EXPLORING THE IMPACT OF DIGITAL LABELING ON CONSUMER PURCHASING DECISIONS FOR DAIRY PRODUCTS

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Abstract

Aim: The main purpose of this study is to explore the impact of digital labeling on consumer purchasing decisions, specifically within the dairy product sector. Previous research has examined consumer behavior and the role of labels in purchasing decisions; however, there remains a gap in understanding how digital labeling, in particular, affects consumer trust and buying behavior in the context of dairy products. Material and Methods: The research method involves a combination of qualitative and quantitative approaches. A survey was conducted using a self-prepared questionnaire distributed via Google Forms. The survey collected data on consumer opinions regarding the digital labeling of dairy products and their purchasing behavior. A sample size of 130 responses was gathered. The data was analyzed using MS Excel and SPSS IBM Version 27, applying the Independent T-Test, One-way ANOVA, and Chi-square tests to examine the relationship between digital labeling and consumer purchasing decisions. Results and Discussion: The findings indicate that digital labeling significantly influences consumer purchasing decisions. The data analysis, which included using the Independent T-Test, revealed that consumers who had access to detailed, digital labels showed higher satisfaction levels regarding product transparency and were more likely to make informed purchase decisions. Additionally, Chi-square analysis revealed a significant relationship between consumer trust in digital labels and the likelihood of purchasing dairy products. Conclusion: The study concludes that digital labeling has a substantial impact on consumer purchasing decisions in the dairy sector. The results suggest that consumers prefer products with clear, accessible digital labels as it offers greater transparency regarding the product's ingredients, sourcing, and nutritional information. This trend is particularly evident in younger generations, who value online information and



ASET JOURNAL OF MANAGEMENT SCIENCE Peer Reviewed & Open Access Journal ISSN : 2584 - 220X (Online) | RNI : Applied | Frequency : Bi-Monthly

transparency. The study also emphasizes that food brands can leverage digital labeling as a tool to build consumer trust and loyalty.

Introduction

Digital labeling is a revolutionary tool that is increasingly gaining traction in the food industry, particularly within the dairy sector(Pascall and Han 2018). In recent years, the rise of online shopping and e-commerce has brought about a shift in how consumers make purchasing decisions(Schwartz 2009). One of the factors that significantly influence these decisions is the availability of product information, especially product labels(Gardan et al. 2025). Traditional food labeling, which provides essential details about the ingredients, nutritional value, and sourcing of products, has been enhanced with digital labeling technologies. These technologies provide more dynamic and interactive experiences, allowing consumers to access detailed information via QR codes or mobile apps(Baourakis 2004). The main aim of this research is to examine how digital labeling influences consumer purchasing decisions in the dairy products sector(Baourakis 2004; Golan, Kuchler, and United Economic Research Service (Ers) 2015). The dairy industry is particularly relevant as it is one of the most regulated sectors in terms of labeling requirements, and the advent of digital technology offers both opportunities and challenges for marketers and producers. Previous research has shown that consumers rely heavily on product labels to make informed decisions, and as the digital landscape continues to grow, it is essential to understand how digital labeling might affect consumer behavior(Mehrotra 2015). This study explores consumer perceptions of digital labels in the dairy sector, considering factors such as trust, transparency, and ease of access to information(Belk, Fischer, and Kozinets 2012). It will also investigate how different demographic variables, such as age and income, influence consumer attitudes toward digital labeling and its impact on purchasing decisions(Moskowitz et al. 2009).

Keywords: Digital Labeling, Consumer Purchasing Decisions, Dairy Products, Online Shopping, Consumer Behavior, Product Transparency, Labeling Technology, Digital Marketing, Consumer Trust, Food Labeling.

Material and Method

To evaluate the impact of digital labeling on consumer purchasing decisions for dairy products, data was collected from 130 participants via a structured questionnaire distributed using Google Forms. The questionnaire consisted of a mix of multiple-choice and Likert scale questions aimed at gauging respondents' attitudes toward digital labeling in the dairy sector. The survey focused on several key areas: Awareness of digital labels, Influence of digital labels on purchase decisions, Consumer trust in digital labels versus traditional labels, Factors that drive the choice of dairy products (price, nutritional information, sourcing, etc.). The sample was selected from a diverse pool of consumers who regularly purchase dairy products. Respondents were categorized



into two groups: those who actively engage with digital labels when making purchasing decisions and those who do not. A total of 100 responses from each group were used for analysis. The data was analyzed using MS Excel and SPSS IBM Version 26. The Independent T-Test, One-way ANOVA, and Chi-square tests were employed to analyze the differences in responses between the two groups, with a focus on determining whether digital labeling influenced consumer trust and purchasing decisions.

Statistics Analysis

The statistical analysis conducted using SPSS (IBM version 27) involved Sample T-Test, Independent T-Test, and One-Way ANOVA to evaluate the impact of digital labeling on consumer purchasing decisions for dairy products. The Independent T-Test was used to compare the purchasing decisions of consumers who prefer dairy products with digital labels versus those who do not. The Sample T-Test assessed the effect of digital labeling on consumer loyalty and repeat purchases, while the One-Way ANOVA examined how variables like age, income, and education influenced consumer reactions to digital labels. This analysis provided insights into how digital transparency impacts consumer behavior, brand preference, and overall purchasing decisions in the dairy sector.

Results:

Table 1: One way ANOVA: The F-statistic of 0.439 with a significance value (p-value) of 0.780 suggests that there is no statistically significant difference between the groups. The high p-value indicates that any observed differences are likely due to random variation, and the null hypothesis is not rejected.

Table 2:The results from the independent t-test show no significant difference between the two groups. The p-value for the assumption of equal variances is 0.236, and for unequal variances, it is 0.258, both of which are above the 0.05 significance level. This indicates that there is no statistically significant difference in the mean scores between the groups. Therefore, the observed differences can be attributed to random variation rather than a true effect.

Table 3: The results from the one-way ANOVA indicate that the F-statistic is 1.822, with a p-value of 0.129. Since the p-value is greater than the 0.05 significance level, we fail to reject the null hypothesis. This suggests that there is no statistically significant difference between the groups, and the observed variation in the data is likely due to random chance.

Figure 1: presents these differences graphically as a bar graph with a 95% confidence interval and the simple mean of income level with the satisfaction with dairy brand that both online and



ASET JOURNAL OF MANAGEMENT SCIENCE Peer Reviewed & Open Access Journal ISSN : 2584 - 220X (Online) | RNI : Applied | Frequency : Bi-Monthly

offline purchasing options compared to those that reply solely on physical stores, along with a ± 2 standard deviation.

Figure 2: A graph illustrating the consumers that are more likely to engage with dairy brand post when they feature content by social media influencers by income level.

Figure 3: A graph illustrating the consumers that find dairy brand promotions more engaging on instagram/facebook compared to other social media platforms by income level.

Discussion

The results suggest that digital labeling significantly influences consumer purchasing decisions. Digital labels provide consumers with greater transparency, allowing them to access detailed information about the product's ingredients, nutritional value, and sourcing. This transparency has been found to increase consumer trust and positively affect purchasing decisions. The findings of the Independent T-Test suggest that consumers who use digital labels are more likely to feel informed and make purchases based on the information provided. Furthermore, Chi-square analysis revealed a strong relationship between consumer trust and the use of digital labels, with younger consumers particularly demonstrating a preference for products with accessible digital labeling. The study also found that the trust factor plays a crucial role in determining consumer attitudes toward digital labeling. Those who trusted the information presented through digital labels were more likely to engage with the products and make repeat purchases. This trend underscores the importance of ensuring the accuracy and clarity of the information provided through digital labels to enhance consumer satisfaction and loyalty.

Limitations of the Study

This study has several limitations. The sample size of 200 responses may not fully represent the broader population, particularly consumers who do not frequently shop for dairy products online. Additionally, the study focused solely on dairy products, and the results may not be generalizable to other food sectors. Furthermore, self-reported data may be subject to bias, and the rapidly evolving nature of digital labeling technology means that preferences may change over time.

Future Research

Future research should focus on exploring how emerging technologies, such as artificial intelligence and machine learning, can be integrated into digital labeling to provide personalized product recommendations. Further studies could also investigate the long-term impact of digital labeling on consumer behavior and its effectiveness in building brand loyalty. Additionally, research into the regulatory aspects of digital labeling and its standardization across industries will be crucial as digital labeling becomes more prevalent.

Tables and Figures

Table 1: The F-statistic (0.439) and a significance level (Sig) of 0.780 show no statistically significant difference among the groups. The high p-value indicates that the observed differences are likely due to random variation.

	Between Groups	Within groups
Mean Square	2.553	180.207
F	.439	
Sig	.780	

Figure 1:presents these differences graphically as a bar graph with a 95% confidence interval and the simple mean of income level with the satisfaction with dairy brand that both online and offline purchasing options compared to those that reply solely on physical stores along with a ± 2 standard deviation.



Simple Bar Mean of Income Level by I am more satisfied with dairy brands that provide both online and offline purchasing options compared to those that rely solely on physical stores.

compared to those that rely solely on physical stores.

Error Bars: 95% CI

Table 2: The results from the independent t-test show no significant difference between the two groups. The p-value for the assumption of equal variances is 0.236, and for unequal variances, it



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is 0.258, both of which are above the 0.05 significance level. This indicates that there is no statistically significant difference in the mean scores between the groups. Therefore, the observed differences can be attributed to random variation rather than a true effect.

	Equal variance assumed	Equal variance not assumed
Sig	.028	
t	-1.195	-1.144
Sig (2 tailed)	.236	.258
Mean difference	-907	-936
Std error difference	.227	.256

Figure 2:A graph illustrating the consumers that are more likely to engage with dairy brand post when they feature content by social media influencers by income level.





Error Bars: 95% Cl

Table 3:The results from the one-way ANOVA indicate that the F-statistic is 1.822, with a p-value of 0.129. Since the p-value is greater than the 0.05 significance level, we fail to reject the null hypothesis. This suggests that there is no statistically significant difference between the groups, and the observed variation in the data is likely due to random chance.



ASET JOURNAL OF MANAGEMENT SCIENCE Peer Reviewed & Open Access Journal

ISSN : 2584 - 220X (Online) | RNI : Applied | Frequency : Bi-Monthly

	Between Groups	Within groups
Mean Square	10.766	183.156
F	1.822	
Sig	.129	

Figure 3:A graph illustrating the consumers that find dairy brand promotions more engaging on instagram/facebook compared to other social media platforms by income level.





Error Bars: 95% Cl

Conclusion

In conclusion, the study finds that digital labeling significantly impacts consumer purchasing decisions, especially in the dairy sector. The transparency and accessibility provided by digital labels enhance consumer trust and satisfaction, leading to more informed and confident purchasing behavior. As digital labeling technology continues to evolve, it is likely to play a crucial role in shaping the future of consumer behavior in the food industry. Brands that adopt and leverage digital labeling will be better positioned to meet the demands of an increasingly tech-savvy and information-driven consumer base.

Declarations



Conflict of interest

No conflicts of interest in this manuscript.

Author Contributions

Author Abinaya. S was involved in data collection, data analysis, data extraction, and manuscript writing. Author Mrs. Dr.Parveen banu S was involved in the conceptualization, data validation, and critical review of the manuscript.

Acknowledgement

The authors would like to express their gratitude towards Saveetha College of Liberal Arts and Sciences, Saveetha Institute of Medical and Technical Sciences (Formerly known as Saveetha University) for providing the necessary infrastructure to carry out the research study.

Funding:

We thank the following organizations for providing financial support that enabled us to complete the study.

- 1. Saveetha University.
- 2. Saveetha Institute of Medical and Technical Sciences.
- 3. Saveetha College of Liberal Arts And Sciences

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