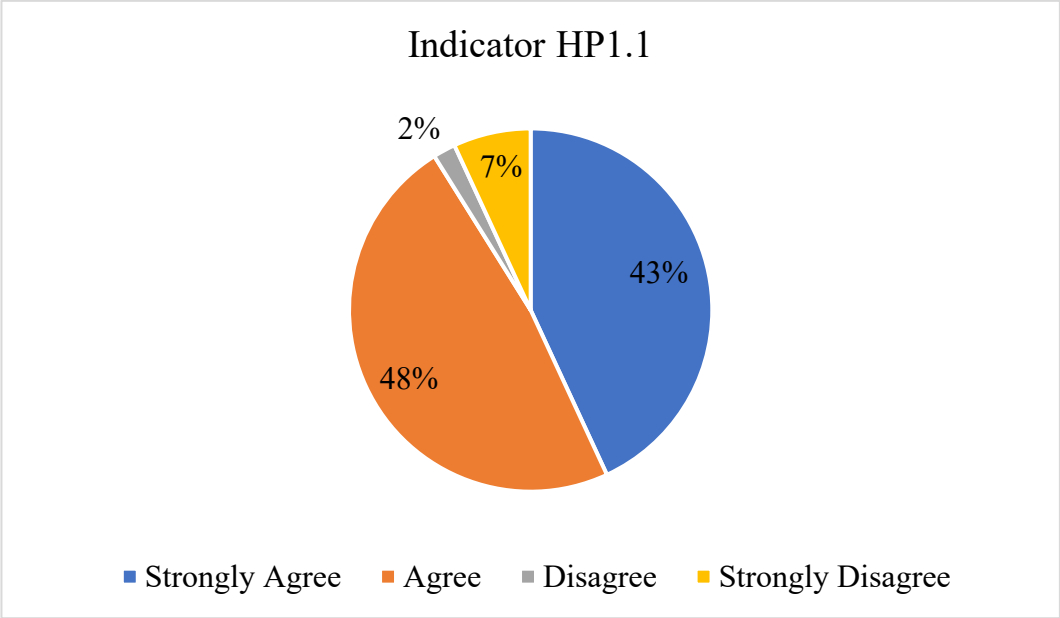


Figure 4.2 Distribution of Respondents' Responses for Indicator HP1.1

Based on Figure 4.2, the majority of respondents demonstrated a high level of understanding regarding the criteria of halal products according to Islamic principles. A total of 43% of respondents indicated Strongly Agree, and 48% indicated Agree with the statement, "I understand the criteria for determining whether a product is halal according to Islamic principles." Overall, 91% of respondents provided positive responses to this indicator. These findings indicate that most respondents possess good awareness and understanding of the halal standards of products based on Islamic teachings.

According to Setiawan and Mauluddi (2019), halal awareness refers to an individual's ability to understand, recognize, and perceive the concept of halal before determining consumption behavior. Such awareness is formed through knowledge, experience, and learning processes acquired by individuals. The higher a person's knowledge regarding the halal concept, the better their ability to distinguish products that comply with Islamic law.

The findings of this study are consistent with Islamic teachings that emphasize the importance of understanding and consuming halal products. Allah SWT states in Surah Al-Baqarah, verse 168:

يٰٓاَيُّهَا النَّاسُ كُلُوْا مِمَّا فِى الْاَرْضِ حَلٰلًا طَيِّبًا ۖ وَّلَا تَتَّبِعُوْا خُطُوٰتِ الشَّيْطٰنِ ۗ اِنَّهٗ لَكُمْ عَدُوٌّ مُّبِيْنٌ ﴿١٦٨﴾

"O mankind! Eat from whatever is on earth that is lawful and good, and do not follow the footsteps of Satan. Indeed, he is a clear enemy to you."(Q.S Al-Baqarah 2:168)

In addition, Allah SWT also states in Surah Al-Ma'idah, verse 88:

وَكُلُوْا مِمَّا رَزَقَكُمُ اللّٰهُ حَلٰلًا طَيِّبًا ۖ وَّاتَّقُوا اللّٰهَ الَّذِيْٓ اَنْتُمْ بِهٖ مُؤْمِنُوْنَ ﴿٨٨﴾

"And eat of what Allah has provided for you as lawful and good sustenance, and fear Allah in whom you believe." (Q.S Al-Ma'idah 5:88)

These two verses indicate that Muslims are not only commanded to consume halal products but are also required to understand the criteria of halal products to make consumption decisions that are in accordance with Islamic law.

In addition to the Qur'an, Prophet Muhammad SAW also guided the importance of understanding the boundaries between what is halal, haram, and doubtful (syubhat) in everyday life. In a hadith narrated by Imam Bukhari No. 1910, the Prophet SAW said:

حَدَّثَنِي مُحَمَّدُ بْنُ الْمُثَنَّى حَدَّثَنَا ابْنُ أَبِي عَدِيٍّ عَنْ ابْنِ عَوْنٍ عَنْ الشَّعْبِيِّ سَمِعْتُ النُّعْمَانَ بْنَ بَشِيرٍ رَضِيَ اللَّهُ عَنْهُ سَمِعْتُ النَّبِيَّ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ و حَدَّثَنَا عَلِيُّ بْنُ عَبْدِ اللَّهِ حَدَّثَنَا ابْنُ عُيَيْنَةَ حَدَّثَنَا أَبُو فَرْوَةَ عَنْ الشَّعْبِيِّ قَالَ سَمِعْتُ النُّعْمَانَ بْنَ بَشِيرٍ قَالَ سَمِعْتُ النَّبِيَّ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ و حَدَّثَنَا عَبْدُ اللَّهِ بْنُ مُحَمَّدٍ حَدَّثَنَا ابْنُ عُيَيْنَةَ عَنْ أَبِي فَرْوَةَ سَمِعْتُ الشَّعْبِيَّ سَمِعْتُ النُّعْمَانَ بْنَ بَشِيرٍ رَضِيَ اللَّهُ عَنْهُمَا عَنْ النَّبِيِّ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ حَدَّثَنَا مُحَمَّدُ قَالَ النَّبِيُّ صَلَّى اللَّهُ عَلَيْهِ بْنُ كَثِيرٍ أَخْبَرَنَا سُفْيَانُ عَنْ أَبِي فَرْوَةَ عَنْ الشَّعْبِيِّ عَنْ النُّعْمَانِ بْنِ بَشِيرٍ رَضِيَ اللَّهُ عَنْهُ قَالَ وَسَلَّمَ الْحَلَالُ بَيِّنٌ وَالْحَرَامُ بَيِّنٌ وَبَيْنَهُمَا أُمُورٌ مُشْتَبِهَةٌ فَمَنْ تَرَكَ مَا شُبِّهَ عَلَيْهِ مِنْ الْإِثْمِ كَانَ لِمَا اسْتَبَانَ أَتْرَكَ وَمَنْ اجْتَرَأَ عَلَى مَا يَشُكُّ فِيهِ مِنْ الْإِثْمِ أَوْشَكَ أَنْ يُوَاقِعَ مَا اسْتَبَانَ وَالْمَعَاصِي حِمَى اللَّهِ مَنْ يَرْتَعْ حَوْلَ الْحِمَى يُوشِكُ أَنْ يُوَاقِعَهُ

" It was narrated to us by [Muhammad bin Al-Mutsanna], who narrated to us from [Ibn Abbu 'Adiy], from [Ibu 'Aun], from [Ash-Sa'bi], that I heard [An-Nu'man bin Bashir, may Allah be pleased with both of them], who said: I heard the Prophet, peace and blessings be upon him. It is also narrated that ['Ali bin Abdullah]

told us, [Ibn ‘Uyainah] told us, [Abu Farwah] told us from [Ash-Sa’bi], who said, “I heard [An-Nu’man bin Bashir] tell us,’ I heard the Prophet, peace and blessings be upon him.’ It was also narrated by [‘Abdullah bin Muhammad] from [Ibn ‘Uyainah] from [Abu Farwah]: “I heard [Asy-Sa’biy] say, ‘I heard [An-Nu’man bin Bashir, may Allah be pleased with both of them] narrated from the Prophet, peace and blessings be upon him.”’ [Muhammad bin Katsir] narrated to us, and [Sufyan] informed us, be pleased with both of them, who said: The Prophet, peace and blessings be upon him, said:” What is lawful is clear, and what is unlawful is clear. However, between the two, some matters are dubious (ambiguous). Therefore, whoever avoids such ambiguous matters out of fear of sin has, in effect, avoided what is clearly forbidden. Therefore, whoever comes close to what Allah has forbidden is in danger of falling into that prohibition.”

— Shahih Bukhari, No. 1910

This hadith emphasizes that a Muslim is not only required to know what is clearly halal and clearly haram but must also possess sufficient understanding to recognize and avoid doubtful matters (*syubhat*). In the context of product consumption, including natural-based health products, understanding the raw materials, composition, production process, and halal status of a product is essential so that consumers can distinguish products that comply with Islamic law from those whose halal status remains questionable. Therefore, the ability to understand halal criteria constitutes an important component of halal awareness that can assist consumers in making more appropriate decisions in accordance with Islamic teachings.

The Qur’anic verses and hadith above indicate that Muslims are not only commanded to consume products that are halal and good (*halalan tayyiban*) but are also required to understand the criteria of halal products and exercise caution regarding doubtful matters (*syubhat*). Such understanding is necessary to ensure that consumption decisions are not only free from what is haram but also from matters whose halal status remains uncertain. The high level of agreement among respondents on this indicator demonstrates that most respondents already possess a good understanding of the halal concept as a basis for selecting and using the products they consume.

The findings of this study are also supported by the research of Setiawan and Mauluddi (2019), which stated that the level of halal awareness and positive attitudes toward the halal concept influence consumers' decisions in choosing halal products. Furthermore, a study by Prakasita and Wardana (2022) found that Muslim female students in Yogyakarta possess good knowledge and understanding of halal cosmetic products, including paying attention to ingredients, safety, quality, and halal certification status before using such products. The study demonstrated that understanding the halal concept plays an important role in shaping the consumption preferences of Muslim consumers.

These findings are also consistent with the study by Sudarsono et al. (2025), which explained that halal literacy refers to individuals' knowledge and understanding of halal concepts, principles, certification, and the importance of halal products. The study showed that a high level of halal literacy can shape consumers' confidence and positive attitudes toward halal products, thereby influencing their consumption intentions and behaviors.

Based on these findings, it can be concluded that the high level of respondents' understanding of halal criteria is likely influenced by religious education, social environment, exposure to halal-related information, and experience in using halal products in daily life. This good understanding serves as important capital in shaping consumption behavior that is consistent with Islamic principles. Nevertheless, a small proportion of respondents still provided negative responses, indicating that the level of halal understanding has not yet been evenly distributed. Therefore, education regarding halal concepts, halal certification, and halal regulations still needs to be enhanced in order to improve and equalize halal literacy within society.

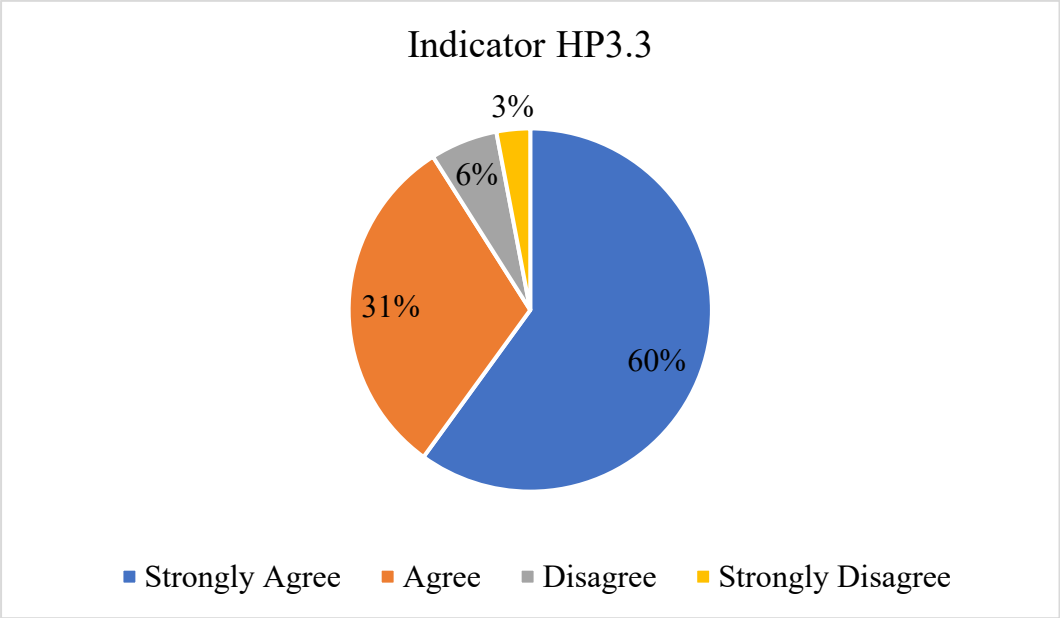


Figure 4.3 Distribution of Respondents' Responses for Indicator HP3.3

Based on Figure 4.3, the majority of respondents demonstrated a strong tendency to avoid products with unclear halal status. A total of 60% of respondents indicated Strongly Agree, and 31% indicated Agree with the statement, "I avoid Natural-Based Health Products if their halal status is unclear." Overall, 91% of respondents provided positive responses to this indicator. These findings suggest that female students at Universitas Islam Indonesia possess a high level of halal awareness and tend to exercise caution when selecting products for use or consumption. The findings indicate that halal aspects constitute one of the primary considerations in respondents' consumption decision-making.

The behavior of avoiding products with unclear halal status is consistent with Islamic teachings, which obligate Muslims to consume halal products and avoid all forms of prohibited substances. Allah SWT states in Surah Al-Baqarah, verse 173:

إِنَّمَا حَرَّمَ عَلَيْكُمُ الْمَيْتَةَ وَالدَّمَ وَلَحْمَ الْخِنْزِيرِ وَمَآ أُهِلَّ بِهِۦ لِغَيْرِ اللَّهِ ۖ فَمَنِ اضْطُرَّ غَيْرَ بَاغٍ وَلَا عَادٍ فَلَآ إِثْمَ عَلَيْهِ ۚ

إِنَّ اللَّهَ غَفُورٌ رَّحِيمٌ ﴿١٧٣﴾

"Indeed, He has only forbidden to you carrion, blood, the flesh of swine, and that which has been dedicated to other than Allah. However, whoever is compelled by necessity, neither desiring it nor transgressing the limits, incurs no sin. Indeed, Allah is All-Forgiving, Most Merciful."(Q.S Al-Baqarah 2:173)

This verse demonstrates that Islam has established clear boundaries regarding prohibited ingredients and products. Therefore, when the halal status of a product cannot be confirmed, Muslims are encouraged to exercise caution to avoid engaging in something that may potentially be haram. Such caution is part of the effort to maintain obedience to Allah SWT's commands regarding the consumption of halal and wholesome products.

This principle is further reinforced by a hadith of the Prophet Muhammad SAW narrated by Imam Tirmidhi No. 2518:

عَنْ أَبِي الحَوْرَاءِ السَّعْدِيِّ قَالَ: قُلْتُ لِلْحَسَنِ بْنِ عَلِيٍّ رضي الله عنهما: مَا حَفِظْتَ مِنْ رَسُولِ اللهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ؟ قَالَ: حَفِظْتُ مِنْ رَسُولِ اللهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ: «دَعْ مَا يَرِيبُكَ إِلَى مَا لاَ يَرِيبُكَ، فَإِنَّ الصِّدْقَ طُمَأْنِينَةٌ، وَإِنَّ الكَذِبَ رِيبَةٌ».[رواه الترمذي والنسائي وأحمد] [صحيح]

"Abul-Ḥaurā` As-Sa'diy narrated: I asked Hasan bin Ali—may Allah be pleased with both of them—'What have you memorized from the Messenger of Allah ﷺ?' He replied, 'I memorized from the Messenger of Allah ﷺ: "Abandon what causes you doubt in favor of what does not." Indeed, truth brings peace of mind, and falsehood brings doubt."

— Imam Tirmidhi No. 2518

This hadith teaches that Muslims are encouraged to abandon matters that create doubt and choose those that are clearer and more convincing. In the context of product consumption, if the halal status of a product is not known with certainty, avoiding it constitutes an application of the principle of caution (*wara'*) encouraged in Islam. Therefore, the high percentage of respondents who chose to avoid products with unclear halal status reflects an awareness of applying Islamic principles in their daily consumption behavior.

The findings of this study are also consistent with the Fatwa of the Majelis Ulama Indonesia (MUI) No. 4 of 2003 concerning the Standardization of Halal Fatwas, which emphasizes that products with doubtful halal status (*syubhat*) should not be consumed until their halal status has been confirmed through legitimate

mechanisms. This fatwa indicates that the clarity of halal status is an important aspect that Muslim consumers should consider when selecting products.

The results of this study are supported by Khasanah and Huda (2025) and Sudarsono et al. (2025), who explained that halal awareness is positively associated with halal consumption behavior. Individuals with higher halal awareness tend to demonstrate a stronger commitment to selecting products that comply with Islamic law and to considering halal aspects in every purchasing decision. Furthermore, Prakasita and Wardana (2022) found that Muslim female students in Yogyakarta tend to avoid using cosmetics containing haram ingredients or products with unclear halal status. They reported feeling more comfortable using products with confirmed halal status.

These findings are further supported by the study of Sudarsono et al. (2025), which demonstrated that halal literacy encourages consumers to become more critical and selective in evaluating products before making purchases. Consumers with good halal literacy consider not only the benefits of products but also ensure that the products are free from elements that contradict Islamic principles. Moreover, Utami and Fetrina (2024) found that religiosity positively influences consumer attitudes toward selecting halal products. The higher an individual's level of religiosity, the stronger the tendency to avoid products with doubtful halal status. Adiba et al. (2023) also explained that consumers with high levels of halal knowledge and awareness tend to pay greater attention to halal information on products and are more proactive in seeking certainty regarding a product’s halal status before deciding to use it.

Based on these results, it can be concluded that respondents’ strong tendency to avoid products with unclear halal status reflects a high level of halal awareness and the application of caution in consumption behavior. This attitude is likely influenced by religious understanding, halal literacy, religiosity, and the accessibility of information regarding halal certification. Nevertheless, a small proportion of respondents still provided negative responses, indicating that educational efforts regarding the importance of ensuring the clarity of a product’s

halal status should continue to be enhanced so that halal awareness can develop more evenly among Muslim consumers

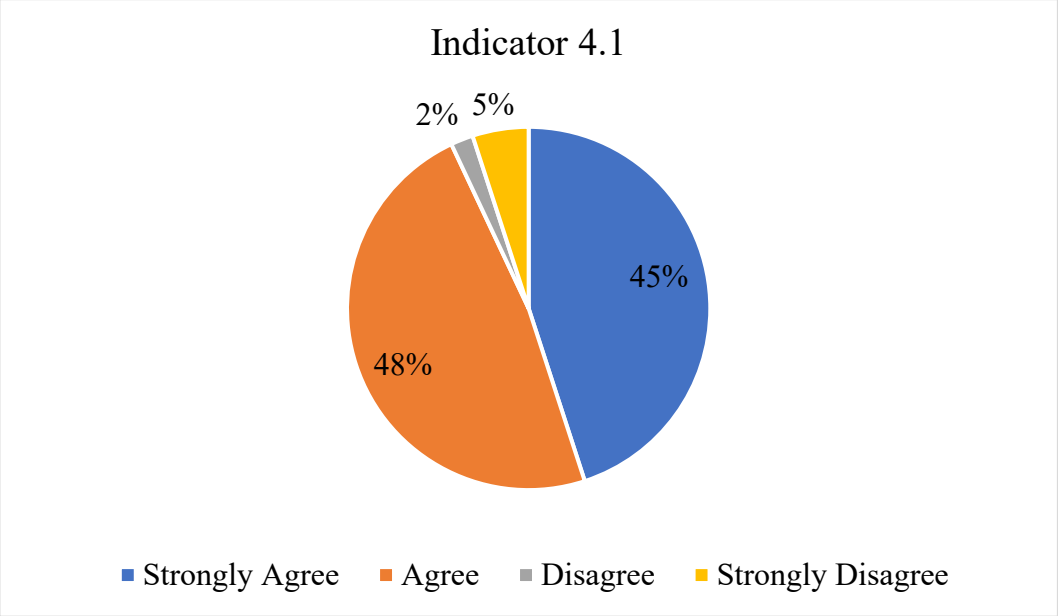


Figure 4.4 Distribution of Respondents' Responses for Indicator HP4.1

Based on Figure 4.4, the majority of respondents demonstrated a high level of trust in halal certification issued by authorized institutions. A total of 45% of respondents indicated Strongly Agree, and 48% indicated Agree with the statement, "I trust halal certification or labeling issued by authorized institutions." Overall, 93% of respondents provided positive responses to this indicator. These findings suggest that most respondents perceive halal certification issued by authorized institutions as a credible and trustworthy indicator for determining the halal status of a product.

These findings are consistent with Islamic teachings that encourage Muslims to obey legitimate authorities in matters requiring specific expertise and authority. Allah SWT states in Surah An-Nisa, verse 59:

يٰٓاَيُّهَا الَّذِيْنَ اٰمَنُوْٓا اَطِيْعُوا اللّٰهَ وَاَطِيْعُوا الرَّسُوْلَ وَاُولِى الْاَمْرِ مِنْكُمْۚ فَاِنْ تَنَازَعْتُمْ فِيْ شَيْءٍ فَرُدُّوْهُ اِلَى اللّٰهِ

وَالرَّسُوْلِ اِنْ كُنْتُمْ تُؤْمِنُوْنَ بِاللّٰهِ وَالْيَوْمِ الْاٰخِرِۗ ذٰلِكَ خَيْرٌ وَّاَحْسَنُ تَأْوِيْلًا ۝٥٩

"O believers! Obey Allah and obey the Messenger and those in authority among you. Then, if you disagree over anything, refer it to Allah and the Messenger, if you truly believe in Allah and the Last Day. That is better and fairer in outcome." (Q.S An-Nisa 4:59)

This verse serves as a foundation for the understanding that Muslims may place trust in decisions established by parties possessing authority, competence, and responsibility in a particular field. In the context of halal products, trust in halal certification reflects consumers' confidence in the institutions authorized to examine, determine, and guarantee the halal status of products.

In addition, Allah SWT states in Surah Al-Hujurat, verse 6:

يٰٓاَيُّهَا الَّذِيْنَ اٰمَنُوْٓا اِنْ جَاۤءَكُمْ فَاسِقٌۢ بِنَبَاٍ فَتَبَيَّنُوْٓا اَنْ تُصِيْبُوْا قَوْمًاۢ بِجَهَالَةٍ فَتُصْبِحُوْا عَلٰى مَا فَعَلْتُمْ نٰدِمِيْنَ ۝٦

"O believers, if an evildoer brings you any news, verify ˹it˺ so you do not harm people unknowingly, becoming regretful for what you have done." (Q.S Al-Hujurat 49:6)

This verse emphasizes the importance of verifying information through reliable sources. In the context of halal product consumption, such verification is reflected in halal certification issued by official institutions following a series of systematic inspections and assessments. Therefore, the existence of halal certification assists consumers in obtaining certainty regarding the halal status of a product.

Trust in halal certification issued by authorized institutions is also supported by national regulations governing the halal product assurance system in Indonesia. Law Number 33 of 2014 concerning Halal Product Assurance stipulates that products circulated and traded in Indonesia must have a clear halal status. Through this law, the government established the Halal Product Assurance Organizing Agency (BPJPH) as the institution responsible for administering halal certification, including the issuance of halal certificates and the supervision of Halal Product Assurance implementation.

Within Indonesia's halal certification system, BPJPH and the Majelis Ulama Indonesia (MUI) perform distinct yet complementary roles. BPJPH functions as the administrative authority responsible for managing the halal certification process and issuing halal certificates to business operators. Meanwhile, MUI, through its Fatwa Commission, is authorized to determine the halal status of products based on the results of halal inspections and audits conducted by Halal Inspection Bodies (LPH). Thus, BPJPH is responsible for the regulatory and administrative aspects of halal certification, while MUI is responsible for the determination of Islamic legal

rulings (*fatwa halal*). The synergy among BPJPH, MUI, and LPH creates a halal certification system that is more accountable, transparent, and trustworthy for the public.

Furthermore, MUI Fatwa No. 26 of 2013 concerning Halal Standards for Cosmetic Products emphasizes that cosmetic products declared halal must comply with Islamic law and undergo examination by authorized institutions. This fatwa strengthens the function of halal certification as an official guarantee that a product has fulfilled the established halal requirements.

The findings of this study are supported by Nursyapa'ah et al. (2025), who explained that halal certification contributes significantly to building consumer trust by assuring that a product has met halal standards and demonstrates accountability throughout the halal supply chain. Consumers tend to perceive halal-certified products as more trustworthy because the certification process involves formal evaluation, auditing, and verification by authorized institutions.

These findings are also consistent with the study by Ishmam (2026), which found that institutional signals tend to generate higher levels of consumer trust than unverified claims. Halal certification represents a verifiable institutional signal because it is supported by structured audits and clear regulatory procedures. In addition, Prakasita and Wardana (2022) showed that some Muslim female students in Yogyakarta assess the halal status of cosmetic products based on the presence of a halal logo on the packaging because they have a high level of trust in the credibility of halal certification institutions.

Furthermore, Utami and Fetrina (2024) found that the presence of halal certification on cosmetic products can increase Muslim consumers' trust in those products. This is reflected in the high proportion of halal cosmetic users reported in their study. Meanwhile, Sudarsono et al. (2025) explained that consumers tend to rely on signals originating from institutions or authorities perceived as credible when forming beliefs and attitudes toward products. These findings reinforce the results of the present study, indicating that halal certification issued by authorized institutions is an important factor in building consumer trust.

Based on these findings, it can be concluded that respondents' high level of trust in halal certification is likely influenced by their confidence in the credibility,

competence, and legitimacy of the institutions responsible for the halal certification system in Indonesia. Halal certification serves as an important source of information that helps consumers ensure a product's compliance with Islamic principles and reduces uncertainty regarding its halal status. Nevertheless, a small proportion of respondents still provided negative responses, indicating that understanding of the halal certification system and the roles of related institutions still needs to be further enhanced. Therefore, continuous education regarding the functions of BPJPH, MUI, LPH, and the halal certification process is necessary to strengthen public trust in the halal product assurance system.

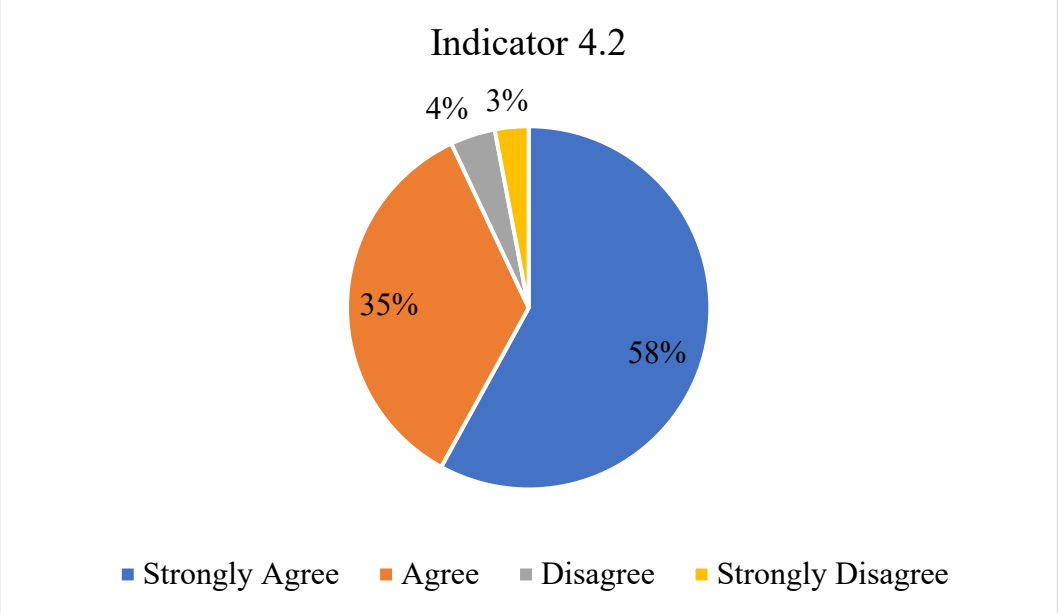


Figure 4.5 Distribution of Respondents' Responses for Indicator HP4.2

Based on Figure 4.5, the majority of respondents demonstrated a high level of trust in products displaying halal labels. A total of 58% of respondents indicated Strongly Agree, and 35% indicated Agree with the statement, "The presence of a halal logo increases my trust in a product." Overall, 93% of respondents provided positive responses to this indicator. These findings suggest that most respondents perceive the halal label as an important source of information that provides assurance and enhances confidence regarding a product's compliance with halal requirements.

These findings are consistent with Islamic teachings that encourage Muslims to consume products that are halal and wholesome. Allah SWT states in Surah An-Nahl verse 114:

فَكُلُوْا مِمَّا رَزَقَكُمُ اللّٰهُ حَلٰلًا طَيِّبًاۖ وَّاشْكُرُوْا نِعْمَتَ اللّٰهِ اِنْ كُنْتُمْ اِيَّاهُ تَعْبُدُوْنَ ﴿١١٤﴾

"So eat of the lawful and good things that Allah has provided for you, and be grateful for the blessings of Allah if it is indeed Him that you worship." (QS. An-Nahl 16:114)

This verse emphasizes that Muslims are commanded to consume products that are *halalan thayyiban* (lawful and wholesome). In modern consumption practices, consumers often do not possess the ability to directly examine all raw materials, production processes, and distribution chains of a product. Therefore, the presence of a halal label serves as a mechanism that helps consumers identify products that have been declared halal through an official certification process. Through the existence of a halal label, consumers can more easily fulfill Allah's command to choose products that comply with Islamic principles.

Trust in halal labels is also supported by regulations in Indonesia. Law Number 33 of 2014 concerning Halal Product Assurance stipulates that products that have obtained halal certification are required to display a halal label as a form of information for consumers. This provision is reinforced by BPJPH Regulation Number 4 of 2022, which governs the procedures for displaying halal labels on products that have obtained halal certification. Through these regulations, the halal label functions not merely as a symbol or logo on packaging but also as an official representation that a product has undergone auditing, inspection, and halal determination processes in accordance with applicable requirements.

Furthermore, MUI Fatwa No. 26 of 2013 concerning Halal Standards for Cosmetic Products emphasizes that cosmetic products that meet halal requirements and obtain halal certification may display the halal logo on their packaging as a form of information and assurance for consumers. Therefore, the halal label serves as one of the indicators that facilitates consumers in identifying products that have met established halal standards.

The findings of this study are supported by Nursyapa'ah et al. (2025), who explained that halal certification and halal labels function as mechanisms for reducing consumer uncertainty by providing transparent and verifiable information regarding a product's halal status. Consumers often do not have the ability to

independently examine all ingredients and production processes; therefore, halal labels become practical indicators that assist them in evaluating products.

These findings are also consistent with the study by Ishmam (2026), which stated that halal labels represent credible formal signals because they are supported by certification, auditing, and verification processes conducted by authorized institutions. Consequently, consumers tend to place greater trust in products bearing halal labels than in products that merely claim to be halal without official certification. In addition, Prakasita and Wardana (2022) found that the halal logo is one of the primary pieces of information considered by Muslim female students in Yogyakarta when selecting cosmetic products. The halal logo is viewed as objective evidence that a product has undergone a legitimate and trustworthy certification process.

Furthermore, Utami and Fetrina (2024) reported that the presence of halal labels on cosmetic products can enhance Muslim consumers' interest in and trust toward such products. The survey cited in their study showed that the majority of Indonesian Muslim women consider halal labels important for ensuring product safety and compliance with religious values. Sudarsono et al. (2025) also find that halal labels, brand image, and halal awareness collectively influence consumer purchasing decisions regarding halal cosmetic products. Meanwhile, Briliana and Mursito (2017) found that the presence of halal labels significantly influences the attitudes of young Muslim consumers because halal labels are perceived as guarantees that products are consistent with Islamic values while also reflecting product safety and quality.

Based on these findings, it can be concluded that respondents' high level of trust in products displaying halal labels is likely influenced by the perception that halal labels constitute clear, official, and easily recognizable evidence regarding a product's halal status. Halal labels help reduce consumer uncertainty, enhance feelings of security, and facilitate consumption decision-making in accordance with Islamic principles. Nevertheless, a small proportion of respondents still provided negative responses, indicating that not all consumers consider halal labels as the sole basis for trusting a product. Therefore, public education regarding the meaning, function, and certification processes underlying the display of halal labels should

continue to be strengthened in order to enhance public understanding of and trust in the halal product assurance system.

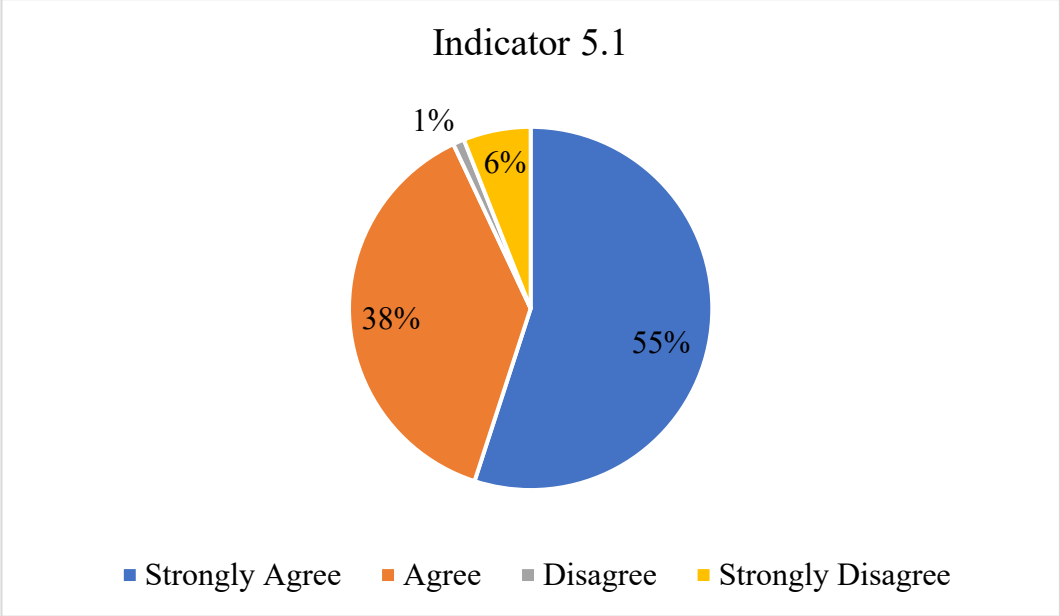


Figure 4.6 Distribution of Respondents' Responses for Indicator HP5.1

Based on Figure 4.6, the majority of respondents demonstrated a strong intention to continue using natural-based health products that have been halal-certified or carry a halal label. A total of 55% of respondents indicated Strongly Agree and 38% indicated Agree with the statement, "I intend to continue using natural-based health products that have been halal-certified or carry a halal label." Overall, 96% of respondents provided positive responses to this indicator. These findings suggest that most respondents possess a strong commitment to maintaining the use of halal-certified natural-based health products and regard halal status as an important consideration in their future consumption decisions.

These findings are consistent with Islamic teachings that encourage Muslims to choose and consume things that are halal and wholesome (thayyib). Allah SWT states in Surah Al-A'raf verse 157:

اَلَّذِيْنَ يَتَّبِعُوْنَ الرَّسُوْلَ النَّبِيَّ الْاُمِّيَّ الَّذِيْ يَجِدُوْنَهٗ مَكْتُوْبًا عِنْدَهُمْ فِى التَّوْرٰىةِ وَالْاِنْجِيْلِ يَأْمُرُهُمْ بِالْمَعْرُوْفِ وَيَنْهٰىهُمْ عَنِ الْمُنْكَرِ وَيُحِلُّ لَهُمُ الطَّيِّبٰتِ وَيُحَرِّمُ عَلَيْهِمُ الْخَبٰۤىِٕثَ وَيَضَعُ عَنْهُمْ اِصْرَهُمْ وَالْاَغْلٰلَ الَّتِيْ كَانَتْ عَلَيْهِمْ ۗ فَالَّذِيْنَ اٰمَنُوْا بِهٖ وَعَزَّرُوْهُ وَنَصَرُوْهُ وَاتَّبَعُوا النُّوْرَ الَّذِيْٓ اُنْزِلَ مَعَهٗٓ ۙ اُولٰۤىِٕكَ هُمُ الْمُفْلِحُوْنَ ۚ ﴿١٥٧﴾

“Those who follow the Messenger, the unlettered Prophet, whom they find mentioned in the Torah and the Gospel that are with them. He commands them to what is right and forbids them from what is wrong, makes lawful for them all good things, prohibits for them all impure things, relieves them of their burdens, and removes the shackles that were upon them. Therefore, those who believe in him, honor him, support him, and follow the light that was sent down with him—it is they who will be successful.” (Q.S Al-A'raf 7:157)

This verse demonstrates that Islam guides its followers to choose everything good and beneficial while avoiding things that are harmful and undesirable. In the context of natural-based health product consumption, the use of halal-certified products reflects consumers’ efforts to ensure that the products they use not only meet safety and quality standards but also comply with Islamic principles. Therefore, the intention to continue using halal-certified natural-based health products may be regarded as a form of commitment to maintaining a lifestyle that aligns with Islamic values.

The findings of this study are also consistent with a hadith of the Prophet Muhammad SAW narrated by Imam Bukhari:

حَدَّثَنَا الْحُمَيْدِيُّ عَبْدُ اللَّهِ بْنُ الزُّبَيْرِ قَالَ حَدَّثَنَا سُفْيَانُ قَالَ حَدَّثَنَا يَحْيَى بْنُ سَعِيدٍ الْأَنْصَارِيُّ قَالَ أَخْبَرَنِي مُحَمَّدُ بْنُ إِبْرَاهِيمَ التَّيْمِيُّ أَنَّهُ سَمِعَ عَلْقَمَةَ بْنَ وَقَّاصٍ اللَّيْثِيَّ يَقُولُ سَمِعْتُ عُمَرَ بْنَ الْخَطَّابِ رَضِيَ اللَّهُ عَنْهُ عَلَى الْمِنْبَرِ قَالَ سَمِعْتُ رَسُولَ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ يَقُولُ إِنَّمَا الْأَعْمَالُ بِالنِّيَّاتِ وَإِنَّمَا لِكُلِّ امْرِئٍ مَا نَوَى فَمَنْ كَانَتْ هِجْرَتُهُ إِلَى دُنْيَا يُصِيبُهَا أَوْ إِلَى امْرَأَةٍ يَنْكِحُهَا فَهِجْرَتُهُ إِلَى مَا هَاجَرَ إِلَيْهِ

“Al-Humaidi Abdullah bin Az-Zubair narrated to us, saying: Sufyan narrated to us, who said that Yahya bin Sa’id Al-Ansari narrated to us, who said that Muhammad bin Ibrahim At-Taimi informed us that he heard Alqamah bin Waqqash Al-Laitsi say: I heard Umar bin Al-Khattab, while on the pulpit, say: I heard the Messenger of Allah (peace and blessings be upon him) say, ‘Actions are judged by intentions, and every person will be rewarded according to what he intended. Therefore, whoever migrated for worldly gain or to marry a woman, then his migration is for that which he migrated for.”

— Sahih al-Bukhari, No. 1

This hadith emphasizes that intention serves as the foundation that determines the direction and value of an action. In the context of halal product consumption, the intention to continue using natural-based health products that have been halal-certified or carry a halal label reflects a personal commitment to maintaining consumption behavior that complies with Islamic principles. The stronger an individual's intention to choose halal products, the greater the likelihood that such intention will be translated into consistent consumption behavior in the future. Therefore, the high percentage of respondents who expressed agreement and strong agreement with this indicator demonstrates a strong tendency to continue prioritizing natural-based health products whose halal status has been assured in their daily lives.

Furthermore, MUI Fatwa No. 26 of 2013 concerning Halal Standards for Cosmetic Products explains that the use of halal products is part of the effort to maintain purity and halal compliance in everyday life. Accordingly, the intention to continue using halal-certified natural-based health products can be understood as a form of long-term commitment to ensuring that consumption activities remain aligned with religious teachings.

The findings of this study are consistent with the research of Nursyapa'ah et al. (2025), who explained that halal certification not only increases consumer trust but also contributes to consumer loyalty. When consumers believe that a product consistently meets halal standards, they tend to develop a stronger commitment to continue purchasing and using that product.

These findings are also supported by the study of Memon et al. (2020), which found that positive attitudes toward halal products significantly influence consumers' intentions to choose and use halal products. Consumers who possess a high level of confidence in a product's halal status tend to demonstrate stronger intentions to maintain its use over the long term. Furthermore, higher levels of religiosity have been shown to strengthen the relationship between positive perceptions of halal products and the intention to use them.

Research by Sudarsono et al. (2025) also demonstrated that behavioral intention is the strongest predictor of actual user behavior. These findings indicate that the stronger an individual's intention to use halal products, the greater the

likelihood that such intention will be translated into actual and sustained consumption behavior. Similar findings were reported by Utami and Fetrina (2024), who stated that consumers who experience tangible benefits from halal products are more likely to develop a stronger commitment to continue using them. Meanwhile, Sudarsono et al. (2025), explained that strong purchase intentions among Muslim consumers are significantly reflected in actual consumption behavior, including the continued use of halal products.

Based on these findings, it can be concluded that respondents' strong intention to continue using halal-certified natural-based health products is likely influenced by the belief that halal products not only fulfill religious obligations but also provide a sense of security, assured quality, and perceived benefits in daily use. This strong intention reflects a commitment to maintaining consumption behavior that aligns with halal principles over the long term. Nevertheless, a small proportion of respondents still provided negative responses, indicating that not all consumers demonstrate the same level of commitment toward the continuous use of halal products. Therefore, education regarding the benefits, safety, and importance of halal certification should continue to be strengthened so that these positive intentions can develop into consistent and sustainable halal consumption behavior.

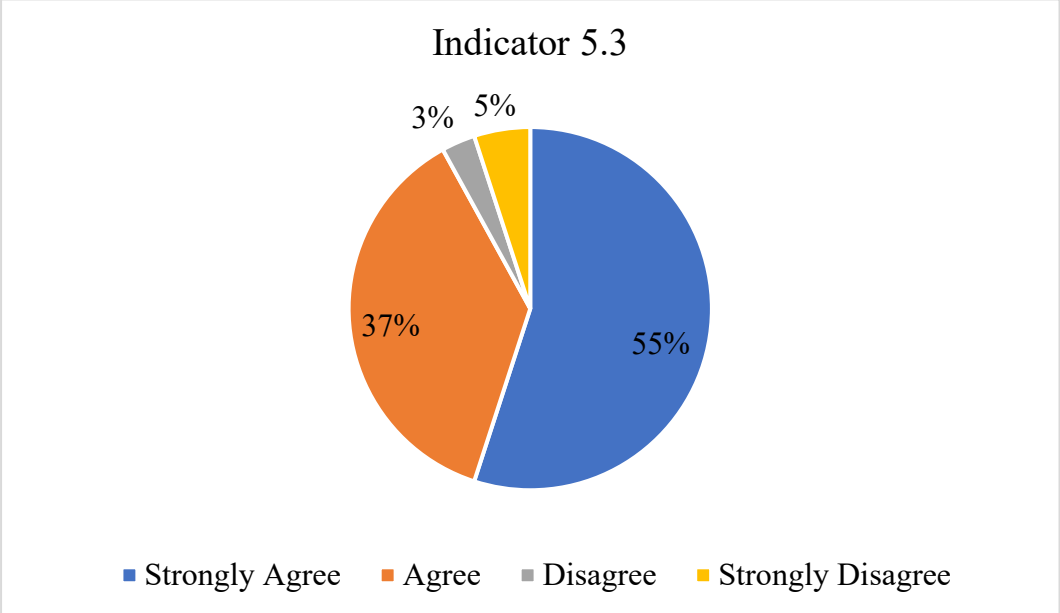


Figure 4.7 Distribution of Respondents' Responses for Indicator HP5.3

Based on Figure 4.7, the majority of respondents demonstrated a strong preference for switching to products that have been halal-certified or carry a halal

label when such products are available. A total of 55% of respondents indicated Strongly Agree, and 37% indicated Agree with the statement, “I prefer to switch to halal-certified natural-based health products when such products are available.” Overall, 92% of respondents provided positive responses to this indicator. These findings suggest that most respondents consider halal certification as one of the primary factors in product selection and demonstrate a tendency to choose halal-certified products over alternative products whenever such options are available.

These findings are consistent with Islamic teachings that encourage Muslims to choose the best and most appropriate alternatives in accordance with the guidance of Allah SWT when faced with various options. Allah SWT states in Surah Az-Zumar verse 18:

الَّذِيْنَ يَسْتَمِعُوْنَ الْقَوْلَ فَيَتَّبِعُوْنَ اَحْسَنَهٗۗ اُولٰۤىِٕكَ الَّذِيْنَ هَدٰىهُمُ اللّٰهُ وَاُولٰۤىِٕكَ هُمْ اُولُوا الْاَلْبَابِ ﴿١٨﴾

“Those who listen to what is said and follow the best of it. They are the ones whom Allah has guided, and they are the people of understanding.” (QS Az-Zumar 39:18)

This verse explains that those who receive Allah’s guidance are individuals who are capable of considering the various options available and then selecting the best alternative. In the context of product consumption, Muslims consider not only the functional benefits of a product but also its compliance with Islamic principles. Therefore, when consumers are presented with a choice between a halal-certified product and a product without a clear halal guarantee, Muslim consumers tend to choose the halal-certified product because it provides greater certainty regarding its halal status. Consequently, the preference to switch to halal-certified products reflects consumers’ efforts to select alternatives that are perceived as better, safer, and more consistent with Islamic values.

The findings are also supported by a hadith of the Prophet Muhammad SAW:

عَنْ أَبِي هُرَيْرَةَ رَضِيَ اللهُ عَنْهُ قَالَ: قَالَ رَسُولُ اللَّهِ صلى الله عليه و سلم "إِنَّ اللَّهَ طَيِّبٌ لَا يَقْبَلُ إِلَّا طَيِّبًا، وَإِنَّ اللَّهَ أَمَرَ الْمُؤْمِنِينَ بِمَا أَمَرَ بِهِ الْمُرْسَلِينَ فَقَالَ تَعَالَى: "يَا أَيُّهَا الرُّسُلُ كُلُوا مِنْ الطَّيِّبَاتِ وَاعْمَلُوا صَالِحًا"، وَقَالَ تَعَالَى: "يَا أَيُّهَا الَّذِينَ آمَنُوا كُلُوا مِنْ طَيِّبَاتِ مَا رَزَقْنَاكُمْ" ثُمَّ ذَكَرَ الرَّجُلَ يُطِيلُ السَّفَرَ أَشْعَثَ أَغْبَرَ يَمُدُّ يَدَيْهِ إِلَى السَّمَاءِ: يَا رَبِّ! يَا رَبِّ! وَمَطْعَمُهُ حَرَامٌ، وَمَشْرَبُهُ حَرَامٌ، وَمَلْبَسُهُ حَرَامٌ، وَغُذِّيَ بِالْحَرَامِ، فَأَنَّى يُسْتَجَابُ لَهُ؟ ".[رَوَاهُ مُسْلِم]

“On the authority of Abu Hurayrah (ra): The Messenger of Allah (ﷺ) said, “Allah the Almighty is Good and accepts only that which is good. And verily Allah has commanded the believers to do that which He has commanded the Messengers. So the Almighty has said: “O (you) Messengers! Eat of the tayyibat [all kinds of halal (legal) foods], and perform righteous deeds.” and the Almighty has said: “O you who believe! Eat of the lawful things that We have provided you.” “ Then he (ﷺ) mentioned [the case] of a man who, having journeyed far, is disheveled and dusty, and who spreads out his hands to the sky, saying, “O Lord! O Lord!,” while his food is haram (unlawful), his drink is haram, his clothing is haram, and he has been nourished with haram, so how can [his supplication] be answered?”

—Sahih Muslim, No 1015

According to Harimurti (2024), this hadith emphasizes that Islam encourages Muslims to maintain and choose things that are good, proper, and aligned with Islamic teachings. Although the hadith is commonly associated with physical appearance and personal care, its meaning extends to the broader concept of religious values. In Islam, goodness is not solely determined by quality, effectiveness, or attractiveness but also by adherence to halal principles and ethical standards. Therefore, Muslim consumers are encouraged to prioritize Islamic requirements.

In the context of this study, respondents’ preference to switch to halal-certified products when such products are available can be understood as an effort to choose products with greater assurance of halal compliance and wholesomeness. Halal certification provides confidence that a product has undergone examination and verification processes in accordance with Islamic principles. Therefore, respondents’ tendency to choose halal-certified products reflects an awareness that

consuming halal and wholesome products constitutes part of practicing Islamic teachings in everyday life.

Furthermore, MUI Fatwa No. 26 of 2013 concerning Halal Standards for Cosmetic Products emphasizes that the use of halal products is part of the effort to maintain personal purity and ensure that products do not contain ingredients prohibited under Islamic law. Accordingly, the preference to switch to halal-certified products reflects consumers' commitment to prioritizing products that are aligned with Islamic values.

The findings of this study are supported by Nursyapa'ah et al. (2025), who explained that halal certification can enhance consumer trust and encourage loyalty toward halal products. When consumers are confident that a product has fulfilled halal requirements through an official certification process, they tend to prefer that product over products without halal certification.

These findings are also consistent with the study by Memon et al. (2020), which found that positive attitudes toward halal products significantly influence consumers' intentions to purchase and choose halal products. Consumers with a high level of confidence in a product's halal status tend to demonstrate stronger preferences for halal products when faced with multiple product alternatives. In addition, religiosity has been shown to strengthen the relationship between positive attitudes toward halal products and the intention to choose such products.

Research by Sudarsono et al. (2025) demonstrated that behavioral intention is a strong determinant of actual consumption behavior. These findings indicate that a strong preference for halal products has the potential to encourage consumers to genuinely choose and use halal products in their daily lives. Similar findings were reported by Utami and Fetrina (2024), who stated that consumers who perceive benefits and positive value from halal products tend to show a greater inclination to choose halal products over other alternatives. Meanwhile, Sudarsono et al. (2025), explained that strong intentions and preferences toward halal products are reflected in the actual purchasing decisions of Muslim consumers.

Based on these findings, it can be concluded that respondents' strong preference for switching to halal-certified products is likely influenced by the belief that halal certification provides clearer assurance regarding a product's compliance

with Islamic principles. In addition to providing a greater sense of security and trust, halal certification assists consumers in distinguishing products that meet halal standards from products that do not yet have a clear halal guarantee. Nevertheless, a small proportion of respondents still provided negative responses, indicating that not all consumers consider halal certification as the primary factor in product selection. Therefore, education regarding the importance of halal certification and its benefits for consumers should continue to be strengthened so that awareness of and preference for halal products can become increasingly widespread within society.

b. Descriptive Analysis of the Natural-Based Health Product Use Variable

A descriptive analysis of the Natural-Based Health Product Use variable was conducted to identify trends in respondents' use of natural-based health products for health maintenance. This variable consists of eight indicators that met the validity and reliability criteria during the measurement model evaluation stage. The distribution of respondents' answers regarding the Natural-Based Health Product Use variable is presented in Table 4.12 below.

Table 4.10 Frequency Distribution of Respondents' Answers: Natural-Based Health Product Use Variable

Indicator	Strongly Agree	Agree	Disagree	Strongly Disagree	Positive (%)	Negative (%)
NPU1.1	35	49	14	4	82	18
NPU1.2	30	59	10	3	87	13
NPU1.3	39	51	7	5	88	12
NPU2.2	26	57	14	5	81	19
NPU3.1	40	52	5	5	90	10
NPU4.2	45	49	4	4	92	8
NPU5.1	41	55	3	3	94	6
NPU5.2	43	50	7	2	91	9

(Source: Data Processing, 2026)

Based on Table 4.10, the majority of respondents also gave positive responses to the indicators under the Natural-Based Health Product Use variable. The percentage of positive responses ranged from 82% to 94%, indicating that most

respondents tend to use natural-based health products to maintain women's health. Indicator NPU5.1 received the highest percentage of positive responses at 94%, indicating that respondents believe natural-based health products are effective for women's health. Additionally, indicator NPU4.2 also received a high positive response rate of 92%, indicating that respondents tend to follow the usage guidelines for natural-based health products properly.

However, indicator NPU2.2 had the highest percentage of negative responses at 19%. This indicates that there are still some respondents who do not consistently use natural-based cosmetics or skincare products. Nevertheless, overall, the results of the descriptive analysis show that the level of natural-based health product usage among respondents is relatively high, with a predominance of positive responses across all indicators.

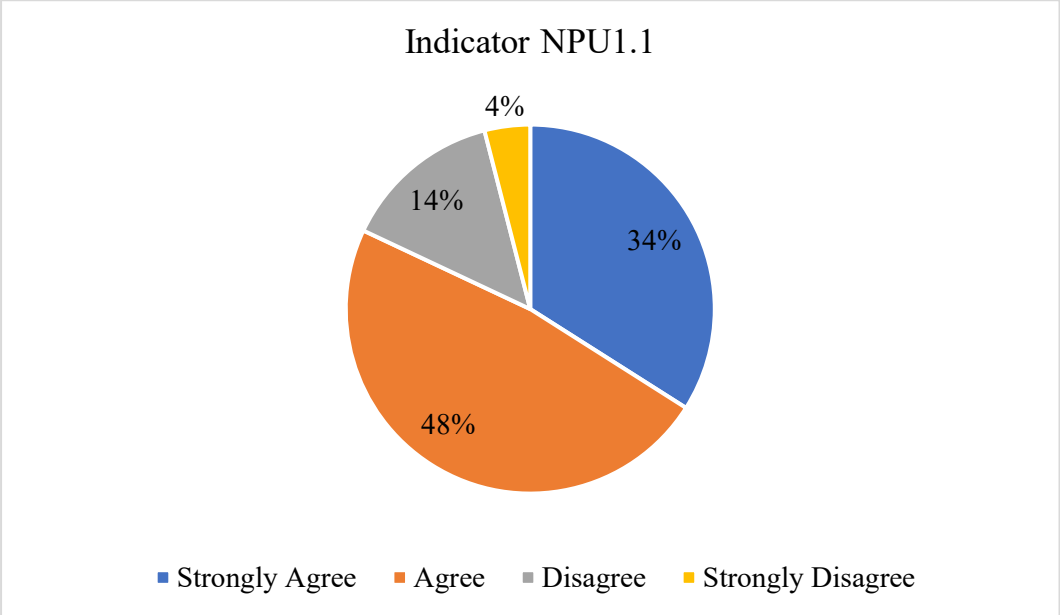


Figure 4.8 Distribution of Respondents' Responses for Indicator NPU1.1

Based on Figure 4.8, most respondents showed a high tendency to use plant-based products for health purposes. A total of 34% of respondents strongly agreed, and 48% agreed with the statement "I regularly use natural-based health products for health purposes." Thus, 82% of respondents gave a positive response, while 18% gave a negative response. These results indicate that the use of natural-based health products has become a fairly common practice among female students at the Universitas Islam Indonesia in maintaining their health and fitness.

The high level of agreement on this indicator suggests that respondents tend to choose natural-based health products as one alternative for maintaining their health. Natural-based health products are no longer viewed merely as a supplementary option but have become part of daily health behaviors. This indicates increasing awareness among respondents of the importance of preventive measures and health maintenance using natural ingredients, which are considered safer and more suitable for long-term use.

The Theory of Planned Behavior (TPB), according to Ajzen (2020), posits that individual behavior is influenced by attitudes toward the behavior, subjective norms, and perceived behavioral control. Individuals are more likely to engage in a particular action if they hold a positive attitude, receive social support, and feel capable of performing the behavior.

Furthermore, Jilani et al. (2024) adapted TPB to the context of health behavior and found that attitudes, social norms, and behavioral control significantly influence actual individual behavior. Their findings indicate that psychological and social factors play a crucial role in shaping health behavior, including preventive behaviors such as the use of specific health products.

Furthermore, Novanda et al. (2026), through a meta-analysis of various behavioral studies, demonstrated that these three TPB constructs consistently influence consumption and health behaviors. Their findings confirm that individuals with positive attitudes, strong social support, and ease of access to and use of a product are more likely to engage in such behaviors. In the context of this study, the routine use of plant-based products can be influenced by perceived benefits, social environmental influences, and the ease of obtaining such products.

The results of this study align with the findings of Liu et al. (2025), who reported that various bioactive compounds in plants, such as flavonoids, polyphenols, and phytoestrogens, have the potential to support women's health through antioxidant, anti-inflammatory, and physiological regulatory activities. This indicates that plant-based products are increasingly being utilized as part of women's health maintenance strategies due to their comprehensive health benefits.

Additionally, Dahia et al. (2025) explain that natural health solutions are increasingly used in women's self-care practices as part of efforts to maintain long-

term health and improve quality of life. These findings are reinforced by Ali and Abu Hasan (2025), who found that students have a high tendency to use natural health products because they are perceived as beneficial and easily accessible through various information sources.

Furthermore, Akram et al. (2023) emphasize that natural products still play a crucial role in modern healthcare systems because they contain active compounds with potential therapeutic effects. Abdallah et al. (2023) also state that growing public awareness of healthy lifestyles is driving the use of medicinal plants as alternatives for maintaining health and preventing disease. Additionally, Deliaz et al. (2025) note that the use of natural ingredients in the pharmaceutical and cosmetic sectors is growing as part of the clean beauty and sustainability trends.

Based on these results, it can be concluded that the majority of female students at the Universitas Islam Indonesia have incorporated natural-based health products into their health practices. The high rate of routine use indicates a positive perception regarding the benefits of natural-based health products in maintaining health. These findings suggest that natural-based health product use is a fairly strong health behavior among respondents, influenced by a combination of factors including attitude, social norms, perceived benefits, and ease of access to such products.

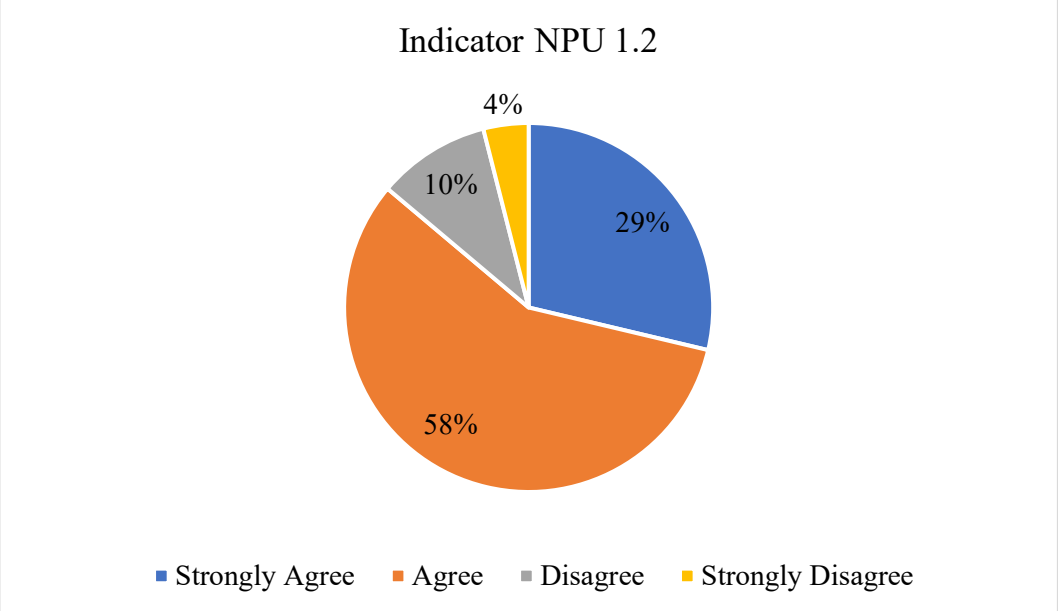


Figure 4.9 Distribution of Respondents' Responses for Indicator NPU1.2

Based on Figure 4.9, the majority of respondents reported using plant-based products at least once a month. A total of 29% of respondents strongly agreed, and 58% agreed with the statement “I use natural-based health products at least once a month.” Meanwhile, 10% of respondents disagreed, and 3% strongly disagreed. Overall, 87% of respondents gave a positive response, while 13% gave a negative response. These results indicate that the use of natural-based health products has become a fairly common practice among female students at the Universitas Islam Indonesia.

This relatively high frequency of use suggests that natural-based health products are not merely used occasionally but have been integrated into the respondents’ health routines. Although usage rates may vary among individuals, these findings indicate that natural-based health products have become part of a recurring health behavior pattern. This reflects the growing tendency among young adult women to adopt preventive and complementary health approaches through the use of natural-based products.

The use of natural-based health products in this context can be explained by the growing recognition of the role of natural ingredients in health maintenance. Liu et al. (2025) explain that bioactive compounds derived from plants, such as flavonoids, polyphenols, and phytoestrogens, possess antioxidant, anti-inflammatory, and physiological regulatory activities that contribute to women’s overall health. These biological activities support the perception that the regular use of plant-based products can provide long-term health benefits.

Additionally, Dahia et al. (2025) state that natural health solutions are increasingly being integrated into women’s self-care practices as part of long-term health strategies and efforts to improve quality of life. This indicates that the use of natural-based health products is not merely temporary but has become an integral part of daily health management, particularly among women who are highly conscious of preventive health and holistic well-being.

These findings are also supported by Ali and AbuHasan (2025), who found that students tend to use supplements and natural health products because they are perceived to have health benefits and are easily accessible through various information sources, including digital media. This suggests that high usage

frequency may be influenced by perceived benefits as well as the ease of access to plant-based products in daily life.

From a pharmacological perspective, Akram et al. (2023) explain that natural products contain various bioactive compounds with therapeutic potential, such as antioxidant, antimicrobial, and anti-inflammatory activities. In line with this, Abdallah et al. (2023) emphasize that medicinal plants still play a significant role in modern healthcare systems due to the growing global interest in natural and preventive treatment approaches.

Additionally, Widyaningtyas (2024) reports that the use of herbal and natural-based products is on the rise in Indonesia, in line with the growing trend toward a healthy lifestyle among the population. This indicates a shift in consumption patterns toward products that are more natural and perceived as safer for long-term use.

Based on these results, it can be concluded that the monthly use of natural-based health products by respondents reflects a well-established health behavior. This behavior is influenced by perceptions of health benefits, increased exposure to information about natural-based health products, and the growing availability of plant-based products that are increasingly accessible. Overall, the use of natural-based health products has become part of a developing healthy lifestyle among female students at the Universitas Islam Indonesia

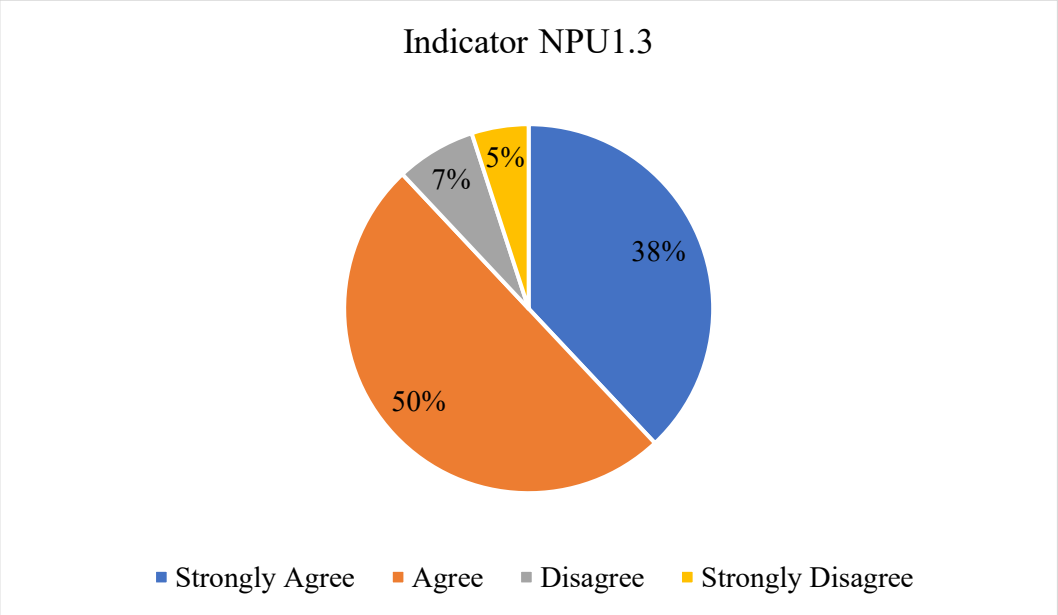


Figure 4.10 Distribution of Respondents' Responses for Indicator NPU1.3

Based on Figure 4.10, the majority of respondents stated that plant-based products have become part of their routine health practices. A total of 38% of respondents strongly agreed, and 50% agreed with the statement "Natural-based health products are part of my routine health practices." Meanwhile, 7% of respondents disagreed, and 5% strongly disagreed. Overall, 88% of respondents gave a positive response, while 12% gave a negative response. These results indicate that plant-based products have become a fairly established component of the routine health practices of most female students at the Universitas Islam Indonesia.

The high level of agreement on this indicator suggests that natural-based health products are not only used periodically but have been integrated into the respondents' daily health habits. This indicates a pattern of sustainable health behavior, where natural-based health products are viewed as part of efforts to maintain health and improve quality of life.

This finding aligns with Liu et al. (2025), who explain that bioactive compounds from plants, such as flavonoids, polyphenols, and phytoestrogens, possess biological activities that can support women's health through antioxidant, anti-inflammatory, and physiological regulation mechanisms. These activities provide a scientific basis for the use of plant-based products in long-term health maintenance.

Furthermore, Dahia et al. (2025) state that natural health approaches are increasingly being integrated into women's self-care practices as part of long-term health strategies. This indicates that the use of natural-based health products is not merely supplementary but has become an integral part of health routines that support overall well-being. These findings are also supported by Ali and AbuHasan (2025), who found that students tend to use natural health products because they are perceived to have health benefits, are easily accessible, and are supported by information from various sources. This reinforces the understanding that the routine use of plant-based products can be shaped by a combination of perceived benefits and ease of access.

From a pharmacological perspective, Akram et al. (2023) explain that natural products contain various bioactive compounds with therapeutic potential, including

antioxidant, antimicrobial, and anti-inflammatory activities. In line with this, Abdallah et al. (2023) emphasize that the growing focus on healthy lifestyles is driving the use of medicinal plants as part of a preventive health approach.

Furthermore, Widyaningtyas (2024) notes that the trend of using herbal products in Indonesia continues to rise alongside shifts in people's lifestyles toward healthier and more natural living patterns.

Based on these results, it can be concluded that natural-based health products have become part of the respondents' routine health practices. This indicates that the use of natural-based health products has been integrated into the health lifestyles of female students at the Universitas Islam Indonesia and reflects a strong tendency toward a natural-based health approach.

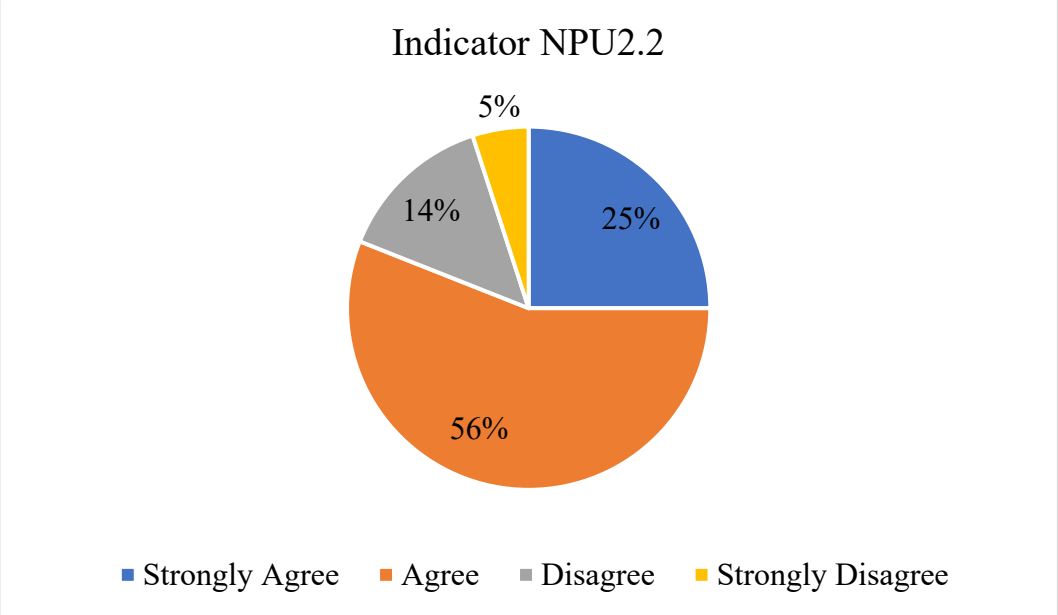


Figure 4.11 Distribution of Respondents' Responses for Indicator NPU2.2

Based on Figure 4.11, the majority of respondents reported that they use natural-based cosmetics or skincare products. A total of 25% of respondents strongly agreed, and 56% agreed with the statement "I use natural-based cosmetics or skincare." Meanwhile, 14% of respondents disagreed, and 5% strongly disagreed. Overall, 81% of respondents gave positive responses, while 19% gave negative responses. These results indicate that the use of natural-based cosmetics and skincare is quite common among female students at the Universitas Islam Indonesia and has become part of their self-care practices.

This high usage rate indicates that natural-based cosmetic products are no longer viewed as limited alternative products but have become a primary choice in the skincare routines of some respondents. This suggests a shift in consumption patterns from synthetic-based products toward those considered more natural, safe, and aligned with long-term skincare needs.

This phenomenon can be linked to increasing consumer awareness regarding the ingredients in cosmetic products. Many consumers, particularly women, are beginning to pay attention to product composition and the potential side effects of long-term chemical use. Consequently, natural-based products are often perceived as a gentler alternative, with minimal risk of irritation and more skin-friendly.

According to Mitterer-Daltoé et al. (2023), women tend to have a positive perception of natural and eco-friendly cosmetic products. This perception is not only related to health aspects but also encompasses environmental sustainability and a lifestyle that is more conscious of the impacts of consumption. Thus, the choice of natural cosmetic products is not merely functional but also reflects consumers' values and lifestyle preferences.

Additionally, Mohamed Nasralla (2024) explains that the development of herbal cosmetic products has seen a significant increase in recent years alongside rising market demand for natural-ingredient products. Herbal cosmetic products are considered attractive because they are perceived as safer for long-term use and align with the "clean beauty" trend, which emphasizes the use of natural ingredients and minimizes synthetic chemicals.

These findings are further supported by Bai (2024), who states that cosmetic consumption behavior among young women is influenced by various factors, including product safety, social influence, and post-pandemic beauty trends that are increasingly focused on health and hygiene. Younger generations tend to be more selective in choosing skincare products and are more open to natural-based products, which are perceived as safer and better suited for sensitive skin.

Furthermore, Prakasita and Wardana (2022) emphasize that, in the context of Muslim women, the selection of cosmetic products is not only influenced by aesthetic factors but also considers aspects of safety, quality, and alignment with

personal values. Natural-based products are often associated with higher safety, making them a preferred choice in daily skincare practices.

From a scientific perspective, the use of natural-ingredient products is also supported by research developments regarding the bioactive potential of plants. Compounds such as flavonoids, polyphenols, and various plant secondary metabolites have been proven to possess antioxidant and anti-inflammatory activities, as well as the ability to protect cells from damage caused by free radicals, which play a role in aging and skin damage (Abdallah et al., 2023; Akram et al., 2023). Furthermore, these bioactive compounds are widely used in modern cosmetic formulations due to their effectiveness in supporting skin health biologically (Mohamed Nasralla, 2024). This reinforces the perception that natural-based products are not merely a trend but are also backed by scientific evidence supporting their use in skincare.

Based on these results, it can be concluded that the use of natural-based cosmetics and skincare has become part of the self-care practices of the majority of respondents. This indicates a shift in preference toward more natural and safe products, influenced by a combination of safety perceptions, the evolution of modern beauty trends, and increasing awareness of long-term skin health among female students at the Universitas Islam Indonesia.

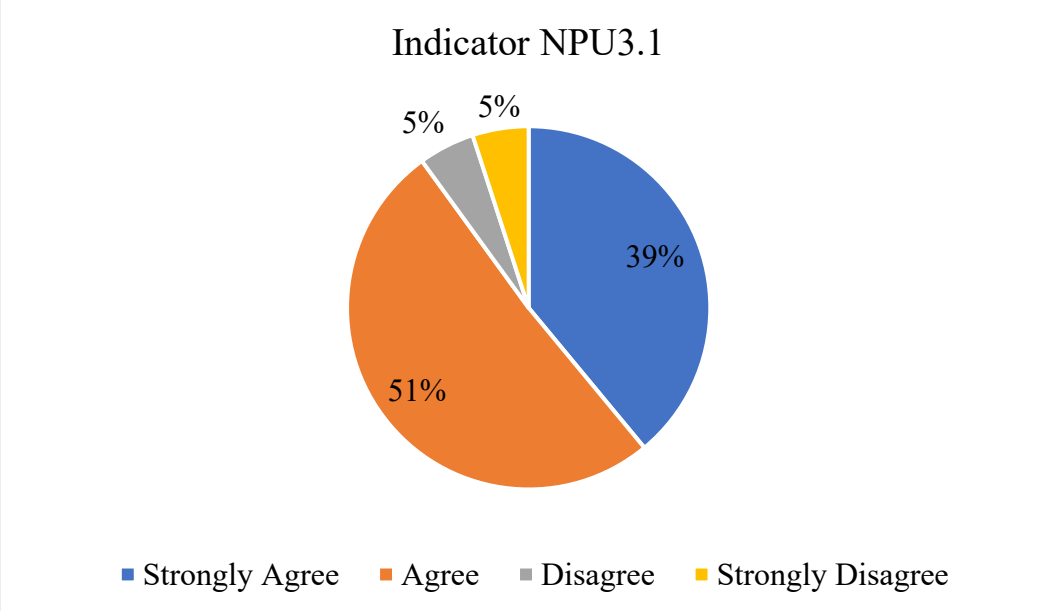


Figure 4.12 Distribution of Respondents' Responses for Indicator NPU3.1

Based on Figure 4.12, the majority of respondents reported using plant-based products to maintain reproductive or hormonal health. A total of 39% of respondents strongly agreed, and 51% agreed with the statement “I use natural-based health products to maintain reproductive or hormonal health.” Meanwhile, 5% of respondents disagreed, and 5% strongly disagreed. Overall, 90% of respondents gave a positive response, while 10% gave a negative response. These results indicate that natural-based health products are widely used by female students at the Universitas Islam Indonesia as part of efforts to maintain reproductive health and hormonal balance.

This high level of agreement suggests that the use of natural-based health products is not limited to general health aspects such as fitness or skincare, but has also evolved into a specific part of efforts to maintain women’s reproductive health. This indicates an increased awareness among respondents regarding the importance of hormonal health as part of overall physical well-being.

Reproductive health is viewed as a crucial aspect that influences quality of life, making various approaches, including the use of natural-based health products, a viable option. This phenomenon also reflects a self-care trend among young women, that is, the practice of maintaining health independently through the use of natural ingredients, which are perceived as safer and carrying a lower risk of side effects compared to synthetic products. In this context, plant-based products are often perceived as a more “natural” alternative that aligns with women’s bodily needs, particularly in maintaining the sensitive and complex balance of hormones.

Liu et al. (2025) explain that compounds such as flavonoids, polyphenols, and phytoestrogens possess biological activities that can influence the female reproductive system through antioxidant, anti-inflammatory, and hormonal modulation mechanisms. These compounds play a role in helping to maintain hormonal balance, reduce oxidative stress, and support the physiological function of the reproductive system.

Additionally, Noviani and Prasetya (2025) emphasize that the use of traditional herbal remedies and herbal products in women’s health has long been part of traditional practices that continue to this day. Herbal products are frequently used to help address menstrual disorders, alleviate discomfort during the menstrual

cycle, and maintain women's overall physical well-being. This indicates that the use of natural-based health products has a strong historical foundation as well as relevance in modern healthcare practices.

This finding is further supported by Zandstra et al. (2024), who explain that the use of medicinal plants to address women's reproductive disorders, such as dysmenorrhea and hormonal imbalances, remains widespread due to personal experience, family traditions, and positive perceptions regarding the effectiveness of natural ingredients. Thus, the use of herbal products in the context of reproductive health is not only based on scientific aspects but is also influenced by cultural factors and empirical experiences that have been passed down through generations.

Furthermore, Lassi et al. (2025) emphasize that reproductive health is a fundamental aspect of women's health throughout the life cycle. Therefore, various strategies to maintain hormonal balance and reproductive function are crucial, whether through modern medical approaches or complementary approaches such as the use of natural ingredients. In this context, natural-based health products are often positioned as part of a supportive strategy for maintaining long-term health.

Beyond biological and health aspects, the increased use of herbal products may also be influenced by social perceptions and information circulating within the community. Plant-based products are often associated with a healthy lifestyle and natural living, so their use is not merely functional but also reflects specific lifestyle preferences that are more health-conscious and focused on natural ingredients.

Based on these results, it can be concluded that natural-based health products have become an important part of respondents' reproductive health practices. The high level of agreement indicates strong acceptance of the use of natural-based health products in supporting hormonal and reproductive health. This is influenced by a combination of biological factors and empirical experience, and positive perceptions regarding the safety and long-term benefits of herbal products in supporting women's health.

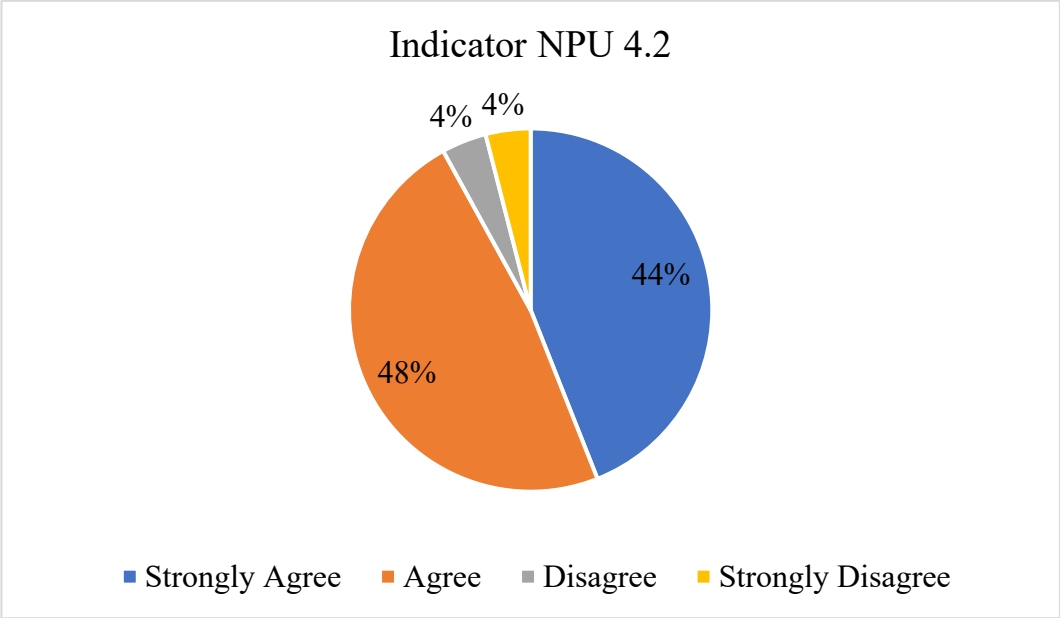


Figure 4.13 Distribution of Respondents' Responses for Indicator NPU4.2

Based on Figure 4.13, the majority of respondents reported that they follow the recommended usage instructions when using natural-based products. A total of 44% of respondents strongly agreed, and 48% agreed with the statement "I follow the recommended usage instructions for natural-based health products." Meanwhile, 4% of respondents disagreed, and 4% strongly disagreed. Overall, 92% of respondents gave positive responses, while 8% gave negative responses. These results indicate that the majority of female students at the Universitas Islam Indonesia demonstrate responsible behavior in using natural-based health products by adhering to the recommended usage guidelines.

This high level of compliance with usage instructions indicates that respondents not only use natural-based products regularly but also understand the importance of proper use in accordance with recommendations. Although natural-based health products are often perceived as safe, risks still exist if they are used in doses, frequencies, or ways that deviate from the recommended guidelines. Therefore, adherence to usage guidelines is a critical aspect in ensuring the effectiveness and safety of plant-based products.

This behavior also reflects a high level of health awareness among respondents, particularly regarding the use of herbal or natural-based health products. This awareness indicates that respondents are not only focused on the

benefits of the products but also consider safety and proper usage as part of responsible self-care practices.

From a scientific perspective, Akram et al. (2023) explain that the effectiveness of natural products is highly dependent on dosage, method of use, and adherence to usage instructions. Although natural-based health products have therapeutic potential due to their bioactive compounds, these benefits can only be optimally obtained when used in accordance with proper recommendations. Improper use can actually reduce effectiveness or diminish the expected benefits.

This is further supported by Abdallah et al. (2023), who state that while medicinal plants contain various active compounds with pharmacological potential, their safety and effectiveness still depend on proper use. Therefore, education on correct usage is crucial to ensure optimal benefits from these natural-based health products.

Additionally, Noviani and Prasetya (2025) explain that the use of herbal products in women's health practices is often influenced by experience, knowledge, and information obtained from the surrounding environment. In this context, adherence to usage guidelines indicates that respondents do not rely solely on personal experience but also pay attention to formal information or usage instructions provided on the product.

These findings also reflect an increase in health literacy among young women, particularly regarding the use of natural-based health products. Good health literacy enables individuals to understand the importance of using products correctly, including reading labels, following dosages, and adhering to recommended usage instructions.

Based on these results, it can be concluded that the majority of respondents exhibit responsible behavior regarding the use of natural-based health products. The high level of adherence to usage instructions indicates that natural-based health products are not used haphazardly but are accompanied by an understanding of proper usage. This reflects a strong awareness of safety and efficacy aspects in the use of natural-based health products as part of daily health practices.

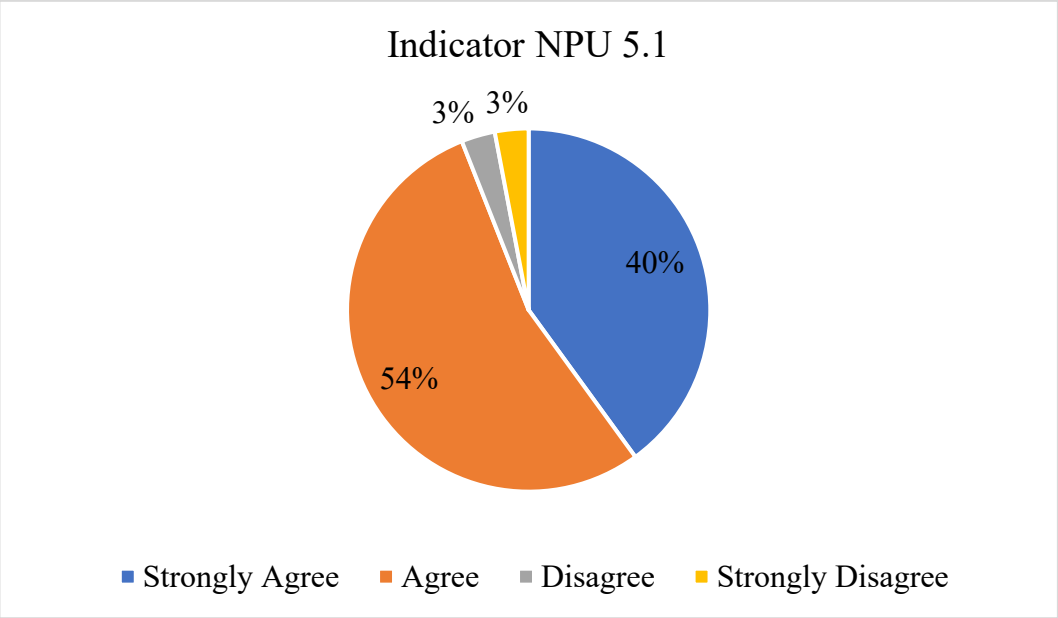


Figure 4.14 Distribution of Respondents' Responses for Indicator NPU5.1

Based on Figure 4.14, the majority of respondents expressed their belief that natural-based health products are effective in supporting women's health. A total of 40% of respondents strongly agreed, and 54% agreed with the statement "I believe that natural-based health products are effective for women's health." Overall, 94% of respondents gave a positive response, while 6% gave a negative response. These results indicate that the majority of female students at the Universitas Islam Indonesia have a very high level of confidence in the effectiveness of natural-based health products in supporting women's health and well-being.

This high level of agreement indicates that natural-based health products have achieved strong acceptance among respondents, not only as consumer products but also as part of a health belief system that influences how individuals view alternative healthcare options. In this context, natural-based health products are no longer positioned as mere supplements but as one of the primary choices believed to provide tangible benefits for women's health.

This belief can be explained by a combination of empirical experience, exposure to information, and the growing trend toward a healthy lifestyle that increasingly emphasizes the use of natural ingredients. Respondents who have had positive experiences using herbal products tend to form the perception that these products are effective. Additionally, information obtained from social circles,

digital media, and general knowledge regarding the benefits of natural ingredients further reinforces this belief.

From a scientific perspective, Liu et al. (2025) explain that plants contain various bioactive compounds such as flavonoids, polyphenols, and phytoestrogens that possess important biological activities in the human body. These compounds play a role in antioxidant mechanisms that help reduce oxidative stress, anti-inflammatory effects that support the reduction of inflammation, and physiological regulation related to female hormonal and reproductive functions. These biological mechanisms provide a scientific basis supporting the perception of the effectiveness of natural-based products in the context of women's health.

Furthermore, Akram et al. (2023) state that natural products have significant therapeutic potential due to their diverse content of secondary metabolites. Various active compounds such as alkaloids, flavonoids, terpenoids, and polyphenols have been shown to possess pharmacological effects that can support the prevention and management of various health conditions. In the modern context, the use of herbal products is growing alongside increasing scientific research supporting their effectiveness in the field of health.

In addition, Abdallah et al. (2023) note that the growing interest in a "back to nature" movement has spurred the use of medicinal plants as an alternative source for maintaining health. Plant-based products are not only used in traditional medicine but have also been integrated into modern pharmaceutical development due to their antibacterial, anti-inflammatory, and antioxidant potential. This reinforces the scientific legitimacy of using natural-based health products within the healthcare system.

These findings are further supported by Dahia et al. (2025), who state that natural health approaches are increasingly being adopted in women's health strategies, particularly to support long-term health and quality of life. The integration of natural solutions into women's health indicates that herbal products are not merely perceived as alternatives but as integral components of a more holistic and sustainable health approach.

Furthermore, Nisa et al. (2025) explain that the consumption trend among the younger generation toward plant-based products such as matcha and herbal

remedies shows a significant increase, in line with the growing healthy lifestyle in the digital era. Natural-based health products are perceived not only as beneficial for health but also as aligned with a modern, health-conscious lifestyle. This phenomenon further reinforces respondents' confidence in the effectiveness of natural-based health products.

From a consumer behavior perspective, high levels of trust in natural-based health products can also be linked to the formation of perceived benefits derived from a combination of direct experience and external information. When individuals consistently receive positive information and experience results they perceive as beneficial, a stronger belief in the product's effectiveness is formed.

Based on these results, it can be concluded that the level of confidence in the effectiveness of natural-based health products in supporting women's health falls into the very high category. This indicates that positive perceptions of natural-based health products are not merely temporary but have become an integral part of respondents' health beliefs. This belief is formed through a combination of scientific evidence regarding the bioactive compounds in plants, usage experiences, as well as the influence of the social environment and the growing trend of healthy lifestyles among young women.

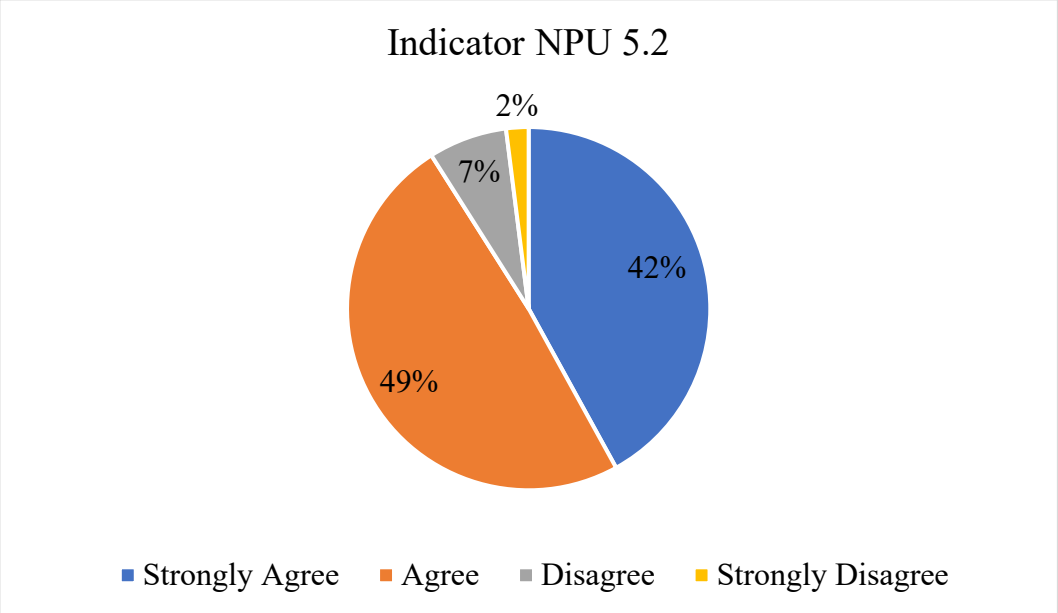


Figure 4.15 Distribution of Respondents' Responses for Indicator NPU5.2

Based on Figure 4.15, the majority of respondents reported experiencing positive benefits after using plant-based products. A total of 42% of respondents

strongly agreed, and 49% agreed with the statement “I feel the benefits after using natural-based health products.” Meanwhile, 7% of respondents disagreed, and 2% strongly disagreed. Overall, 91% of respondents gave a positive response, while 9% gave a negative response. These results indicate that the majority of female students at the Universitas Islam Indonesia have experienced noticeable benefits from the use of plant-based products. This finding suggests that respondents’ personal experiences with positive outcomes may contribute to their continued use of natural-based health products and reinforce their confidence in effectiveness of natural-based health products.

The high level of agreement on this indicator suggests that plant-based products provide a positive subjective experience for the majority of respondents. Unlike indicator NPU5.1, which focuses on belief in the product’s effectiveness, NPU5.2 reflects an experience-based evaluation, that is, the extent to which respondents actually felt an impact or change after using the product. This suggests that the product’s benefits are not merely perceptual but are also confirmed through actual usage experience.

These perceived benefits can encompass various aspects, such as improved overall health, a greater sense of comfort, enhanced physical fitness, or improvements in specific conditions like skin health or bodily balance. The variation in these perceived benefits suggests that the effects of plant-based products can differ among individuals, depending on the type of product used, frequency of use, and each respondent’s health condition.

From a scientific perspective, Akram et al. (2023) explain that natural products contain various bioactive compounds such as flavonoids, alkaloids, terpenoids, and polyphenols that possess pharmacological activity. These compounds are known to have antioxidant, anti-inflammatory, and antimicrobial effects that can contribute to improvements in the body’s physiological conditions as well as overall health. It is this biological activity that forms the scientific basis for the benefits experienced by users of natural-based health products.

Additionally, Abdallah et al. (2023) emphasize that medicinal plants have long been used due to their significant therapeutic potential in supporting human health. Various studies indicate that active compounds in plants can act through

specific biological mechanisms that produce positive effects on the body, including supporting healing processes, disease prevention, and improving overall health.

Furthermore, Liu et al. (2025) state that plant bioactive compounds such as flavonoids and phytoestrogens play a role in regulating women's biological systems, including hormonal balance and reproductive function. The resulting antioxidant and anti-inflammatory effects can also help maintain the body's physiological stability, thereby supporting better health outcomes following the use of plant-based products.

These findings are also consistent with Dahia et al. (2025), who demonstrated that the use of natural health solutions is increasingly being integrated into women's health practices because they contribute to long-term well-being. This indicates that the perceived benefits are not merely short-term but can also contribute to a more stable and sustainable perception of health.

Based on these results, it can be concluded that the majority of respondents experienced positive benefits after using natural-based health products. This demonstrates that natural-based health products are not merely accepted based on perception or belief but also provide tangible experiences directly felt by users, thereby reinforcing the functional value of natural-based health products in daily health practices.

4.3.3 Evaluation of the Measurement Model (Outer Model)

The evaluation of the measurement model (outer model) is conducted to assess the quality of the research instruments in measuring the latent constructs used in the study. In Partial Least Squares Structural Equation Modeling (PLS-SEM), the evaluation of the outer model for reflective constructs includes tests of convergent validity, discriminant validity, and reliability. According to Hair et al. (2021), testing the measurement model must be performed before analyzing the structural model to ensure that the indicators used are valid and reliable in representing the research constructs.

a. Convergent Validity

To determine whether the data meet the criteria for convergent validity, an assessment can be conducted based on the resulting outer loading values. Convergent validity aims to determine the extent to which the indicators within a

construct exhibit high correlation and are capable of explaining the latent variable being measured. In a reflective model, convergent validity is evaluated using outer loading values and Average Variance Extracted (AVE). According to Hair et al. (2021), an indicator is considered to meet convergent validity if it has an outer loading value of ≥ 0.70. However, in exploratory research, indicators with outer loading values between 0.50 and 0.60 may still be retained as long as the construct's AVE and composite reliability values continue to meet the required criteria.

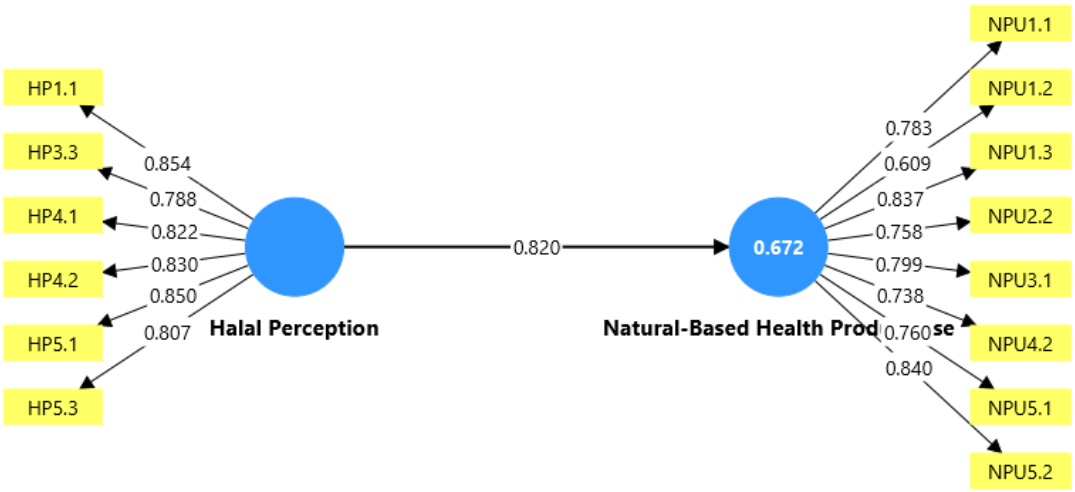


Figure 4.16 Outer Loading Values – Main Data

(Source: SmartPLS analysis, 2026)

Table 4.11 Outer Loading Values – Main Data

Nama Indikator	Outer Loading
Halal Perception	
HP1.1	0.854
HP3.3	0.788
HP4.1	0.822
HP4.2	0.830
HP5.1	0.850
HP5.3	0.807
Natural-Health Based Product Use	
NPU1.1	0.783
NPU1.2	0.609*
NPU1.3	0.837
NPU2.2	0.758
NPU3.1	0.799
NPU4.2	0.738
NPU5.1	0.760
NPU5.2	0.840

(Source: SmartPLS Data Analysis, 2026)

Based on Table 4.11, all indicators under the Halal Perception variable have outer loadings above 0.70, ranging from 0.788 to 0.854. These values indicate that all indicators effectively represent the Halal Perception construct, thereby meeting the criteria for convergent validity. Indicator HP1.1 has the highest outer loading value of 0.854, indicating that this indicator provides the strongest representation in explaining the Halal Perception construct.

In the Natural-Based Health Product Use variable, most indicators also have outer loading values above 0.70, namely NPU1.1 (0.783), NPU1.3 (0.837), NPU2.2 (0.758), NPU3.1 (0.799), NPU4.2 (0.738), NPU5.1 (0.760), and NPU5.2 (0.840). Meanwhile, indicator NPU1.2 is 0.609. Although both values are below 0.70, the indicators can still be retained because this study is exploratory in nature, and the loading values remain within the minimum acceptable threshold of ≥ 0.60 as recommended by Hair et al. (2021). Furthermore, these indicators remain

theoretically relevant in measuring the Natural-Based Health Product Use construct and do not adversely affect the convergent validity of the overall measurement model.

In addition to factor loadings, convergent validity was also evaluated using the Average Variance Extracted (AVE) value. An AVE value of ≥ 0.50 indicates that the construct explains more than 50% of the variance in the indicators that comprise it.

Table 4.12 AVE – Main Data

Variable	Average Variance Extracted (AVE)
Halal Perception	0.681
Natural-Based Health Product Use	0.591

(Source: SmartPLS Data Analysis, 2026)

Based on the test results in Table 4.12, the Halal Perception variable has an AVE value of 0.681, indicating that the construct meets the criterion for convergent validity because its value exceeds the minimum threshold of 0.50. Meanwhile, the Natural-Based Health Product Use variable has an AVE value of 0.591 and is therefore also deemed to meet the criterion for convergent validity. Thus, the indicators used in this study are capable of adequately explaining the latent constructs.

b. Discriminant Validity

Discriminant validity refers to the extent to which a construct is empirically distinct from other constructs within the research model. This assessment is important to ensure that each construct measures a unique concept and does not overlap excessively with other constructs. According to Hair et al. (2021), the Heterotrait-Monotrait Ratio (HTMT) is recommended as a more sensitive approach for evaluating discriminant validity in reflective measurement models compared with traditional approaches.

The HTMT value represents the ratio between the average correlations across different constructs and the average correlations between indicators within the same construct. A construct is considered to demonstrate adequate discriminant validity when the HTMT value is below 0.90 for conceptually similar constructs.

The results of the HTMT analysis on the main dataset are presented in the following table.

Table 4.13 HTMT – Main Data

	Heterotrait-monotrait ratio (HTMT)
Natural-Based Health Product Use <-> Halal Perception	0.890

(Source: SmartPLS Data Analysis, 2026)

Based on the HTMT results presented in Table 4.13, the HTMT value between the Halal Perception and Natural-Based Health Product Use constructs was 0.890. Therefore, the measurement model demonstrates adequate discriminant validity, and no discriminant validity issues were identified in this study.

c. Reliability Test

A reliability test was conducted to measure the level of internal consistency of the indicators in measuring the research constructs. The reliability test aims to ensure that the indicators within a construct are capable of producing stable and consistent measurements. In the Partial Least Squares Structural Equation Modeling (PLS-SEM) method, construct reliability is generally evaluated using Cronbach's Alpha and Composite Reliability (CR/rho_c). According to Hair et al. (2021), a construct is considered reliable if it has a Cronbach's Alpha and Composite Reliability of ≥ 0.70.

The results of the reliability test on the main data are presented in the following table.

Table 4.14 Cronbach's Alpha and Composite Reliability – Main Data

	Cronbach's alpha	**Composite reliability**
Halal Perception	0.907	0.928
Natural-Based Health Product Use	0.900	0.920

(Source: SmartPLS Data Analysis, 2026)

Based on the reliability assessment results presented in Table 4.14, the Halal Perception construct obtained a Composite Reliability value of 0.928 and a Cronbach's Alpha value of 0.907. Both values exceed the recommended threshold of 0.70, indicating that the construct possesses a high level of internal consistency.

These findings suggest that the indicators used to measure Halal Perception are reliable and capable of consistently representing the underlying construct.

Similarly, the Natural-Based Health Product Use construct achieved a Composite Reliability value of 0.920 and a Cronbach's Alpha value of 0.900. Since both values are above the minimum acceptable criterion of 0.70, the construct can be considered reliable. The results indicate that the indicators associated with Natural-Based Health Product Use consistently measure the intended construct and demonstrate satisfactory measurement stability.

Furthermore, the Composite Reliability values for both constructs exceed 0.90, reflecting a very high degree of internal consistency among the indicators. Although extremely high reliability values may occasionally suggest indicator redundancy, the values obtained in this study remain within acceptable limits and do not indicate any substantial concerns regarding the measurement model. According to Hair et al. (2021), higher reliability coefficients indicate that the indicators within a construct are strongly correlated and effectively measure the same latent concept.

Overall, the reliability assessment demonstrates that all constructs included in this study satisfy the recommended reliability criteria based on Cronbach's Alpha and Composite Reliability. Therefore, the measurement model can be considered reliable, exhibiting adequate internal consistency and providing a sound basis for proceeding with the evaluation of the structural model.

4.3.4 Evaluation of Structural Model (Inner Model)

The evaluation of the structural model (inner model) was conducted after all constructs in the measurement model (outer model) had been confirmed to be valid and reliable. The purpose of the inner model evaluation is to assess the relationships among latent constructs, determine the explanatory power of the model, and evaluate its predictive capability. In accordance with the guidelines proposed by Hair et al. (2021), the evaluation of the inner model includes the assessment of collinearity, path coefficients, coefficient of determination (R^2), effect size (f^2), predictive relevance, and predictive power.

a. Collinearity Assessment (VIF)

Collinearity assessment was performed to determine whether excessive correlations existed among the predictor constructs in the structural model. The Variance Inflation Factor (VIF) values were examined to identify potential multicollinearity issues. According to Hair et al. (2021), VIF values below 3.0 indicate that collinearity is not a concern and that the predictor constructs do not exhibit excessive correlations that could bias the estimation of the structural model.

Table 4.15 Variance Inflation Factor (VIF) Values

Variable Correlation	**VIF**
Halal Perception → Natural-Based Health Product Use	1.000

(Source: SmartPLS Data Analysis, 2026)

Based on Table 4.15, the VIF value for the relationship between Halal Perception and Natural-Based Health Product Use is 1.000. This value is well below the recommended threshold of 3.0, indicating that no collinearity issue within the structural model. Therefore, the predictor construct does not exhibit excessive correlation that could distort the estimation of the structural relationship.

Furthermore, the VIF value of 1.000 is expected because the research model includes only one exogenous construct, namely Halal Perception, which predicts Natural-Based Health Product Use. Since multicollinearity can only occur when two or more predictor constructs simultaneously explain the same endogenous construct, the presence of a single predictor results in a VIF value of 1.000 by definition. Consequently, the structural model satisfies the collinearity assumption and is appropriate for subsequent structural model evaluation and hypothesis testing.

b. Coefficient of Determination (R^2)

The coefficient of determination (R^2) was evaluated to assess the explanatory power of the structural model. The R^2 value indicates the proportion of variance in the endogenous construct that can be explained by its predictor construct(s) included in the model.

Table 4.16 Coefficient of Determination (R^2 and Adjusted R^2)

Variable Endogen	R^2	R^2 Adjusted
Natural-Based Health Product Use	0.672	0.668

(Source: SmartPLS Data Analysis, 2026)

Based on Table 4.16, the Natural-Based Health Product Use construct achieved an R^2 value of 0.672 and an Adjusted R^2 value of 0.668. This indicates that 67.2% of the variance in Natural-Based Health Product Use is explained by the Halal Perception construct in the model. The remaining 32.8% of the variance is explained by other factors not included in this study.

According to Hair et al. (2021), R^2 values of 0.75, 0.50, and 0.25 can be interpreted as substantial, moderate, and weak, respectively. Therefore, the R^2 value of 0.672 indicates that the structural model has a moderate level of explanatory power in explaining Natural-Based Health Product Use.

Furthermore, the Adjusted R^2 of 0.668 is only slightly lower than the R^2, indicating that the model provides a stable estimate of explained variance after adjusting for the number of predictor constructs. The small difference between R^2 and Adjusted R^2 suggests that the model is not substantially affected by estimation bias and demonstrates good explanatory performance.

Overall, these findings indicate that Halal Perception explains a considerable proportion of the variation in Natural-Based Health Product Use among female students at Universitas Islam Indonesia, demonstrating that the structural model possesses satisfactory explanatory capability.

c. Effect Size (f^2)

The effect size (f^2) was evaluated to determine the contribution of the predictor construct to the explanatory power of the endogenous construct. The f^2 value indicates the extent to which the R^2 value of the endogenous construct changes when a predictor construct is removed from the structural model.

Table 4.17 Effect Size (f^2) of Structural Relationships

Structural Relationship	f^2
Halal Perception → Natural-Based Health Product Use	2.047

(Source: SmartPLS Data Analysis, 2026)

Based on Table 4.17, the effect size (f^2) of Halal Perception on Natural-Based Health Product Use is 2.047. According to Hair et al. (2021), f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively. Since the obtained f^2 value is substantially greater than 0.35, the effect of Halal Perception on Natural-Based Health Product Use can be categorized as a large effect.

This finding indicates that Halal Perception makes a substantial contribution to explaining the variance in Natural-Based Health Product Use. In other words, removing Halal Perception from the structural model would lead to a considerable reduction in the model's explanatory power. Therefore, Halal Perception represents an important predictor of Natural-Based Health Product Use among female students at Universitas Islam Indonesia.

Overall, the effect size analysis demonstrates that Halal Perception has a strong practical contribution to explaining Natural-Based Health Product Use, confirming its important role in enhancing the explanatory capability of the structural model.

d. Hypothesis Testing

The significance and relevance of the structural relationships were assessed using the bootstrapping procedure. The analysis generated path coefficients (β), t-statistics, p-values, and confidence intervals for each hypothesized relationship.

Table 4.18 Path Coefficient Analysis Results (Bootstrapping)

	Original sample (O)	**Sample mean (M)**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**
Halal Perception → Natural-Based Health Product Use	0.820	0.818	0.051	16.160	0.000

(Source: SmartPLS Data Analysis, 2026)

Based on Table 4.18, the path coefficient between Halal Perception and Natural-Based Health Product Use is 0.820. The positive coefficient value indicates a positive relationship between the two constructs, suggesting that higher levels of

halal perception are associated with higher levels of natural-based health product use among undergraduate female students.

The bootstrapping results show a t-statistic value of 16.160, which is substantially higher than the critical value of 1.96 at the 5% significance level. In addition, the p-value is 0.000, which is below the significance threshold of 0.05. These results indicate that the relationship between Halal Perception and Natural-Based Health Product Use is statistically significant.

Furthermore, the path coefficient value of 0.820 also indicates a strong positive effect of Halal Perception on Natural-Based Health Product Use. This finding suggests that students who possess stronger awareness, knowledge, trust, and consideration regarding halal aspects are more likely to use natural-based health products. The result implies that halal-related perceptions play an important role in influencing the utilization of natural-based health products among female students.

Therefore, the proposed relationship between Halal Perception and Natural-Based Health Product Use is supported. These findings provide empirical evidence that halal perception is a significant predictor of natural-based health product use among undergraduate female students at Universitas Islam Indonesia.

4.4 Discussion of Research Results

This study was conducted to explore the patterns of natural-based health product use for women's health, to identify the factors influencing such use, and to analyze the influence of halal perception on the use of natural-based health products among undergraduate female students at Universitas Islam Indonesia. The discussion below interprets the research findings in relation to relevant theories, previous studies, and the characteristics of the respondents as female students within an Islamic higher-education environment.

4.4.1 Patterns of Natural-Based Health Product Use

The first research question aimed to explore the patterns of natural-based health product use for women's health among female students at Universitas Islam Indonesia. Based on the descriptive analysis presented in Table 4.12, the percentage of positive responses for the Natural-Based Health Product Use variable ranged from 81% to 94%, indicating that respondents generally demonstrated a high level of natural-based health product use. This finding suggests that natural-based health

products have become an important component of respondents' health-related behaviors and are commonly incorporated into their daily health practices. In the context of Universitas Islam Indonesia as an Islamic higher education institution, the use of natural-based health products is also closely related to respondents' consideration of halal aspects, where products that are perceived as halal, safe, and aligned with Islamic values may increase confidence and acceptance toward their use.

The findings indicate that the majority of respondents regularly use plant-based products for health purposes. Indicator NPU1.1 showed that 82% of respondents agreed that they regularly use plant-based products, while 87% reported using natural-based health products at least once a month (NPU1.2), and 88% considered natural-based health products to be part of their routine health practices (NPU1.3). Although NPU1.1 and NPU1.2 both relate to the frequency of use, they capture different aspects of this behavior: NPU1.1 reflects respondents' general, self-perceived sense of regularity, whereas NPU1.2 anchors that regularity to a concrete behavioral benchmark of at least once a month. The close alignment between the two figures (82% and 87%) indicates that respondents' subjective sense of regular use is consistent with this objective frequency threshold, thereby reinforcing rather than duplicating the measurement of this dimension. These findings suggest that the use of natural-based health products among female students is not merely occasional but has become a habitual health behavior. The regular use of natural-based health products reflects respondents' growing awareness of maintaining health through natural approaches rather than relying solely on conventional medicine after illness occurs. Furthermore, halal consideration may contribute to this behavior, as Muslim consumers often consider the permissibility and source of ingredients before selecting health products. Similar findings were reported by Akram et al. (2023), who found that consumers with positive perceptions of natural-based health products tend to use them regularly as part of their health management. Likewise, Abdallah et al. (2023) reported that confidence in the benefits, safety, and quality of herbal products encourages consumers to incorporate natural-based health products into their routine health practices.

The study also found that natural-based health products are widely used for personal care, particularly in cosmetics and skincare. Indicator NPU2.2 showed that 81% of respondents reported using natural-based cosmetic or skincare products. Although this indicator recorded the lowest percentage of positive responses among the Natural-Based Health Product Use indicators, the result still indicates that more than four-fifths of respondents use natural ingredients for personal care. This finding suggests that natural-based health product use among female students extends beyond general health maintenance to include skincare and beauty practices. For Muslim female students, the halal status of cosmetic ingredients may also become an important consideration because cosmetic products are applied directly to the body. Therefore, natural-based cosmetic products that are perceived as halal, safe, and free from questionable ingredients may provide greater confidence for consumers. Previous research by Prakasita and Wardana (2022) similarly found that women tend to prefer natural-based cosmetic products because they are perceived as safer, gentler on the skin, and less likely to cause adverse effects than synthetic products.

Another important finding is related to women's reproductive health. Indicator NPU3.1 obtained a positive response of 90%, indicating that most respondents use plant-based products to maintain reproductive or hormonal health. This finding reflects the important role of natural-based health products in supporting women's specific health needs. Herbal products have long been used to complement women's reproductive healthcare because they are perceived to help maintain hormonal balance and overall reproductive well-being. In addition to perceived health benefits, Muslim consumers may also consider whether these products are halal and suitable for their religious values before using them for personal health purposes. This finding is consistent with previous studies showing that women are among the primary users of herbal products due to their unique reproductive health needs and their preference for complementary health approaches (Akram et al., 2023; Abdallah et al., 2023).

The results further indicate that respondents generally use natural-based health products responsibly. Indicator NPU4.2 showed that 92% of respondents follow the recommended usage instructions for natural-based health products. This

finding suggests that respondents understand the importance of appropriate product use to achieve optimal benefits while minimizing potential health risks. Appropriate adherence to usage recommendations is essential because the safety and effectiveness of herbal products depend on correct dosage, duration of use, and product quality. In addition, selecting products with clear information regarding safety and halal status may further support responsible consumption among Muslim consumers. The World Health Organization (2023) emphasizes that herbal medicines should be used rationally and according to recommended guidelines to ensure their safe and effective use.

The highest level of agreement was observed for indicator NPU5.1, where 94% of respondents believed that natural-based health products are effective for women's health. Furthermore, 91% of respondents agreed that they experienced benefits after using plant-based products (NPU5.2). These findings indicate that respondents have strong confidence in the effectiveness of natural-based health products, and their positive experiences reinforce continued use. The perceived effectiveness of natural-based health products may be strengthened when products are also perceived as halal, as halal assurance provides additional confidence regarding ingredient sources, safety, and suitability for Muslim consumers. In consumer behavior, perceived effectiveness, previous positive experience, and trust in product attributes are important determinants of continued product use because consumers are more likely to reuse products that consistently provide satisfactory outcomes. This interpretation is supported by Akram et al. (2023), who identified perceived effectiveness as one of the strongest predictors of natural-based health product use. Similarly, Mitterer-Daltoé et al. (2023) reported that positive experiences significantly influence consumers' willingness to continue using natural health products.

Overall, the findings indicate that the pattern of natural-based health product use among female students at Universitas Islam Indonesia is characterized by regular use of plant-based products, routine incorporation of natural-based health products into daily health practices, utilization of natural-based cosmetics, use for reproductive and hormonal health, adherence to recommended usage instructions, strong belief in product effectiveness, and positive experiences following use.

Additionally, halal consideration represents an important supporting aspect in the acceptance and confidence toward natural-based health product use among Muslim female students. Products that are perceived as halal, safe, and beneficial may encourage consumers to continue incorporating natural-based health products into their health practices. These findings are consistent with the Health Belief Model, which proposes that individuals are more likely to engage in health-related behaviors when they perceive that the expected benefits outweigh the potential barriers. The consistently high positive responses across all indicators indicate that respondents perceive natural-based health products as valuable, halal, and appropriate for maintaining women's health, thereby encouraging their continued use.

4.4.2 Factors Influencing the Use of Natural-Based Health Products

The second research question aimed to identify the factors influencing the use of natural health products among female students at Universitas Islam Indonesia. Based on the descriptive findings presented in the previous section, several factors appear to encourage respondents to use natural health products. These include belief in the effectiveness of natural-based health products, positive experiences after use, women's reproductive and hormonal health needs, routine health practices, preference for plant-based products, use of natural-based cosmetic products, and adherence to recommended usage instructions. Collectively, these findings suggest that female students' use of natural health products is influenced by a combination of health-related, behavioral, personal, and value-based considerations. In addition, considering that Universitas Islam Indonesia is an Islamic higher education institution, halal perception represents an important aspect that may shape consumers' trust and acceptance of natural health products, particularly among Muslim consumers.

One of the most prominent factors identified in this study is respondents' belief in the effectiveness of natural-based health products. Indicator NPU5.1 recorded the highest level of positive responses, with 94% of respondents agreeing that natural-based health products are effective for women's health. This finding suggests that perceived effectiveness is one of the main considerations underlying respondents' decision to use natural-based health products. Consumers are generally

more likely to adopt and continue using health products when they believe those products are capable of providing the expected health benefits. Similar findings were reported by Akram et al. (2023), who found that perceived effectiveness is one of the strongest predictors of natural health product use. Likewise, Abdallah et al. (2023) reported that consumers' confidence in the therapeutic benefits of herbal products significantly increases their willingness to use these products for maintaining health. Furthermore, for Muslim consumers, confidence in product effectiveness may be strengthened when the product is also perceived as halal, as halal assurance provides additional trust regarding ingredient sources and product suitability.

Another important factor is positive experience after using natural-based health products. Indicator NPU5.2 showed that 91% of respondents agreed that they experienced benefits after using plant-based products. This finding indicates that previous positive experiences strengthen respondents' confidence in natural-based health products and encourage continued use. In consumer behavior, positive product experience is considered an important determinant of repeat usage because consumers tend to continue using products that consistently provide satisfactory outcomes. Mitterer-Daltoé et al. (2023) similarly reported that positive experiences with natural health products contribute significantly to consumers' long-term acceptance and continued use. When combined with confidence in halal status, positive experiences may further enhance consumers' trust and willingness to continue using natural-based health products.

The findings also suggest that women's reproductive and hormonal health needs are an important consideration in natural-based health product use. Indicator NPU3.1 obtained a positive response rate of 90%, indicating that most respondents use plant-based products to maintain reproductive or hormonal health. Women's reproductive health requires continuous care throughout different stages of life, leading many women to seek complementary approaches that support their health and well-being. Herbal products have traditionally been used to relieve menstrual discomfort, maintain hormonal balance, and support reproductive health. For Muslim female students, the selection of products for reproductive health may also involve consideration of halal status to ensure that the products used are aligned

with religious values. Previous studies likewise reported that women frequently use herbal products because they are perceived as beneficial complementary therapies for women's specific health needs (Akram et al., 2023; Abdallah et al., 2023).

Another factor reflected in the findings is the incorporation of natural-based health products into routine health practices. Indicators NPU1.1, NPU1.2, and NPU1.3 showed positive response rates of 82%, 87%, and 88%, respectively, indicating that respondents regularly use plant-based products, consume natural-based health products at least once a month, and consider them part of their routine health practices. These findings suggest that natural-based health products have become integrated into respondents' everyday lifestyles rather than being used only when health problems arise. This pattern reflects increasing health awareness and a greater emphasis on preventive healthcare among young adults. Additionally, the availability of natural-based health products with clear halal information may support this routine consumption behavior by increasing consumers' confidence in product selection. Mitterer-Daltoé et al. (2023) similarly found that health-conscious consumers are more likely to incorporate natural-based health products into their daily routines as part of long-term health maintenance.

The use of natural-based cosmetic and skincare products also appears to contribute to respondents' overall natural-based health product use. Although indicator NPU2.2 recorded the lowest positive response (81%), the majority of respondents still reported using natural-based cosmetic or skincare products. This finding indicates that respondents value natural ingredients not only for general health but also for personal care and beauty. Among Muslim consumers, halal perception may also influence cosmetic product selection because cosmetic ingredients are directly applied to the body. Therefore, natural-based cosmetic products that are perceived as halal, safe, and suitable may provide greater confidence for users. Previous research by Prakasita and Wardana (2022) found that female consumers tend to prefer natural cosmetic products because they are perceived as safer, gentler on the skin, and less likely to produce adverse effects than synthetic alternatives.

In addition, respondents demonstrated a high level of responsible natural-based health product use. Indicator NPU4.2 showed that 92% of respondents follow

the recommended usage instructions for natural-based health products. This finding suggests that respondents recognize the importance of appropriate product use in achieving optimal health benefits while minimizing potential risks. According to the World Health Organization (WHO, 2023), herbal medicines should be used rationally and according to recommended guidelines to ensure their safety and effectiveness. Responsible use may also reflect consumers' awareness in selecting products that provide sufficient information regarding ingredients, safety, and halal status.

Beyond these descriptive factors, this study also examined halal perception as a potential determinant influencing natural-based health product use. The PLS-SEM analysis demonstrated that halal perception has a positive and significant influence on natural-based health product use, with a path coefficient of $\beta = 0.753$, a t-value of 11.209, and a p-value of 0.000. This result indicates that respondents with stronger halal perceptions tend to demonstrate higher levels of natural-based health product use. For Muslim consumers, halal perception may function as a form of trust and assurance regarding ingredient sources, production processes, and product suitability according to Islamic principles. Therefore, halal consideration is not only a religious aspect but also a factor that may strengthen consumer confidence and encourage the adoption of natural health products.

Overall, the findings indicate that the use of natural health products among female students at Universitas Islam Indonesia is influenced by several interrelated considerations. The strongest factors reflected in respondents' responses include belief in the effectiveness of natural-based health products, positive experiences after use, the need to maintain reproductive and hormonal health, routine use of plant-based products, preference for natural-based cosmetic products, adherence to recommended usage instructions, and halal perception. These findings suggest that respondents' decisions to use natural-based health products are motivated by both perceived health benefits and trust-related factors. The significant relationship between halal perception and natural-based health product use highlights that religious values and product assurance may play an important role in shaping health-related behavior among Muslim female students.

4.4.3 Influence of Halal Perception on the Use of Natural-Based Health Products

The third research question aimed to examine the influence of halal perception on the use of natural health products among female students at Universitas Islam Indonesia. This relationship was evaluated using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach through the assessment of the structural model. The results demonstrated that halal perception has a positive and statistically significant influence on natural-based health product use. As presented in Table 4.24, the structural relationship produced a path coefficient (β) of 0.820, a t-statistic of 16.160, and a p-value of 0.000. Since the t-statistic exceeded the critical value of 1.96 and the p-value was below the significance level of 0.05, the proposed hypothesis was accepted. These findings indicate that higher levels of halal perception are associated with higher levels of natural-based health product use among female students at Universitas Islam Indonesia.

The positive path coefficient demonstrates that halal perception is an important determinant of respondents' decisions to use natural health products. Female students who possess stronger awareness and understanding of halal principles, greater trust in halal certification, and stronger intentions to prioritize halal-certified products are more likely to incorporate natural-based health products into their health practices. This finding suggests that respondents do not evaluate natural health products solely based on their perceived health benefits but also consider whether the products comply with Islamic principles before deciding to use them.

The importance of halal perception is further reflected in the descriptive results of the Halal Perception construct. The measurement model showed that all retained indicators exhibited satisfactory outer loading values, indicating that they adequately represented the construct. Among these indicators, understanding the criteria for determining whether a product is halal (HP1.1) demonstrated the highest loading value (0.854), suggesting that halal knowledge forms an essential foundation of respondents' halal perception. Respondents also showed strong trust in halal certification issued by authorized institutions (HP4.1; outer loading =

0.822) and agreed that the presence of a halal logo increases their confidence in a product (HP4.2; outer loading = 0.830). Furthermore, respondents expressed a strong intention to continue using halal-certified natural-based health products (HP5.1; outer loading = 0.850) and to switch to halal-certified alternatives whenever available (HP5.3; outer loading = 0.807). Collectively, these findings indicate that halal perception among respondents consists of cognitive, affective, and behavioral dimensions that together encourage the use of halal natural health products.

The explanatory power of the structural model further supports the importance of halal perception in predicting natural-based health product use. The coefficient of determination showed an R^2 value of 0.672, indicating that halal perception explains 67.2% of the variance in Natural-Based Health Product Use. According to Hair et al. (2021), this value indicates a moderate level of explanatory power, demonstrating that halal perception accounts for a substantial proportion of respondents' decisions regarding natural-based health product use. The remaining 32.8% of the variance may be explained by other factors not included in the present study, such as health literacy, product accessibility, economic considerations, recommendations from family or peers, previous experiences, or cultural influences.

The practical importance of halal perception is reinforced by the effect size analysis. The f^2 value of 2.047 greatly exceeds the threshold of 0.35 recommended by Hair et al. (2021) for a large effect, indicating that halal perception makes a very strong contribution to explaining natural-based health product use. This finding implies that removing halal perception from the structural model would substantially reduce its explanatory capability. Therefore, halal perception should be regarded as a key determinant of natural-based health product use among female students at Universitas Islam Indonesia.

The predictive assessment also demonstrated that the proposed model possesses satisfactory predictive capability. The Q^2 predict value of 0.655 was greater than zero, indicating that the model has predictive relevance for the endogenous construct. Furthermore, all indicators produced positive Q^2 predict values, while the comparison between the PLS-SEM model and the linear

regression benchmark showed that the PLS-SEM model outperformed the linear model for several indicators and produced comparable prediction errors for the remaining indicators. According to Hair et al. (2021), these findings indicate moderate predictive power, suggesting that halal perception provides a reliable basis for predicting natural-based health product use among female students.

The findings of this study are consistent with the Theory of Planned Behavior (TPB) proposed by Ajzen (2020), which explains that an individual's behavior is preceded by behavioral intention, while behavioral intention is influenced by attitudes, subjective norms, and perceived behavioral control. In the present study, halal perception reflects respondents' beliefs regarding the importance of consuming products that comply with Islamic principles. Positive beliefs regarding halal certification, together with trust in halal assurance and awareness of Islamic dietary requirements, contribute to favorable attitudes toward halal-certified natural-based health products. These positive attitudes subsequently strengthen respondents' intentions to choose halal-certified natural-based health products, which are reflected in their actual use of these products. Therefore, halal perception functions as an important psychological determinant that shapes respondents' health-related consumer behavior.

From an Islamic perspective, the findings are also consistent with the concept of *halalan thayyiban*, which emphasizes that products consumed or used by Muslims should be not only halal but also wholesome, safe, and beneficial. Allah SWT states:

يٰٓاَيُّهَا النَّاسُ كُلُوْا مِمَّا فِى الْاَرْضِ حَلٰلًا طَيِّبًاۖ وَّلَا تَتَّبِعُوْا خُطُوٰتِ الشَّيْطٰنِۗ اِنَّهٗ لَكُمْ عَدُوٌّ مُّبِيْنٌ ١٦٨

"O mankind, eat from whatever is on earth that is lawful and good, and do not follow the footsteps of Satan. Indeed, he is to you a clear enemy." (Q.S. Al-Baqarah 2:168)

This verse demonstrates that Islam encourages Muslims to select products that are not only lawful but also beneficial and safe for health. Accordingly, the use of halal-certified natural health products represents not only a health-related decision but also an implementation of Islamic teachings in everyday life. Harimurti (2024) explains that Islam regulates all aspects of consumption, including medicines, cosmetics, and health products. Products used by Muslims should

therefore comply with Islamic requirements regarding ingredients, manufacturing processes, distribution, and methods of acquisition. Consequently, halal perception extends beyond recognizing halal ingredients and includes confidence in the integrity of the entire halal assurance system.

This understanding is reinforced by a hadith narrated by Abu Hurairah RA, in which the Prophet Muhammad SAW stated:

إِنَّ اللَّهَ طَيِّبٌ لَا يَقْبَلُ إِلَّا طَيِّبًا

"Indeed, Allah is Good and accepts only that which is good." (Narrated by Muslim)

The hadith emphasizes that Muslims should prioritize products that are lawful and wholesome in every aspect of life, including products used for health maintenance and personal care. Therefore, respondents' preference for halal-certified natural-based health products reflects not only health awareness but also obedience to Islamic ethical values.

A similar principle is found in Islamic jurisprudence. Ibn Taymiyyah stated:

كُلُّ نَجِسٍ مُحَرَّمَ الْأَكْلِ وَلَيْسَ كُلُّ مُحَرَّمِ الْأَكْلِ نَجِسًا

“Every impure substance is prohibited for consumption, but not everything prohibited for consumption is impure” (Majmu‘ al-Fatawa, Vol. 21, p. 16).

This principle indicates that Muslims should evaluate products comprehensively by considering not only the absence of impure substances but also compliance with Islamic principles throughout the production process. In this context, halal certification serves as an important mechanism that assures consumers that products have fulfilled these requirements. The strong trust demonstrated by respondents toward halal certification (HP4.1), their confidence in halal logos (HP4.2), and their intention to continue using halal-certified products (HP5.1) indicate that halal certification provides an important source of confidence when selecting natural health products.

Harimurti (2024) further argues that Muslim consumers have a responsibility to support the halal industry by prioritizing products from manufacturers that consistently implement halal principles throughout the supply chain. This perspective is reflected in the findings of the present study, where respondents

expressed high levels of trust in halal certification and strong intentions to continue using halal-certified natural-based health products. These findings suggest that halal perception extends beyond personal religiosity to include awareness of halal governance, certification credibility, and ethical consumer responsibility.

The findings of this study are consistent with previous research. Utami and Fetrina (2024) reported that halal knowledge and positive halal perceptions significantly influence consumers' intentions to use halal products. Similarly, Sudarsono et al. (2025) found that halal literacy, trust in halal certification, and positive attitudes toward halal products significantly encourage halal consumption behavior among Muslim consumers. Abdallah et al. (2023) likewise reported that consumers' trust in product quality, safety, and compatibility with personal values plays an important role in encouraging the use of natural health products. The present study extends these findings by demonstrating that halal perception is not only relevant to food purchasing decisions but also serves as a significant determinant of natural health product use among female university students within an Islamic higher education environment.

Overall, the findings provide strong empirical evidence that halal perception significantly influences the use of natural health products among female students at Universitas Islam Indonesia. Respondents who possess stronger halal knowledge, greater trust in halal certification, stronger awareness of Islamic principles, and higher intentions to prioritize halal-certified products are more likely to use natural health products as part of their daily health practices. Therefore, the proposed hypothesis is supported, confirming that halal perception is an important determinant of natural-based health products use within the context of Muslim female university students.

Beyond its contribution to the local context of Universitas Islam Indonesia, this study also carries relevance for the wider international academic community. By empirically linking halal perception with the use of natural-based health products among female university students, this research extends the discourse on halal-related consumer behavior, which has so far been dominated by studies on food and cosmetics (Prakasita & Wardana, 2022; Sudarsono et al., 2025; Utami & Fetrina, 2024), into the relatively underexplored area of women's health products.

This offers a transferable framework and empirical reference that researchers in other Muslim-majority countries and multicultural societies can adapt when examining the intersection of religiosity, halal assurance, and health-related consumer behavior. In doing so, this study contributes new empirical evidence to the global body of knowledge on health behavior, religiosity, and consumer psychology, particularly within the context of Islamic higher education.

CHAPTER V
CONCLUSIONS AND SUGGESTIONS

5.1 Conclusions

Based on the findings, the following conclusions can be drawn:

1. The use of natural health products among UII female students was found to be relatively high. Natural-based health products were commonly used as part of routine health practices, particularly for women's health, while halal certification also served as an important consideration in product selection.
2. The use of natural-based health products was influenced by several factors, including perceived effectiveness, positive user experiences, routine health practices, and women's health needs. In addition, trust in halal certification and halal-labelled products strengthened respondents' confidence in using natural health products.
3. Halal perception was found to have a positive influence on the use of natural-based health products, indicating that halal is not merely a religious obligation but also an indicator of consumer trust and product quality.

5.2 Suggestions

Based on the findings of this study, the following recommendations are proposed:

1. Female students, especially UII female students, are encouraged to be more selective when choosing natural-based health products by considering their benefits, effectiveness, safety, and halal status, as verified through official halal certification and product registration approval.
2. Manufacturers, healthcare professionals, educational institutions, and other relevant stakeholders are advised to enhance consumer education and provide greater transparency regarding product ingredients and halal certification to strengthen consumer trust and confidence.
3. Future researchers are encouraged to expand the scope of the study by involving more diverse respondents and incorporating additional variables, such as health literacy, halal knowledge, halal awareness, and social influence, to obtain a more comprehensive understanding of the factors affecting the use of natural health products.

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ATTACHMENTS

Appendix 1. Ethical Clearance

Kementerian Kesehatan
Poltekkes Yogyakarta
Komite Etik Penelitian Kesehatan
Jalan Tata Bumi No. 3, Banyuraden, Gamping, Sleman, D.I. Yogyakarta 55293
(0274) 617601
https://poltekkesjogja.ac.id

Terakreditasi KEPPKN No. 005/KEPPKN/AKT/IV/2024

KETERANGAN LAYAK ETIK
DESCRIPTION OF ETHICAL EXEMPTION
"ETHICAL EXEMPTION"

No.DP.04.03/e-KEPK.1/476/2026

Protokol penelitian versi 1 yang diusulkan oleh :
The research protocol proposed by

Peneliti utama : Zulaika Zamri
Principal In Investigator

Nama Institusi : Universitas Islam Indonesia
Name of the Institution

Dengan judul:
Title

"EXPLORING NATURAL PRODUCT USE AND HALAL PERCEPTION FOR WOMEN'S HEALTH AMONG UNIVERSITY FEMALE STUDENTS IN UNIVERSITAS ISLAM INDONESIA"

"EXPLORING NATURAL PRODUCT USE AND HALAL PERCEPTION FOR WOMEN'S HEALTH AMONG UNIVERSITY FEMALE STUDENTS IN UNIVERSITAS ISLAM INDONESIA"

Dinyatakan layak etik sesuai 7 (tujuh) Standar WHO 2011, yaitu 1) Nilai Sosial, 2) Nilai Ilmiah, 3) Pemerataan Beban dan Manfaat, 4) Risiko, 5) Bujukan/Eksploitasi, 6) Kerahasiaan dan Privacy, dan 7) Persetujuan Setelah Penjelasan, yang merujuk pada Pedoman CIOMS 2016. Hal ini seperti yang ditunjukkan oleh terpenuhinya indikator setiap standar.

Declared to be ethically appropriate in accordance to 7 (seven) WHO 2011 Standards, 1) Social Values, 2) Scientific Values, 3) Equitable Assessment and Benefits, 4) Risks, 5) Persuasion/Exploitation, 6) Confidentiality and Privacy, and 7) Informed Concent, referring to the 2016 CIOMS Guidelines. This is as indicated by the fulfillment of the indicators of each standard.

Pernyataan Laik Etik ini berlaku selama kurun waktu tanggal 11 Maret 2026 sampai dengan tanggal 11 Maret 2027.

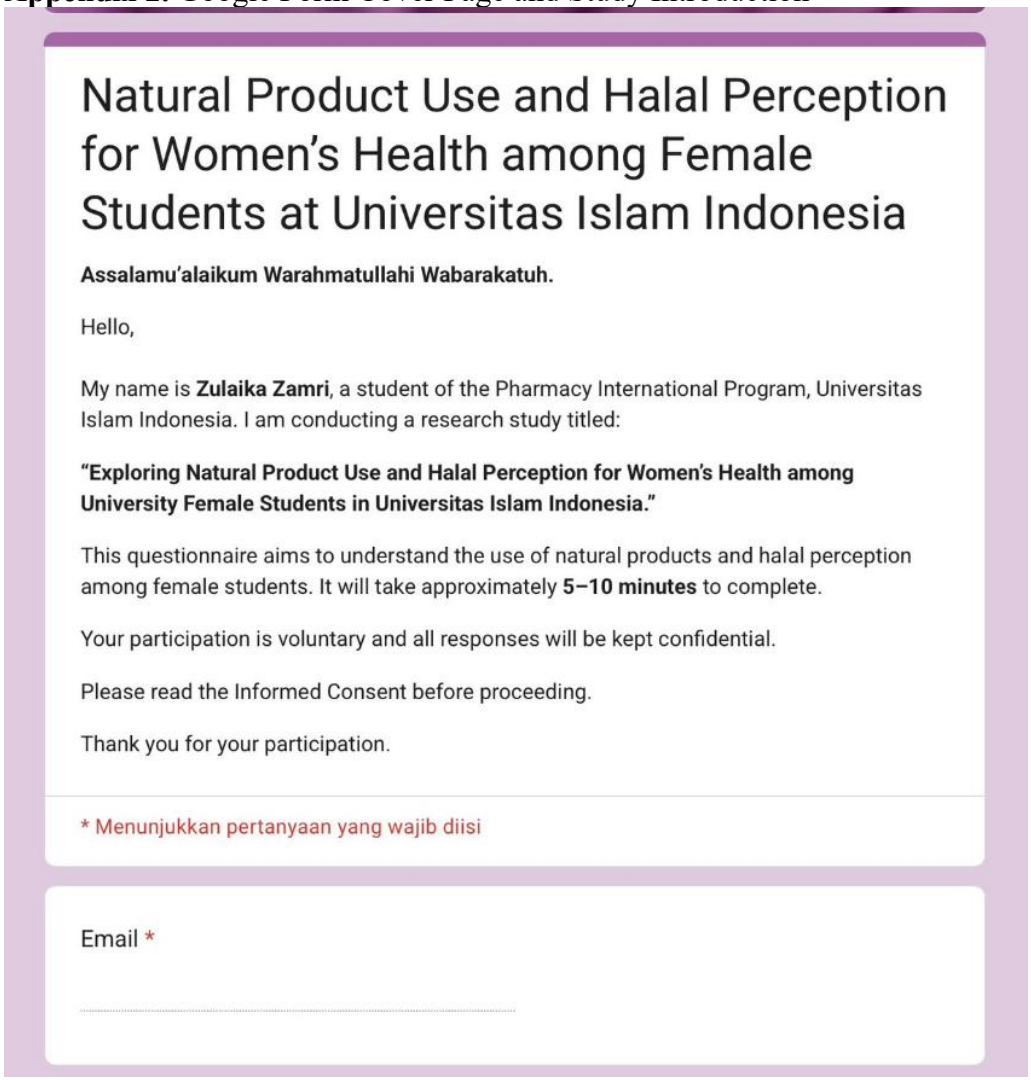
This declaration of ethics applies during the period March 11, 2026 until March 11, 2027.

March 11, 2026
Chairperson,

POLITEKNIK KESEHATAN YOGYAKARTA
KOMITE ETIK PENELITIAN KESEHATAN
KEMENTERIAN KESEHATAN

Dr. drg. Wiworo Haryani, M.Kes.

Appendix 2. Google Form Cover Page and Study Introduction



Natural Product Use and Halal Perception for Women's Health among Female Students at Universitas Islam Indonesia

Assalamu'alaikum Warahmatullahi Wabarakatuh.

Hello,

My name is **Zulaika Zamri**, a student of the Pharmacy International Program, Universitas Islam Indonesia. I am conducting a research study titled:

"Exploring Natural Product Use and Halal Perception for Women's Health among University Female Students in Universitas Islam Indonesia."

This questionnaire aims to understand the use of natural products and halal perception among female students. It will take approximately **5–10 minutes** to complete.

Your participation is voluntary and all responses will be kept confidential.

Please read the Informed Consent before proceeding.

Thank you for your participation.

* Menunjukkan pertanyaan yang wajib diisi

Email *

Appendix 3. Informed Consent Form

Informed Consent (Persetujuan Responden)

Judul Penelitian / Research Title:

Exploring Natural Product Use and Halal Perception for Women's Health among University Female Students in Universitas Islam Indonesia

Peneliti / Researcher:

Zulaika Zamri

Pharmacy International Program, Universitas Islam Indonesia

Tujuan Penelitian / Purpose of the Study

Penelitian ini bertujuan untuk mengetahui penggunaan produk alami dan persepsi halal terkait kesehatan wanita di kalangan mahasiswa.

This study aims to explore the use of natural products and halal perception related to women's health among university students.

Prosedur / Procedure

Anda akan diminta mengisi kuesioner online yang berisi pertanyaan terkait penggunaan produk alami, persepsi halal, dan data demografi. Waktu pengisian sekitar 5–10 menit.

You will be asked to complete an online questionnaire about natural product use, halal perception, and demographic information. It will take approximately 5–10 minutes.

Risiko / Potential Risks

Penelitian ini memiliki risiko minimal. Anda mungkin merasa sedikit tidak nyaman saat menjawab beberapa pertanyaan.

This study involves minimal risk. You may experience slight discomfort when answering some questions.

Manfaat / Benefits
Penelitian ini diharapkan memberikan informasi yang bermanfaat bagi pengembangan edukasi kesehatan dan penelitian selanjutnya.

This study is expected to provide useful insights for health education and future research.

Kerahasiaan / Confidentiality
Data yang Anda berikan akan dijaga kerahasiaannya dan hanya digunakan untuk keperluan penelitian. Tidak ada identitas pribadi yang akan dipublikasikan.

All information provided will be kept confidential and used only for research purposes. No personal identity will be disclosed.

Partisipasi Sukarela / Voluntary Participation
Partisipasi dalam penelitian ini bersifat sukarela. Anda dapat menolak atau menghentikan pengisian kapan saja tanpa konsekuensi. Responden berkesempatan mendapatkan reward melalui undian. Anda dapat secara sukarela mencantumkan nomor WhatsApp di akhir kuesioner.

Participation in this study is voluntary. You may refuse or withdraw at any time without any consequences. Participants may receive a reward through a random draw. You may voluntarily provide your WhatsApp number at the end of the questionnaire.

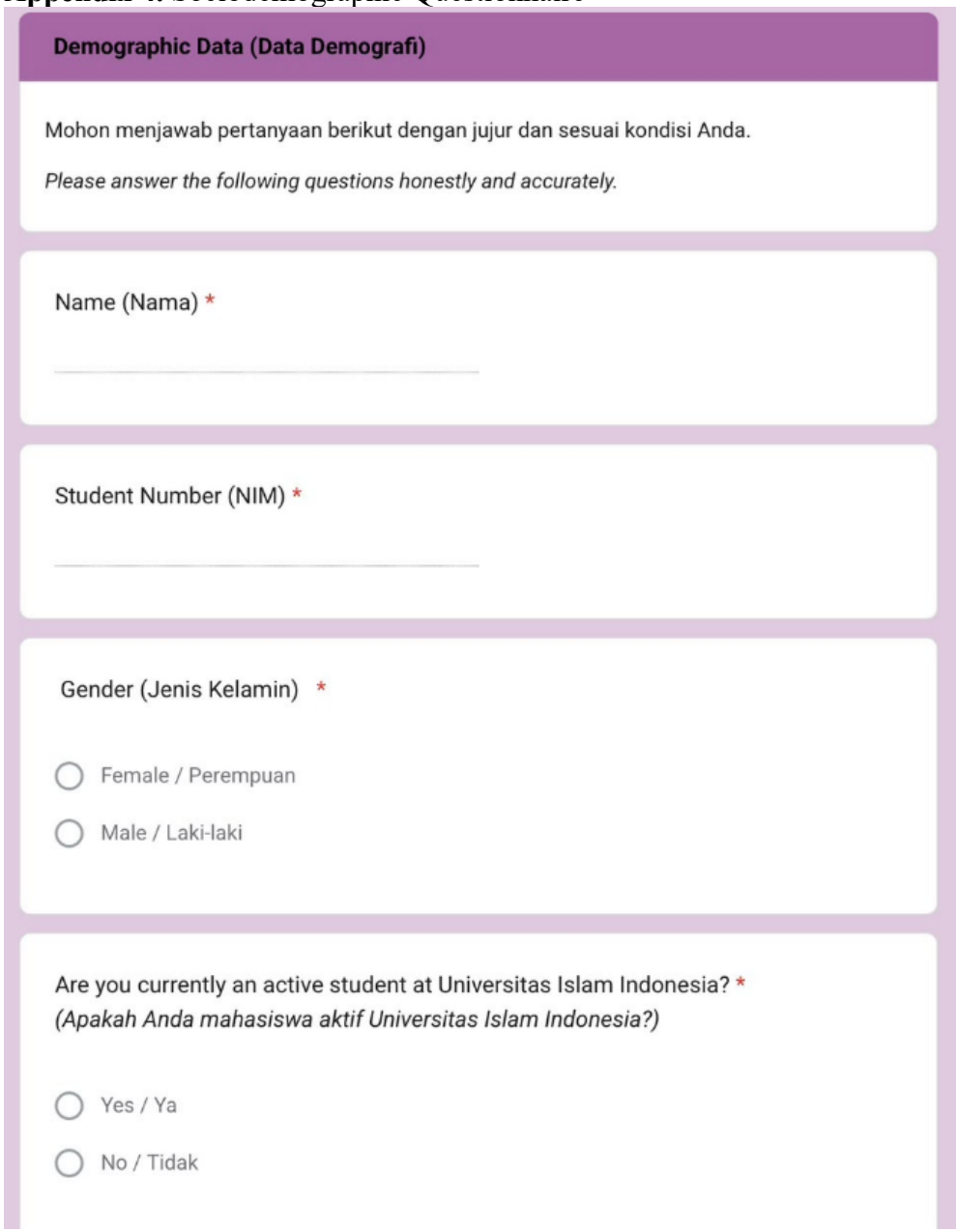
Pernyataan Persetujuan / Consent Statement

Dengan memilih "Saya setuju", saya menyatakan bahwa saya telah membaca dan memahami informasi di atas serta bersedia berpartisipasi secara sukarela. *

By selecting "I agree", I confirm that I have read and understood the information above and voluntarily agree to participate.

- ◯ Saya setuju / I agree
- ◯ Saya tidak setuju / I do not agree

Appendix 4. Sociodemographic Questionnaire



Demographic Data (Data Demografi)

Mohon menjawab pertanyaan berikut dengan jujur dan sesuai kondisi Anda.

Please answer the following questions honestly and accurately.

Name (Nama) *

Student Number (NIM) *

Gender (Jenis Kelamin) *

- Female / Perempuan
- Male / Laki-laki

Are you currently an active student at Universitas Islam Indonesia? *
(Apakah Anda mahasiswa aktif Universitas Islam Indonesia?)

- Yes / Ya
- No / Tidak

Age (Usia) *

- ◯ > 18 tahun (diatas 18 tahun)
- ◯ < 18 tahun (dibawah 18 tahun)

Faculty (Fakultas) *

(Pharmacy & Medicine are excluded based on research criteria)
(Fakultas Farmasi & Kedokteran tidak termasuk sesuai kriteria penelitian)

- ◯ Faculty of Law / Fakultas Hukum (FH)
- ◯ Faculty of Economics and Business / Fakultas Bisnis dan Ekonomika (FBE)
- ◯ Faculty of Islamic Studies / Fakultas Agama Islam (FIAI)
- ◯ Faculty of Psychology / Fakultas Psikologi (FP)
- ◯ Faculty of Social and Cultural Sciences / Fakultas Ilmu Sosial Budaya (FISB)
- ◯ Faculty of Civil Engineering and Planning / Fakultas Teknik Sipil dan Perencanaan (FTSP)
- ◯ Faculty of Industrial Technology / Fakultas Teknologi Industri (FTI)
- ◯ Faculty of Mathematics and Natural Sciences / Fakultas MIPA (non-Pharmacy)

Have you used natural-based products for women's health in the past 12 months? *

Apakah Anda pernah menggunakan produk berbahan alami untuk kesehatan wanita dalam 12 bulan terakhir?

Natural-based products refer to products containing at least one ingredient derived from natural sources (e.g., plants or minerals), including herbal medicines, supplements, and personal care products used for health or well-being.

Produk berbahan alami adalah produk yang mengandung minimal **satu bahan dari sumber alami** (misalnya tumbuhan atau mineral), termasuk **obat herbal, suplemen, dan produk perawatan atau skincare serta kosmetik** yang digunakan untuk kesehatan atau kesejahteraan ataupun relaksasi.

- ◯ Yes / Ya
- ◯ No / Tidak

Thank you for your participation

You may optionally provide your WhatsApp number to participate in a reward draw. This information will only be used for reward purposes and will remain confidential.

Anda dapat secara sukarela mengisi nomor WhatsApp untuk mengikuti undian reward. Data ini hanya digunakan untuk keperluan reward dan akan dijaga kerahasiaannya.

Nomor WhatsApp hanya akan digunakan untuk keperluan pemberian reward dan tidak akan disebarluaskan
The WhatsApp number will only be used for reward distribution purposes and will not be shared

.....

Kontak Peneliti / Researcher Contact
Peneliti / Researcher :
Zulaika Zamri
Pharmacy International Program
Universitas Islam Indonesia

Email: 22613226@students.uii.ac.id
WhatsApp: 08978145705

Kirim Kosongkan formulir

Appendix 5. Questionnaire Items and References

Variable Halal Perception	Domain	Code	Indicator (Questionnaire Item)	Answer	Reference
	Knowledge of Halal Products	HP1.1	I understand the criteria for determining whether a product is halal according to Islamic principles.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Utami & Fetriani, 2023)
		HP1.2	I know how to identify whether Natural-Based Health Products contain halal or non-halal ingredients.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Sudarsono et al., 2022)
		HP1.3	I understand that halal status is determined not only by ingredients but also by the production process.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Utami & Fetriani, 2023)
	Attitude toward Halal Compliance	HP2.1	Using halal-certified Natural-Based Health Products is important to me.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Sudarsono et al., 2022)
		HP2.2	I feel more comfortable using halal-certified Natural-Based Health Products.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Sudarsono et al., 2022)
		HP2.3	I believe the command to consume *halalan thayyiban*, as stated in the Qur'an (Al-Baqarah: 168), is relevant to my daily health product choices.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Prakasita & Wardana, 2021)
	Importance of Halal in Decision-Making	HP3.1	The values contained in the Qur'an (Surah Al-Mā'idah: 3) influence the way I evaluate whether a product is appropriate for use.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Riswandi et al., 2022)
		HP3.2	I prioritize halal-certified Natural-Based Health Products	☐ Strongly agree ☐ Agree ☐	(Prakasita & Wardana, 2021)

			over products that are not certified.	Disagree ☐ Strongly disagree	
		HP3.3	I avoid Natural-Based Health Products if their halal status is unclear.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Sudarsono et al., 2022)
	Trust in Halal Certification	HP4.1	I trust halal certification or labeling issued by authorized institutions.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Utami & Fetriani, 2023)
		HP4.2	The presence of a halal logo increases my confidence in a product.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Sudarsono et al., 2022)
		HP4.3	Halal certification guarantees product safety and compliance with Islamic principles.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Utami & Fetriani, 2023)
	Behavioral Intention to Use Halal Products	HP5.1	I intend to continue using halal-certified Natural-Based Health Products.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Sudarsono et al., 2022)
		HP5.2	I will recommend halal-certified Natural-Based Health Products to others.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Sudarsono et al., 2022)
		HP5.3	I prefer to switch to halal-certified Natural-Based Health Products whenever they are available.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Prakasita & Wardana, 2021)
	Frequency of Use	NPU1.1	I regularly use Natural-Based Health Products for health purposes.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)

		NPU1.2	I use Natural-Based Health Products at least once a month.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
		NPU1.3	Natural-Based Health Products are part of my routine health practices.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
	Type of Product Used	NPU2.1	I use herbal medicines or natural-based dietary supplements for women's health.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
		NPU2.2	I use natural-based cosmetic or skincare products.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
		NPU2.3	I consume plant-derived functional foods or beverages.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
	Purpose of Use	NPU3.1	I use Natural-Based Health Products to maintain reproductive or hormonal health.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
		NPU3.2	I use Natural-Based Health Products to improve my mood or emotional well-being.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
		NPU3.3	I use Natural-Based Health Products for beauty and skin health.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
	Consistency of Use	NPU4.1	I use Natural-Based Health Products continuously rather than occasionally.	☐ Strongly agree ☐ Agree ☐	(Liu et al., 2025)

				Disagree ☐ Strongly disagree	
		NPU4.2	I follow the recommended instructions when using Natural-Based Health Products.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
		NPU4.3	I prefer Natural-Based Health Products for long-term health management.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
	Perceived Effectiveness	NPU5.1	I believe Natural-Based Health Products are effective in supporting women's health.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
		NPU5.2	I experience health benefits after using Natural-Based Health Products.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)
		NPU5.3	I believe Natural-Based Health Products are safer than synthetic alternatives.	☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree	(Liu et al., 2025)

Appendix 6. Final Questionnaire

Code	Indicator
Halal Perception	
HP1.1	I understand the criteria for determining whether a product is halal according to Islamic principles.
HP3.3	I avoid Natural-Based Health Products if their halal status is unclear.
HP4.1	I trust halal certification or labeling issued by authorized institutions.
HP4.2	The presence of a halal logo increases my confidence in a product.
HP5.1	I intend to continue using natural-based health products that are halal-certified or labeled halal.
HP5.3	I prefer to switch to halal-certified Natural-Based Health Products whenever they are available.
Natural-Based Health Product Use	
NPU1.1	I regularly use natural-based health products for health purposes.
NPU1.2	I use natural-based health products at least once a month.
NPU1.3	Natural-based health products are part of my routine health practices.
NPU2.2	I use natural-based cosmetic or skincare products.
NPU3.1	I use natural-based health products to maintain reproductive or hormonal health.
NPU4.2	I follow the recommended usage instructions for natural-based health products.
NPU5.1	I believe natural-based health products are effective for women's health.
NPU5.2	I feel the benefits after using natural-based health products.

Appendix 7. Research Schedule

No	Types of Activities	Months					
		I	II	III	IV	V	VI
1.	Research preparation	■					
2.	Questionnaire development and content validation		■				
3.	Ethical clearance submission and approval		■				
4.	Questionnaire distribution and data collection			■	■		
5.	Data analysis and interpretation			■	■		
6.	Thesis writing, revision, and finalization					■	■

Appendix 8. Raw Data of Respondents' Responses

Respondent	Halal Perception						Natural-Based Health Product Use							
	HP1.1	HP3.3	HP4.1	HP4.2	HP5.1	HP5.3	NPU1.1	NPU1.2	NPU1.3	NPU2.2	NPU3.1	NPU4.2	NPU5.1	NPU5.2
1	3	3	3	3	4	4	3	4	4	3	4	4	3	3
2	4	4	3	4	4	4	2	3	4	2	3	4	4	3
3	3	4	4	4	4	4	3	3	3	3	3	3	4	3
4	3	4	3	4	3	4	3	3	3	3	3	3	3	3
5	2	4	3	3	4	4	2	4	3	1	1	4	3	2
6	3	3	4	4	4	4	3	3	3	3	3	4	3	3
7	4	4	3	4	4	4	3	3	3	3	4	3	4	4
8	4	4	4	4	4	3	3	3	3	2	4	4	3	4
9	3	4	4	4	4	4	3	2	3	3	3	3	4	3
10	3	4	3	4	4	4	3	4	4	3	3	4	3	4
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