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The Role Of Business Analytics In Enhancing Marketing Strategies For Food Products: A Systematic Review

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Abstract
The shift towards a more data-driven culture is a key progenitor of business success in today's technological era. Business analytics has emerged as a transformative force in the marketing sphere, offering the potential to enhance decision-making and drive innovation. Therefore, the study aims to systematically review the role of business analytics in marketing strategies for food products with a focus on applications, technologies, and barriers to adoption. The review highlights applications such as customer segmentation, demand forecasting, personalized marketing, and campaign performance analysis. It identified common tools like Customer Relationship Management (CRM) systems, AI-powered analytics platforms, and data visualization tools while addressing the technical, regulatory, and organizational barriers that hinder their effectiveness. The findings show the importance of a holistic approach to business analytics that integrates technological, organizational, and ethical dimensions. Addressing these challenges by investing in robust data infrastructure, enhancing workforce capabilities, and fostering industry collaboration, the food sector can unlock the full potential for business analytics, enabling firms to develop targeted, innovative, and ethical marketing strategies that resonate with consumers and drive sustainable growth.

Keywords: *Business analytics, food products, food marketing, marketing strategies*

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I. Introduction

Continuous technological development and advancement have significantly transformed business operations, particularly in digital technologies and data analytics (Arcgate, 2019; Ryan, 2020; Amin, 2021). Business analytics involves tools and techniques for data collection and actionable insights have gained prominence across various sectors to enhance decision-making and operational efficiency with marketing being no exception (Adamu, et al., 2020; Firman, et al., 2020). Marketing strategies for food products require a deep understanding of market segmentation, pricing, distribution, and consumer engagement (Kumar et al., 2021). Marketing strategies are important in meeting the diverse preferences of consumers, ranging from health to convenience and affordability (Hetcht, et al., 2020; Sumartini, et al., 2023).

The food sector is characterized by evolving customer preferences, intense competition, and global supply chain intricacies, and the adoption of business analytics has played a critical role in shaping marketing strategies (Liao & Huang; 2021; Geligile &Shukla, 2023). Conventional marketing techniques frequently fall behind these developments, resulting in inefficiencies and lost opportunities. Although data-driven insights from business analytics provide a solution, their uptake in the food industry is still unequal and unexplored (Etuk et al., 2022). Issues including data silos, a lack of experience, and change aversion make it difficult for businesses to incorporate analytics into their marketing strategies (Anyadighibe et al., 2021).

Furthermore, it is still unclear from the literature how business analytics might specifically address the particular difficulties in food marketing, like forecasting demand for perishable commodities, focusing on various consumer categories, and maximizing digital marketing campaigns. This disparity calls for a methodical examination to see how business analytics might be used to improve food product marketing strategies. The four main elements of the marketing mix are product, price, promotion, and distribution (Yusuf & Matiin, 2022). The marketing mix is therefore essential to the company. If the marketing mix is successful in the sense that it is highly effective, a larger percentage of the overall sales volume will be generated (Darmawan & Grenier, 2021). A bad marketing mix will reduce people's purchasing power, which will be expensive for the company (Hanaysha. Shaikh & Alzoubi, 2021). Food products have a bright future as a business. The need for reasonably priced, superior food is growing every day. Several food types are accessible and exhibit growth, but the main issue is in formulating the marketing strategy for food products. Therefore, the study aims to systematically explore the role of business analytics in enhancing marketing strategies for food products by synthesizing existing research, identifying key trends and challenges, and providing actionable insights for practitioners and policymakers in the food industry.

II. Methodology

This study employs a systematic review method, which involves identifying, evaluating, and synthesizing existing research to provide a comprehensive understanding of the role of business analytics in enhancing marketing strategies for food products. The research followed the Preferred Reporting Item for Systematic Review and Meta-analysis (PRISMA) protocol to ensure rigor, transparency, and reproducibility. Mengist et al. (2020) explain that a systematic review uses a clear and systematic process to minimize the occurrence of bias during searching, identification, appraisal, synthesis, analysis, and summary of studies. The methods for this systematic review included developing the research question, outlining the search strategy, inclusion and exclusion criteria, study selection process, data extraction, quality assessment, and data analysis and synthesis.

Development of research questions: The first step to the systematic review was to determine the research scope which helps in formulating the research questions and boundaries to identify the proper research methods (Mengist et al., 2019). Therefore, the research questions the review answered are;

i. What are the applications of business analytics in different aspects of food product marketing?
ii. What are the tools and techniques commonly used in business analytics within the context of the food industry?
iii. What are the barriers encountered in adopting business analytics in the marketing of food products?

Search strategy: The literature search was conducted using various databases to capture a diverse range of studies. Databases used are; ScienceDirect, Google Scholar, Web of Science, and PubMed. To account for spelling variations, Boolean operators (AND, OR) were used to combine search words when searching databases. Examples of the search terms include ("Business Analytics" OR "Data Analytics" OR "Big Data") AND ("Marketing Strategies" OR "Marketing Techniques") AND ("Food Products" "Food Industry" OR "Consumer Goods"). The search was also limited to peer-reviewed articles and high-quality reports.

Inclusion and exclusion criteria: The quantity of literature that is available was found by using the search strings in the database. However, the articles of selection were influenced by the search criteria (inclusion and exclusion) as shown in Table 1.

Table 1: Search Criteria

Inclusion criteria	Exclusion criteria
• Articles published in peer-reviewed journals. • Articles focusing on the application of business analytics in marketing strategies for food products. • Articles published in the last ten years • Articles are written in English	• Non-empirical papers • Studies unrelated to the food industry • Articles publish before the last ten years. • Articles not written in other languages.

Article selection process: The study selection was conducted in stages; the article search string from the databases produced 156 articles (figure 1). 128 articles were obtained after removing duplicates and were screened for eligibility. Full-text articles were reviewed to determine eligibility based on inclusion criteria. Eligible studies were evaluated for methodological rigor and relevance. A PRISMA flow diagram was used to document the screening process, ensuring transparency in the selection of studies (figure 2). The PRISMA framework guide was used on a step-by-step approach to carefully assess all searched papers against duplication, eligibility, inclusion, and exclusion criteria, 20 articles were selected to pass through the qualitative assessment criteria check. Finally, 12 articles were chosen to be included in the systematic review. The quality assessment of the studies which is also referred to as the appraisal step of the studies is where the selected articles were evaluated based on the study focus. The Critical Appraisal Skill Programme (CASP) checklist was conducted to ensure the validity and reliability of the studies (Shah, et al., 2020). Each study was assessed based on 11 questions in the checklist, these include; the clarity of the objectives, appropriateness of methodology, robustness of data analysis, and relevance of findings (as shown in Table 2). Studies that answered NO were excluded.

Table 2: CASP Checklist

S/N	Questions
1	Did the study address the clearly focused issue?
2	Did the authors use an appropriate method to answer their question?
3	Were the subjects recruited in an acceptable way?
4	Were the measures accurately measured to reduce bias?
5	Were the data collected in a way that addressed the research issue?
6	Did the study have enough participants to minimize the play of chance?
7	How are the results presented and what is the main result?
8	Was the data analysis sufficiently rigorous?
9	Is there a clear statement of findings?
10	Can the results be applied to the local population?
11	How valuable is the research?

Key markers; 0-Yes and 1-No

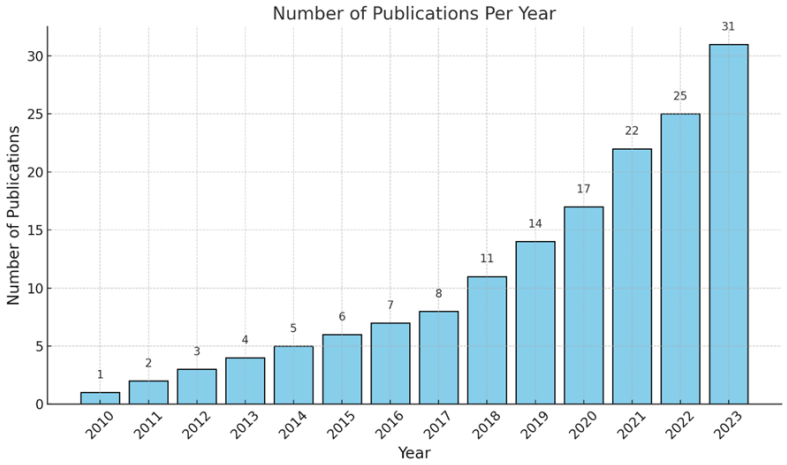

Figure 1: Initial Search String Publication per Year

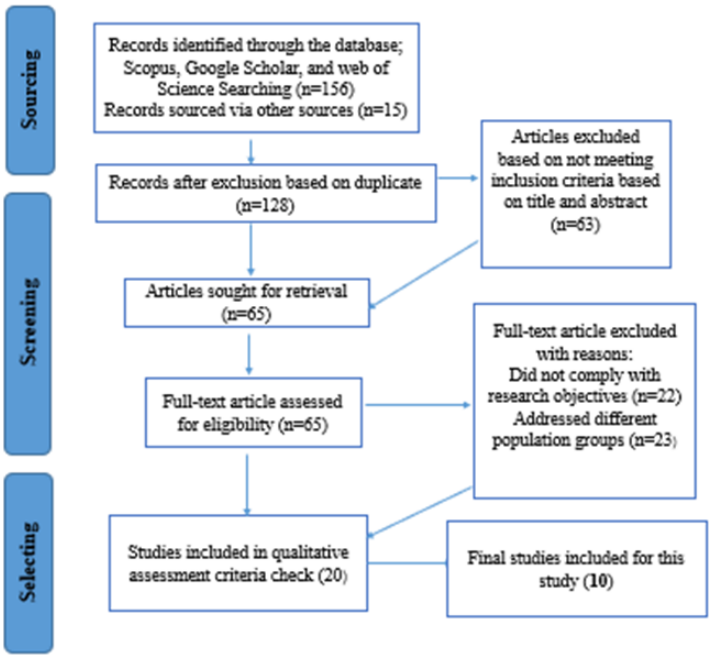

Figure 2: PRISMA Flow chart

Data analysis and synthesis: The data collected was analysed using the thematic analysis method. The thematic analysis involved identifying recurring patterns and themes across the studies. The themes were then categorized into broader topics relating to the research aim. The findings were synthesized qualitatively to provide a holistic understanding of the topic.

III. Analysis Of Findings

Twelve (12) studies met the inclusion criteria out of the 20 studies initially identified, and the 12 studies will be used to form the basis of discussion. 4 of the studies focused on the market in America, 2 focused on Indonesia, 3 on the Nigeria market, and 3 on the Europe market. There has been a continuous increase in publications on this topic per year but an exponential increase started in 2021.

Application of Business Analytics in Different Aspects of Food Product Marketing:
The application of business analytics in marketing strategies is diverse;

Customer Segmentation: Granular customer segmentation from business analytics solutions is praised for enabling marketers to customize their campaigns to meet the needs of particular client segments. However, data silos within firms frequently limit the real application of segmentation tactics. The success of clustering algorithms and prediction models, for example, is dependent on the availability of clean, integrated datasets, even though they are capable of identifying niche areas. Literature criticizes food firms for not investing in strong data infrastructure, which results in segmentation methods that are too general and inefficient at promoting genuine client interaction. Therefore, it is evident that analytics can improve segmentation; however, this potential must be realized through a paradigm shift in corporate data practices.

Market Prediction: Predictive analytics has been a game-changer in the food industry for demand forecasting, especially for perishable items. Using sophisticated analytics models has been found to significantly reduce waste and increase profitability. Critics counter that these models' capacity to adjust to unanticipated factors, including recessions or sudden changes in consumer behavior, is constrained by their reliance on historical sales data. For instance, integrating weather data has been effective in certain situations, but in emerging economies where weather patterns do not coincide with customer buying patterns, its usefulness is less obvious. This emphasizes the need for analytics models that are more context-aware and take into account variables other than past trends.

Customized Marketing: Analytics facilitates the customization of marketing content to resonate with individual consumer preferences. Analyzing and integrating customer data into marketing strategies and business decisions enhances an organization's efforts to tailor its products and services to individual customers based on their unique preferences and behaviours. Data technologies help companies analyze customer data, identifying patterns and trends in their behavior and preferences. This information is then used to create personalized customer experiences through targeted marketing campaigns and offers.

Channel optimization: Analytics-based channel optimization gives the potential to maximize return on investment by determining the most successful marketing platforms. On the other hand, there is a growing awareness that relying too much on digital analytics, including social media metrics, can result in an excessive focus on immediate profits. Prioritizing platforms with high interaction rates, for instance, may cause new channels to be overlooked that may provide long-term benefits. This emphasizes how crucial it is to use a well-rounded strategy that incorporates both qualitative and quantitative data when choosing channels.

Champaign performance analysis: Dashboards for real-time analytics have become essential for monitoring the effectiveness of campaigns. However, the choice of key performance indicators (KPIs) frequently restricts the usefulness of such systems. Research criticizes businesses' propensity to give more weight to superficial measures like click-through rates than to more profound ones like client lifetime value. This misalignment is indicative of a larger problem in the sector: a failure to strategically integrate analytics capabilities with long-term marketing goals.

Tools and Techniques Commonly used in Business Analytics within the Food Industry:

The tools and techniques employed in business analytics have evolved significantly, but their adoption within the food industry reflects both innovation and inertia.

Tools for Gathering Data: Using Point of sale (POS) data and CRM systems has given food marketers a wealth of information about how customers behave. However, because these technologies don't integrate with other data sources, they are frequently underutilized. For example, CRM data can show trends in loyalty, but it can only

reach its full potential when paired with external data, such as social media analytics or consumer insights from third parties. This fragmented method of data collection emphasizes the necessity for a cohesive data strategy by sustaining inefficiencies.

Tools for Data Processing: Although visualization tools like Tableau and Power BI are often commended for their intuitive user interfaces, their effectiveness in analyzing unstructured datasets, such as social network posts or customer reviews, is limited by their dependence on structured data. A move toward more flexible platforms, such as Python and R, which can manage both structured and unstructured data, has been spurred by this issue.

Methods of Analysis: Descriptive tools offer insightful information about historical performance; their strategic relevance is limited by their focus on retrospect rather than foresight. Even if they are more sophisticated, predictive and prescriptive analytics demand a large amount of money and experience, which many smaller food businesses cannot afford.

Emerging Tools: Emerging tools like Customer Data Platform (CDPs) and AI-powered analytics platforms are now been used for marketing strategies. For instance, CDPs are excellent at integrating customer data from many touchpoints, but they are frequently out of SMEs' price range. Concerns regarding equity and industrial competitiveness are raised by the gap this generates between big businesses that can afford these technologies and smaller players that run the risk of falling behind.

Barriers Encountered in Adopting Business Analytics in Marketing of Food Products:

The adoption of business analytics is hindered by several organizational, technological, and legal barriers. These hurdles are not only impediments; rather, they are indicators of more serious structural problems in the sector.

Organizational barrier: The lack of analytics knowledge is a recurring theme with many organizations relying on outsourced analytics services. Although outsourcing can offer temporary fixes, it frequently hinders the growth of internal skills, resulting in a dependency that jeopardizes long-term strategic independence. Furthermore, cultural inertia that favours conventional marketing strategies over data-driven innovation is reflected in resistance to change.

Technical barriers: Data integration challenges continue to be a major bottleneck, with many businesses finding it difficult to blend data from disparate sources. Critics contend that these problems are more due to a lack of strategic vision than technical limitations.

Regulatory barriers: Strict restrictions for gathering, maintaining, and using customer data are required by regulatory frameworks including the California Customer Privacy Act (CCPA) in the US and the General Data Protection Regulation (GDPR) in Europe. Businesses in the food marketing industry, which mostly depend on data-driven insights to tailor campaigns and forecast trends, frequently face difficulties as a result of these rules. Significant fines, harm to one's reputation, and a decline in customer trust can result from breaking such rules.

IV. Conclusion

The study systematically explored the applications of business analytics in food product marketing, identified the tools and techniques used in business analytics for marketing strategies, and the barriers encountered in their adoption. The findings show the potential of business analytics to revolutionize customer segmentation, demand forecasting, personalized marketing, and channel optimization in the food industry. Some of the tools used are predictive analytics tools, emerging trends, data analysis, and data processing tools. Business analytics integration into food product marketing is not only a technical effort; it necessitates a change in organizational culture that prioritizes strategic investments in infrastructure and talent and cultivates a data-driven mindset. Despite the enormous importance of modern tools and methodologies, their efficacy is dependent on the availability of clean, integrated datasets and the capacity to match analytical skills with long-term marketing goals. However, the study also highlighted barriers such as; organizational, technical, and regulatory limitations to the adoption of business analysis in food product marketing. To transform compliance into the potential for difference and trust-building, organizations must handle these challenges with openness and creativity. In addition to technical fixes, removing these obstacles calls for a dedication to encouraging cooperation between all parties involved, from legislators to marketers. In summary, business analytics is a potent instrument for improving food sector marketing strategies, but its full potential can only be attained by combining organizational, technological, and ethical aspects comprehensively.

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