The Motivation of Healthy Product Consumption: A Bibliometric Study

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Abstract
Increased awareness of the importance of health among young people in Indonesia has led to increased healthy food consumption. According to a survey by the state statistics agency, most respondents are concerned about calorie intake and participate in diet programs. The motivation of individuals plays an important role in satisfying their needs and desires for healthy food. This study uses bibliometric analysis to explore the motivation for consuming healthy foods. Despite the increasing trend towards healthy food consumption, research interest has declined recently. Countries such as the United States, the United Kingdom and Australia dominate this research, while research in Asia remains relatively minimal. These findings can potentially inform public health policy-making and future disease prevention efforts.

Keywords: Health Awareness, Consumption, Healthy Food, Motivation, Public Health

Introduction
The food and beverage industry in Indonesia has experienced growth due to household consumption. Increasing individual income and spending on food and beverages also contribute to the growth of the food and beverage industry. In the period from 2020 to 2021, the Gross Domestic Product (GDP) of the food and beverage industry increased by 2.54% or reached Rp 774.1 trillion. In the first quarter of 2022, the GDP of this industry grew by 3.75%, and in the first quarter of 2023, the growth increased to 5.33% (BPS, 2024). The growth of the GDP of the food and beverage industry is in line with the increasing consumer expenditure on food and beverages, which grew by 1.44% compared to the previous year (Kusnandar, 2022). The motivation to consume healthy food is necessary to reduce the incidence of several diseases that are currently on the rise, such as diabetes mellitus. Individuals with indications of diabetes mellitus are at risk of suffering from various complications, including macrovascular diseases (heart disease, stroke, and peripheral vascular disease) and microvascular diseases (retinopathy, neuropathy, and nephropathy). The various
complications caused by diabetes mellitus can lead to a decrease in the quality of life and life expectancy of individuals with diabetes mellitus (Persadia & Perkeni, 2020). The life expectancy of people with diabetes mellitus is reduced by approximately 15 years, 75% of whom die from macrovascular complications (Persadia & Perkeni, 2020). It is hoped that there will be an increase in the motivation of individuals to consume healthy food, which in turn can reduce the cases of diabetes mellitus and other deadly diseases.

The increasing health awareness among Indonesian youth has driven the trend of consuming healthy food products (Sari, 2022). In Indonesia, this healthy food trend has begun to be integrated into daily life. Based on a survey of 1,000 respondents, it was found that about 570 respondents (57%) are more attentive to calorie intake in their food and engage in diet programs to maintain or lose weight (Populix, 2022).

Thomson et al (2017) study analyzed the health levels of various common beverages, trust in nutritional information sources, and personal values of respondents from Melbourne, Shanghai, Vietnam, Indonesia, and Singapore. The results showed that respondents classified beverage healthiness into four types: intensively marketed sugary drinks, dairy-based and children’s products, unsweetened and minimally processed drinks, and water. The perception of healthiness regarding intensively marketed sugary drinks and dairy-based and children’s products was higher in Vietnam, Shanghai, and Indonesia compared to Singapore and Melbourne, and this perception was positively related to trust in nutritional information sources from the industry as well as hedonic values.

People in the Mediterranean region have traditionally followed a plant-based diet that emphasizes vegetable consumption. This dietary pattern is the result of a complex, millennia-long interaction between natural resources, religious influences, and the eating habits of various conquerors (Lăcătușu et al., 2019). In contrast, the cooler grassland climates of South America have led to a preference for meat production and consumption over vegetables (Tumas et al., 2014). Vegetables are rich in vitamins, antioxidants, minerals, and dietary fiber while being low in fat, sugars, and calories, making them an ideal component of a healthy diet (Guzek et al., 2022). Numerous studies have shown that increased vegetable intake reduces the risk of various cancers, cardiovascular diseases, and overall mortality (Dong et al., 2022).
The consumption of healthy food products is also driven by individual motivation (Barauskaite et al., 2018). Motivation is a representation of the inner drive in someone that prompts them to act. This drive arises due to pressure from unmet needs (Heckhausen & Heckhausen, 2018). Research by Filgona et al (2020) explains that motivation is the state within individuals that drives them to take specific actions to achieve desired goals. Generally, consumer motives in consuming a product are typically driven by efforts to fulfill their needs and desires (Zanoli & Naspetti, 2002).

Figure 2. Popular Healthy food brand in Indonesia (Angelia, 2022)

Figure 2, shows 10 popular healthy food product brands favored by the Indonesian public such as SaladStop!, Yellow Fit Kitchen, Health’s Kitchen, Re.Juve, The Good Habit, Boost Juice, Burggreens, Mini Calore, Summer Minibar, Kenyang Senang (Angelia, 2022). The proliferation of businesses operating in the healthy food sector has led to increasingly tight and competitive market competition (Ang et al., 2000).

The number of research publications related to the consumption of healthy food products has been continuously decreasing over the past three years. This study uses bibliometric analysis, with research data obtained from Scopus data. Bibliometric analysis is used to measure and analyze statistics, thereby identifying research focus areas, rarely studied, and frequently studied results (Gümüş et al., 2019). The study utilizes VosViewer software, which is considered helpful in analyzing data related to individual motivation in consuming healthy food products in Indonesia (Wahyuni et al., 2019).

Literature Review
Motivation Theory
Research by Cook & Artino (2016) explains that motivation involves the willingness to exert maximum effort in order to achieve goals determined by the ability to fulfill individual personal needs. Motivation is a reflection of the inner drive in someone that propels them to act; this drive arises due to pressure resulting from unmet needs (Sdrali et al., 2016). An individual is motivated to consume a product as an effort to fulfill needs and desires (Eastman et al., 2015). Consumption is the activity of meeting life needs by utilizing products or services (Rahmah & Satyaninggrat, 2023). Meanwhile, products are anything offered to the market with the aim of attracting attention for purchase and consumption to meet needs.
According to Maslow (1943), one of the primary needs of humans is physiological needs, which include biological needs such as the need for food.

**Consumption**

Increased consumption is influenced by the availability, accessibility, and availability of products (Abdullah et al., 2015). Consumers choose to include certain healthy foods in their diet to gain health and physical benefits (Salleh et al., 2022). Consumers understand that consuming healthy foods can help them maintain wellness without using medications. Thus, the benefits of maintaining health and well-being from consuming functional foods have increased consumers' intentions to consume such foods (Lee et al., 2018). Research by Hwang & Lorenzen (2008) shows that restaurant customers currently exhibit the most positive attitudes towards low-calorie items and are willing to pay more when menus provide nutrition information. Nutritional information tends to contain information about calories, serving sizes, and nutrients Miller & Cassady (2015); Pink et al (2022), and this basic information is easily understood by most individuals (Graham & Jeffery, 2011). It is likely that a healthy lifestyle will lead to healthy food choices and food consumption among older generations of Z-ers (Savelli & Murmura, 2023).

**Research Methodology**

Bibliometric analysis applies quantitative methods, aiming to classify data, generate representative summaries, and is recognized as a useful approach for analyzing journal performance, authorship, and research topic characteristics (Li et al., 2020). This study evaluates the influence of author keywords, research citations, and the most influential countries using VosViewer software, employed in the data analysis on motivation for consuming healthy food products. Data were collected using the Scopus database, which includes articles on motivation in consuming healthy food products. Scopus encompasses abstracts from various literature sources, including scientific journals, articles, books, and international conference proceedings (Liao et al., 2019). Researchers used keywords "motivation, healthy food, promotion, and intention" to gather relevant data from Scopus. It is hoped that this research will support individuals' goals of achieving a healthy life, namely, a better quality of life through the consumption of healthy food products. Thus, it can provide well-being for the current generation and create suitable conditions for future generations (Meiselman, 2016).

**Results and Discussions**

In this study, an analysis of the number of articles published each year was conducted to see if there were any changes annually. The research utilized articles released from 1989 to 2024. The number of publications discussing motivation for consuming healthy products can be seen in Figure 3. From the graph, there is an increase in publications over the past 16 years. The increase occurred in 2014-2015, where the number rose from 39 publications to 52 publications. Furthermore, another increase was observed in 2018-2019, from 49 publications to 59 publications. However, the highest increase occurred in 2020-2021, with 45 publications rising to 64 publications. The rise in research on motivation for consuming healthy products is due to the global attention of academics and experts. The highest number of publications occurred in 2021 with 64 publications, but there was a significant decrease by 2024 to 15 research publications. The decline in research interest in this field could be attributed to several factors, which have the potential to be discussed in the future.
There are 87 countries of origin out of 722 articles. Figure 4 shows the top 10 countries with the highest number of publications. These 10 countries contribute 91.4% of all publications in the field of motivation of healthy product consumption. The United States has the highest number of publications with 274 articles, followed by the United Kingdom with 86 articles and Australia with 81 articles. Publications in this field are still not extensively researched in the Asian region. This indicates that publications related to motivation of healthy product consumption are still dominated by countries other than Asia, although China is already an influential country in research in this field.

In addition to country-based analysis, an analysis was also conducted based on the publication names. Table 1 shows the Top 10 publication names based on the number of documents. It can be seen from Table 1 that the 10 publishers listed contribute 214 out of 428 documents, or 50%. From the table, it can be observed that 7 out of 10 publishers explicitly use names related to motivation of healthy product consumption. Appetite ranks highest in terms of the highest number of documents, with 49 documents contributing 11.4%. Following that, Public Health Nutrition ranks second highest in terms of the highest number of documents, with 33 documents contributing 7.7%. Subsequently, Nutrients ranks third with the most documents, with 27 documents contributing 6.3%. From the publisher rankings, it can be inferred that research in the field of motivation of healthy product consumption already has its own platform.
Table 1
**Top 10 Publisher by Number of Documents**

<table>
<thead>
<tr>
<th>Publisher</th>
<th>Documents</th>
</tr>
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<tbody>
<tr>
<td>Appetite</td>
<td>49</td>
</tr>
<tr>
<td>Public Health Nutrition</td>
<td>33</td>
</tr>
<tr>
<td>Nutrients</td>
<td>27</td>
</tr>
<tr>
<td>BMC Public Health</td>
<td>26</td>
</tr>
<tr>
<td>International Journal of Environmental Research and Public Health</td>
<td>21</td>
</tr>
<tr>
<td>International Journal of Behavioral Nutrition and Physical Activity</td>
<td>14</td>
</tr>
<tr>
<td>Preventive Medicine</td>
<td>11</td>
</tr>
<tr>
<td>PLOS One</td>
<td>11</td>
</tr>
<tr>
<td>Journal of Nutrition Education and Behavior</td>
<td>11</td>
</tr>
<tr>
<td>American Journal of Preventive Medicine</td>
<td>11</td>
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</tbody>
</table>

However, Table 2, which shows the top 10 publishers based on the number of citations. It can be seen that publishers explicitly related to motivation of healthy product consumption occupy ranks 1, 2, 3, 5, and 9. Although ranking high, citations for publishers related to motivation of healthy product consumption are still dominated by publishers addressing health and medicine in general.

Table 2
**Top 10 Publisher by Number of Citations**

<table>
<thead>
<tr>
<th>Publisher</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appetite</td>
<td>2342</td>
</tr>
<tr>
<td>Public Health Nutrition</td>
<td>973</td>
</tr>
<tr>
<td>BMC Public Health</td>
<td>733</td>
</tr>
<tr>
<td>American Journal of Preventive Medicine</td>
<td>619</td>
</tr>
<tr>
<td>International Journal of Behavioral Nutrition and Physical Activity</td>
<td>585</td>
</tr>
<tr>
<td>Preventive Medicine</td>
<td>497</td>
</tr>
<tr>
<td>Health Psychology</td>
<td>474</td>
</tr>
<tr>
<td>PLOS One</td>
<td>439</td>
</tr>
<tr>
<td>Nutrients</td>
<td>433</td>
</tr>
<tr>
<td>British Food Journal</td>
<td>356</td>
</tr>
</tbody>
</table>

Table 3 represents the Top 10 Cited Authors based on the number of citations. The third highest citation rank is the study by Story *et al* (2008) sejumlah 1564. Next, the research by Worsley (2002) received 464 citations. And the research by Feunekes *et al* (2008) received 341 citations.
Table 3

Top 10 Cited Authors

<table>
<thead>
<tr>
<th>Authors</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Story (2008)</td>
<td>1564</td>
</tr>
<tr>
<td>Worsley (2002)</td>
<td>464</td>
</tr>
<tr>
<td>Feunekes (2008)</td>
<td>341</td>
</tr>
<tr>
<td>Adriaanse (2011)</td>
<td>296</td>
</tr>
<tr>
<td>James (2004)</td>
<td>268</td>
</tr>
<tr>
<td>Khatib (2014)</td>
<td>266</td>
</tr>
<tr>
<td>De Magistris (2008)</td>
<td>254</td>
</tr>
<tr>
<td>Downs (2009)</td>
<td>234</td>
</tr>
<tr>
<td>Capacci (2012)</td>
<td>228</td>
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<tr>
<td>Munt (2017)</td>
<td>213</td>
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Figure 5 shows co-citation clusters of authors in the field of research related to motivation of healthy product consumption. There are five author clusters, including **Cluster 1 or the red cluster**: The study by Story et al (2008) examines the level of understanding regarding how the environment influences food choices and highlights promising intervention strategies and policies to promote healthy eating patterns broadly in society. The results of the study by Story et al (2008) indicate the need to address obesity by enhancing sustainable dietary and lifestyle patterns among the population. Furthermore, the research by Glanz et al (1997)
compares fat intake in the diet, individual awareness of fat intake, and the sociodemographic and psychosocial correlates among working adults in the Netherlands and America. The findings from Glanz et al. (1997) suggest that many adults in the United States and the Netherlands lack awareness regarding their fat intake. Another study by Brug et al. (2008) conducts a systematic review on the relationship between environmental factors and nutrition behavior to provide insights into evidence on environmental correlates and predictors of nutrition behavior. The research findings suggest that social environmental factors may be more important than physical environmental factors for healthy eating behavior (Brug et al., 2008).

Next cluster 2 or the green cluster includes studies such as the one by Worsley (2002), which examines the conceptual relationship between knowledge and behavior, as well as nutrition knowledge and food behavior specifically. The study findings suggest that consumer behavior changes are influenced by environmental and intra-individual factors, and nutrition knowledge plays a minor role in adopting healthier eating habits Worsley (2002); Another study by James (2004) explores how culture and community influence nutritional attitudes, food choices, and food intake among a selected group of African-American individuals in central north Florida, as well as identifies population segments and communities targeted for nutrition education programs and health promotion channels. The study findings indicate that African Americans still need information on basic nutrition topics such as portion sizes and reading food labels. Potential population segments motivated to make dietary changes include women, men with health issues, young adults, older adults, and those diagnosed with severe and life-threatening illnesses James (2004); Furthermore, the research by Wansink et al. (2014) examines the factors influencing the adoption of specific healthy foods, such as tofu, by future nutritionists. The research findings suggest that nutritionists and healthcare practitioners may be more successful in promoting the adoption of new healthy foods than focusing on their nutritional benefits (Wansink et al., 2014).

In cluster 3 or the blue cluster, there are several authors, including the study by Popkin et al. (2012) which documents changes that have occurred and are occurring regarding global obesity, reexamining the development of dietary science occurring in low- and middle-income countries worldwide. The findings from Popkin et al. (2012) indicate significant shifts in human dietary and drinking patterns, energy imbalance occurrences, overweight and obesity, and various other nutrition-related cardiometabolic issues. However, researchers do not have data to accurately document how these changes compare to others during human evolution. It is crucial to evolve towards a healthier diet with more nutrient-rich foods.

Cluster 4 or the yellow cluster in this study includes research conducted by Adriaanse et al. (2011), which conducts a systematic review and meta-analysis to test whether implementation intentions are an effective tool to help people implement their intentions to consume a healthy diet into practice. The research findings suggest that implementation intentions are slightly more effective in promoting healthy eating patterns than reducing unhealthy eating patterns (Adriaanse et al., 2011); Additionally, the research conducted by Norman et al. (2019) examines a controlled trial on the Healthy School Start (HSS) aimed at promoting child health and obesity prevention through parental support conducted in 31 preschool classes (378 families) in high-risk areas in Sweden during 2012–2013, thus evaluating the long-term effectiveness over a 4-year post-intervention period. The research findings suggest that after four years of intervention, only subgroup effects were found, and it is unlikely that the HSS intervention had clinically significant effects on children. These
results suggest that school-based prevention programs need to be expanded for greater long-term effectiveness, such as integration into routine school practices (Norman et al., 2019). In cluster 5 or the purple cluster, one of the studies by Sharma et al (2013) analyzes the value of food intake and nutrition in a cross-sectional sample of adults. The research findings suggest a relatively high prevalence of inadequate nutrient intake among Inuit individuals. These findings can be used to monitor nutritional transitions among Inuit individuals, evaluate nutrition interventions, and provide information for public health policy-making (Sharma et al., 2013).

In this study, a co-occurrence network was also created as seen in Figure 6. From the co-occurrence analysis, it can be observed that research in the field of motivation of healthy product consumption is divided into 5 clusters. Additionally, the keywords from recent research in healthy consumption can be seen. From the figure, it can be noted that out of the 5 clusters, only 3 clusters contain keywords from recent research. These 3 clusters are the dark green cluster with keywords such as "health promotion," "human," "female," "adult," "obesity," and "food preference". Meanwhile, the light green cluster consists of several keywords including "body mass," "behavior change," "perception," "public health," and "eating." Furthermore, the yellow cluster consists of keywords like "healthy diet," "consumer behavior," "healthy lifestyle," "habit," and "consumer attitude." However, the other 2 clusters, namely the blue and purple clusters, are dominated by keywords that have appeared in relatively older research. The blue cluster comprises keywords such as "health behavior," "attitude to health," and "health knowledge, attitude, practice." From these keywords, it can be inferred that the blue cluster focuses on attitude and health knowledge. On the other
The purple cluster contains keywords like "food habits," "clinical trial," and "health program," indicating a tendency towards habits and health programs. Hence, research focusing on the keywords in the blue and purple clusters is beginning to lose interest among researchers today.

Fig 6. Co-Occurrence Network of Keywords: b) by year

Conclusion
Awareness of the importance of health among young people in Indonesia has driven the trend of consuming healthy food products. Young people in Indonesia are paying more attention to calorie intake and are engaging in diet programmes to maintain or reduce weight. The consumption of healthy food products is also driven by individual motivation to fulfil their needs and desires. This study employs bibliometric analysis to measure individual motivation in consuming healthy food products. Bibliometric results indicate a declining interest in this research field in recent years. Research in this area is dominated by several countries such as the United States, the United Kingdom, and Australia. However, this study also highlights the lack of research conducted in the Asian region, despite the increasing trend of healthy food consumption in Indonesia. The findings of this research are invaluable for shaping effective public health policies and fostering a global understanding of dietary behaviours. Additionally, increasing research efforts and interdisciplinary collaboration will be essential in supporting healthy lifestyle choices and preventing diet-related diseases on a broader scale. The decline in the number of research publications related to the consumption of healthy food products is a serious concern for researchers. Further studies are needed to investigate the factors causing the decrease in research publications on this topic.
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