Eduvest – Journal of Universal Studies
Volume 4 Number 8, August, 2024
p- ISSN 2775-3735- e-ISSN 2775-3727

DIFFUSION OF INNOVATION THEORY ADAPTATION IN GENOMIC-BASED PRODUCT MARKETING STRATEGY

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ABSTRACT

With the rise of preventative healthcare needs after the COVID-19 pandemic, tanyaDNA, a genomics company in Indonesia, seeks to introduce Lifestyle and Pharmacogenomic Testing. This study explores using Diffusion of Innovation Theory to create a targeted marketing strategy for this new service. There's a lack of awareness and affordability concerns surrounding the test, along with a knowledge gap between the company, healthcare professionals, and the target market. The research aims to assess the theory's applicability, bridge these understanding gaps, and promote successful integration of the test into Indonesian healthcare. This can inform marketing strategies for other genomics companies looking to expand beyond COVID-19 testing. The study focuses on the JABODETABEK area of Indonesia and utilizes surveys and interviews to gather data. The findings can help bridge the gap between product creators and target markets, especially regarding the perspectives of key healthcare professionals.

KEYWORDS *Innovation Theory Adaptation, Genomic-Based Product, Marketing Strategy*

INTRODUCTION

COVID-19 Pandemic has brought mass impact towards global society. There have been over 760 million cumulative cases and over 6 million cumulative deaths recorded and reported by the World Health Organization (WHO) from January 2020 up to March 2023 (World Health Organization. (2023). Reflecting back to how the Indonesian government and citizens initially reacted towards this pandemic issue has shown that the awareness of infectious diseases, urgency and prevention are still lacking in our country (Erdianto, K., 2020). With delayed action from the government and limited knowledge at that time, Indonesians are struggling with

How to cite: Levanya Martina Marbun. (2024). Diffusion of Innovation Theory Adaptation in Genomic-Based Product Marketing Strategy. *Journal Eduvest. 4*(8), 7489-7503
E-ISSN: 2775-3727
Published by: https://greenpublisher.id/

what action should be taken if they or their family are contracted with the virus or even as simple as differentiated COVID-19 with common cold symptoms.

After successfully taming down the COVID-19 issue and receiving the welcome announcement from the World Health Organization (WHO) declaring the end of COVID-19 on Thursday, May 4, 2023 (World Health Organization, 2023), Genomik Solidaritas Indonesia (GSI), a prominent COVID screening company, swiftly adjusted its business strategy and set new objectives to meet the evolving needs of a post-pandemic world.

Genomik Solidaritas Indonesia (GSI) is a genomics-based healthcare provider in Indonesia. Initiating their business during the COVID-19 era, the company's mission is to make genetic testing accessible and affordable to everyone in Indonesia, and to improve the quality of healthcare in the country; especially to be a solution for COVID-19 testing (GSI Lab., 2020). Recognizing the shift in global health priorities, GSI Lab harnessed its expertise in genomic analysis and innovative technology to address the emerging demands in healthcare by launching their new business line called TanyaDNA by GSI Lab; which caters a range of genetic testing services other than COVID-19 testing; including carrier testing, cancer predisposition testing, pharmacogenomics testing, and more (tanyaDNA by GSI Lab., 2023). With a renewed sense of purpose, the company redirected its focus towards comprehensive health screenings and disease prevention, leveraging its existing infrastructure, research capabilities, and skilled workforce.

In addition to its role in addressing COVID-19, genomic testing presents a wide range of advantages and purposes that can offer significant insights into our well-being. By examining our genetic composition, this type of testing allows us to develop a more comprehensive comprehension of our susceptibility to diseases, make well-considered choices regarding our food choices and nourishment, as well as identify uncommon genetic disorders during their initial phases (Haridas, S., et.al, 2020).

Genomic testing is a powerful tool in evaluating our vulnerability to cancer and heart problems. By examining particular genetic indicators related to these ailments, it can identify individuals who may be more susceptible. Having this knowledge allows individuals to proactively take action, like increasing surveillance or making lifestyle adjustments, in order to reduce the chances of developing these diseases. Additionally, genomic testing is pivotal in the search for uncommon genetic diseases. Genomic testing equips healthcare professionals with the ability to provide appropriate care and support to affected individuals and their families by identifying genetic abnormalities that may not be immediately apparent, enabling early detection of these conditions and allowing for timely medical intervention and management (Clinical settings for genomic testing. Healio., n.d.).

With a shocking statistic, it is revealed that in Indonesia, a whopping 8-10% or around 25 million people face the possibility of developing and passing on genetically uncommon illnesses (Jawa Post., 2022). Regrettably, determining these conditions often takes an extensive 5-7 years, whereas those with rare diseases typically have a life expectancy of less than 5 years. This lengthy diagnostic journey is mainly due to the necessity of shipping samples abroad for examination and testing. Acknowledging this pressing necessity for a quicker and more accessible

solution, tanyaDNA by GSI Lab arose as a game-changing approach, with the aim of greatly reducing the diagnostic process and enhancing outcomes for those impacted by uncommon ailments.

Therefore, the implications of diffusion of innovation theory in building targeted marketing strategy to introduce gamechanger genomic-based testing called Lifestyle and Pharmacogenomic testing from tanyaDNA to Indonesian market by analysing the gap between owner's, Key Opinion Leaders' (KOL), and market understanding and positioning about the product.

The study focuses on the potential and challenges of genomic testing, particularly tanyaDNA's Lifestyle and Pharmacogenomic testing, in the Indonesian market. Despite its benefits in personalized healthcare, diagnostic accuracy, and gene therapy, there is limited market awareness and high cost, making it inaccessible to many Indonesians. The research aims to develop marketing strategies to address these issues, using the Diffusion of Innovation theory to enhance product acceptance. This involves assessing market understanding through surveys, interviews with company directors and healthcare leaders, and analyzing the perceptions of Key Opinion Leaders (KOLs) in the healthcare sector. The study will focus on the JABODETABEK area and excludes other tanyaDNA products and regions outside this area.

RESEARCH METHOD

Research Method

The research methodology will integrate both quantitative and qualitative approaches. The quantitative aspect involves analysing a pre-assessment questionnaire designed to gain market insights about the product. On the other hand, the qualitative dimension entails conducting interviews with various Key Opinion Leaders (KOL) in the healthcare sector. The primary objective of this research is to comprehend how each party, including the product owner and end-users (KOLs and customers), perceives the product. It aims to identify gaps in understanding among these stakeholders and develop an integrated marketing strategy to boost product sales in the market.

Sample and Population

- Pre-Assessment Questionnaire
  - The preliminary assessment questionnaire will utilise 100 samples, evenly split between 50 females and 50 males, within the age range of 25 to 45 years old, residing in the JABODETABEK area.
- Interview
  - The interview will involve discussions with four Key Opinion Leaders (KOL) from the healthcare sector, each specialising in different medical fields, including Obstetrics and Gynecology, Nutrition, Oncology, and Genomic.

Data Collection Technique

- Pre-Assessment Questionnaire

- The initial evaluation will be carried out using an online survey. This questionnaire aims to gauge the market's demographic, their awareness of general healthcare concepts and their significance, and their familiarity with the product. The questions can be found in Appendix 1.

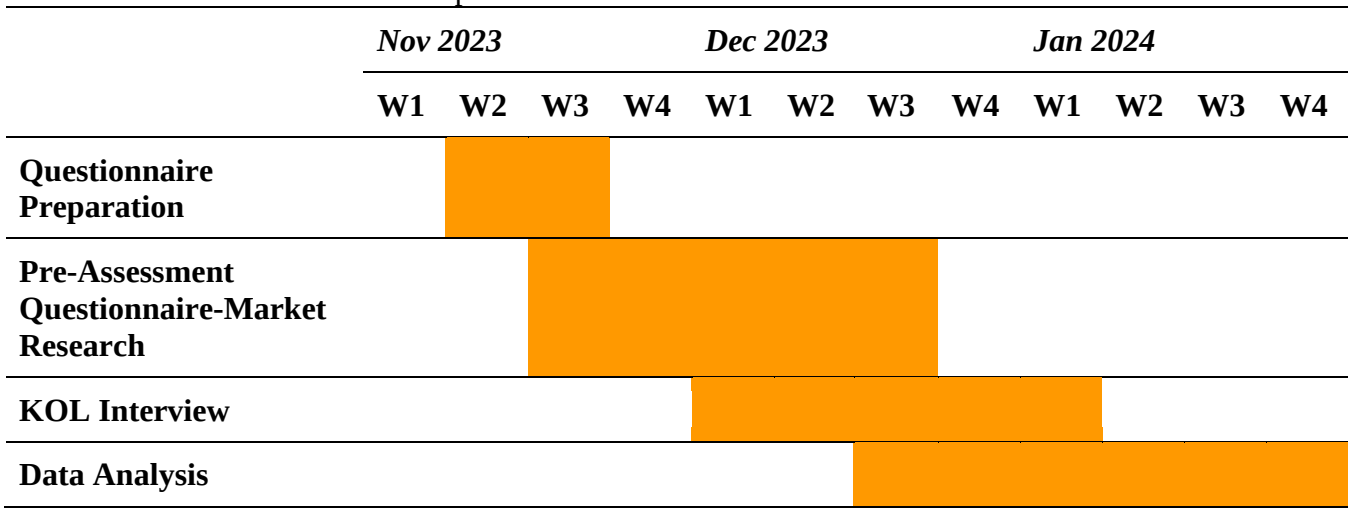
- Interview
  - Separate interviews will be held for the Key Opinion Leaders (KOL) in the healthcare industry. The aim is to comprehend their perspectives on the product in terms of its relative advantage, compatibility, complexity, trialability, and observability. The set of questions can be found in Appendix 2.

Data Analysis Technique

- Pre-Assessment Questionnaire
  - The data gathered from the survey will be analysed using cross-tabulation methods to identify patterns and trends in the market related to the aforementioned research questions.
- Interview
  - The information acquired from interviews with both parties will undergo critical discourse analysis. This analysis will examine the discourse between the interviewer and the sample, assessing its alignment with the research hypothesis.

Time and Places of Research

The research activities will occur through both online means, involving the distribution of a pre-assessment questionnaire, and offline methods, consisting of interviews, within the JABODETABEK area. The implementation of these activities will follow a specified timeline:



Research Limitation

This study exclusively aims to explore market awareness regarding lifestyle and pharmacogenomics products offered by tanyaDNA, as well as the perspectives

of Key Opinion Leaders (KOLs) using the diffusion of innovation theory. The analysis will not encompass the examination of the current marketing strategy.

RESULT AND DISCUSSION

Research Object Description

a. Preliminary Assessment

Initial data was collected using an online survey, which included twenty-one participants in the JABODETABEK area. Among these, ten respondents were from Jakarta, seven from Depok, two from Tangerang, and one from Bekasi. The majority of participants (seventeen individuals) were in the 21-30 age group, representing the youngest age category sampled. Additionally, three respondents were in the 31-40 age range, while one respondent was in the >40 age range. The distribution of respondents was equally split between ten females and eleven males.

b. Interview

Following an initial evaluation, an expert in genomics, familiar with the product and its functionalities, was interviewed to identify potential angles that could be emphasised to encourage customers to make a purchase.

Result Analysis

a. Preliminary Assessment

- General Health Knowledge

In order to gauge the customer's inclination to learn about and acquire the product, it is essential to assess the overall perception of health through variables that could influence the purchase of healthcare services from the customer's perspective.

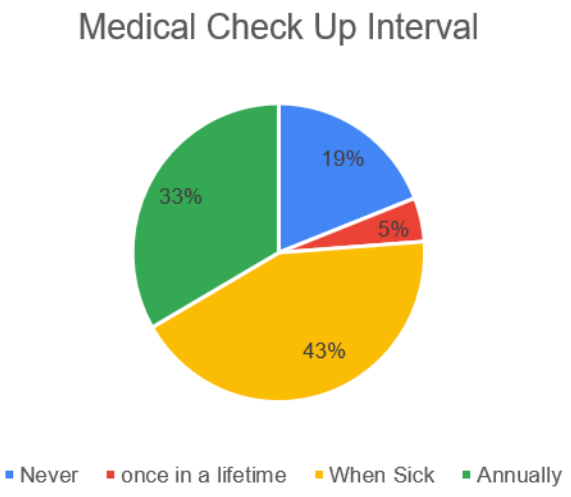


Figure II. Interval of the respondent doing a medical check up

The initial sign of their health consciousness becomes evident when observing the frequency of customers undergoing medical check-ups. According to Figure II, the majority of respondents (43%) undergo a medical check-up solely when they are unwell or as advised by their doctors. Additionally, 19% of

respondents have never undergone a medical check-up, and 5% only do so once in their lifetime. On the other hand, 33% of respondents consistently engage in annual medical check-ups. This data suggests that overall self-health awareness remains relatively low, as indicated by the tendency of respondents to undergo medical check-ups primarily when they are already sick.

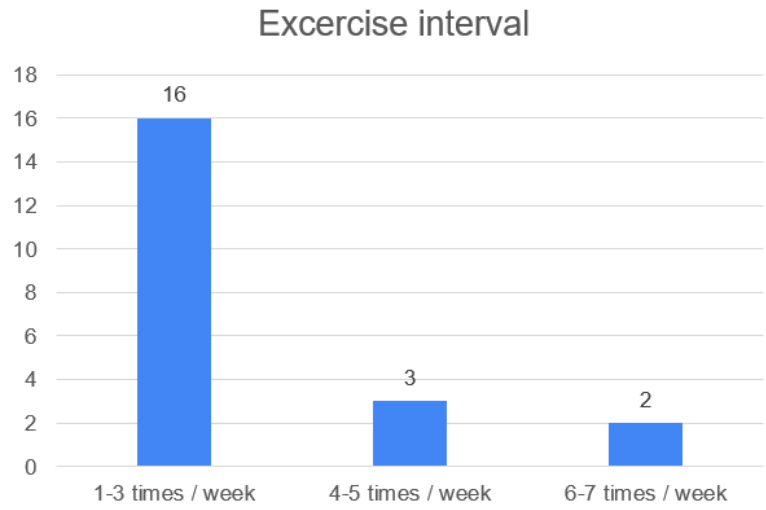


Figure III. Interval of Exercise

Another indication of awareness regarding a healthy lifestyle is demonstrated by the frequency and consistency of exercise, with health-conscious individuals typically engaging in more regular physical activity. Nevertheless, based on the collected responses, only 2 participants reported exercising regularly throughout the week, while the majority of respondents displayed lower exercise intensity. This observation suggests that prioritising fitness through regular exercise may not be a top concern for most respondents.

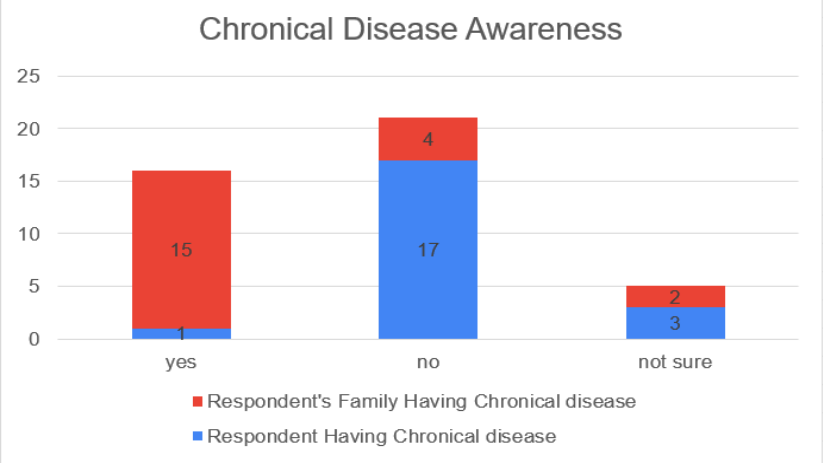


Figure III. Chronical disease awareness of respondents and their family

Furthermore, in assessing their health awareness and determining the market demand for lifestyle genomics products, an evaluation of their awareness regarding personal health conditions, such as chronic diseases, is conducted. The findings reveal that the majority of respondents do not have any chronic diseases themselves, but they are cognizant of such conditions within their family. This awareness suggests that these respondents recognize the potential hereditary health risks from their family, making them a promising target market for lifestyle and pharmacogenomics products.

- Brand Awareness

After assessing the overall health knowledge of the customers, their familiarity with GSI Lab and tanyaDNA, the latter being the new sister company of GSI Lab, is gauged to determine the market awareness of the brand.

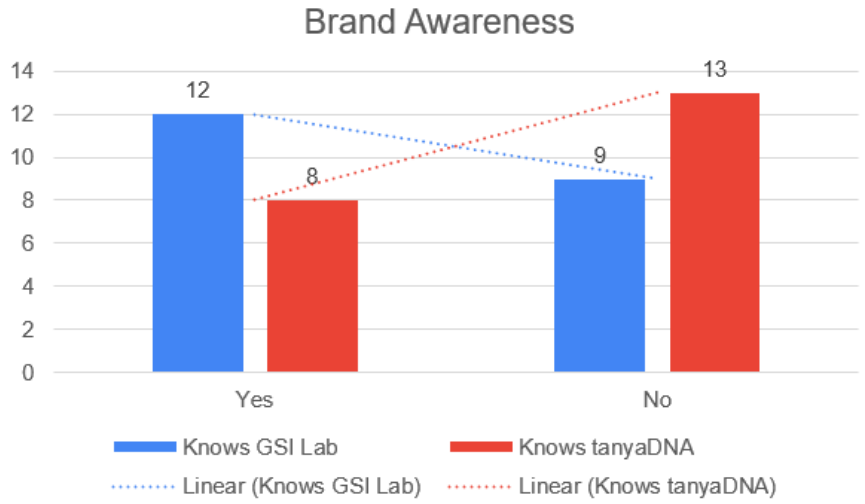


Figure IV. Market Awareness Towards GSI Lab and tanyaDNA

The majority of respondents are familiar with GSI Lab, but there has been a decrease in the number of respondents who are acquainted with tanyaDNA. Moreover, most customers who are aware of GSI Lab recognize it as a company specializing in COVID-19 testing. On the other hand, among those familiar with tanyaDNA, they primarily associate the company with genetic testing, specifically Non-invasive Prenatal Testing (NIPT), rather than lifestyle and pharmacogenomics products. This indicates that the market awareness for tanyaDNA itself remains relatively low.

- Product Awareness

To gain a more profound understanding of the market's viewpoint on Lifestyle and Pharmacogenomics testing, the assessment includes measuring their awareness of the product and their inclination to try it.

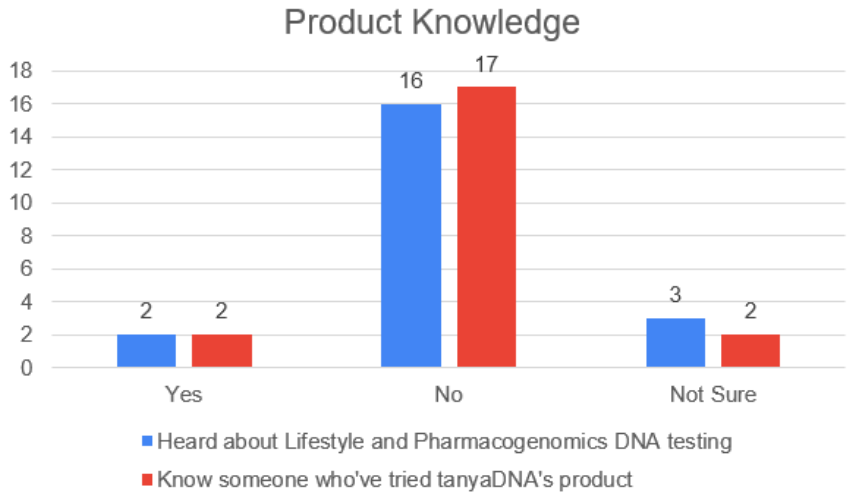


Figure V. Market Product Knowledge Toward Lifestyle and Pharmacogenomics

Figure V reveals that most respondents are not familiar with Lifestyle and Pharmacogenomics testing from tanyaDNA. Additionally, they indicate that they haven't come across anyone who has tried the product. These findings highlight the low awareness of the product and a limited number of individuals who have experienced it, making it challenging for customers to acquire information about the product. Furthermore, the absence of opinion leaders in promoting the brand and introducing the product to the market is evident from the results.

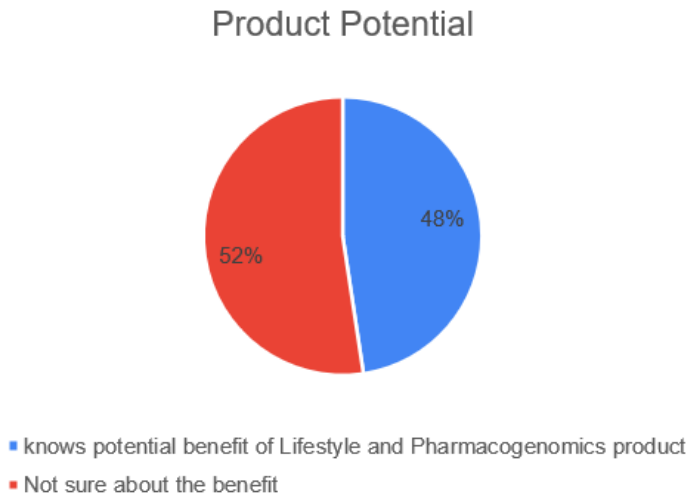


Figure VI. How Market Perceived the Potential Benefit of The Product

Despite the market having relatively low awareness, half of the respondents recognize the potential of the product. This emphasises the significance of

providing the market with accurate information to help them understand the product's importance.

- Market Competitiveness

Finally, in evaluating the market positioning of tanyaDNA, we measure the following three aspects: the extent to which respondents have encountered tanyaDNA's advertisements, their familiarity with competitors in the product space, and their willingness to consider purchasing the product, reflecting the trialability of the offering. This comprehensive approach provides insights into how tanyaDNA is perceived in the market, considering factors such as advertising exposure, competition awareness, and consumer openness to trying the product.

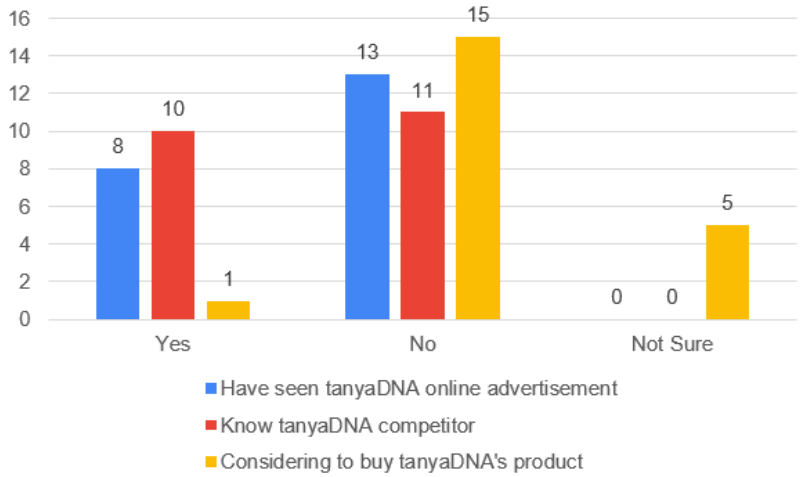


Figure VII. How Competitive tanyaDNA Market Are

The data reveals that most respondents have not encountered any advertisements for tanyaDNA, but they are aware of tanyaDNA's competitors. This indicates that tanyaDNA's visibility within the healthcare market is currently limited, and the product has not been adequately exposed to the market. Furthermore, the deficiency in product exposure contributes to a lower willingness among respondents to try the product. In essence, the lack of awareness and promotion hampers both the visibility and acceptance of tanyaDNA within the market.

b. Interview

- Relative Advantage

From the perspective of a healthcare practitioner in nutrition, cancer, or degenerative diseases, the specific advantages of tanyaDNA's Lifestyle and Pharmacogenomic Testing compared to traditional diagnostic and treatment methods become apparent. The DNA screening is perceived as beneficial because it provides predictions when patients are still in a healthy condition. This early insight allows customers to proactively prevent diseases by making lifestyle improvements. The ability to anticipate potential health issues earlier and prepare accordingly is considered a notable advantage.

In the Indonesian context, the genomic-based approach of tanyaDNA's product offers relative advantages in tailoring treatment and dietary plans for patients. This approach allows for a personalized understanding of genetic factors influencing individual responses to nutrients and medications. By incorporating genomic insights, practitioners can customize interventions to better align with patients' unique genetic profiles, enhancing the effectiveness of treatment and dietary plans.

While healthcare practitioners may not have specific case studies, the perceived advantages of tanyaDNA's product, such as early prediction and proactive disease prevention, are expected to have a significant impact on patient outcomes. The product's emphasis on increasing the genome database for Indonesians is particularly noteworthy, as it contributes to the improvement of healthcare and facilitates the development of targeted and personalized medicine in Indonesia. The potential impact of tanyaDNA's Lifestyle and Pharmacogenomic Testing in tailoring interventions based on individual genetic makeup holds promise for advancing patient care and outcomes in their specialization.

- Compatibility

From a professional standpoint, tanyaDNA's Lifestyle and Pharmacogenomic Testing aligns with the current practices and protocols in nutrition, cancer, or degenerative disease management in Indonesia, despite the absence of specific guidelines for genomic testing in the country, as genomic testing is presently utilised to refine diagnoses rather than as a primary diagnostic tool.

Several factors may influence healthcare practitioners in my specialisation to adopt this genomic-based testing product. Endorsement from professionals could be influenced by testimonials and the potential for providing earlier diagnoses to patients, ultimately enhancing their lifestyle. While there may be concerns related to the compatibility of the product with existing practices, addressing these issues is essential for successful integration into our practice.

Considering dietary and treatment preferences of patients with nutrition, cancer, or degenerative conditions in Indonesia, tanyaDNA's product offers an innovative approach. It aligns with the growing trend of personalised medicine, providing tailored recommendations based on genomic insights. The ability to offer earlier diagnoses and improve lifestyle is particularly appealing, potentially making it a valuable addition to the current management strategies in our specialisation.

- Complexity

Healthcare practitioners may find certain aspects of tanyaDNA's Lifestyle and Pharmacogenomic Testing complex challenging to comprehend and implement in their specialised field. The intricacies lie in crafting an Indonesian perspective to induce lifestyle changes among the population and effectively delivering this message to them. Additionally, practitioners face challenges related to interpreting the complexity of the product's genetic data and integrating it into personalised healthcare plans for patients. To address these complexities effectively within their practice, healthcare practitioners believe that several training sessions are necessary. These training sessions should focus on equipping practitioners with the skills to interpret the genetic data results accurately and provide personalised and tailored medication recommendations to the customers. Resources and ongoing

support are deemed essential to navigate the challenges associated with the implementation of tanyaDNA's product in the realm of personalised healthcare plans.

- Trialability

The genomic counsellor exhibits a notable openness to experimenting with innovative healthcare technologies or services, such as tanyaDNA's product, particularly through trial initiatives. To gauge their interest, hosting a seminar featuring a scientifically rigorous presentation of the product's knowledge is suggested. Additionally, a collaborative marketing approach that provides practitioners with the opportunity to experience the test for free emerges as a crucial incentive to encourage their participation in trials or pilot programs. This strategy leverages both education and hands-on experience to foster practitioner engagement and exploration of the benefits offered by tanyaDNA's Lifestyle and Pharmacogenomic Testing.

- Observability

From the interview conducted with genomic counsellor from tanyaDNA, it is shown that in the realm of nutrition, TanyaDNA's product yields observable outcomes by offering insights into genetic factors that influence an individual's response to specific nutrients, metabolism, and predisposition to nutritional deficiencies. Healthcare practitioners can gauge changes in dietary recommendations based on these genetic insights and measure improvements in nutritional status. Key performance metrics in this context may encompass alterations in dietary adherence, nutrient levels, and overall well-being.

Transitioning to the domain of cancer, the product provides information on genetic markers associated with cancer risk, allowing for personalised risk assessments and preventive measures. Healthcare practitioners can monitor changes in patient engagement with cancer risk mitigation strategies and assess adherence to personalised screening protocols. Essential performance metrics include shifts in cancer risk perception, compliance with recommended screenings, and early detection of potential malignancies.

In addressing degenerative diseases, the product's observable outcomes lie in genetic insights that reveal susceptibility to such diseases, enabling early intervention and lifestyle modifications. Healthcare practitioners can track changes in disease progression, symptom management, and the adoption of preventive measures. Performance metrics in this context may involve improvements in symptom severity, disease progression rates, and overall quality of life.

Delving into specific performance metrics or indicators, there is a focus on genetic literacy improvement. This entails measuring the enhancement of patients' understanding of their genetic information to ensure comprehension of its implications for their health. Additionally, assessing the degree to which patients follow personalized recommendations based on their genomic data, such as dietary changes, lifestyle modifications, and screening protocols, is crucial. Monitoring shifts in patient behavior related to health practices, such as smoking cessation, increased physical activity, or improved dietary habits, is also considered a key metric.

To enhance the observability and comprehensibility of the product's outcomes, strategic initiatives are recommended. These include the development of patient education programs aimed at enhancing understanding of genomic information and its implications for nutrition, cancer risk, and degenerative diseases. Collaborative efforts between tanyaDNA and healthcare practitioners are essential to facilitate seamless communication of genetic findings, ensuring effective interpretation and explanation to patients. Integration with Electronic Health Records (EHR) is proposed to provide healthcare practitioners easy access to relevant information during patient consultations, thereby improving the overall observability of genomic impacts on health outcomes. Implementation of a system for regular follow-ups and monitoring based on genomic insights enables healthcare practitioners to observe changes over time and adjust recommendations accordingly. Additionally, establishing patient support networks or forums allows individuals to share experiences, challenges, and successes related to implementing genomic-based recommendations, contributing to a collective understanding of the product's impact. These strategies collectively contribute to a more effective and observable integration of genomic information into patient care.

Discussion

In light of the comprehensive data analysis and an understanding of the current market dynamics surrounding tanyaDNA's lifestyle and pharmacogenomics DNA testing product, it is evident that a strategic and multifaceted marketing approach is essential for optimising market penetration and consumer adoption. The following key aspects underscore the imperative strategies to be implemented:

To begin with, there is a crucial need to amplify product awareness. This can be achieved through the development of targeted advertising campaigns that specifically aim to increase awareness of tanyaDNA's lifestyle and pharmacogenomics DNA testing product. Leveraging a diverse array of communication channels, including digital platforms, social media, and traditional media, will be instrumental in reaching a wider audience. It is paramount to highlight the unique features and benefits of the product in these campaigns, ensuring a clear differentiation from competitors and establishing a distinct market presence.

Education plays a pivotal role in shaping market perceptions, and thus, the next strategic focus involves creating comprehensive educational content. This content should effectively communicate the significance of lifestyle and pharmacogenomics testing, dispelling common misconceptions and providing clear explanations of the potential benefits and applications of tanyaDNA's product. Collaborating with healthcare professionals and experts in genomics will not only enhance the credibility of the testing services but also reinforce the educational component of the marketing strategy.

Leveraging expert endorsements becomes a powerful tool in building trust and credibility. Highlighting endorsements and testimonials from genomics experts and healthcare professionals who are familiar with tanyaDNA's product can significantly influence potential customers. Additionally, forming partnerships with

influencers in the genomics and health industry will extend the product's reach, creating a more impactful and widespread presence in the market.

Recognizing the demographic distribution from the preliminary assessment underscores the importance of tailoring marketing messages to resonate with different age groups. Developing targeted campaigns that address the specific health concerns and priorities of each age segment will enhance the relevance and effectiveness of the marketing strategy.

Improving market competitiveness is essential for tanyaDNA's sustained success. Strengthening the company's competitive positioning involves addressing the awareness gap highlighted in the data. Analysing competitors' strategies allows for adjustments in tanyaDNA's marketing approach, emphasizing unique selling points and advantages. Implementing promotional strategies to increase visibility and competitiveness in the market will be instrumental in capturing consumer attention.

Enhancing trialability is another critical aspect of the marketing strategy. Introducing trial offers or promotional discounts serves to incentivize potential customers to try tanyaDNA's lifestyle and pharmacogenomics testing product. Providing easily accessible information about the testing process and its benefits will alleviate any concerns potential customers may have, encouraging them to take the first step toward adoption.

Establishing thought leadership in the genomics industry is a strategic move that adds substantial value to the overall marketing approach. Engaging in thought leadership initiatives, such as hosting webinars, contributing articles, and participating in industry events, positions tanyaDNA as a leader in genomics. Sharing insights and research findings related to lifestyle and pharmacogenomics showcases the company's expertise and commitment to innovation.

Considering a strategic rebranding or repositioning of tanyaDNA aligns with the broader objective of better meeting the expectations and needs of the target market. Developing a compelling brand narrative communicates the company's dedication to advancing personalised healthcare through genomics, creating a more resonant and compelling brand image.

By meticulously addressing these strategic points, tanyaDNA can elevate its marketing strategy, fortify product awareness, and position itself as a leader in the market for lifestyle and pharmacogenomics DNA testing. This comprehensive approach ensures a nuanced and effective response to the challenges and opportunities present in the current market landscape.

CONCLUSION

The preliminary assessment of tanyaDNA's lifestyle and pharmacogenomics DNA testing product revealed key insights into the market dynamics. The data, collected from an online survey and interviews in the JABODETABEK area, highlighted low awareness and limited exposure of the product. Initial observations on general health knowledge indicated a need for education on lifestyle genomics. Brand awareness, especially for tanyaDNA, was relatively low, and product awareness reflected a lack of familiarity among respondents.

The market competitiveness analysis indicated that tanyaDNA's visibility was limited, contributing to a lower willingness among respondents to try the product. Despite the low awareness, half of the respondents recognized the potential benefits of the product, emphasizing the importance of accurate information dissemination.

The interview with a genomic counselor showcased the perceived advantages of tanyaDNA's product in predicting health outcomes, especially in nutrition, cancer, and degenerative diseases. However, the complexity of genetic data interpretation and integration into personalized healthcare plans posed challenges, necessitating training and ongoing support for practitioners.

The trialability of the product was addressed through a proposed seminar and collaborative marketing approach, offering practitioners a chance to experience the test for free. Observable outcomes, such as changes in dietary recommendations and cancer risk assessments, were identified, along with performance metrics to measure genetic literacy improvement and adherence to recommendations.

The study discussed the compatibility of tanyaDNA's product with current practices in Indonesia, emphasizing the need for endorsements, testimonials, and earlier diagnoses as influential factors for healthcare practitioners. It also touched on the absence of specific guidelines for genomic testing in Indonesia.

The perceived relative advantages of the product were underscored, including early prediction of health issues and contributing to the genome database for Indonesians. Strategic initiatives were recommended to enhance observability, comprehensibility, and integration of genomic information into patient care.

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