



(REVIEW ARTICLE)



The Impact of Shrinkflation and Big Data on Consumer Behavior

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Abstract

A phenomenon known as "shrinkflation" describes situations in which businesses reduce the quantity or quality of their offerings without concurrently lowering their prices. Consumers may experience cognitive dissonance as a result of this, leading to dissatisfaction when they buy a product that does not live up to their expectations and is, for example, of a lesser quality or smaller size. According to the findings of our study on the prevalence of the phrase "shrinkflation" throughout the world, it appears that consumers are becoming more aware of this phenomena, particularly in the wake of the conflict between Russia and Ukraine. This heightened knowledge brings to light the significance of openness and straightforward communication in the consumer market. Building trust with customers and retaining their loyalty over the long run is likely to be easier for businesses that are forthcoming about any modifications they make to their offerings and communicate these alterations clearly.

Keywords: Marketing methods; Downsizing; Consumer Behavior Analysis; Real-Time Feedback.

1. Introduction

The success of a business relies in part on a good Marketing plan. But what is Marketing? Marketing is all around us, in a huge number of activities involving people and businesses (Kotler & Keller, 2006). Marketing is described as an administrative and social activity in which individuals and groups of individuals produce and exchange goods and value to satisfy their needs and desires (Kotler & Armstrong, 2001). One of the individual processes of Marketing is the definition of price for each product of the company. Pricing is a difficult process, possibly involving unethical practices. One of these practices is the reduction of the quantity of the product (downsizing), while at the same time its price remains unchanged (Green, 2008). Some businesses choose to decrease the size of their product packaging in order to increase their pricing in highly competitive marketplaces without drawing the attention of their customers. Even though they are required to show the number on the packaging, buyers frequently rely on other criteria to estimate product quantity and value. These considerations include the look of the box, the entire cost, or previous experiences. Because of this, shrinking packages has the potential to mislead clients and establish an unequal power dynamic between the buyer and the vendor. As a result, it is essential to give some thought to the consequences that this practice has in terms of morality and ethics (Gupta et al., 2007).

This paper will review what is already known about the term shrinkflation and will explore how known the term is among consumers (instead of the term 'package downsizing'), as a marketing method among firms.

1.1. The 'Shrinkflation' trend

The term "Shrinkflation" is not new. It refers to the Marketing practice in which the company chooses to reduce the quantity offered of a product, while keeping the price at the same levels (Durbin, 2022). As Lorie Konish mentions in her August 2022 article, Shrinkflation translates to "getting less for the same price". Companies have been decreasing

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the size of ordinary items to hide growing prices from customers, from toilet paper to candy bars. The pace of price growth for consumer products is currently at its highest level, in the past 40 years (Meizenzahl & Dean, 2022). Oxera Agenda attempted to discuss the matter in their article, back in 2017, using that very same term of 'Shrinkflation'. Businesses employ shrinkflation as a method of passing cost increases along to clients, in a way that is less evident or more agreeable to them than a rise in price. The article examined the causes of shrinkflation, how it helps firms and when it hurts them. It also considered the effects on official statistics and legal claims for damages. Oxera Agenda state that consumers are actually less sensitive to a possible quantity decrease of a product than an increase in its price, thus making this method a good practice of generating more profit, with less cost. This, however, does not mean that this is a safe method for firms to use, as there have been cases where consumers have noticed the smaller product, and that may result in losing those customers altogether. They go on to mention that there could be possible lawsuits from adopting shrinkflating methods, thus further damaging a firm and its reputation in the market. They conclude that although not all consumers may be aware of shrinkflation, it must be documented in official records and that statistics on inflation are meant to track changes in the cost of a representative basket of commodities, over time (Theodorakopoulos et al., 2024).

Bryan Wood, in his article in June 2022, attempts to shed light to the phenomenon of shrinkflation globally, its main cause, how consumers and organizations perceive this and how their views may differ. He states that in many countries, like Japan, total costs keep raising (like that of raw materials), thus forcing the firm to adopt downsizing methods, or in other words, shrinkflating methods, especially to areas where consumers are price sensitive. Customers want to be appreciated since, by purchasing a product, they are basically making an investment in the firm. Nevertheless, consumers are now keeping note of shrinkflation incidents. However, this method has shown to be quite successful in preserving consumer loyalty while also allowing firms to boost their earnings. He goes on to explain that organizations are trying to cut costs and, since costs are rising everywhere, the best method to deal with this is to reduce packaging sizes, or downsizing, if they do not want to raise their products' prices. Wood also explored what caused the shrinkflation phenomenon (Thanasas & Theodorakopoulos, 2023). One of the causes he mentioned in his article has to do with government involvement, for example, where they place restrictions on imported goods, in order to protect the domestic industry, or how some of them control the availability of food alternatives. Additionally, Wood also stated that the total management of supply chain has been disrupted, due to the Russia-Ukraine war, and has made it quite difficult to obtain and move raw materials to different parts of the world. He also notes that labor shortages play their part in the rise of the shrinkflation phenomenon. For example, the COVID-19 pandemic drove about 3 million people into early retirement, in the USA alone. Wood concluded that shrinkflation truly is an ethical dilemma and organizations have both compelling reasons to use or refrain from using this method. If firms are not adequately informing their customers about it, it may turn out to be an intrinsically dishonest policy, that is going to have unwanted repercussions for the firms. However, if shrinkflation is carried out properly, it could even be beneficial to a company.

2. Big Data and Shrinkflation: How Data Analytics Shapes Product and Pricing Strategies

Big data is playing a crucial role in how companies navigate the complexities of shrinkflation. Shrinkflation involves reducing product sizes while maintaining the same price, allowing companies to manage rising costs without directly increasing prices, which can be more noticeable and off-putting to consumers. With the rise of big data, companies can make more informed decisions about shrinkflation, tailoring their strategies to optimize profits while minimizing consumer backlash. Here's how big data influences shrinkflation strategies:

2.1. Consumer Behavior Analysis

Big data enables companies to analyze consumer purchasing behavior at an unprecedented scale and detail. By examining past purchasing patterns, preferences, and responses to price changes, brands can predict how consumers might react to product size reductions. This helps companies determine the best approach to shrinkflation, such as which products to downsize, by how much, and in which markets. Insights from big data can also reveal the price sensitivity of different consumer segments, guiding decisions on how to implement shrinkflation without significantly impacting sales volumes (Theodorakopoulos et al., 2024).

2.2. Personalized Marketing and Targeting

With data analytics, companies can segment their customer base more precisely, tailoring their shrinkflation strategies to different demographic and regional markets. For example, a brand might choose to implement more significant size reductions in markets where consumers are less price-sensitive or more loyal to the brand. Conversely, in regions where customers are highly sensitive to value changes, companies might opt for smaller size reductions or introduce promotional offers to offset perceived losses. This targeted approach helps brands maintain customer satisfaction and loyalty (Graesch et al., 2021).

2.3. Predictive Analytics for Cost Management

Big data's predictive analytics capabilities allow companies to anticipate future market conditions, such as raw material price fluctuations and supply chain disruptions, which can impact production costs. By forecasting these factors, companies can plan shrinkflation measures proactively, rather than reacting to market pressures as they occur. This enables brands to implement size reductions gradually and strategically, reducing the likelihood of sudden and noticeable changes that could alienate consumers (Vasilopoulos et al., 2023).

2.4. Real-Time Feedback and Consumer Sentiment Analysis

Social media, online reviews, and customer feedback platforms provide real-time data that companies can analyze to gauge consumer sentiment toward shrinkflation. By tracking keywords, comments, and engagement metrics, brands can quickly identify negative reactions and adjust their marketing communications accordingly. This real-time feedback loop helps companies fine-tune their shrinkflation strategies, emphasizing product quality, sustainability, or other value propositions that resonate with consumers (Thanasas et al., 2022).

2.5. Dynamic Pricing and Promotion Strategies

Big data allows companies to implement dynamic pricing models that adjust prices based on demand, competition, and other market conditions. While shrinkflation primarily focuses on size reduction, dynamic pricing can complement this approach by fine-tuning price points to maintain competitive positioning. Additionally, data-driven promotional strategies, such as bundling smaller-sized products with discounts or adding value through loyalty rewards, can help mitigate the perceived impact of shrinkflation on consumers (Theodorakopoulos et al., 2024).

2.6. Supply Chain Optimization

Shrinkflation often involves changes in packaging, ingredients, or product formats, which can complicate supply chain logistics. Big data analytics can optimize supply chain operations by forecasting demand shifts resulting from shrinkflation, ensuring that production, inventory, and distribution are aligned with consumer expectations. This reduces waste and ensures that the reduced-size products reach the market efficiently, minimizing disruptions and maintaining consistent product availability (Voyiatzis et al., 2013).

2.7. Enhanced Product Development and Testing

Companies use big data to test consumer responses to potential shrinkflation measures before full-scale implementation. Through A/B testing and market simulations, brands can experiment with different product sizes, packaging designs, and price points to determine the most effective strategy. This data-driven approach allows companies to refine their shrinkflation tactics, choosing the options that have the least negative impact on customer satisfaction and brand perception (Bennett, 2022).

Big data provides companies with the insights needed to navigate the challenges of shrinkflation strategically. By leveraging consumer behavior analysis, predictive analytics, real-time feedback, and supply chain optimization, brands can implement shrinkflation measures that balance cost management with customer satisfaction. As shrinkflation becomes more common in the face of ongoing economic pressures, big data will continue to be a vital tool for companies looking to maintain profitability without compromising their relationships with consumers (Karras et al., 2022).

2.8. Marketing Trends Associated with Shrinkflation

Shrinkflation, the practice of reducing product sizes while maintaining prices, has led to various marketing trends aimed at mitigating consumer backlash and maintaining brand loyalty (Golovacheva, 2016). One prominent strategy is the emphasis on transparency. Some brands choose to openly discuss the reasons behind size reductions, often citing inflationary pressures and rising production costs. By being upfront about these changes, companies can build trust with consumers, positioning themselves as honest and forthright rather than deceptive. This approach differentiates them in a market where shrinkflation is often viewed negatively (Vasilopoulos et al., 2023).

Enhanced digital engagement is another key trend. Companies are increasingly using social media platforms to manage consumer reactions, directly addressing customer concerns about reduced product sizes. Through these channels, brands can explain cost constraints, highlight that product quality remains unchanged, and engage in real-time dialogue with their audience. This not only helps in diffusing potential dissatisfaction but also reinforces a sense of community and connection between the brand and its customers (Theodorakopoulos, 2023).

Sustainability narratives are also being leveraged to reframe shrinkflation in a positive light. Brands are positioning size reductions as part of broader environmental initiatives, such as reducing packaging waste or lowering carbon footprints (Antonopoulou et al., 2022). By aligning these changes with sustainability goals, companies can appeal to environmentally conscious consumers, presenting shrinkflation as a responsible and necessary adaptation rather than a cost-cutting measure. To counteract the potential negative impact of shrinkflation, brands are investing in loyalty programs and subscription models (Halkiopoulos et al., 2024). These strategies provide perceived value through discounts, rewards, and exclusive offers, creating a sense of savings for consumers despite smaller product sizes. Subscription models, in particular, offer convenience and can help maintain a steady customer base, reducing the likelihood of consumers switching to competitors due to perceived price increases (Keller & Kotler, 2006).

Finally, regional and demographic targeting is becoming increasingly sophisticated as companies use data analytics to tailor their shrinkflation strategies (Giannoulis et al., 2022). By adjusting product sizes and marketing approaches based on regional inflation rates, economic conditions, and consumer purchasing power, brands can optimize their profit margins without alienating key customer segments. This targeted approach ensures that shrinkflation measures are implemented in a way that minimizes impact on the most price-sensitive consumers, thereby maintaining overall market stability (Yao et al., 2022).

These marketing trends illustrate how brands are adapting to the challenges posed by shrinkflation, using a mix of transparency, engagement, sustainability, loyalty incentives, and data-driven strategies to maintain consumer trust and market share.

According to statistics from a research by CivicScience, that has been made among grocery shoppers in the USA, we have made the following Figure:

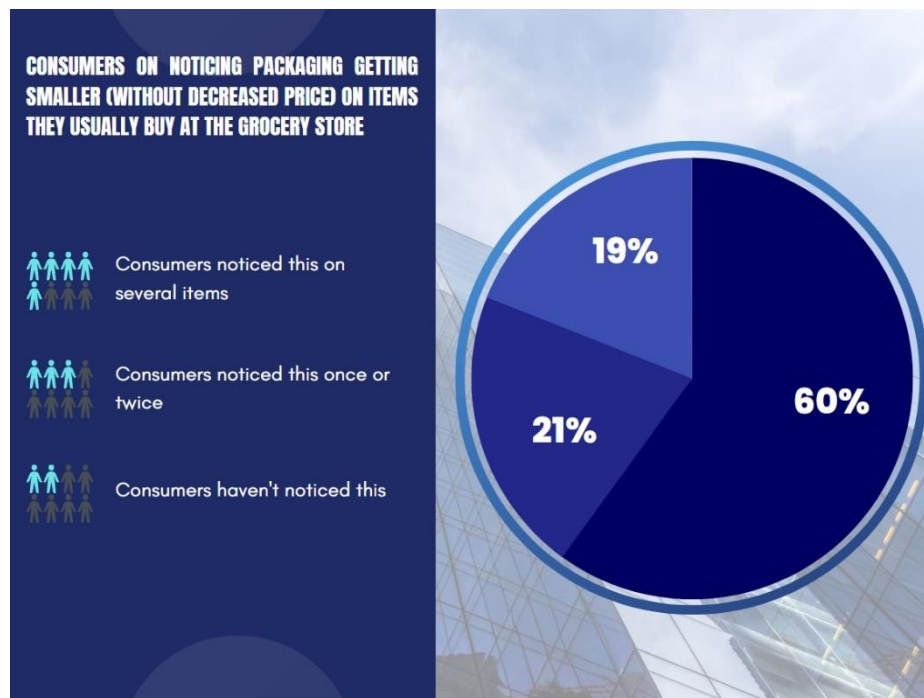


Figure 1 Research results of CivicScience

Figure 1 presents the responses of 3,428 grocery store consumers, from a research conducted between 6/8/2022 until 6/9/2022 from CivicScience. It demonstrates the percentage of consumers that could notice a difference in packaging, without this being followed by a price decrease in grocery store products.

2.9. Consumers experiencing cognitive dissonance

The mental discomfort a person feels when they have two or more competing views, values, or ideas—or when their behaviors do not match their beliefs—is referred to as cognitive dissonance in psychology. As a result, there is an internal conflict that may cause tension, worry, and discomfort. The individual may alter their ideas or conduct to be consistent with one another in order to lessen this discomfort, or they may come up with an explanation to support the

opposing beliefs or activities (Harmon-Jones et al., 2019). For instance, if a person smokes despite believing it to be detrimental, they may suffer cognitive dissonance and attempt to lessen it by convincing themselves it's not really that bad or that they'll stop soon. Numerous elements, including individual values, beliefs, experiences, and outside societal pressure, can have an impact on cognitive dissonance. According to a research on consumers experiencing cognitive dissonance, caused by package downsizing, from Wilkin et al (2016), after completing a purchase, if a customer experiences cognitive dissonance, they are less likely to buy the goods again and more likely to engage in undesirable behaviors. These unfavorable behaviors have the ability to damage the company's reputation as well as its brand, which might result in a loss of future sales as well as negative word-of-mouth (Antonopoulou, 2023). As a result, while misleading packaging and inadequate filling may temporarily increase sales, they run the danger of ultimately hurting a brand's reputation and undermining the loyalty of its customers. Companies have a responsibility to strike a balance between the size of the packaging and the contents, and they should do market research and testing in order to establish the most effective strategy for each individual product (Antonopoulou et al., 1987).

3. Methodology

In this article, Google's tool, Google Trends, is used to investigate the popularity of the term "shrinkflation" and its search frequency, which have been processed in the past 5 years worldwide. The findings resulting from the research are presented through a line graph in order to better reflect the differences noted between searches performed from 2018 – present.

4. Results

In the results below, we can see that there is a worldwide "explosion" of interest in this term (compared to previous periods) right after the outbreak of the war between Russia and Ukraine (13-19 March, 2022).

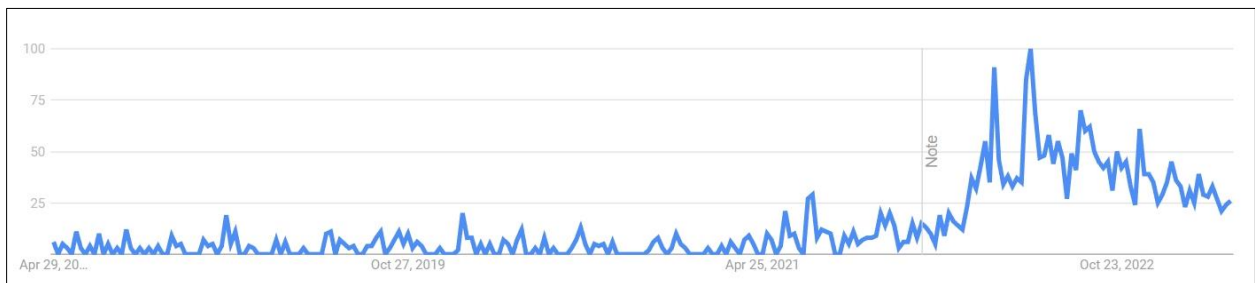


Figure 2 Worldwide searches for the term “shrinkflation”

Figure 2 shows the global search interest in Google search engine regarding the term “Shrinkflation”, in the past 5 years. It is discernible that there is little interest in searching the term for the most part of the last 5 years.

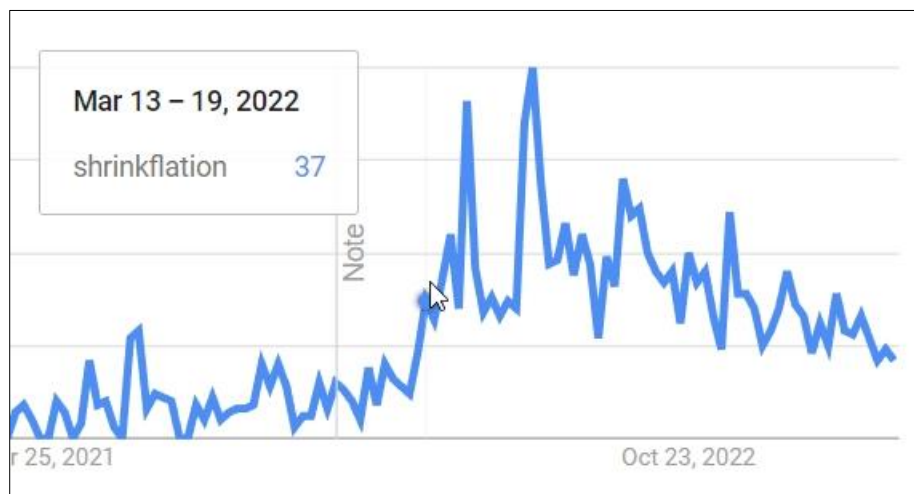


Figure 3 Date “shrinkflation” term started becoming more popular

Figure 3 shows that there is a significant increase in searching this particular term in the last 3 quarters of the year 2022.

5. Conclusion

In recent years, there has been a rise in the incidence of a phenomena known as shrinkflation, particularly in the wake of the conflict between Russia and Ukraine (about 3 weeks after its start), which also triggered a series of economic events. This technique of package downsizing, which is practiced by many companies, was followed by the massive disappointment of their customers, who in turn showed signs of cognitive dissonance after their purchases. Cognitive dissonance can occur as a result of consumers being disappointed with a product they have purchased because it is either of a poorer quality or of a smaller size than they had initially anticipated. As a consequence of this, it is essential for every business to be forthright about any alterations they may make to their products and to provide consumers with an accurate explanation of these modifications. According to the findings of our study, consumers have grown more aware of the problem of "shrinkflation" due to its growing popularity around the globe. The use of social media and other online communities that enable users to share knowledge and experiences with others may have contributed to this surge in awareness. To pinpoint the specific causes of this term's rising popularity, more investigation is necessary. As a whole, shrinkflation emphasizes the significance of transparency and straightforward communication in the consumer market. Companies that are forthcoming about any modifications they make to their products are likely to enjoy greater long-term success in establishing customer trust and retaining customer loyalty.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

- [1] Antonopoulou, H. (2023). Building up Leadership Skills in Vulnerable Social Groups. Case Study in Bipolar Disorder and Psychoeducation Contribution. *Technium Business and Management*, 6, 70-79.
- [2] Antonopoulou, H., Mamalougou, V., & Theodorakopoulos, L. (2022). The role of economic policy uncertainty in predicting stock return volatility in the banking industry: A big data analysis. *Emerging Science Journal*, 6(3), 569-577.
- [3] Antonopoulou, I., & Papastavridis, S. (1987). Fast recursive algorithm to evaluate the reliability of a circular consecutive-k-out-of-n: F system. *IEEE Transactions on Reliability*, 36(1), 83-84.
- [4] Bennett, J. N. (2022). Beyond Inflation Numbers: Shrinkflation and Skimpflation. *Page One Economics*®.
- [5] Durbin, D. A. (2022). No, you're not imagining it — package sizes are shrinking. *AP News*. <https://apnews.com/article/india-prices-business-d2c8279d39e1304f5623b3a99b56b8cc> [processed: 22/12/2022]
- [6] Giannoulis, A., Theodorakopoulos, L., & Antonopoulou, H. (2022). Learning in second-chance schools during COVID-19 Case study. *European Journal of Training and Development Studies*, 9(1), 13-19.
- [7] Golovacheva, K. S. (2016). (Un) fairness of Shrinkflation: the Role of Consumer-, Firm-, and Market-related Factors.
- [8] Graesch, J. P., Hensel-Börner, S., & Henseler, J. (2021). Information technology and marketing: an important partnership for decades. *Industrial Management & Data Systems*, 121(1), 123-157.
- [9] Green, M. (2008). *Ethics and marketing*. The Open University.
- [10] Gupta, O. K., Tandon, S., Debnath, S., & Rominger, A. S. (2007). Package downsizing: is it ethical?. *Ai & Society*, 21, 239-250.
- [11] Halkiopoulou, C., Papadopoulos, A., Stamatiou, Y. C., Theodorakopoulos, L., & Vlachos, V. (2024). A Digital Service for Citizens: Multi-Parameter Optimization Model for Cost-Benefit Analysis of Cybercrime and Cyberdefense. *Emerging Science Journal*, 8(4), 1320-1344.
- [12] Harmon-Jones, E., & Mills, J. (2019). An introduction to cognitive dissonance theory and an overview of current perspectives on the theory.

- [13] Karras, C., Karras, A., Theodorakopoulos, L., Giannoukou, I., & Sioutas, S. (2022, August). Expanding queries with maximum likelihood estimators and language models. In *The International Conference on Innovations in Computing Research* (pp. 201-213). Cham: Springer International Publishing.
- [14] Keller, K. L., & Kotler, P. (2006). *Marketing Management*. 12th Edition. Pearson Prentice Hall
- [15] Konish, L. (2022). 64% of consumers are worried about 'shrinkflation.' What it is and how to watch for it while shopping. CNBC. <https://www.cnbc.com/2022/08/29/64percent-of-consumers-worry-about-shrinkflation-heres-what-to-watch-for.html> [processed: 22/12/2022]
- [16] Kotler, P., Armstrong, G. (2001). *Principles of Marketing*, 9th edition, Pearson Prentice Hall
- [17] Meisenzahl, M. & Dean, G. (2022). From toilet paper to candy bars, companies hide rising costs by shrinking the size of everyday products. Here's what that looks like. Insider. <https://www.businessinsider.com/shrinkflation-grocery-stores-pringles-cereal-candy-bars-chocolate-toilet-paper-cadbury-2021-7> [processed: 22/12/2022]
- [18] THANASAS, G. L., & THEODORAKOPOULOS, L. (2023). ACCOUNTING IN THE ERA OF BIG DATA: CASE STUDIES AND FRAMEWORKS. *Journal of European Economy*, 22(4), 506-516.
- [19] Thanasas, G. L., Theodorakopoulos, L., & Lampropoulos, S. (2022). A Big Data Analysis with Machine Learning techniques in Accounting dataset from the Greek banking system. *European Journal of Accounting, Auditing and Finance Research*.
- [20] Theodorakopoulos, L. (2023). Synergizing Big Data Analytics and Natural Language Processing: A Comprehensive Review of Techniques and Emerging Trends. *Educational Research (IJMCER)*, 5(6), 111-118.
- [21] Theodorakopoulos, L., Thanasas, G., & Halkiopoulos, C. (2024). Implications of Big Data in Accounting: Challenges and Opportunities. *Emerging Science Journal*, 8(3), 1201-1214.
- [22] Theodorakopoulos, L., Theodoropoulou, A., & Halkiopoulos, C. (2024). Enhancing Decentralized Decision-Making with Big Data and Blockchain Technology. A Comprehensive Review.
- [23] Theodorakopoulos, L., Theodoropoulou, A., & Stamatiou, Y. (2024). A State-of-the-Art Review in Big Data Management Engineering: Real-Life Case Studies, Challenges, and Future Research Directions. *Eng*, 5(3), 1266-1297.
- [24] Vasilopoulos, C., Theodorakopoulos, L., & Giotopoulos, K. (2023). Big Data and Consumer Behavior: The Power and Pitfalls of Analytics in the Digital Age. *Technium Soc. Sci. J.*, 45, 469.
- [25] Vasilopoulos, C., Theodorakopoulos, L., & Giotopoulos, K. (2023). The Promise and Peril of Big Data in Driving Consumer Engagement. *Technium Soc. Sci. J.*, 45, 489.
- [26] Voyiatzis, I., Efstathiou, C., Antonopoulou, H., & Milidonis, A. (2013). An effective two-pattern test generator for Arithmetic BIST. *Computers & Electrical Engineering*, 39(2), 398-409.
- [27] Wilkins, S., Beckenuyte, C., & Butt, M. M. (2016). Consumers' behavioural intentions after experiencing deception or cognitive dissonance caused by deceptive packaging, package downsizing or slack filling. *European Journal of Marketing*, 50(1/2), 213-235.
- [28] Yao, J., Wang, D., & Mortimer, G. (2022). All new smaller size! Why getting less with shrinkflation is preferable to paying more.